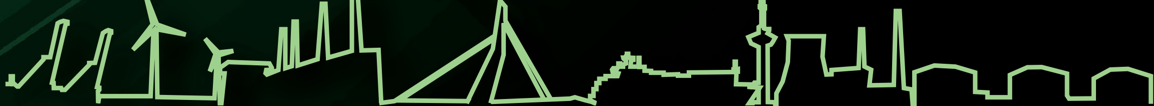
Vying for Vision

Climate and energy policies between local ambitions, national interests and international realities

Natalya Rijk



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by

Natalie A.M. Rijk

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national interests and international realities

Strijd om visie

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nationale belangen en de internationale realiteit

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“If we all got angry together something might be done”

- J.R.R. Tolkien, ‘The Return of the King’

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ACT	Accelerating CCS Technologies (an Era-net fund)
ADN	European Agreement concerning International Carriage of Dangerous Goods by Inland Waterways
AGS	Annual Growth Survey
BNC	Beoordeling Nieuwe Commissievoorstellen (evaluation of new EC proposals)
CCNR	Central Commission for Navigation of the Rhine
CCS	Carbon capture and storage
CCU	Carbon capture and usage
CDA	Christen-Democratisch Appèl
CEF	Connecting Europe Facility
CESNI	Comité Européen pour l'Élaboration de Standards dans le Domaine de Navigation Intérieure
CH_4	Methane
CNG	Compressed natural gas
CO_2	Carbon dioxide
COP	Conference of Parties, or Climate Conference (always followed by a number)
CoR	Committee of the Regions
CPfT	Clean Power for Transport Directive
CPI	Current Policy Initiatives
DCMR	Dienst Centraal Milieubeheer Rijnmond
DG CLIMA	Directorate-General for Climate Action
DG COMP	Directorate-Genreral for Competition
DG ENER	Directorate-General for Energy
DG ENV	Directorate-General for Environment
DG GROW	Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
DG MOVE	Directorate-General for Mobility and Transport
DG RTD	Directorate-General for Research, Technology and Development
DG TREN	Directorate-General for Transport and Energy (pre-2010)
EC	European Commission
ECA	Emission Control Area

ECCP	European Climate Change Programme
ECSA	European Community Shipowner's Associations
EEA	European Energy Agency
EED	Energy Efficiency Directive
EEff	Energy efficiency (EU goal)
EEPR	European Energy Programme for Recovery
EERP	European Economic Recovery Programme
EESC	European Economic and Social Committee
EFIP	European Federation of Inland Ports
EFRO	European Regional Development Fund
EGR	Enhanced gas recovery
EIB	European Investment Bank
EICB	Expertise- en Innovatiecentrum Binnenvaart
EOR	Enhanced oil recovery
EP	European Parliament
EPA	Environmental Protection Agency
EPS	Emission performance standards
ESD	Effort Sharing Decision
ESI	Environmental Ship Index
ESPO	European Sea Ports Organisation
ETS	Emissions trading system
EU (EU-28)	European Union
EU-15	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden, and UK
EU ETS	European Emissions Trading System
EUA	European carbon allowances
FID	Final investment decision
FP	Framework Programme (always followed by a number)
FQD	Fuel Quality Directive
FTE	Full time equivalent
GATE	Gateway to Europe
GCCSI	Global CCS Institute
GDF Suez	Gaz de France (now Engie)
GDP	Gross Domestic Product
GHG	Greenhouse gas
GTL	Gas-to-liquid
GWP	Global warming potential
IEA	International Energy Agency

IGO	International governmental organisation
IGU	International Gas Union
IMO	International Maritime Organization
INEA	Innovation & Networks Executive Agency
IPCC	International Panel on Climate Change (a UN body)
ISO	International Organization for Standardisation
IWT	Inland waterway transport
JEGTE	Joint Expert Group on Transport and Environment
LBBR	GATE's liquid break bulk terminal
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas
MARPOL	Marine Pollution Protocol
MBM	Market-based measure
MEP	Member of European Parliament
Ministry of EZ	Ministry of Economic Affairs, The Netherlands
Ministry of I&M	Ministry of Infrastructure and Environment, The Netherlands
MLG	Multi-level governance
MRV	Monitoring, reporting and verification
MS	Member states (EU)
Mt	Megatonnes
NAIADES	European Action Programme for the promotion of Inland Waterway Transport
NAP	National Action Plan
NEC	National Emission Ceilings Directive
NER	New Entrant's Reserve (300 or 400)
NGO	Non-governmental organisation
NH_3	Ammonia
NOx	Nitrogen oxides
NRMM	Non-Road Mobile Machinery
NRP	National Reform Programme
NSBTF	North-Sea Basin Task Force
OCAP	Organic CO_2 for Assimilation by Plants
OEIN	Observatory of European Inland Navigation
OMC	Open Method of Coordination
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
PM	Particulate matter
QSNA	Qualitative social network analysis
PoR	Port of Rotterdam Authority

PvdA	Partij voor de Arbeid
PwC	PricewaterhouseCoopers
R&D	Research and Development
RED	Renewable Energy Directive
RES	Renewable energy
RCI	Rotterdam Climate Initiative
ROAD	Rotterdam Opslag en Afvang Demonstratieproject
SCP	Stability and Convergence Programme
SECA	Sulphur Emission Control Area
SET-Plan	Strategic Energy Technology Plan
SO_2	Sulphur dioxide
SOx	Sulphur oxides
SOP	Samenwerkend Onderzoeksprogramma
SP	Socialistische Partij
TEN-T	Trans European Networks - Transport
TFEU	Treaty on the Functioning of the European Union
UK	United Kingdom
U.S./USA	United States of America
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
VRR	Veiligheidsregio Rotterdam-Rijnmond
VVD	Volkspartij voor Vrijheid en Democratie
WPCI	World Ports Climate Initiative
ZEP	Zero Emissions Platform

1

Changing Climate and Energy Governance

1.1. INTRODUCTION

"Energy and climate are nearly synonymous"
"Nobody is investing because it's such a long-term perspective, with high costs and uncertain prospects. […] So it is very important that governments continue planning and start sharing the risks. They need to take it seriously"
"We need a certain measure of central policy-making and planning. It is not enough to have the market decide everything"
"We have the Energieakkoord which speaks of CO2 reduction and the wish to implement CCS, but we do not have a vision"
"Typically Dutch is that we try to meet goals through minimum effort"[1]

One of humanity's gravest problems in the 21st century is climate change and the threat it poses to the state of our planet and humankind. Governments, businesses, NGOs and experts across the globe are considering the problem and trying to find solutions to limit the earth's temperature rise by finding and implementing ways to reduce greenhouse gas (GHG) emissions (most notably CO_2). So far, we have not been very successful as global emissions continue to rise and vulnerable nations (fe., island nations) are experiencing the woes of flooding and human disaster. Yet change is on the horizon. During 2015's Paris

1 Quotes are, in order, from: interview with someone from a knowledge centre, with a European Commission official, with a private sector representative, with someone working for an NGO, and with a Dutch government representative.

Climate Conference (also called 'COP-21') leaders from over 170 countries ambitiously agreed to limit global warming to well below 2℃. This agreement entered into force in 2016, yet does not guarantee success because it hinges on countries' willingness to act. There is no strong enforcement mechanism. Recently, the United States have announced their exit from the COP-21 agreements.

Concerted efforts to limit CO_2 emissions date from 1990 with the establishment of the United Nation Framework Convention on Climate Change (UNFCCC). Since then, the limited progress that has been made has been subject of much scholarly study. The severity of the problem and the difficulty of reaching a solution make it a prime example of a (super) wicked problem (cf. Lazarus, 2009; Levin et al., 2012; Maréchal & Lazaric, 2010; Webster, 2008) with four features and potentially catastrophic consequences:

> "time is running out; those who cause the problem also seek to provide a solution; the central authority needed to address them is weak or non-existent; and irrational discounting occurs that pushes responses into the future. Together these features create a tragedy because our governance institutions, and the policies they generate (or fail to generate), largely respond to short-term time horizons even when the catastrophic implications of doing so are far greater than any real or perceived benefits of inaction" (Levin et al., 2012:124).

Lacking an easy test for a potential solution and a way of knowing precisely how our society will be affected by climate change, decision-makers are constrained by the choice they have to make between short-term gain (for example, economic gain) and the long-term gain of preventing climate change (Levin et al., 2012:126-128).

The search for a logical solution begins with addressing emission sources: most notably the energy sector, industry, transport, and housing. The majority of global emissions is energy-related, and even when emissions are not directly related to energy, they often stem from human practices that are 'energetic'[2] (Shaw, 2011:744). The energy sector alone was responsible for more than two-thirds of GHG emissions in 2010 (IEA, 2013:15). Energy being used in industry and transport furthermore accounts for almost 60% of the European Union's (EU) final energy consumption in 2014 (European Commission, 2016:20)[3]. It therefore makes sense to seek concerted action by addressing climate change and energy (production and use) as two sides of the same coin. Processes of European governance

2 Waste treatment is an example of a human practice that is energetic.

3 The EU publishes its statistical pocketbook for the energy sector each year at [https://ec.europa.eu/energy/en/data-analysis/energy-statistical-pocketbook].

geared toward dealing with these challenges often result in a re-articulation of political space beyond the state. The result of such a re-articulation is a web of "complex relationships of mutual interdependence among regions, organised interests, member states and the Union itself" (Hueglin, 1999:249). That makes them interesting to study.

1.2. WHAT'S THE BIG DEAL?

The European Union's import of raw materials is six times higher than its corresponding export[4]. As the world's largest regional energy market, Europe's challenges with respect to climate change, sustainable energy access and technological advancement are exemplary for the challenges faced worldwide. The European Union is trying to be a global climate leader by advocating stringent GHG emissions reductions and pursuing an ambitious internal climate policy. In reality it has to deal with 28 sovereign member states (MS); each has a different view of the problem and on the pathways available to solve it. Since the Lisbon Treaty (2009), the EU shares energy policy competences with its member states. The EU's climate policies have followed global climate agreements and developed steadily since the 1990s.

Table 1.1 shows the three areas EU climate policies focus on: GHG reduction, adoption of renewable energy (RES) and improving energy efficiency (EEff). Though the three focus areas linked energy and climate from the onset, the EU had to wait until 2007 before both policy fields were mentioned in one and the same policy package. The Climate and Energy Package (third column in table 1.1), part of the *Europe 2020* strategy, introduces binding goals on GHG emissions reductions and RES. Energy efficiency is left with indicative goals and voluntary implementation. Willingness to act is also embedded in the legally binding goals, since member states are free to reach them any way they want. The EU has only shared competence with member states in the area of energy policy; a nation's energy mix is completely left to its sovereign decision making. At most, the EU can try to coordinate policies and policy results through soft coordination (benchmarks, peer pressure, common reports, and so on). Furthermore, the difficulty many member states have with reaching the Europe 2020 targets has led to their refusal to accept another batch of binding targets for the period after 2020. The *Climate and Energy Framework* for 2030 is altogether based on indicative goals.

The Netherlands is one of the EU's few natural gas producers. The *Slochteren gas* bubble has given gas a big role in the Dutch energy mix and, due to its economic importance, the Netherlands has been unwilling to let the EU decide on matters pertaining to gas. The

4 As stated by Commissioner Potočnik (DG Environment) at the EEAC Conference in October 2012.

Table 1.1. The rise of binding targets for EU climate & energy policy — 1990 to 2010

	Pre-Kyoto **(1990 - 1997)** *Aimed at 2000*	**European Climate Change Programme (ECCP)** and additional legislation **(1998 - 2006)** *Aimed at 2010*	**Climate and Energy Package** and additional legislation **(2007 - 2010)** *Aimed at 2020*
Greenhouse Gases (GHGs)	No European policy (discussion on CO_2 tax, which was not adopted).	EU ETS (2003)	EU ETS review (2008, 2009) with one EU-wide ETS target including aviation
			Effort Sharing Decision (national non-ETS targets)
		Fluorinated Gases Regulation	Fluorinated Gases Regulation review
	Mainly national policies!	Mobile Air-Conditioning Systems Directive	Further implementation
		Voluntary agreement with car manufacturers (1998/1999)	Mandatory standards for cars and vans
Renewable Energy (RES)	ALTENER	Renewable Electricity Directive (2001) Biofuels Directive	Renewable Energy Directive (RED) & Fuel Quality Directive (FQD)
Energy Efficiency (EEff)	SAVE	Energy Services Directive Combined Heat and Power Directive	Energy Efficiency Directive (EED)
		Ecodesign of Energy Using Products Directive	Further implementation
		Energy Labeling Framework Directive	Energy Labeling Framework Directive review
		Energy Performance of Buildings Directive	Energy Performance of Buildings Directive review

Source: adapted from Climate Policy Info Hub, 2017 [http://climatepolicyinfohub.eu/european-climate-policy-history-and-state-play].

Netherlands is also home to Europe's largest port in terms of size (Edelenbos, Gerrits & Van Gils, 2008:51) and market share (Port of Rotterdam, 2013): the Port of Rotterdam. After the 2004 corporatisation, the Rotterdam Port Authority (PoR) now has the status of a public limited company[5]. It is furthermore a typical example of a landlord-type port. Somewhat a-typical about the port is the amount of industry located on port land. The port is by far the largest port in Europe, and also houses one of the world's largest (petro)chemical port clusters (PoR, 2016a:12). Between 2010 and 2015, the port and port-related industries were responsible for about 3,5-4% of Dutch GDP (Van den Bosch, Hollen, Volberda & Baaij, 2011:ii; Van den Bossche, Kleingeld, Van Schijndel, Yagafarova, 2016:15). The port

5 Owned by the Municipality of Rotterdam and the Dutch State.

area alone emits roughly 30 million tonnes CO_2 per year (Wuppertal Institute, 2016:19), making it a prime target for GHG reduction efforts due to the potential scale and impact reduction efforts can have in the region. Compared to the Dutch national CO_2 emissions, the port area is responsible for ±20% of the Dutch contribution to climate change. Conventional energy sources such as oil, coal, and gas are supplemented by renewables and techniques to mitigate the negative climate effects of industry and shipping. Energy policy and sustainability thus co-exist inside the port, and can converge or clash.

1.2.1. Rotterdam in the European economy

Due to its status as Europe's largest port and important hub for European economy, there is a strong connection between the port of Rotterdam and the EU. The interconnectedness of energy markets within Europe and across the globe has had unsettling effects on the Dutch energy market. The German *Energiewende*, based on *en masse* investments into alternative energy sources (for example, solar power and wind) subsidised by the EU, is one such example. The large-scale production of shale gas in the United States is another. It has lowered coal prices and tipped the scales in favour of this — rather polluting — energy source; a development which stands in direct competition with the EU's wish to decarbonise (European Commission, 2011a:2). The surplus energy that is flooding the Dutch market has had an unsettling effect on the price of energy and has created a trade-off in the Dutch market, because clean power plants (gas-powered) are being shut down in favour of coal-fired plants. An example of the latter is the Enecogen plant which has deconstructed and sold its turbine. Investments in clean energy and air in The Netherlands are also being mitigated by the lack of investments in sustainable energy elsewhere, such as Eastern Europe. Poland, for example, is one of the largest countries in the EU and still mainly runs on coal. The low carbon price in the EU Emissions Trading System (ETS) has made it unattractive for industry to invest heavily in sustainability (Sandbag, 2013); an effect which is strengthened by the coal surplus stemming from the USA.

Globally, nation states have committed themselves to a temperature rise 'well below 2°C'. Progress is monitored by a UN body: the Intergovernmental Panel on Climate Change (IPCC). Yet this global goal cannot be enforced by any global judiciary. Binding agreements can, however, be found at EU-level. In the absence of an overarching port policy in the EU, many EU regulations from different DGs impact the port on a day-to-day basis. Climate and energy regulations are a good examples, and when one looks at how they are translated nationally, a complex picture arises.

A cursory glance at the table above implies that the local ambitions are in line with European ambitions, and reason would state that there should therefore be no conflict between the two. However, the complex dynamics of the energy market also give rise to problems. Seemingly aligned goals may be conflicting due to other constraints, such as varying implementation of directives across the EU, political pressures within a country or economic interdependencies. Furthermore, the industry that is active in the port has its own preferences and operations, yet the port as a whole is seen as a big polluter. With the PoR being the landlord for the industry, the port authority can make demands to its 'renters'. An interesting question is how the PoR could steer the industry to meet PoR and policy goals so that the port ceases to be perceived as the largest polluter. Such steering becomes complex when considering the fact that many of the businesses present in the port are multinationals, and that business responds to global trends.

For the Port of Rotterdam, energy and sustainability are interconnected[6]. In its Energy Port magazine, the Port Authority argues that "energy efficiency measures and renewable energy (wind, biomass) will help a lot to cut emissions, but carbon capture and storage (CCS) will also be necessary to reach this ambitious goal" (Port of Rotterdam, 2010:4). In its yearly reports, the Port Authority — see figure 1.1 for a general map of the port area — outlines progress in the transition towards more sustainability. Cleaner energy production and use make up the largest parts of its sustainable ambitions[7] to reduce CO_2 emissions by 50% in 2025 and increase the share of renewables to 30% (Port of Rotterdam, 2016:72). The Port of Rotterdam realises that in order to maintain its competitive position, a transition towards renewable energy, biomass, and a clean chemical industry is necessary. Given the high rate of energy imports and exports in Rotterdam, the port is of major importance to the European economy. Its strategic decisions regarding this energy hub function are summarised in its *Energy Port* concept. Rotterdam Energy Port is a "growth concept focusing on infrastructure, transhipment, production and knowledge with regards to energy in the port of Rotterdam"[8]. The concept was coined to help combat external confusion surrounding the identity of the Port of Rotterdam and to provide a marketable concept. Developing the Energy Port is part of the policy and mandate of the Port of Rotterdam Authority, although it needs support from the wider Port Community to make it happen. The concept consists of five pillars and a backbone. The five pillars are the LNG hub, the coal and biomass hub, the CO_2 hub, (sustainable) electricity generation, and energy ef-

6 And not only for the PoR. Policy documents of the Dutch government and the EU often explicitly mention energy and climate issues in one breath. Scholarly articles focusing on sustainability can hardly avoid mentioning energy (policy).

7 See for example p. 83 of the 2010 report, p. 44 of the 2011 report, p. 35 of the 2012 report and p.30 of the 2013 report at [https://www.portofrotterdam.com/nl/havenbedrijf/financiën/jaarverslagen].

8 Rotterdam Energy Port Marcom Plan, 2013. Author's translation. Internal document.

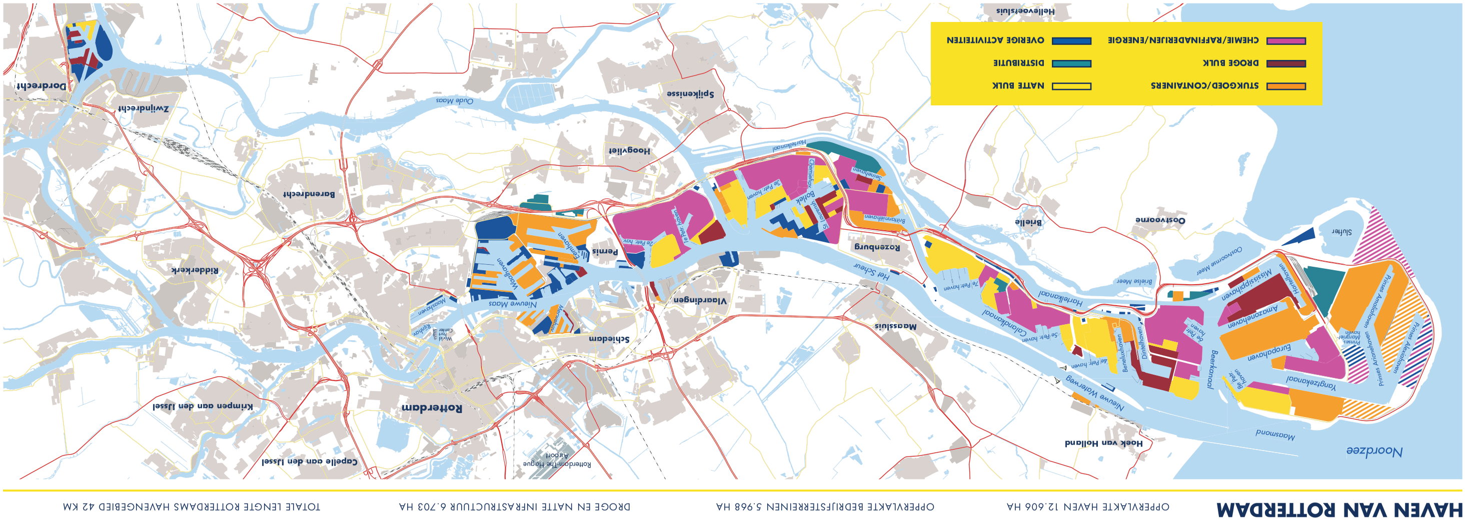

Figure 1.1. Map of the Rotterdam port area
Source: PoR, 2016b:11.

ficiency. The backbone covers all energy infrastructure necessary to make the pillars viable. In practice, this infrastructure amounts to pipelines for residue heat, CO_2, utilities, and resource trade. The goals of the Energy Port concept are to solidify and ameliorate the investment climate in the Port of Rotterdam in order to continue its development into the 'sustainable power house' of North-West Europe, and developing into a global hub for energy commodities such as LNG, coal, biomass and CO_2[9].

The context in which the governance of the Rotterdam Energy Port is grounded needs to be analysed if we want to draw meaningful conclusions regarding EU climate and energy policy and how it plays out in Rotterdam. Figure 1.2 presents a highly simplified view of the arena and relevant interests along the axes of competitiveness versus sustainability, and a concern for reaching the set EU policy goals for 2020 versus low concern for reaching these goals. While at face value the Port of Rotterdam Authority seems to strive for the same goals as the European Commission, their relationship is not clear-cut and is influenced by other actors. In other words, they are not the sole actors in Energy Port matters. The inclusion of the Dutch state, the municipality of Rotterdam, and the industry present on port land is an inclusion of necessity. With this addition to the picture that was sketched above, we are observing a dynamic context in which the Port of Rotterdam has to operate. Turning back to the illustrative case of this thesis, the above assertion allows us to draw

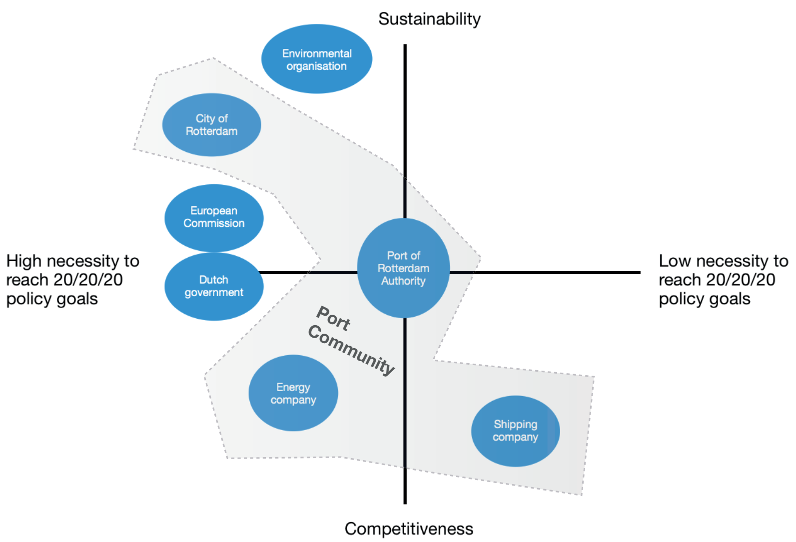

Figure 1.2. Major climate and energy stakeholders with differing interests
Source: author's own composition based on conducted research. Highly simplified.

9 See previous footnote.

an important conclusion to further steer inquiry: the relationships between the Energy Port actors are embedded in a wider multi-level and multi-actor context which may have fundamental consequences for these relationships over time. Rotterdam Energy Port has a multi-level governance aspect due to the participation of actors such as governments, companies, NGOs, and even citizens, both national and international. However, whenever multiple actors are present, there will be multiple goals and strategies to achieve these goals as well. Sometimes these contradict and cause tension.

Figure 1.2 lacks nuance[10], though already shows that actors at multiple levels of governance have differing interests when it comes to climate and energy objectives. Interestingly, the PoR sits at the middle of the figure which potentially gives it the means to relate to stakeholders on all sides of the spectrum. It also means the PoR can be drawn into the conflicting interests of others. The challenge is how to manage the major actors identified in the figure. Add to this picture the EU's tendencies to Europeanise policies, either through soft or hard law, and the PoR is facing both an advocacy problem and a potential loss of sovereignty, putting pressure on the organisation. Not only is the context it operates in changing, but the way the PoR influences governance is changing as well. All things considered, this topic is definitely a big deal. That brings us to the research question this research project seeks to address.

Table 1.2. Climate and energy policy goals aligned?

	Rotterdam	Netherlands	European Union
CO2 reduction	50%*	20%	20%
Share of renewables in energy mix	20%	14%	20%
Energy savings	20%	1,5%**	20%

* = in 2025, ** = per year until 2020.
Sources: cited documents in this chapter and the RCI and Dutch Ministry of Economic Affairs websites.

1.3. RESEARCH QUESTION AND AIM

In order to realise its long-term local strategies, the Port of Rotterdam Authority — responsible for port strategy and development — and the Port Community[11] as a whole seek support from the EU. The EU, in turn, needs ports and industry to realise its energy and climate objectives. The ensuing relationship between the European Commission and the Port Community has its own complexity and struggles. The PoR feels that a certain degree of support from the

10 More nuancing is added in chapters four, five and six of this dissertation.

11 The word 'community' implies that everyone part of it feels that they are part of a community, which does not necessarily have to be the case. In this respect he word 'community' reflects the eco-system of the port.

European Union is necessary to achieve its Energy Port goals, which is why efforts are made to lobby at the European level. Successive Dutch governments have been staunch advocates of climate change mitigation and the Dutch academic community is very active. In terms of results, the country is lagging behind (chapter 4 discusses this in more detail). To successfully get through what has been dubbed the "energy transition", radical change[12] is considered necessary. Possibilities for GHG reductions in the Rotterdam port area are vast and, due to the region's large contribution to Dutch emissions, efforts to decarbonise in the port play an important role in overall Dutch climate change mitigation efforts. Many expect the Port of Rotterdam to do everything possible to limit their GHG emissions. The two newly built coal-fired power plants have been subject of public discussion even before they opened. At the same time, even though reduction potential is high and the Dutch have committed themselves to EU climate and energy goals, the expectations are not met with satisfying results. Why not? That is the focus of this dissertation. It asks the following question:

> *How do the European Union's efforts to address climate and energy issues affect the Rotterdam port community, and what role can the Port of Rotterdam Authority play in its governance in order to reach climate and energy policy goals?*

The aim of this dissertation is to explain how decisions made at EU level can impact the port area in Rotterdam[13], and how relevant actors — in particular the Port of Rotterdam Authority due to its special status as a privatised landowner — operate within the black box of climate and energy governance. Chapter two will discuss the term 'governance' at length, but for now governance is defined as "the various institutionalized modes of social coordination to produce and implement collectively binding rules, or to provide collective goods" (Börzel & Risse, 2010:114). The special focus given to the PoR does not mean it is an all-powerful actor. The port authority is just one of many actors within a larger network in which actors are mutually interdependent. This dissertation zooms in on the PoR, without losing the whole picture, in an effort to give recommendations regarding how they can improve their public affairs. Understanding the impact of EU policies can help improve governance in order to deal with policies more effectively. Since governmental authorities at multiple hierarchical levels are involved and governance takes place at these different levels and including societal and business actors as well, the research question will be approached from the perspective of multi-level governance. As such, the national government can be

12 Not necessarily meaning rapid change.

13 It should be noted that logistics, a very important activity in a port, is not the focus of this thesis. This study will only address issues concerning climate and energy as they come up in Rotterdam Energy Port (potentially applied to transport) but not, for example, containerisation. The Rotterdam port 'area' is defined as the formal tract of land that is part of the port of Rotterdam.

viewed as a stakeholder in climate and energy governance, and is therefore identified as an important actor in this study.

The dissertation also provides insight in how actors in the port can organise their public affairs to influence future policies to their benefit. It does not show in detail how EU climate and energy policy was made until now, but rather treats policy goals until 2020 as a given and shows what the consequences of current policies are for the Port of Rotterdam. What have these policies enabled and what have they thwarted? The results are interesting for public affairs scholars precisely because this study focuses on how governance actually works in an empirical case. Governance is a game of stakes and priorities, and developing an understanding of which buttons to press, or which tools to use, to get certain outcomes is of great value for public affairs. After all, every actor needs to find a working mode of governance for themselves and vis-à-vis other actors.

The following sub-questions will structure the analysis:

I. Which EU climate and energy policies are relevant for Rotterdam Energy Port? (*chapter 4*)
   A. How do these policies affect the domestic level?
   B. Can national and supranational policy goals be aligned in practice and which constraints can be identified?
II. Which (multi-level) governance mechanisms are present in the implementation of these policies? (*chapters 5, 6 and 7*)
   A. What is the role and position of the Port of Rotterdam Authority?
   B. How are non-governmental actors involved in the process?
   C. To what extent is governance successful?
III. How can the governance of climate and energy in the Rotterdam port area be improved? (*chapter 8*)
IV. What are lessons the Port of Rotterdam Authority can learn for its public affairs management of future rounds of climate and energy policy-making? (*chapter 8*)

This dissertation aims to provide an inside view into how climate and energy governance works between the EU and the port of Rotterdam. The illustrative case that has been chosen is the Energy Port, which is divided into two nested cases: the CO_2 hub and the LNG hub. It is important to note that both nested cases provide potentially viable solutions on the medium term, yet perhaps not on the long term. Multi-level governance is used as a conceptual framework to guide data collection and analysis. MLG is interpreted as a hybrid model of governance in which both hierarchical and non-hierarchical mechanisms play an equally large role. As a consequence, power and influence — public affairs — are important concepts for the analysis. Insights from framing theory are therefore used to show how (political) narratives differ from action that is undertaken. Two narratives guide the reader through this dissertation: a political (power-driven) narrative, and an industrial narrative. Politics and industry are presented as two different realities that are in close contact with each other, yet operate on a different logic. What is necessary problem framing in politics does not necessarily represent industrial reality and vice versa. These realities complicate governance processes in which all parties are vying to get their vision across. The dissertation culminates in one overarching conclusion: without vision and active governmental steering, the governance of climate and energy will not bear fruit. The consequence for public affairs management is that insight is gained into what works and what does not work in climate and energy governance, which aids in the identification of valuable instruments to change governance and future policy-making.

1.3.1. Scientific Relevance

The scientific relevance of this dissertation is a strengthening of research, which thus far is very scarce in number, done on the interplay between the European Union and a port authority. It provides insight on how such a port authority — with ambitions focusing on (durable) energy that are compatible with EU ambitions — can be positioned within multi-level governance theory. Multi-level governance as a theory has been undergoing a reconceptualisation in the past few years to include mechanisms through which the participation of non-public sector actors can be studied. It is therefore not only possible to study the Rotterdam Energy Port case using this approach, but also desirable so that MLG as a theory can be further tested and improved. The results of this dissertation are also relevant for public affairs studies. The PoR's ambition to be at the centre of an energy carrousel makes it very important to position it within a broader context consisting of many players such as the Dutch State, the European Union, private sector companies, NGOs, and even citizens. As each actor has their own priorities, agendas, and ways to frame problems and their solutions, uncovering how governance mechanisms work between the EU level and the port level helps further ideas about how to best organise interests in the area of climate and energy. Lastly, generated data from this thesis can also be used in similar studies to position other actors with a similar status, although question marks can be placed concerning the validity of such generalisations. It is not the aim of this dissertation to produce results that are generalisable across policy sectors.

1.3.2. Practical Relevance

Ensuring the societal relevance of this dissertation has been done firstly through close cooperation with the port community, mainly with the Port of Rotterdam Authority. Given the complexity of the problem of climate change, the challenge for the Port Authority lies in reducing its very large carbon footprint whilst maintaining competitiveness and remaining attractive for businesses to settle. This challenge can be viewed as a threat, but can also be framed as an opportunity to find new ways of capitalising on the strength of a cluster to reach a desired goal: a cleaner port. Secondly, the thesis is primarily focused on the interaction between the EU and the port area in the field of energy and climate policy. The study paints a clear picture of the governance of these policies and what that governance means for the port authority's position vis-à-vis other actors, most notably governmental authorities. In essence, it adopts a reflexive attitude towards the consequences of governance processes and tries to act as a mirror for societal thinking about the role of governments and the private sector in solving the climate change problem. It will also provide the Rotterdam Port Authority with instruments to influence EU decision making and project funding based on an in-depth case study analysis and resulting recommendations. As such, this dissertation includes practical recommendations for the Port of Rotterdam Authority at the end. These recommendations will hopefully contribute to the *orgware* of the port — and not so much to the *techware* — and will seek to advance the Port of Rotterdam Authority's efforts to achieve its goals at the EU level. It is also my hope that the findings of this dissertation will provide reasons to reflect on the Dutch national government's climate and energy policy agenda.

1.3.3. Valorisation

Insights and lessons gained from this dissertation have been communicated with the Port of Rotterdam Authority along the way and aim to aid the PoR in improving its relationship with the European Commission. The end result will also be presented to the higher management of the Port Authority. Preliminary results and theoretical findings have also be presented at relevant academic conferences.

1.4. METHODOLOGICAL STATEMENT

This dissertation takes port authorities, with the Port of Rotterdam Authority as the studied case, as its unit of analysis within a larger context of port-related stakeholders, including the local and national governmental authorities and the European Commission. The research approach[14] consists of an embedded single-case study to allow for a deep-dive into a practically and academically relevant case and generate in-depth knowledge regarding climate and energy governance mechanisms in the port of Rotterdam. Within the main case (Energy Port), two nested cases (LNG and CCS) have been chosen. The research approach

14 Chapter 3 contains an extensive overview of the chosen methodology.

can thus still benefit from cross-case analysis of the nested cases and ensure the required depth within the case. Data was collected during the period of 2013 through 2016. Because of the rapidly changing landscape of climate and energy governance, including events after 2016 in the analysis was not doable. The analysis therefore reflects the status quo until December 2016[15]. Main methods of data collection were extensive desk research and interviews with experts from a wide variety of (public and private) stakeholders in the Energy Port. Observation and participative (action) research have also been employed due to the researcher's stationing at the Rotterdam Port Authority for two days a week during the entire research period. Interview and observation data was analysed qualitatively using MAXQDA.

1.5. THESIS OUTLINE

This chapter can be read together with the concluding chapter (ch. 8) to give comprehensive insight in the studied problem and the most important findings; what does the climate and energy governance game look like and how does it work? For people who are interested in the theoretical part of this dissertation, chapter two provides an extensive overview of literature on (European) governance — including the chosen definition of governance — multi-level governance, and its theoretical expectations. These theoretical expectations have been used as conceptual lenses through which data has been collected. Chapter three continues with a treatise on the methodological part of this study. Scholars of climate and energy policy (sub question I) will want to read chapter four, which provides an overview of global, European and national efforts to set sustainable goals and progress that has been made in reaching them. The chapter also shows how closely energy and sustainability are tied together in discourse, providing insight into the political context and dynamics within which this case study operates. Chapters five and six dive into the case study and discuss CCS and LNG at length. These chapters provide a detailed analysis of how governance works in both nested cases, using rich descriptions and much of the data collected during the expert interviews. Chapter seven brings both nested cases together in an effort to compare them and draw conclusions for Energy Port and MLG at large. It discusses what MLG's strengths and weaknesses are and ties the secondary findings into the theoretical framework. Chapter eight dives into the main conclusions of this dissertation, tying governance studies and public affairs together by showing how in-depth knowledge of governance mechanisms leads to insights regarding how to organise interests and influence governance processes. The chapter ends with empirical recommendations for the Port of Rotterdam Authority and governmental authorities, and suggestions for future research.

15 At the end of chapter 8 I have included a reflection on most recent developments (post-2016) and how they might impact the studied case.

2

European (Multi-level) Governance

2.1. INTRODUCTION

A lot of the literature focusing on the European Union mentions the term *governance,* implying that everyone seems to know and understand what that means. However, its definition is not straightforward, and neither are its implications. As Pierre and Peters (2000:7) have argued: "[t]he concept of governance is notoriously slippery; it is frequently used among both social scientists and practitioners without a definition all agree on". Schmitter (2001:7) also argues that governance as a concept is fuzzy and vague, yet that there is consensus that it entails some sort of mechanism to resolve conflicts and solve problems. While the EU is often characterised as a multi-level polity, a concept such as multi-level governance remains elusive due to the focus on different elements pertaining to the multi-level and governance aspects of the concept (Eising, 2004:214). EU studies seem full of basic concepts that are vague and contestable, even though they share some basic views. Even so, a clarification of their use in this study is not impertinent. Using European governance literature as a starting point, the theoretical framework developed in this dissertation will take *governance* as a leading concept and attempt to define and apply it to the studied topic of EU climate and energy policies and their consequences for the Rotterdam port region. In doing so, this chapter will especially discuss the value of MLG as a theoretical framework, presenting its core premises and strengths, but also its critiques. I will argue that MLG can be seen as a theory by contrasting it with other — similar — approaches and their theses if strengthened by a workable conceptualisation of power and the addition of attention for issue framing. This chapter serves to provide a comprehensive overview of relevant developments in scholarly debates surrounding EU governance from the 1990s onwards, in an effort to identify the most appropriate theoretical approach for the dissertation.

2.1.1. Chapter Outline

This chapter will present and discuss the theoretical framework adopted in this dissertation and will focus on the academic literature on European governance. Starting with different definitions of *governance*, the next section (§2.2) will show the multiplicity of governance conceptions present in the EU. This variety will be further explored in a discussion of the emergence of European governance in academic research (§2.3), which will function as a broad literature overview in this field. Several streams of research on European governance will be identified, with specific attention for the up- and downsteam. For the remainder of the dissertation I will latch on to the 'newer school' combining both streams into a two-way stream of research on the EU. Specific attention will be paid to multi-level governance as the dominating view of how the European Union operates. This approach will be discussed at length (§2.4). A discussion comparing and contrasting multi-level governance and network governance will follow (§2.5), due to the fact that the approaches are at times used in concordance. This discussion will lead to the formulation of theoretical expectations that will guide empirical inquiry and structure the analysis (§2.6). The conclusions (§2.7) function as a bridge to the next chapter which focuses on the theoretical expectations of this dissertation and the chosen methodological approach and operationalisation.

2.2. THE MANY FACES OF GOVERNANCE

In very general terms, governance refers to "theories and issues of social coordination and the nature of all patterns of rule" (Bevir, 2011:1) and is distinctly different from govern*ment* (Kohler-Koch & Rittberger, 2006:28). In the public administration field, an accepted use by many is to define governance as a new way of governing society (Rhodes, 2007:1246), though a less vague but still all-encompassing definition is "the process of bringing about binding agreements" (Kohler-Koch, 1998:1), or "the process by which we collectively solve our problems and meet our society's need" (Osborne & Gaebler, 1993:24). According to Kohler-Koch, then, the essence of governing is about transforming "the plurality of individual preferences into collectively binding decisions" (Kohler-Koch, 1999:18). A bit more specific, governance can be defined as "the continuous political process of setting explicit goals for society and intervening in it in order to achieve these goals" (Jachtenfuchs & Kohler-Koch, 2004:99). Here it becomes apparent that a body is needed to set goals and to intervene in society, implicitly drawing attention to public goals. This implication is made more explicit by Hooghe & Marks (2008:2) who define governance as "binding decision making in the public sphere", thereby also reiterating Kohler-Koch's notion of binding agreements. In all of the above discussed definitions of governance, binding decision-making for society is key. Schmitter (2001:8) lets go of the explicit society-orientedness of governance and offers another process definition by arguing that governance

> "is a method/mechanism for dealing with a broad range of problems/conflicts in which actors regularly arrive at mutually satisfactory and binding decisions by negotiating and deliberating with each other and cooperating in the implementation of these decisions".

With the core of this definition essentially being about negotiations between many public and private actors (Prins, 2008:39), it comes very close to seeing governance as a network affair. Kooiman also stresses the importance of the network part of governance and states that

> "[no] single actor, public or private, has all knowledge and information required to solve complex, dynamic and diversified problems; no actor has sufficient overview to make the application of particular instruments effective; no single actor has sufficient action potential to dominate unilaterally in a particular governing model" (Kooiman, 1993:4).

Consequently, governance encompasses more than just actions performed by the state (Jordan, 2001:199). In a co-edited book with Eising, Kohler-Koch (1999:20) offers a typology of modes of governance that deals with different characteristics of the polity and how political relations are organised. As such, this typology deals with the inclusion or exclusion of a specific focus on the public sphere when employing the governance concept.

Table 2.1. Typology of modes of governance

		Organising principle of political relations	
		Majority rule	**Consociation**
Constitutive logic of the polity	**Common good**	Statism	Corporatism
	Individual interests	Pluralism	Network governance

Source: Kohler-Koch, 1999:20.

Statism refers to a focus on the common good and decision-making by majority rule, which essentially comprises basic decision-making procedures in national governments. Corporatism also has a common purpose but includes competing social interests that need to achieve some degree of consensus. The Netherlands is a country with a strong consociational tradition (cf. Lijphart, 1968) and is therefore illustrative for corporatism. Pluralism is mostly focused on the pursuit of individual interests but with a majority rule. The last type, network governance, also pursues individual interests but by many different social actors and during negotiations. This typology helps understand definitions of governance focusing or abandoning a specific focus on societal problems as well as definitions that are mainly centred around networks and negotiations.

Bevir (2004:606) defines governance as "a politics that operates through disparate practices located partly within civil society, practices that often form loose networks based on dialogue and shared resources". This definition is, although broad, very network-oriented and centres around relationships between actors, and less on the making of binding agreements. In a similar light, Rhodes (2000:346) specifies his description of governance as a new way of governing society by adding that it is about self-organising, interorganisational networks. He attributes four key characteristics to governance: the interdependence between organisations, continuing interactions, game-like interactions, and a significant degree of autonomy from the state. Rhodes' interactions are rooted in trust and structured by rules. In his view, networks can — but do not necessarily — work where markets and bureaucracies fail (*ibid.*:360) and can as such act as a source of legitimacy (Schmitter, 2001:7). Risse, Green Cowles & Caporaso (2001:3) in their treatment of the Europeanisation concept indirectly define governance as political, legal, and social institutions associated with political problem solving that formalise interactions among the actors, and of policy networks specialising in the creation of rules. Here again the public and private participation in networks is underscored, and rules also come up as an important factor in governance.

Van Kersbergen & Van Waarden (2004:144-150) explore and define in their article nine approaches to governance as used by academia and in practice. The first, 'good governance' is a term that is used by, among others, the OECD and the EU, and refers to conscientious governing with an eye for legitimacy and the prevention of wasteful public spending. The second usage comes from international relations theory and refers to governance as governing without government. The third use refers to self-organisation "of societies and communities, beyond the market and short of the state" (*ibid.*:146). This approach is very bottom-up and reliant on informal factors such as trust and social control. In economic sciences, governance is usually understood as being broader than 'government' and encompassing the (market) institutions societies create to facilitate exchanges. The fifth usage is called corporate governance and refers to how corporations are directed and controlled. Taking corporate governance to the public sector results in methods of New Public Management (NPM) and is therefore seen as the sixth approach. Finally, the last three approaches are variations of network governance, but at different levels. One can theorise that, in general, public institutions form networks to govern their environments by exchanging information and resources in negotiation processes. This public networks approach is most akin to the classic interpretation of government. One can also focus on the shift from hierarchy to smaller, cooperative networks of organisations. This shift mainly occurs in the private sector. The third form of network governance is multi-level governance. It defines 'governance' as the power relations that result from the rules of international regimes and as the substance of the policies that emerge. The term 'multi-level' shows that there are multiple governmental levels involved. Especially in the EU this is visible at the supranational level, the national level, the regional level and the local level. These different levels create policy networks across different policy areas. As becomes visible from Van Kersbergen and Van Waarden's nine approaches to governance, all of these approaches focus on some form of network[16]. They assume a plethora of actors, with or without government involvement, operating together and with some goal.

With all the different available conceptualisations of governance, the term remains vague and open to multiple variations of the general idea of Schmitter's mechanism to resolve conflicts and solve problems. Specified even further, governance appears to always be about either resolving problems and solving problems for (1) society, or (2) in networks and negotiations, or both. Table 2.2 shows the alignment of authors concerning their definition of governance.

Table 2.2. Definitions of governance: a matrix[17]

		Focus on societal problems	
		Yes	**No**
Focus on networks/ negotiations	**Yes**	Rhodes Eising & Kohler-Koch Risse, Green Cowles & Caporaso Scharpf Héritier	Schmitter Rosenau Kooiman Jordan Bevir
	No	Osborne & Gaebler Jachtenfuchs Hooghe & Marks	-

Source: author's own composition.

16 In this chapter I will argue that MLG is a loose-standing concept — encompassing networks — but that it is not the same as network governance.

17 Some authors featured in the table were not discussed in this chapter. For Fritz Scharpf, see his 1991 article 'Games real actors play'. For Adrienne Héritier, see her 1999 book 'Policy-making and diversity in Europe' (1999a in bibliography). For James Rosenau, see his contribution in the 2000 book 'Debating governance: authority, steering and democracy' by Pierre & Peters.

Acknowledging the variation in the definitions of governance, it is imperative to define its use in this thesis. Here, governance will be defined — following Börzel and Risse's work[18] — as "the various institutionalized modes of social coordination to produce and implement collectively binding rules, or to provide collective goods" (Börzel & Risse, 2010:114). This definition allows for recognition of the often institutionalised, interactive, multi-actor nature of EU governance, while leaving room for a strong societal focus on cooperation across and between levels with the goal of producing binding decisions. The definition also helps identify governance as encompassing both structure and process. The structure of governance relates to its institutions and actors, whereas the process of governance refers to the modes of social coordination (*ibid.*:114). This distinction is helpful because it sheds light on who engages in governance, in which settings, and how. Governance in this dissertation consists of:

- institutionalised modes of coordination imply governance has a structural component and is not ad hoc;
- social coordination implies that more than one actor has a say in matters, hereby including societal actors;
- producing and implementing implies governance can take place in both policy-making and its implementation and is therefore a dynamic process;
- collectively binding rules imply a certain degree of codification, though not necessarily through laws;
- collective goods imply governance benefits 'the greater good', such as improving the climate and securing energy supply.

Both the network approach and problem solving for society find their way into the definition. The focus on institutionalisation also keeps the definition close to Eising and Kohler-Koch's interpretation[19] of governance as visible in the matrix (table 2.2). This definition of governance has as a consequence that this dissertation will *not* look for ad hoc networks, singular decision-making, informal rules of the game and private gain.

Another important feature of the governance concept is that it is dynamic. As such, shifts in governance may occur over time. While exploring the nine uses of governance, Van Kersbergen and Van Waarden (2004:152-155) identify five general shifts in governance that are present in how the concept is used. The first shift concerns an upwards move from the national to the supranational level, with the latter becoming more and more important for governance activities. However, there is also a downwards shift from the national

18 Who, in turn, draw upon the work of Renate Mayntz.

19 Even though the typology as presented in table 2.1. (page 3) is credited as Beate Kohler-Koch's, it features in the 1999 book she co-edited with Rainer Eising: 'The Transformation of Governance in the European Union'.

and international level to the local and regional level. Therefore, governance is stretched out over multiple levels. A third shift is a horizontal shift from governance by executive and legislative powers to the judiciary. The fourth shift encompasses another horizontal change, yet now from public to semi-public — and at times even private — organisations. The plethora of corporatisation and privatisations in the last two decades are examples of this shift. The fifth, and final, shift is a mixed one; it entails the creation of complicated networks with multiple levels and with the participation of both public and private actors. Such policy networks are common in the European Union. The five shifts in governance not only show the dynamics of the concept but also signify that governance has many aspects which can be examined. In her treatise on multi-level governance as a theory, Simona Piattoni (2010) has also given attention to similar shifts, which she calls 'pressures'. These form the basic theoretical searchlights guiding empirical inquiry in this dissertation and will be discussed later in the chapter. First, it is useful to present how the study of governance in the EU has changed over the years, which is the main focus of the next section.

2.3. OLD SCHOOL AND NEW SCHOOL APPROACHES TO EUROPEAN GOVERNANCE

This section will briefly cover the 'governance turn'[20] in EU studies and some of its critique. The focus on governance in European Union research is certainly not new, but has seen an explosion of articles following an increased focus on how EU policy-making works since the late 1980s (Kohler-Koch & Rittberger, 2006:27-32). Before that time, researchers were mainly interested in applying the grand theories of neofunctionalism (cf. Haas, 1964) and liberal intergovernmentalism (cf. Moravscik, 1993) to the European polity (Jachtenfuchs, 2001:246; Piattoni, 2009:165). When liberal intergovernmentalism seemed to take the upper hand, research shifted to studying one policy or one policy field, the public opinion, or the politics of the EU. In essence, grand theory gave way to middle-range theories (Jordan, 2001:194). The onset of the single market caused researchers to question the sovereignty of the member states and led them to study the impact of the EU on domestic affairs. Instead of taking the European polity as the dependent variable, the governance turn in EU studies sees the European polity as a given and rather places the focus on the "impact of the Euro-polity on national and European policies and politics" (Jachtenfuchs, 2001:246-250).

European governance literature has bloomed over the past decades, and so have its definitions and underlying concepts. As the EU changed over time, so has the research around

20 The 'governance turn' is a term first used by Kohler-Koch and Rittberger in their influential 2006 article "The 'Governance Turn' in EU Studies".

it. The older school focuses on a clear distinction between upstream and downstream research, whereas more recent work considers both streams inseparable. While the general consensus is — not surprisingly — that the European Union is the subject of European governance literature, the exact content of what to study regarding the EU or even how to study it varies. Areas of interest might be EU integration, decision-making, politics, sectoral policies, voter behaviour, knowledge dissemination, and so on. In her seminal work on EU governance, Schmidt distinguishes between Europeanisation and European integration and presents figure 2.1 below.

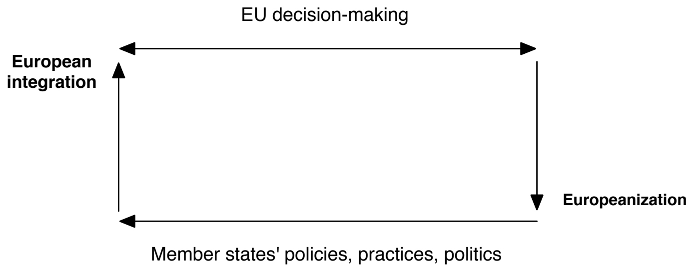

Figure 2.1. Europeanisation versus European integration
Adapted from: Schmidt, 2002:896.

European integration is an upstream approach and is perceived as the process of EU construction, or the way in which member states influence the EU. Important questions in this approach center around explaining how institutions of the EU came to be and how and why competencies are transferred to the EU level. By contrast, Europeanisation goes the other way (downstream) and studies how the EU changes the national level. Transposition and implementation of EU regulation is an important area of focus in this approach (Schmidt, 2002:896). Olsen (2002:923-944) introduces a complementary view and identifies five uses of the concept of Europeanisation, one of which is akin to Schmidt's European integration, and a second which shows her version of Europeanisation. His five uses center around what changes and why. The first use studies changes in the external boundaries of the EU, specifically paying attention to the territorial reach of the Union. The second use involves the development of institutions at the European level, increasing the degree of coordination and coherence and awarding the EU with decision-making capacities and means of enforcing binding decisions. This use is similar to what Schmidt calls 'European integration'. The third use focuses on the central penetration of national systems of governance, looking at the division of power and responsibility on different levels and the way lower tiers adapt to the changing power balance brought upon them with European institution-building. This use is similar to Schmidt's Europeanisation, the most widespread in academic literature, and — along with European integration — will be discussed in more detail below. The fourth use is external and aims at change beyond EU territory, or how the EU finds its place among global fora. The fifth and final use is the political unification project and studies in how far the EU is becoming more unified and stronger as a political entity. Olsen calls this use the most interesting, but at the same time most challenging for researchers. The fifth use encompasses the previous four, but is not necessarily positively correlated with them. Accounting for complexities becomes difficult when studying the "mutual adaptation of co-evolving institutions" (*ibid.*:942). The network mode of governance is a crucial factor in this use of the concept. While the second and third use are akin to Schmidt's approaches, the other three are distinctly different. They seem to fall under a different aspect of political science, with the first and second being oriented toward external relations and the fifth having a clear normative aspect and mostly being about state-building. Labelling them under Europeanisation is thus not wrong but can be confusing. For this reason, Schmidt's distinction between Europeanisation and European integration will be adhered to from now on.

2.3.1. European Integration, or EU Upstream

During the early years of the (pre-)European Union researchers were interested in how the member states shape the constitution of a united Europe. Such upstream research (termed 'European integration'), or the way institutions are built at the supranational level (cf. Bulmer, 1983; Hooghe & Marks, 2001, 2008; Jeffery, 2000), has not been abandoned and continues to be a topic of interest to scholars. The EU is very much an ongoing project with dynamic institutions that are challenged each time a new member enters the Union. This analytical approach corresponds to Schmidt's 'European integration' and to Olsen's second use of the concept of Europeanisation. Hooghe and Marks explore in their 2008 article the extent to which national identity influences European integration. They find that where national identity contrasts the EU and when certain European issues become politicised, European integration may slow down or even invert. The referendums surrounding the Constitutional Treaty — particularly the French and Dutch 'no's — are an example of national influence on the European level (Hooghe & Marks, 2008:20). Yet bottom-up studies do not have to focus solely on the level of the nation state. With increased policy activism from subnational authorities, a more solid base for their involvement at the EU level has been created (Jeffery, 2000:8). Many scholars also focus on the influence of interest groups and how they upload their preferences to the EU level (cf. Coen, 1998; Barron, 2011; Beyers & Braun, 2014; Van Schendelen, 2017). This short overview of upstream research is non-exhaustive out of necessity, but the research on topics like these continues to grow (Coen, 2007:341-342).

2.3.2. Europeanisation, or EU Downstream

The introductory paragraph to this section has shown that Europeanisation can mean different things. This section will address Europeanisation as envisaged by Schmidt, and as described by Olsen as the third use of the concept of Europeanisation. However, even within this narrow perspective, the definition of Europeanisation is no straightforward issue. Graziano and Vink (2007:7) adopted the following definition of Europeanisation: "the domestic adaptation to European regional integration". This definition is a very hierarchical approach to Europeanisation as it assumes that European regional integration precedes domestic adaptation. Any horizontal effects of European integration are seen as indirect effects (*ibid*.:8). Similar is the definition posed by Héritier *et al*. (2001:3): "the process of influence deriving from European decisions and impacting member states' policies and political and administrative structures". Buller and Gamble (2002:17) are a bit less specific and argue that Europeanisation is "a situation where distinct modes of European governance have transformed aspects of domestic politics". Börzel's definition, which identifies Europeanisation as "a process by which domestic areas become increasingly subject to European policy-making" (1999:574) is criticised by Radaelli (2000:3) for being too general when a scholar is interested in the impact of the logic of European political behaviour on domestic policies. Instead, Radaelli is charmed by Ladrech's more process-oriented definition[21] of Europeanisation, adapting it and ultimately suggesting that Europeanisation refers to:

> "[p]rocesses of (a) construction (b) diffusion and (c) institutionalization of formal and informal rules, procedures, policy paradigms, styles, 'ways of doing things' and shared beliefs and norms which are first defined and consolidated in the making of EU decisions and then incorporated in the logic of domestic discourse, identities, political structures and public policies".

While this definition seems very broad as well, it has a very specific EU focus in its way of placing EU decisions as something that happens prior to domestic adaptation (Flockhart, 2010:789), which is similar to the mechanism posed by Graziano and Vink. Furthermore, the definition includes both tangible (f.e., formal rules) and intangible (f.e., shared beliefs) aspects. Yet another definition focuses the attention on the development of distinct structures of governance (Risse, Green Cowles & Caporaso, 2001:3), thereby drawing away the attention so far given to the domestic impact of Europe and rather focusing on the growing policy competences of the EU (Bache, 2005:3). This definition ventures more into the realm of European integration.

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21 Ladrech's definition of Europeanisation refers to the concept as an: "incremental process re-orienting the direction and shape of politics to the degree that EC political and economic dynamics become part of the organizational logic of national politics and policy-making" (1994:69).

But what can actually be Europeanised? The general consensus is that Europeanisation can affect policies, politics, and the polity of a member state (Börzel & Risse, 2003:61)[22]. Examples are instruments, policy narratives, processes of interest representation, judicial structures, public administration, collective identities, and so on. Europeanisation can thus have a fundamental effect on domestic structures through a process called *downloading*. Some scholars focus primarily on this top-down side of Europeanisation, looking at the influence of the EU on its member states and how European policies are translated and implemented in national systems (cf. Ladrech, 1994; Knill & Lehmkuhl, 1999, 2002; Radaelli, 2000; Schmidt, 2006). Knill & Lehmkuhl (1999:2, 2002:256) have studied Europeanisation of railway policies, environmental policy, and road haulage policies and identified in their article three mechanisms of Europeanisation: institutional compliance, changing domestic opportunity structures, and framing domestic beliefs and expectations. Institutional compliance hinges on the domestic adaptation to institutional requirements set by the EU. Such compliance is most often visible in areas such as environment policy or policies concerning health and safety at work and consumer protection (Knill & Lehmkuhl, 2002:258), which are the so-called 'positive integration' policies (Taylor, 1983). Domestic opportunity structures might change due to European legislation influencing the domestic rules of the game. Power may shift between actors, leading to a change in domestic (institutional) structures. This mechanism of Europeanisation is often visible in market-type policies. When European policies trigger a shift in the beliefs and expectations of domestic actors, the way they frame their preferences might change. This change can ultimately lead to institutional change. This mechanism is mostly visible in contentious issues and policies that are intended to bring about a change in European integration (Knill & Lehmkuhl, 2002:258-259). Adaptation of domestic structures can fuel policy entrepreneurship (Jeffery, 2000:14). The general idea behind this stream of Europeanisation research is clear: Europe affects its member states.

2.3.3. The 'New School': Two-Way Stream

But member states affect Europe as well. While Schmidt initially makes a divide between Europeanisation and European integration, a later article specifies that the divide is of an analytical nature, and that empirically the two streams are connected (Schmidt & Radaelli, 2004:185). Börzel (2002) advocates a refined downstream model and argues that Europeanisation in itself is a two-way process. Scholarly work should thus focus on both *downloading* (transposing and implementing EU regulation) and *uploading* (advocating a State's own

22 Piattoni (2010) argues that multi-level governance affects the politics, policy and polity of not only the member states of the EU but also of the EU itself. Her argument will be discussed later in this chapter.

preferences at the EU level). These activities are not sequential but rather run parallel to each other. Considering both the downloading and the uploading dimensions helps conceive "of the European level as an opportunity structure that domestic actors may, depending on their interests and resources, be able to exploit to further their own interests and, in turn, shape EU-level and national governance arrangements" (Kohler-Koch & Rittberger, 2006:38). In other words, Europeanisation not only shapes the domestic level but also gets shaped by it in turn (Laffan & Stubb, 2003:70). When done successfully, domestic actors may impose a — for them — favourable regulatory style to the larger European level (cf. Héritier, 1996; Bomberg & Peterson, 2000), which goes beyond 'mere' institution building but also touches upon the consequences for the policy dimension. They have an incentive to do so in order to minimise the costs associated with the implementation of European policies at the domestic level. After all, the higher the initial fit, the smaller the required changes are, and thus the lower the costs to implement them (Börzel, 2002:194-196). Drawing on evidence gathered from studying EU environmental policy, Börzel identifies three strategies of member state response to Europeanisation: pace-setting, foot-dragging, and fence-sitting. Pace-setting is "the active shaping of European policies according to domestic preferences (*ibid.*:197). It can be difficult to achieve the goal of uploading domestic policies to the European level, especially considering that there are many other member states that can have vastly different preferences. Successful pace-setting is made easier when the national executive operates in the right networks. Germany has been the pace-setter in environmental policy in the 1980s (Liefferink & Andersen, 1998:71), and is still very influential today where sustainable energy policy is concerned. Foot-dragging is the opposite of pace-setting and involves national executives trying to block others from uploading their domestic policies to the EU level. As with pace-setting, this strategy is neither always successful, leading member states to often opt for side-payments or package deals. In general, member states employing the foot-dragging strategy show poor levels of compliance with Community law. Fence-sitting involves neither advocating nor blocking a policy at the EU level, but rather employing a neutral strategy. This strategy makes fence-sitters attractive for both pace-setters and foot-draggers to build a coalition with. Fence-sitting may be caused by a simple lack of the required resources to be a pace-setter, the anticipation of low implementation costs, support of the pace-setters but lack of domestic support (rendering open advocacy unpopular), or calculating that the costs of non-implementation are lower than those associated with foot-dragging (Börzel, 2002:203-208).

Other uploading studies focus, for example, on agenda-setting in the EU and the role of lower-tier governments in the decision-making process. Eising (2004:236) has sought to link the multi-level governance system of the EU to interest group activity, and looked at the presence of interest groups at different levels of government. He found that multi-level interest representation is not (yet) widespread, but that there is evidence of some corporate actors targeting multiple levels. A possible constraint is the amount of governance capacity needed to operate at different levels of the European polity. Coen (1998:97) has looked at large firm lobbying in the EU and found that national lobbying has started to decrease. However, no statistically significant evidence was found to indicate that this decline is connected to the supranational nature of the EU. Moving away from corporate lobbying toward member state lobbying, Haverland and Liefferink (2012:193) have investigated member state influence in the European Commission. Their case study on the Dutch activity in the drafting phase of the REACH directive demonstrated that the availability of high-level expert knowledge can prove invaluable to the EC, which is in need of such information. A high level of expertise can, though, turn into inflexibility when trying to sell very complex policies in Brussels. In that case the member state may lose influence.

Reasoning from the supranational point of view of downloading, Kohler-Koch (1999:25-26) identifies three ways of transmitting a governance mode from the European to the national level, thereby not excluding two-way interaction. The first method is the imposition of governance mechanisms by the EU on member states. The second method is the involvement of the national level through interaction in networks and based on institutional learning processes. The third method is the attraction of member states to European values by establishing and transmitting best practices.

But what about non-governmental actors? What is their role in EU governance? The way EU governance operates is contingent upon the competences assigned to the supranational and domestic levels of government. Furthermore, in policy areas that rely heavily on information and support provided by non-governmental actors — such as expert information needed for electricity grids regulation — the employed governance method can vary (Borrás & Jacobsson, 2004). At the policy-initiation stage, interest groups, the Council, the EP and the European Council supplement the activities of the EC, showcasing the involvement of multiple actors in policy-making (Hooghe & Marks, 2001:14). In fact, the EU is a big stimulator of private sector involvement in EU governance, which has steadily been increasing over the past years (Schmitter, 2001:9). The Commission does really seem to operate in a "system of multi-level governance involving competition and interdependence among it and the European Council, Council of Ministers and European Parliament" (Hooghe & Marks, 2001:16).

2.4. MULTI-LEVEL GOVERNANCE

The views on the two-way mode of Europeanisation assume that the mechanism of EU governance is inherently dynamic. The multi-level governance (MLG) approach seems to fit well in this two-way stream, as it it also based on mutual interaction between multiple levels of government. Crosscutting Europeanisation and European integration, multi-level governance as a conceptual framework has taken flight in the mid-90s. This section introduces MLG and its history, discusses its criticism and will conclude with a judgment of its value as a theoretical approach. Multi-level governance deserves to be given this special attention because of its importance to EU studies as a whole (Bache & Flinders, 2004) and to its persistence as an analytical approach; MLG has undergone several reconceptualisations since its introduction.

2.4.1. From Grand Theory to Multi-Level Governance

As discussed in the previous section, European literature started with neofunctionalist and liberal intergovernmentalist explanations of how the EU evolved. When researchers shifted their attention from seeing the European polity as the dependent variable to using it as an independent variable, middle-range theories regarding EU policy-making took root. Wessels (1997:273) has contrasted governance as a view of how the EU develops with neofunctionalism and realism. He claims that whereas neofunctionalism perceives the EU's development as linear growth and realism as decline, governance allows for a cyclical pattern of growth and decline. Wessels adds to these views a fourth: fusion. Fusion theory is a mixture of neofunctionalism and governance, perceiving EU development as structural growth in cycles. National governments are seen as actors capable of rational choice. Efficient and effective problem-solving in a system characterised by interdependency and joint problem-solving allow for growth, while sovereignty issues add the cyclical nature of EU development. Fusion is ultimately defined as

> "a 'merger' of public resources located at several 'state'-levels for which the 'outside world' […] cannot trace the accountability, as responsibilities for specific policies are diffused" (Wessels, 1997:274),

allowing for the involvement of multiple levels of government. In essence, this fusion reflects multi-level governance. Moving past the classic focus on how the EU integrates, scholars thus began to describe the EU as a system of governance (Marks, 1993; Hix, 1998:39; Hooghe & Marks, 2001; Eberlein & Kerwer, 2004:121). Jachtenfuchs (1995:115) calls EU governance a system of governance 'beyond the state', though without claiming that the state itself has lost importance. If governance depends on negotiations, — as visible in some of its definitions — it is no longer "linked exclusively to the state" (*ibid.*:125). The need and ability to regulate the single market has been the main driving force behind the governance approach (Hix, 1998:40). As interest groups began to proliferate in the early 1990s, the involvement of more than just state actors in policy-making became increasingly important. Furthermore, the emphasis placed on partnership and cooperation fostered linkages between and within levels and the importance attributed to the concept of subsidiarity at the time resulted in a wider inclusion of lower-tier governments (Stephenson, 2013:819). These developments have resulted in a system of European governance characterised by "a unique set of multi-level, non-hierarchical and regulatory institutions, and a hybrid mix of state and non-state actors" (Hix, 1998:39), which Hooghe and Marks have dubbed 'multi-level governance'. Originally defined as

> "a system of continuous negotiation among nested governments at several territorial tiers — supranational, national, regional, and local — as the result of a broad process of institutional creation and decisional reallocation" (Marks, 1993:392),

MLG seemed a very hierarchically oriented form of governance. Since then, Marks[23] has specified it further to include other types of actors as well. The original premise, however, still holds: (sub)national actors are incorporated into EU-level decision-making (Wessels, 1997:281).

Another strand of research centred around Majone and the typology of the EU as a 'regulatory state' (cf. Majone, 1996). The assumption in this strand of research is that the EU has reached a degree of maturity in which it can act like any other state by developing regulation to deal with societal issues. The regulation developed to create and sustain the internal market — a situation of far-reaching fusion — is an example often used to illustrate the EU's regulatory activities (Jachtenfuchs, 2001:252; Kohler-Koch & Rittberger, 2006:35). However, the EU's regulatory power is often also questioned. Scharpf (1988) mentioned the 'joint-decision trap' as being a feature present *in* the EU, — *not* a feature *of* the EU (Scharpf, 2006:847) — leading EU policy to present suboptimal outcomes because of the simultaneous presence of the representation of member states' self-interests and the unanimity rule. These two features clash and can lead to suboptimal policy outcomes. Because of the EU's obvious shortcomings as a regulatory state, I will only focus on the EU as a system of governance approach.

Hooghe & Marks (2001:2-3) assert that there are two ways to look at the EU. One approach is to assume that the EU works through state-centric governance, which effectively means that governments are in control and that EU policies thus show what the interests

23 After criticism by other authors such as Jordan and Rosenau. The inclusion of non-state actors would later prove to be very popular, but would also lead to the dismissal of the label 'multi-level governance' by Kohler-Koch in favour of 'network governance'.

and power of national governments are. The state-centric governance model is an intergovernmental model. The second model they present is that of multi-level governance, which is a supranational model. Their central hypothesis is that, because of the different actors and levels of hierarchy involved in policy making, *national governments lose some of their autonomy*. This loss of autonomy has a few causes. The first cause is the increased power of the European Parliament (EP) in the legislative process of the EU. Over the years the competences of the EP have been broadened, making the EP a weighty player. The second cause is increased public scrutiny through, for example, electoral competition, public referenda and the involvement of domestic groups in European decision-making. The third and final cause is the limited control of national governments over supranational agents. This cause can also be termed a *principal-agent problem*. Because of the nature of European integration, there are multiple principals. In effect, each member state is a principal since no basic institutional change can be made without reaching unanimity on the subject. All these principals make it hard for national governments to rein in supranational institutions. Unanimity thus creates hurdles to change. Furthermore, a supranational institution such as the EC operates within a network of national governments, subnational governments and interest groups, which gives it a lead start on governments when it comes to information and knowledge. This information asymmetry ensures that the EC has wide influence on policy-making processes. European governance is also characterised by mutual distrust. To ensure adherence to the ambiguous treaties, member states have established a judicial system. However, they also allow the EC to create detailed regulations in order to be able to devise precise and binding policies. This competence, then, causes national governments to become less autonomous (*ibid.*:5-12). Following the logic of fusion theory, Wessels argues that it becomes increasingly difficult to reverse this process of continuing loss of autonomy as member states consciously choose further fusion. As the other two options, more intergovernmentalism or more federalism, are not preferable; intergovernmentalism erodes the effectiveness of common coordination whereas federalism threatens the constitutional setup of member states. More intensive participation at the EU level maintains a member state's own sovereignty by making the EU not only the cause of the decline of state power, but also the answer to it (Wessels, 1997:287). The result is a relatively stable system with supranational actors influencing the "rational pursuit of national interests" (*ibid.*:274).

To specify multi-level governance even further, Hooghe & Marks (2003:236-239, 2004, 2010:17-22) identify two types of jurisdictions within which multi-level governance in Europe can take place. They argue that dispersion of governance across multiple jurisdictions, instead of concentrating it within one large jurisdiction, increases its flexibility. Making this flexibility possible is an advantage of multi-level governance. The two types of multi-level governance that Hooghe & Marks propose are summarised in table 2.3.

Table 2.3. Multi-level Governance type I and II

Type I	Type II
General-purpose jurisdictions	Task-specific jurisdictions
Non-intersecting memberships	Intersecting memberships
Jurisdictions organised in a limited number of levels	No limit to the number of jurisdictional levels
System-wide architecture	Flexible design

Source: Hooghe & Marks, 2003:236.

Type I is founded in federalism, which focuses on a limited number of governments covering only a few levels. Power is shared throughout these levels, which do not intersect. An example is the relationship between a national government and a sub-national government. These type I jurisdictions mostly adhere to the *trias politicas* thought of organizing government through an elected legislature, an executive and a court system. This is more or less visible in the EU's ordinary legislative procedure. Type II is embedded in type I and widespread at the local level. It encompasses a vast amount of members that can intersect and operate at many different jurisdictional levels. An example is Switzerland, where there are as many as six (intersecting) jurisdictional levels that form an addition to local governments and sometimes compete with them (Hooghe & Marks, 2003:237). Needless to say, both types can be found in the EU. Type I could be the overarching type for the European Union as an entity, but within this entity there are examples of type II multi-level governance everywhere. However, inherent in multi-level governance are coordination problems. When the number of actors increases, it becomes harder to punish those who defect. What then emerges is a cult of free riding. To diminish the chances for free riding to occur, both types have different ways to cope with the coordination dilemma. Type I limits the number of autonomous actors by decreasing the number of jurisdictional levels. Free riding is then likely to occur less. Type II does not limit the amount of actors, but creates specialised jurisdictions to limit externalities across the jurisdictions. This strategy also limits free riding (*ibid.*:240). From the above follows that type I and type II governance complement each other, which is why they are both present in the EU (Piattoni, 2009:171).

2.4.2. Critique of (Multi-level) Governance and its Defence

Today, prominent features of the EU such as the community method, comitology, and its multi-level nature continue to fuel EU governance research even though the concept of governance still largely remains vague[24]. As such, studying governance lends itself to the use of various theories and methods of inquiry (Kohler-Koch & Rittberger, 2006:34-

24 See also Francis Fukuyama's 2013 article focusing on the measurement of 'governance'.

43). This assertion, however, also offers a basis for criticism of the governance turn. The problem-orientedness of governance has innovative potential, but does not offer a theory. The consequence is that "we observe several streams of discussion that are more or less autonomous" (Jachtenfuchs, 2001:259). While this is not a problem per se, the exercise of integrating the governance approach in existing theories is challenging. The aforementioned vagueness of the concept of governance can also be a source of criticism, although it is also one of the reasons governance debates dominate the research agenda in EU studies. Another criticism of the governance approach is that it generally ignores political power and rule. Its strong focus on problem solving, however helpful, largely fails to account for the influence of concepts such as political power (Jachtenfuchs, 2001:258). Where the governance turn in EU studies does adequately describe how policy is made in the EU, it should be noted that these relationships between different actors, sectors, governments, and even levels of government are not unique to the EU but rather a feature of modern states (Börzel, 2011:54). The result is that theory-building around the governance concept remains difficult, and, at times, even "maddening" (Piattoni, 2009:175).

More specifically geared toward criticising multi-level governance as theory, Jordan (2001:201) asserts that it is not a new concept — as its proponents stated in the early '90s — but rather an mixture of existing theoretical approaches such as neofunctionalism and neo-institutionalism[25]. Furthermore, MLG is criticised for lacking an explanatory mechanism for integration. It is said to not have testable hypotheses. Looking at the content, MLG is criticised for overstating the autonomy of sub-national actors — and understating the role of the national state as a gatekeeper — and for having a too top-down view of sub-national authorities (Jeffery, 2000:8). Its lack of attention for other subnational actors such as pressure groups is also a source of criticism. On the other hand, Tortola (2017:241-242) argues that MLG would have to convincingly show that the connection between state and society is a natural one, and that what is going on is more multi-level involvement and actual multi-level governance. Adopting an even more extreme interpretation of MLG, Rosenau (2004) suggests that it is a purely governmental affair, therefore lacking other elements that arise in today's complex world where states have limited problem-solving capacity and interdependencies are abundant throughout societies. MLG is said to overstate the power of sub-national mobilisation, wrongly equating it with influence (Jeffery, 2000:8; Jordan, 2001:201), while at the same time ignoring the external (or international) level of the EU as well. Ultimately, Jordan (2001:202-204) criticises MLG for not being specific enough regarding the difference between multi-level governance and multi-level

25 To be fair, Jordan only mentions historical institutionalism. But the question that then rises is how important the other institutionalisms are if they are not mentioned at all.

government. His opinion is that there is insufficient proof to adopt MLG as a general view of how the EU operates.

In response to Jordan's critique on MLG as a theory, George (2004) defended MLG and essentially claimed it — in fact — is a theory with testable hypotheses. The classic divide between liberal intergovernmentalism and neofunctionalism dwindled when even Ernst Haas had to admit that the idea of functional spillovers — the core of the theory — did not find evidence in practice (Jordan, 2001:197). The hypothesis of the interconnectedness of sectors, with integration in one sector leading to integration in other sectors, could not be maintained for the European polity as a whole. What could be maintained, however, was the notion of the importance of EU institutions. In essence, MLG revives the neofunctionalist idea of the European Commission forming coalitions with sub-national actors, leaving out the functional spillovers. Seen from this angle, Jordan's statement that MLG is a mixture of theories such as neofunctionalism and historical institutionalism can be criticised by posing MLG as neofunctionalism's replacement. The credibility of such a statement is strengthened when George points out that MLG does, in fact, have its own research questions and hypotheses. From the onset its main research question centred around explaining how national governments have let decision-making authority slip out of their hands. The theory offers three reasons, ranging from a conscious choice to do so to being powerless to stop it from happening. When national governments 'surrender' part of their decision-making authority, it becomes rational for sub-national actors (whether they be governments or not) to establish offices in Brussels and vie for direct links with the Commission. Effectively, such strategies result in a further withering away of the authority of the state. The intricate links between and across levels can serve to pool legitimacy and further strengthen participation of a multitude of actors at the EU level (Wessels, 1997:291).

This account is compelling, but does little to address a fundamental issue encountered by scholars actually adopting the MLG framework: applying Marks & Hooghe's type I and type II MLG governance to empirical case studies has been useful, but has also led to widespread criticism of the dichotomy. This issue and the resulting revision of MLG will be discussed in the next section.

2.4.3. Multi-Level Governance Revisited

MLG at its onset[26] was defined as "a system of continuous negotiation among nested governments at several territorial tiers — supranational, national, regional, and local" (Marks, 1993:392) but, following a more recent interpretation, can consist of more than just state actors (cf. the edited volume by Enderlein, Wälti & Zürn, 2010). It is, after all, multi-level gover*nance* and not govern*ment*. A good way to put private actors into MLG without over stretching the concept is to require private actors to solve public problems, which may be done with private solutions (Zürn, Wälti & Enderlein, 2010:2). In line with the chosen definition of governance for this dissertation, the governance addition to the concept allows for the involvement of both the public and the private sector in European policy-making (Hooghe & Marks, 2001; Kohler-Koch & Rittberger, 2006:34). Keeping that in mind, Zürn, Wälti and Enderlein (2010:4) define multi-level governance as

> "a set of general-purpose or functional jurisdictions that enjoy some degree of autonomy within a common governance arrangement and whose actors claim to engage in an enduring interaction in pursuit of a common good".

This definition is heavily oriented towards giving recognition to Hooghe & Marks' two contrasting types of governance, yet one of MLG's most striking features is the integration of general-purpose jurisdictions with task-specific jurisdictions, thereby often relying on the creation of ad-hoc networks (Piattoni, 2009:164). These networks can become permanent.

MLG as a conceptual and theoretical framework has recently been reconsidered by Piattoni in a 2010 publication called 'The Theory of Multi-level Governance' and by Bache, Bartle, Flinders and Marsden in their 2015 book on the multi-level governance of climate change. Many empirical studies have attempted to apply the type I/type II dichotomy — often called

26 MLG quickly became the accepted dominant view of how the EU works. As a concept it has been used both analytically and normatively, "to capture the nature of decision-making and to advocate particular arrangements" (Bache, 2005:5). A term such as 'good governance' has also been adopted by the EU as a normative concept, exemplified by the Commission's *White Paper on European Governance,* which identifies five principles (openness, participation, accountability, effectiveness, and coherence) of good governance (European Commission, 2001b:5). Together with subsidiarity and proportionality they constitute the foundation of values advocated by the EU. The principles advocate a more transparent and inclusive policy style with responsibilities being taken and shared by both the supranational and the domestic levels. Policies should be clear, effective, and coherent (European Commission, 2001b:10). It is not surprising that these principles are Europe's answer to the widespread critique of its 'democratic deficit' and aim to enhance the Union's democracy and legitimacy. Furthermore, the multi-level nature of the EU — as introduced by Gary Marks — is even celebrated by the Committee of the Regions (CoR), which organises yearly ateliers bringing together academics and practitioners (Stephenson, 2013:822-826). Given the fact that the CoR consists of lower-tier governments that try to influence the EU, it is not illogical for them to celebrate MLG.

the 'binary divide' — to case studies and despite obvious successes (cf. Betshill & Bulkeley, 2006; Bulkeley & Betshill, 2005; Milewa & Barry, 2005; Smith, 2007), other authors have found that some organisations cannot be placed in either category or that the relationship between both types requires clarification (cf. Gustavsson, Elander & Lundmark, 2009; Marsden & Rye, 2010; Skelcher, 2005; Smith, 2007). Smith (2007:6275) even concludes that hierarchy persists and that type II (often called 'network governance') needs type I. Conversely, Hooghe and Marks (2004) have presented their type I and type II MLG as contrasting visions. Moving beyond this narrow binary divide, Piattoni has let go of both types and has made a very comprehensive and compelling contribution to MLG theory. Because both MLG and neofunctionalism stress mobilisation of societal groups and the entrepreneurial capacity of supranational actors, MLG is often seen as a restatement of neofunctionalism (cf. George, also earlier in this chapter). However, Piattoni argues that the neofunctionalist belief that the state is not a unitary actor but rather composed of functional ministries contesting one another is not comparable to MLG's sub-national authorities, because that would presume a "local articulation of one and the same national society and polity, with no political or cultural differences from the whole" (Piattoni, 2010:86). Territorial distinctiveness is actually an inherent feature of MLG, which is an essential difference with neofunctionalism. In her book, she reconceptualises multi-level governance as a theory and argues that MLG encompasses phenomena at the analytical levels of politics, policy and polity. The three levels are interconnected, which implies that changes in one level may lead to changes in the other two levels. MLG offers tools to look at these changes across the levels through a three-dimensional conceptualisation based on three pressures: (1) the domestic - international pressure, (2) the centre - periphery pressure, and (3) the state - society pressure. Alternatively the pressures can be identified as stemming from above, below, and within the nation state[27].

Table 2.4. How the nation state is pressured from above, below and within

Pressure	Direction	Elaboration
Domestic - international	From above the nation state	EU integration spurred by states working together following interdependencies created by non-(national)state actor involvement at EU level
Centre - periphery	From below the nation state	Administrative, economic, and social efficiency lead to the existence of sub-national authorities
State - society	From within the nation state	Blurring of boundaries between state and society to enable effective governance

Adapted from: Piattoni, 2010:9-80.

27 Piattoni adheres to a different order in her book: centre - periphery comes first, then domestic - international, and lastly state - society. She places centre - periphery first and argues it illustrates type I MLG, which probably is her reasoning for mentioning the pressure from below the nation state first. However, there does not seem to be an objection against placing the pressures in a different order, as I have done in this dissertation. The empirical chapters will follow the order suggested in table 2.4, which appeared to be the most logical order for these cases to be discussed in.

These three pressures inform the theoretical expectations of this dissertation, which are fleshed out in section §2.6. The pressure from above — domestic - international — leads to a transformation of the nation state by international organisations and transnational groups. Sub-national authorities across different states work together and are being pulled in by the European Commission in order to further its own integrative mission in exchange for financial support and acknowledgement. Expert groups provide evidence for this pressure. Furthermore, interdependencies created by business and civil society operating across national boundaries further leads to nation states having to coordinate their actions on a higher level. Supranational developments cannot be ignored by nation states and so, through their very existence, spur further EU integration. The reversed centre - periphery pressure lends an answer to the question why sub-national authorities exist. Administrative and economic efficiency allowed for better control and usage of locally based economic factors in the past. Furthermore, the ability to better invoke social values on the local — rather than the national — level allowed for greater social efficiency of sub-national authorities. These three efficiencies have led to a pressure on the nation state stemming from below. Regional actors may become important policy actors simply because they can organise themselves more efficiently than the national level. Finally, the state - society pressure is one from within the nation state and stems from the realisation that the national level cannot govern society without participation of society, thereby blurring the boundaries between the state and society. Private interests thus sometimes act in the general interest, whereas states can sometimes act in the interests of the few. The

> "boundaries between state and society at the European level have been torn down and […] governmental institutions increasingly use some of the same advocacy mechanisms that have been traditionally associated with the activities of interest groups, NGOs, and CSOs" (Piattoni, 2010:71-72).

Private interests thus gain importance, which was often overlooked in the previous conceptualisation of MLG. These cross-linkages, along with the other two pressures, give saliency to the agency of actors. Actors in MLG arrangements pursue their own positions and goals, which redefines and activates new jurisdictions and constituencies on an appropriate level. Even though these networked arrangements defy hierarchies, they do not completely hollow out the importance of territorial government, which remains necessary for policy decisions. This expectation is especially true for policy domains closely tied to territory; factors such as the environment and infrastructure are not easily relocated (*ibid.*:250).

It is precisely the assumed interconnectedness of the three dimensions of pressure (see figure 2.2) that gives MLG its theoretical uniqueness as it captures movements on all three axes (*ibid.*:252). Ultimately, through these dimensions MLG is able to capture three important

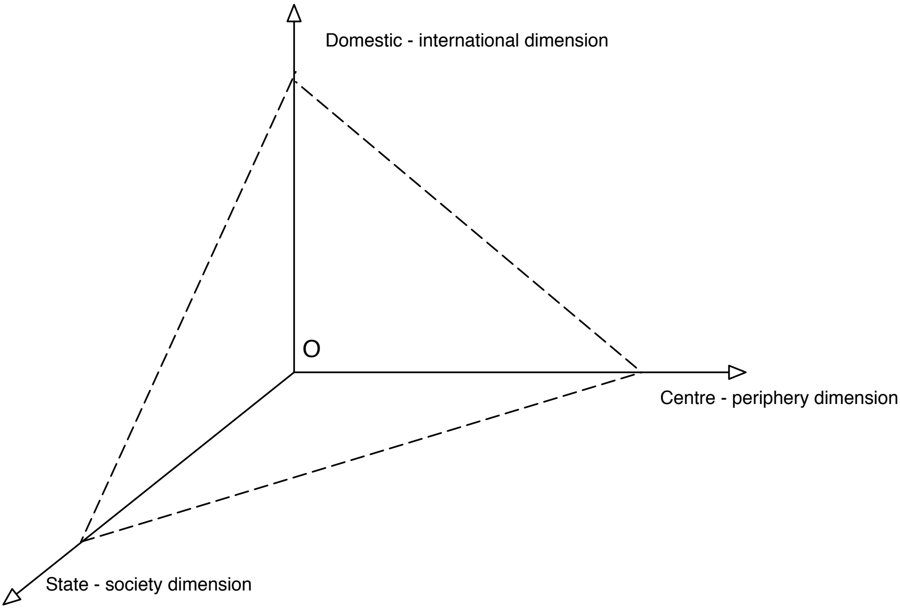

Figure 2.2. MLG's analytical space
Adapted from: Piattoni, 2010:27.

developments in EU governance, covering politics, policy and polity: (1) political mobilisation within and across national boundaries and through conventional and non-conventional means, (2) policy-making now encompasses all actors in all types of roles, and, (3) polity structures leading to policy decisions no longer operate just at nation state level but also at the supranational level of the EU. The implication is that an empirical case can thus be judged as a case of MLG if it meets the following three criteria:

1. different levels of government are simultaneously involved in policy-making;
2. non-governmental actors are involved at different governmental levels, and;
3. interrelationships that are created defy hierarchies and take on the form of non-hierarchical networks (*ibid.*:83).

The crucial difference between MLG and neo-institutionalism is that MLG assumes that actors and their strategies are determinants of both policy-making and polity-restructuring, whereas neo-institutionalists would only support the claim relating to policy-making and refute the one regarding polity-restructuring (*ibid.*:249-253). Piattoni also contrasts MLG and Europeanisation, arguing that Europeanisation can come to encompass political change as a whole — not even just limited to the EU — which makes its realm of application difficult to determine, while MLG does not reach that far (*ibid.*:100-101). Yet it can also be argued that MLG fits in Börzel's two-way stream within Europeanisation. Changes in both the EU and domestic political systems are assumed by Börzel as well as by Piattoni, which leads to co-evolving political systems, or *downloading* and *uploading*.

EU institutions and procedures thus are created and developed without substituting national actors, who are often involved in all phases of the EU's policy cycle. National civil servants are increasingly sent to Brussels to participate in the policy process. National actors are, as such, incorporated in the European procedures (Wessels, 1997:279-280). Aside from growing participation of national actors on the European level, non-national actors such as interest groups, media and the private sector are increasingly present in Brussels. These intermediary groups are often found in informal, non-hierarchical networks vying for access to the Commission (Héritier, 1999b). The EC itself welcomes these actors in its pursuit of influence. Semi-public actors are represented in Brussels as well and maintain offices there (Wessels, 1997:282). Networks and governance in networks are persistent terms in EU studies. The question, then, is whether it would be better to focus on network governance instead?

2.5. MULTI-LEVEL OR NETWORK GOVERNANCE?

Network governance was mentioned in a previous section as being part of Kohler-Koch's typology of governance modes. It is also an often cited feature of governance as a concept. How does network governance link back to MLG? This section will address this question by comparing and contrasting MLG and network governance.

2.5.1. Policy Networks in the European Union

Héritier (1999b:273-274) focuses on the elements of democratic control present at the EU level and the efforts to create citizen support for European policies. Her findings are that a lot of European policy-making occurs in so-called supportive networks consisting of public and private (mostly corporate) actors stemming from multiple levels and across national boundaries. These supportive networks are mostly active in the policy formulation phase, where they advise the Commission and provide a counterbalance to national preferences and the dominance thereof. Many European policies are drafted in supportive networks, which can also be called *policy networks*. Even though policy networks are widespread and active in the policy formulation phase, the actual decision-making on EU legislation is still very much a hierarchical affair (Kohler-Koch & Rittberger, 2006:36). This observation has led to Börzel (quoted in Kohler-Koch & Rittberger, 2006:36) distinguishing between governing *in* networks and governance *with* networks. The former is a rarity in the EU while the latter refers to the policy networks active in the formulation and implementation of EU policy.

Governance networks are networks of public and private actors that devise and implement policy (Rethemeyer & Hatmaker, 2007:619) and can thus also be called policy networks (Börzel, 1998:255; Rhodes, 2007; Klijn, 2008:122). Within these networks, relationships among the various actors are crosscutting and interwoven. This crisscrossing produces a complex system of interactions between interdependent actors employing various strategies (Koppenjan & Klijn, 2004). The core assumption of network governance is that interests evolve and get redefined as negotiations between actors continue (Eising & Kohler-Koch, 1999:5). These negotiations take place in arenas in which governments and various public and private actors participate, blurring the boundaries between public and private and thereby creating overlapping negotiating arenas. Interactions in the network are structured by rules of behaviour. The role of the state is largely that of an activator (Kohler-Koch, 1999:23-24). The fact that actors in a network are interdependent because of their mutual dependency on each other's resources leads to the need to coordinate their activities, i.e., align their preferences and strategies, in order to realise objectives that they share (Börzel, 1998:259; Koppenjan, 2007:133; Sørensen & Torfing, 2007).

The EU seems very much aware of the necessity of an "inclusive policy style [...] aimed at acceptance of business actors and ordinary citizens" (Lenschow, 1999:39). The network elements of EU governance can have transformational effects on national modes of governance (Eising & Kohler-Koch, 1999:267). One of the consequences of this mode of governance is a re-articulation of political space beyond the state. The 'traditional' supranational versus state debate gives way to a different one, because the EU

> "is transforming politics and government at the European and national levels into a system of multi-level, non-hierarchical, deliberative and apolitical governance, via a complex web of public/private network and quasi-autonomous agencies, which is primarily concerned with the re-regulation and de-regulation of the market" (Hix, 1998:54).

This shift leads to complex relationships characterised by mutual interdependency among regions, organised interests, member states, and the EU itself (Hueglin, 1999:249). Another consequence of EU governance is a new constitutionalism which redefines the rules by which governments and societies should operate. Furthermore, a new governmentality provides a new ideological frame for collective action. The resulting functionally differentiated policy communities in which territorial and societal actors at all levels are engaged in professionalised processes of lobbying, policy formulation, and regulation have a disaggregating effect on politics (*ibid.*:249-251).

2.5.2. The Persistence of Hierarchy

Following Van Kersbergen & Van Waarden (2004:148-151, also see earlier in this chapter), three types of network governance can be identified in the literature on EU governance. These are summarised in table 2.5.

Table 2.5. Three types of network governance

Type of network governance	Elaboration
Public networks	Networks formed by public institutions to govern their environments by exchanging information and resources in negotiation processes
Private networks	Inter-firm cooperation of smaller firms in networks, governed by decision rights and a certain claim to profit
Multi-level governance	Policy networks formed by multiple levels of government and the private sector engaging in policy-making or public-private partnerships

Adapted from: Van Kersbergen & Van Waarden, 2004:148-151.

While public and private networks are forms of network governance on a very specific level, interpreting MLG as network governance cuts across levels and domains, thereby establishing policy networks. According to Eising & Kohler-Koch (1999:5), the different policy networks that emerge, and at times even surpass the national level by organising European-local networks, should be better termed network governance than multi-level governance because of their horizontal — rather than hierarchical — approach to coordination within the network. The authors' idea of network governance is that

> "political actors consider problem-solving the essence of politics and that the setting of policy-making is defined by the existence of highly organised social sub-systems. […] Thus, in these patterns of interaction, state actors and a multitude of interest organisations are involved in multilateral negotiations about the allocation of functionally specific 'values' (Eising & Kohler-Koch, 1999:5).

Both the academic literature on MLG and network governance mention the blurring of the boundaries between state and society (cf. Piattoni, 2009; Hooghe & Marks, 2001 for MLG and Börzel, 2011 for network governance). They also share other features such as an emphasis on interdependencies, multiple actors, horizontal relationships, and the exchange of resources. Network governance, just as MLG, sees shortcomings in the ability of the national state to govern effectively (Piattoni, 2010:87). Changing relationships in (international) society offer new ways for non-state actors to participate in the policy-making process, especially at the European level. The national governments have lost their monopoly on the representation of their business and citizenry (Kohler-Koch, 1999:19). Especially in the EU, network governance is seen as an appropriate method because it is "able to bridge the heterogeneity of the EC's [European Community's] members and compensate for the lack of democratic accountability by introducing elements of functional representation" (Eising & Kohler-Koch, 1999:274). Yet whereas network governance then often proceeds to look at coordinated efforts to reach a common policy goal, MLG stresses the contested nature of power and responsibility, even though it still does not adequately offer a conceptualisation of power. Both approaches differ in the degree to which they consider the formality and fluidity of networks and on the focus on consensus within networks. Network governance is mostly concerned with informal and highly fluid networks focusing on reaching consensus[28]. By contrast, MLG focuses on more formal and stable networks although it does not discount ad-hoc constructions (cf. Zürn, Wälti & Enderlein, 2010:4; Piattoni, 2010).

It is not strange that networks as an image keep popping up in EU studies. MLG does encourage flexible and negotiated solutions to coordination, which leads to the conclusion that type II MLG is often more useful in describing the challenges of EU policy-making than type I MLG (cf. Bache, 2008; Conzelmann, 2008). Furthermore, the introduction of the network governance approach in EU studies was a criticism of the classic '90s interpretation of MLG for being too 'level-oriented' (Börzel, 2011:53) and is said to solve the joint-decision trap because negotiators often have more flexible instead of fixed mandates (Jachtenfuchs, 2001:254). The more recent reinterpretation of MLG seems to address at least the first caveat by explicitly including non-state actors in analyses of EU policy-making. Another critique of MLG is that it is outdated since the "increasing issue and institutional complexity of EU policy-making activity can no longer be captured through an isolated, three-layered conceptualization" (Stephenson, 2013:833). Instead, Stephenson argues that the MLG approach should be complemented by studies of institutional or actor complexity. Smith has encountered this issue in his research on renewable energy policy in the UK. He states that power relations form the basis for negotiations due to often asymmetrical resource interdependencies, leading to the conclusion that "the need to enrol key interests and material priorities will structure renewable energy governance" (Smith, 2007:6269). A study of MLG can therefore benefit from specific attention for power relations, which will be confirmed in the empirical part of this book.

The case that was chosen for this dissertation includes a variety of non-state (private sector) actors, which lends validity to the addition of a non-hierarchical viewpoint to contrast the traditional level-oriented governance approach to EU studies. In fact, it is difficult to move

28 Though one could argue that the policy networks dichotomy of issue networks and policy communities leaves room for both sides of the formal/informal and fluid/stable spectra.

completely away from hierarchy as state actors remain dominant in EU policy-making and the EC seems to show no interest in involving private actors beyond formal and informal consultations (Börzel, 2011:53-54). Even when governance takes place in type II arrangements, multiple empirical studies asserted that the formal authority of type I is still necessary for effective governance. MLG offers insights to study both the network aspect of EU governance and the hierarchical tendencies that remain. The above leads to MLG providing a loose-standing analytical framework in its own right. Its strengths are that it shows which role governments and social actors play at different territorial levels, it highlights the levels lower than the national one, it does not assume that the national state can just 'step in' if MLG arrangements fail, and it reminds us that existing institutions cannot be ignored. It therefore connects the three dimensions of politics, policy and polity and "*fully* acknowledges this triple dynamic and the interrelations that it implies" (Piattoni, 2010:89-90, emphasis in original). Even so, MLG does have its limits. It is probably best applicable in policy domains where territory plays a major role, mostly due to the fact that much depends on territorial distinctiveness. Even with the newer research conducted using MLG theory, it also still lacks a proper incorporation of the importance of power in EU governance, which remains especially important in a highly politicised area such as energy policy. Furthermore, even though Marks and Hooghe's distinction between type I and type II MLG is often criticised, type II MLG comes rather close in describing governance networks, thereby offering similarities between both approaches. However, MLG does help remind us that in the end some territorial authority must 'bind policy knots together'. Territorial constituencies are therefore still at the heart of policy-making (Piattoni, 2010:257). This observation is especially true for the studied case of the Energy Port, as the region in which it is located has its own actors, with their own resources, preferences, and possibilities. Negotiations thus take place within the regional context (Smith, 2007:6269) even though — paradoxically — issues of climate change transcend administrative boundaries, making them obvious candidates to analyse from the perspective of multi-level governance (Marsden & Rye, 2010:670).

While recognising Eising & Kohler-Koch's premise and stressing that studying the EU's democratic deficit or legitimacy is not the purpose of this study, from this point onwards a distinction will be made between network governance and multi-level governance. The academic debates surrounding both approaches have their similarities, but should not be confused. I will apply the more recent interpretation of MLG, which allows continued use of how governance as a concept was defined in this chapter; leaving room for public *and* private actors. Piattoni's conceptualisation is especially attractive because the three pressures she describes lend themselves well to empirical investigation. Chapters 5 and 6 will show the tensions and connections between these pressures and how they can be used to really *show* what happens in multi-level governance processes. Network governance can also shed light on such processes, but the added value of MLG is the reminder that hierarchy persists, and analytical tools to investigate this assumption. For the development of MLG, the addition of private sector actors is "conceptually and empirically interesting" (Zürn, Wälti & Enderlein, 2010:3), which adds to the relevance of such an exercise.

2.6. THEORETICAL EXPECTATIONS

Two a-priori assumptions of MLG are *trust in the importance of supranational institutions* and the *belief that the agency of actors has influence on the politics, policy and even polity* of the European Union. The first assumption needs elaboration. The incorporation of sub-national and private actors into European policy-making at all levels of government and often in non-hierarchical networks has led to a reconfiguration of the supranational level as a fundamental level of government (Piattoni, 2010:250). The European level thus becomes one of the fundamental levels, which does not mean it supersedes all other levels. Therefore, the interpretation of that statement in this thesis is that the supranational level *should not be discounted*, but that other governmental authorities remain important as well. Both parts of this statement — the presumably important role of supranational and lower levels of government — are already interesting to study in and of themselves. The second assumption, specifically applied to the case at hand, means that Rotterdam Energy Port actors defend their own positions and pursue goals (that they find legitimate). The rationalist underpinnings of MLG theory suggest that actors are aware of and can act on their own behalf, which suggests it may be beneficial for them to keep systemic changes open for the time being in order to retain a measure of flexibility (Piattoni, 2010:250). In essence, the polity-forming aspect of MLG encompasses both *downloading* and *uploading* and accepts that governance in the EU has a cyclical nature. This dissertation will focus mostly on the consequences of *downloading*, but will draw conclusions for *uploading* activities which, according to MLG, can lead to structural changes.

Taking the two assumptions outlined above as testing ground, I now turn to the theoretical expectations[29] of this thesis. They will be structured along the three pressures as identified by Piattoni (2010) — discussed earlier in this chapter — and will therefore provide the three expectations of this dissertation. First, the *domestic - international pressure* addresses one of Jordan's (2001:201-202) criticisms of MLG about its lack of attention to external developments for European policy-making. This pressure is one from above the nation state and assumes that policy coordination at a higher level than the national one is necessary

29 The term 'theoretical expectation', or 'proposition', was chosen instead of 'hypothesis' since the expectations will not be tested quantitatively but rather used as a guiding tool for qualitative analysis. An explicit formulation of the limitations of using hypotheses in qualitative research would also have been possible, but what then remains are theoretical expectations, which is why the choice was made to call them what they are from the start.

due to increased policy activism at the supranational level by actors other than national governments. Actors stemming from business, civil society (including European associations and transnational groups) and sub-national governments are pulled into the European sphere by the European Commission. They create interdependencies on an international level which national governments cannot ignore. It becomes only rational for them to coordinate at the supranational level as well, thereby spurring further EU integration (Wessels, 1997:274). The European Commission also uses agreements made internationally as a way to legitimise its own activism towards national governments (Piattoni, 2010:58-62, 148). The result is that the domestic - international distinction is overcome. The first expectation I therefore have is: *actors create interdependencies between business, civil society, and government on an international level, which necessitates policy coordination at not only the national level but also the supranational level.* Applying the proposition to the studied case would involve Energy Port actors participating in transnational and cross-border settings and policy-making at the European level. Zooming in even further, the expectation is that *the PoR is one of many actors active at international level because the policy solutions the PoR needs cannot be provided at national level alone.* The assumption of importance of supranational institutions would hereby seem correct.

Second, the *centre - periphery pressure* describes a pressure from below the national governments and effectively deals with the question why sub-national authorities exist. Since sub-national authorities are often territorially distinctive from their central government — that is, they embody (slightly) different culture, values, politics, and so on — it stands to logic that for certain issues it may be easier to arrange coordination at the local or regional level than at the national level. Important for multi-level governance theory is the fact that the status and competences of sub-national authorities vary throughout the EU; some have a larger role than others. At the same time, the consequence of more efficient coordination at a lower level of governance creates opportunities for actors at that level to make more use of their power than originally intended by the national government (Piattoni, 2010:46-50). This mechanism is especially true in matters relating to territorial policies, such as land use planning, infrastructure, regional cohesion, and so on. A caveat of the new conceptualisation of MLG is that it does not specify how sub-national actors increase their power vis-à-vis the central government. It was chosen to call those actors ‘policy actors’ in this thesis and to indicate a strengthening of their relative position in the network as a way to conceptualise the centre - periphery shift. The second expectation of this thesis is therefore: *regional coordination in territorial matters is more efficient than national coordination, which leads to the strengthening of local policy actors.* In this case I especially expect the *Port of Rotterdam Authority to be empowered due to being able to employ its resources effectively when stimulating activities in Rotterdam*.

Finally, the *state - society pressure* puts pressure on national governments from within. This pressure is brought about by increasing cross-linkages between public and private actors based on the knowledge that the state and society need each other to ensure effective governance. Examples of movements in the state - society dimension are European NGOs, neo-corporatist arrangements, local mobilisation of civil society, and transnational advocacy coalitions. Governmental institutions at times use advocacy mechanisms traditionally associated with those of interest groups. What results from this blurring of boundaries between state and society is that private actors often assume public responsibilities[30] while public parties start to act like private groups (*ibid.*:67-72). It is important to note that Piattoni's view of the state - society pressure entails a more far-reaching blurring of state and society than often referred to by scholars of European and network governance. It is not just about public and private actors cooperating together in non-hierarchical networks. The fundamental factor here is the far-reaching *blending* of public and private advocacy and responsibilities. The third theoretical expectation thus posed in this thesis is as follows: *cross-linkages between private and public actors lead to private parties assuming public responsibilities and public parties acting like private groups*. In this specific situation it is expected that an analysis of Energy Port governance will reveal instances of cooperation between public and private actors, in which private actors have taken up tasks that are traditionally associated with the public sphere while public actors form coalitions with them against other governmental authorities. An example of the latter would be if the Dutch government would enlist the support of the private sector to advocate a certain energy target at the European level. Likewise, it is not unthinkable that a governmental authority could also 'lobby' a private actor. The challenge is to show if this far-reaching blurring of state and society is really happening, questioning what is considered 'traditional tasks' and what is not. Specifically applied to the Port of Rotterdam Authority, I expect the *PoR to develop economic activity in cooperation with the private sector and to advocate its interests at EU level alongside Dutch governmental actors to obtain favourable policy conditions*.

The three expectations formulated above (summarised in table 2.6) essentially cover mechanisms that were described previously: a blurring of state and society that trespasses the traditional boundaries of governmental competence and an apparent hollowing out of the nation state from two opposite directions. Turning back to the assumption of the importance of agency, the three shifts in governance help us understand how agency can manifest itself in multi-level governance. Agency guides the first three theoretical expectations, implying ongoing interaction between actors. According to Piattoni (2010:250), the interaction between actors results in shifts in multi-level governance arrangements and a redefinition and simultaneous activation of new jurisdictions and constituencies. It can

30 One could, for example, imagine a company such as Shell offering policy advice to governments.

thus be claimed that the three pressures lead to more and newer forms of interaction in mixed (public and private) systems. Examples of such arrangements are shadow lists for EC monitoring of legislative implementation of EU regulations in member states supplied by civil society, citizen monitoring[31] and the formation of platforms spanning multiple territorial jurisdictions. However, one of the drawbacks of this conceptualisation of agency and interaction is that it misses the concept of power (cf. Smith, 2007; and to some extent Jachtenfuchs, 2001). In the case at hand, interaction takes place in the Energy Port network. Interactions in networks have the form of negotiations, which are based on power. The actors entering into negotiations do not necessarily have an equal distribution of resources or resource interdependencies. In fact, more often than not are negotiations based on an unequal distribution of power (Rhodes, 2007:1245; Smith, 2007:6269).

Table 2.6. Theoretical expectations of multi-level governance

Pressure	Theoretical expectation
Domestic - international	Actors create interdependencies between business, civil society, and government on an international level, which necessitates policy coordination at not only the national level but also the supranational level -> *The PoR is one of many actors active at international level because the policy solutions the PoR needs cannot be provided at national level alone*
Centre - periphery	Regional coordination in territorial matters is more efficient than national coordination, which leads to the strengthening of local policy actors -> *PoR is empowered due to being able to employ its resources effectively when stimulating activities in Rotterdam*
State - society	Cross-linkages between private and public actors lead to private parties assuming public responsibilities and public parties acting like private groups -> *PoR develops economic activity in cooperation with the private sector and advocates its interests at EU level alongside Dutch governmental actors to obtain favourable policy conditions*

Source: author's own composition based on Piattoni (2010).

Previous studies (cf. Marsden & Rye, 2010; Skelcher, 2005; Smith, 2007) that have attempted to apply Marks and Hooghe's (2003, 2004, 2010) type I and type II multi-level governance have uncovered that, not only do some governance arrangements refuse easy placement in this dichotomy, in the end an actor with type I decision-making authority (ie., *power*) is almost always present or necessary to make policy decisions. The value of MLG is that it stresses territorial distinctiveness. It is thus not so much interested in the incorporation of national actors into EU policy-making as in how national actors give meaning to their role on their 'own turf'. Furthermore, even though the inclusion of business, civil society and

31 In the field of environmental policy an example of citizen monitoring is the use of eco-labels (Lenschow, 2005:321), which enables citizens to not only make a conscious environmental choice when buying household appliances but it also enables them to punish businesses based on their level of environmental friendliness.

sub-national governments in often non-hierarchical networks at the European level defies traditional hierarchy, the fact that some form of territorial government is necessary for policy decisions still holds. The newly created jurisdictions and constituencies may span multiple territories or form a sub-territory within a larger one, but the 'original' territories retain their importance because certain resources such as people, infrastructure and knowledge, and other factors such as the environment cannot easily be relocated (Piattoni, 2010:250). In other words, MLG does not expect governance to take place without a State. Phenomena such as self-governance by citizens or private governance by companies can thus never be part of multi-level governance.

It is important to note that, even though the theoretical expectations suggest a measure of sequentiality, in reality they probably interact, forming a mechanism. The exact way the various concepts depend on one another and interact will be analysed in the empirical part of this dissertation. The theoretical expectations thus act in concordance and are therefore not mutually exclusive.

2.7. CONCLUSIONS

Much like the European Union, governance is an ongoing project attracting the attention of many a scholar. It is expected that many studies covering governance issues will continue to be published in the near future. This flow of attention and the characteristics of governance make the study of it a dynamic and interesting exercise. This chapter has attempted to give a broad introduction into EU governance in research and practice, while taking into account that it cannot — and does not attempt to — cover all that has been written on this subject. The starting point was the concept of governance, which was taken as leading throughout the rest of this chapter. Attention was paid to its 'fuzziness' and many different definitions. In this study, governance will be understood as "the various institutionalized modes of social coordination to produce and implement collectively binding rules, or to provide collective goods" (Börzel & Risse, 2010:114). The adopted definitions of governance of authors such as Kohler-Koch, Eising, Börzel and Risse were consulted as sources of inspiration for the definition used in this study. The variety of approaches to governance was shown in bird's view, ranging from Rhodes' distinction of governance as possibly effective where markets and bureaucracies fail, to Van Kersbergen and Van Waarden's nine approaches to governance which they distilled both from academia and from practice. These nine approaches are a mixture of analytical and normative approaches to governance.

This chapter discussed the twin concepts of *Europeanisation* and *European integration* as introduced by Schmidt, which are understood as the influence of the supranational level on the domestic levels (Europeanisation) or the process of building institutions at the supranational level (European integration). These upstream and downstream approaches were classified as belonging to the older school of research, since, as Börzel has argued, European governance is a two-way interaction in which member states download EU policy but also upload their own preferences and policy styles to the supranational level. Downstream and upstream activities therefore take place in a parallel (or even circular, as suggested by Van Schendelen) fashion. The domestic level shapes what is happening at the EU level as well, and both approaches influence one another. An intricate pattern of dynamic interactions between the supranational and the domestic then lends itself to academic research, which has very often focused on the 'democratic deficit' of the EU, its legitimacy, accountability, and efficiency. An important concept in EU research is thus its multi-level aspect. Introduced by Marks and subsequently taken up by the EU, the multi-level and multi-actor nature of European governance is widely accepted but also criticised for not providing a coherent theory. It is furthermore criticised for being too level-oriented and lacking an adequate conceptualisation of power. Even so, the EU's multi-level nature is celebrated by EU bodies such as the Committee of the Regions and many scholars take MLG into account when studying the EU. Its celebrated strengths are the recognition of there being more than just EU institutions and national governments in EU policy-making. MLG effectively brought sub-national actors into debates about the EU. The application of Marks & Hooghe's contrasting type I and type II governance visions and criticism of multi-level governance as a theoretical approach led to a renewed wave of research into MLG in the EU. In a comprehensive addition to scholarly literature in this domain, Piattoni identified three pressures (from above, below and within the nation state) that have consequences for national governments and subsequently for MLG arrangements in the domains of policy, politics and polity. The increased participation of sub-national authorities and private actors in policy-making leads to private actors assuming public responsibilities while public actors at times defend private interests. The European Commission actively supports the multi-actor system in its quest for legitimacy and power. In exchange, it provides financial support and access to the European policy-making process. As a result, national governments cannot ignore the supranational level, which necessitates coordination at that level. Further EU integration is spurred by this development, thereby reconfiguring the supranational level as a fundamental level of government. The governance mechanics that arise, in essence, are of a hybrid nature; horizontal governance is strengthened, but so are its vertical elements. MLG thus reconfigures the relationships between actors in a far-reaching manner as compared to the classic view of government-steering from above.

As the boundaries between state and society have started to blur and lower-tier governments and interest groups have increasingly sought the European arena in an effort to exert influence, authors such as Kohler-Koch and Eising have drawn attention to the EU's network nature and claimed that multi-level governance would better be termed 'network governance'. I have argued that it is better to separate both terms so that the academic debates surrounding both approaches are not confused. Furthermore, Piattoni's recent reconceptualisation of MLG offers interesting theoretical insights. This dissertation explores the degree in which these insights can be applied to empirical cases by applying the three pressures she identified to two nested cases. MLG will therefore be used as an analytical framework; data collection and analysis will be guided by the three theoretical expectations formulated in the previous section. The next chapter will discuss why a case study design was chosen to approach the empirical aspect of this thesis, present its methodology, and operationalise the theoretical expectations.

3

Case Study Research Design

3.1. INTRODUCTION

The previous chapter discussed the theoretical debates surrounding governance and European governance in particular. The theoretical approach that was ultimately chosen to inspire analysis of the Energy Port case was multi-level governance. The starting point of multi-level governance as an analytical framework is provided by Marks & Hooghe's work, and has seen wide application in studies of European policy and governance. Several scholars, such as Bache, Flinders and Piattoni, have tried to take multi-level governance a step further and reconceptualised the theory. Chapter two ended with the formulation of three theoretical expectations that will act as a searchlight for data collection and analysis.

The chosen research approach will be covered in this chapter. It will start (§3.2) with a discussion of retroductive research and its ontology and epistemology, then discuss the chosen research strategy of performing case study research. The case studied in this thesis should logically fit within the existing typology of case study designs. Then, the chapter will assess whether Rotterdam Energy Port is actually a case of multi-level governance. Following that, the chapter (§3.3) turns toward the operationalisation of the theoretical expectations, and the resulting research approach (§3.4). The expectations are linked to the sub-questions (see chapter one) guiding the thesis to ensure consistency and coherency of the analysis. Finally, the nested case selection process will be elaborated on in the last part of this chapter (§3.5) to include detailed information on the considerations that led to Energy Port being chosen as the case, and why CCS and small-scale LNG were chosen as its nested cases. The conclusions (§3.6) provide a brief overview of the key decisions guiding the research design.

3.2. RETRODUCTIVE RESEARCH AND CASE STUDY DESIGNS

Blaikie (2000:91-99) provides an interesting view on the multiple strategies a researcher can use to answer research questions. He mentions four approaches: inductive, deductive, retroductive, and abductive, each with an appropriate set of research questions and methods of data collection and analysis[32]. Using the analogy of an alien civilisation studying human interactions taking place at a university, Blaikie discusses several ways to get an answer to how human social interactions in enclosed spaces can be understood. The inductive method generates many observations and attempts to generalise them into a theory. The deductive method works the other way around, starting with theory-infused hypotheses and testing them methodically in the field. Retroductive research is a mix of both inductive and deductive reasoning, starting with tentative mechanisms that could have produced the observed regularities and refining these mechanisms using empirical data in order to find the 'real' mechanism. The fourth approach, abductive research, allows the researcher to be 'abducted' by the studied object, often following it closely in an attempt to uncover how sense-making and the attribution of meaning occurs (fe., anthropological research). Given the lack of academic knowledge on climate and energy policy processes within port areas and the open-endedness of multi-level governance as a conceptual framework, I have chosen the retroductive approach. A purely deductive approach was not desirable due to the multiple blind spots this dissertation addresses. To name a few: the governance of port-industrial complexes, the quick evolution of climate and energy policies as one terrain[33], the system-wide consequences of the introduction of a new fuel. Explorative research was therefore an important part of my initial approach to discover which factors to include in the analysis and which to exclude. At the same time, the PoR had the wish to better understand how they should approach the EU, so an EU-oriented theoretical framework was preferable over a purely inductive approach. Retroduction combines both requirements, allowing for theoretical expectations to be drawn while leaving enough room for unexpected twists and turns. Chapter two posited three tentative theoretical expectations and social mechanisms, which I explore in chapters five and six, and further refine in chapter seven. As such, the retroductive approach leaves room to *work* with a theory, testing its merits and iteratively refining it during the research process.

32 Though it must be noted that what is deemed 'appropriate' is partly personal preference and not set in stone.

33 At the start of my research period (February 2013) climate and energy policies were often seen (or experienced) as separate. In the last few years views on their intertwinement have changed at an extremely rapid pace.

3.2.1. Ontological and Epistemological Statement

Retroductive research is an alternative to positivism and critical rationalism, which constitute the logics behind inductive and deductive research (Blaikie, 2000:101). Its ontology — its understanding of reality — has three domains: the empirical (observable), the actual (events that happen, even if unobserved), and the real (underlying structures and mechanisms). Its epistemology — the way in which knowledge is perceived to be obtained — consists of 'laws' that express the tendencies of things, or models which reveal underlying mechanisms. It is less about causality and more about underlying powers and opportunities, allowing the researcher to reveal mechanisms even when there is no observable change. A distinction is made between transitive and intransitive objects of science, the former being about concepts, theories and models while the latter refers to real entities and their relations. Retroductive research does not assume that prediction is possible in social sciences due to the open nature of social systems (Blaikie, 2000:108-113). As a researcher I share the belief that prediction is impossible in social sciences, and pose that trying to understand the consequences of European climate and energy policies for the Port of Rotterdam is most interesting to study from a perspective of unraveling social mechanisms and building a narrative around them, rather than by proving statistical causality. Causality is not always quantifiable. This dissertation qualitatively measures the key concepts discussed in section 3.3, but to determine their individual statistical impact on the Rotterdam port community lies beyond the nature of this case study. If one understands the underlying social mechanism, one has the tools in hand to influence outcomes. In a sense, I value the practical implications and usefulness of this academic research highly and it is my hope that this dissertation gives the studied actors insight in how they can help shape their own world. It is now time to turn toward the research strategy and discuss types of case study research.

3.2.2. Energy Port: A Case of Multi-level Governance?

The question why a case study strategy was chosen begins with the research problem as defined in chapter one. In order to gain knowledge regarding why climate and energy goals continue to be set yet not met, and in order to understand what consequences the formulation of climate and energy policy at European level has for an industrialised region such as the Port of Rotterdam, one needs to delve into a shining example of the problem. Case studies provide context-dependent knowledge that assists human beings in learning processes (Flyvbjerg, 2006:221). It can provide information that can illustrate a phenomenon by 'force of example' and test hypotheses or propositions. By virtue of being able to dig deep into a given case, a researcher is enabled to seek for deep causes of a problem (*ibid.*:228-229), which is the objective of this thesis so that lessons may be drawn for the future. Flyvbjerg counters several misunderstandings about case study research in his 2006 article 'Five Misunderstandings About Case-Study Research', though single case studies could remain vulnerable because the case may not turn out to be what is needed for proper analysis. Even doing two cases increases the researcher's chances to arrive at valid results (Yin, 2009:60-61). For reasons of executability, the depth that is necessary for this dissertation cannot be established when doing more than one case. Therefore an embedded single-case study has been chosen instead of a holistic design. Within the main case (Energy Port), two nested cases (LNG hub and CO_2 hub) have been chosen. While still performing a single case study, the nested cases can counter some of the criticism thrown at single case studies, such as non-generalisability (Yin, 2009:61). The research approach can thus still benefit from cross-case analysis of the nested cases *and* ensure the required depth within the case. But is Energy Port a representative case of multi-level governance?

When selecting cases for a single case study, there are five general information-oriented designs which can guide the selection process. First, the critical case can test a theory's propositions to support, falsify, or extend the theory. It can also act as a critical case to establish which theory of multiple theories comes closest to explaining a phenomenon. Second, the extreme or deviant case can provide information on cases that have an unusual nature, for example by being extremely problematic or extremely good (Flyvbjerg, 2006:230). An extreme case can test a theory in a setting where there are no other similar cases to be compared with. Third, the representative or average case shows takes an average example (for example, one project among many similar projects) to explain the general occurrence of a phenomenon (Yin, 2009:48-49). Fourth, the revelatory case is used when previously researchers have not had access to the study of a certain phenomenon. An example can be the study of drug cartels from within. Fifth, the longitudinal case studies a case at two (or more) points in time, which allows for the study of intra-case dynamics (Yin, 2009:49).

Identifying what type of case we are dealing with requires a discussion of how Energy Port fits within the MLG paradigm. Applying the reconceptualised form of multi-level governance theory leads to the general expectation that multi-level governance arrangements put pressure on and reconfigure politics, policy and polity in the EU. Applying the former to the studied case, the expectation would be that the Rotterdam Energy Port, due to its context and its multi-level and multi-actor nature, operates in a dynamic constellation which defies hierarchy and challenges politics, policy, and polity on several levels of government. In the scholarly literature on MLG, several criteria are identified if an empirical case is to be judged a case of MLG. The first three are suggested by Piattoni (2010:83), the latter by Zürn, Wälti & Enderlein (2010:2-4):

1. different levels of government are simultaneously involved in policy-making;
2. non-governmental actors are involved at different governmental levels[34];
3. interrelationships that are created defy hierarchies and take on the form of non-hierarchical networks;
4. all private actors present in the governance arrangements may offer private solutions but must do so to solve a public problem, and;
5. the governance arrangements have a certain degree of durability.

The first criterium is easily defended and met. The involvement of the European Commission[35] for the establishment of EU-wide energy and sustainability targets (most notably the emission targets) is obvious. Furthermore, the EU grants subsidies to promising projects and accepts policy advocacy documents in return. The Dutch national government is in charge of port policy and also governs through climate and energy targets coupled with financial support to Energy Port-related businesses planning projects. The municipality of Rotterdam is responsible for the port bye-laws (in Dutch: *Havenbeheersverordening*) which can be seen as the day-to-day port management rules for the Port of Rotterdam. They are relevant for the Energy Port since certain energy carriers that are part of Energy Port (such as LNG) can also be used as fuels for ships and therefore fall under Rotterdam's bye-laws. Governments active in the Energy Port case are thus active on at least three levels. However, they must also simultaneously be involved in policy-making in order to fully meet the first criterium. In negotiations surrounding energy and climate policies, the EU welcomes input from its member states. Consequently, the Dutch government is active during the policy-making process to ensure that EU rules and targets do not exceed Dutch preferences or possibilities. The city of Rotterdam, in turn, is a prime information source for the Dutch government since about 20% of Dutch GHG emissions originate in the port of Rotterdam. Any regulations adopted by the EU or the Dutch government therefore have an enormous impact on the city of Rotterdam. The importance of local collaboration in order to meet local and international climate targets has led to the establishment of the Rotterdam Climate Initiative (RCI), in which both the municipality and the PoR take part. A network organisation such as provided by RCI facilitates negotiations and can therefore be

34 In this dissertation the inclusion of non-governmental actors is mostly considered at the local/regional level rather than the EU level.

35 Recognising that the EU is not a unitary actor, this thesis focuses solely on the European Commission. The reasoning behind a specific focus on the Commission is the fact that it is the main body for policy preparation and initiatives, and because it funds projects carried out under the Energy Port. This dissertation does not wish to step into the debate on which EU institution is most important or most powerful and therefore does not claim that the EC is 'the' institution to target at the EU level. However, for the chosen case, analysing the role of the Commission is the most logical choice.

a welcome actor at other governmental levels. It is safe to say that in the Rotterdam Energy Port multiple levels of government are simultaneously involved in policy-making.

The second criterium of non-governmental actor involvement is also met by Rotterdam Energy Port. Several examples can be considered to support this claim. The Rotterdam Port Authority itself is a prime — but also ambiguous — example of the involvement of a non-governmental actor at different governmental levels. Even though all 100% of the shares of the PoR are government-owned, the PoR is governed by private law. It is therefore allowed to make a profit and to invest that profit where it sees fit. At the same time, the PoR also has certain responsibilities that traditionally belong to public authorities. As a landowner the port authority is responsible for port infrastructure. Specialised employees of the port also function as police officers, first aid givers and firemen when patrolling port waters. As one of the most important motors of Dutch economy, the PoR is also aware of its contribution to Dutch society. Whether the PoR is advocating its business preferences or its public duty, however, it makes sure to be present at the local, regional, national and supranational levels of government. The port's private 'renters' and partners in the Energy Port are companies such as Uniper, Engie, Shell, Air Liquide, Vopak, and many more. These companies often not only operate within the city of Rotterdam, but also advocate their goals at the national and supranational level. They can do so on their own or through membership of think tanks, advocacy networks, or European associations. An actor such as the LNG Platform (with membership of, for example, the PoR, Shell, and employer's organisation Deltalinqs) is a bridge between local levels and the national level. Membership of European associations further increases the multi-level nature of non-governmental participation through advocacy of country-based firms at the supranational level.

The third criterium flows from the consequences of the first and second criterium. Networks are established harbouring the participation of both governments and non-governmental actors. The Dutch government sometimes acts in concordance with Energy Port actors in order to secure subsidies at the European level. Dutch policy officers then support private parties when submitting their tenders. Backing from the national government also helps non-governmental actors gain access to Commission funds, as it is important for the EC to be shown that a project can be trusted and be carried through to its end. In the LNG case, Dutch policy officers from the ministry of Economic Affairs effectively advocated private interests when they helped secure major funding that made small-scale development of LNG as a fuel possible. The non-hierarchical entwinement in networks does not end there. In the same LNG case the Dutch government backed using LNG as fuel for inland-faring ships, but also had to officially sanction it. Safety studies were needed to ensure the new technology would not endanger citizens, so private parties, research institutes and government officials cooperated in studies geared towards finding out what the risks of LNG use in ships are.

Such studies need not only data but also resources required to collect and analyse it. A non-hierarchical cooperation made the successful completion of the safety studies possible. The findings have been shared throughout the network of actors and have also reached international actors such as the International Maritime Organisation (IMO). They are also used to change legislation and as source of inspiration for policy advocacy at the European level. Here is where hierarchy does seep back in.

The fourth criterium is a very interesting one, because it incites a discussion on what constitutes a 'public' problem and what constitutes a 'private' problem, and when a proposed solution is deemed private or public. It is not the aim of this dissertation to provide an answer to this philosophical discussion. According to the definition of governance adopted by Zürn, Wälti & Enderlein (2010:2), governance only occurs when public problems are solved collectively by actors, through processes and in structures. While their definition of governance is not exactly the same as, but very similar to, the one adopted in this dissertation, it offers a good way to limit the possibilities of governance as a concept; it excludes purely business-oriented processes. This limitation is helpful because it suggests that, if governance occurs in this case, and non-governmental actors are present, they will be contributing to solving a public problem. There will probably be no doubt about whether climate change is a public problem or not.

The fifth criterium of durability of governance arrangements helps distinguish MLG from issue networks. The public problem Energy Port seeks to solve is very similar to the goals of European Union climate and energy policies: battling the cross-border issue of climate change coupled with ensuring safe, adequate and affordable energy provision[36]. Part of the solution offered by Energy Port is the development of LNG and CCS. While the durability of the governance arrangements falling under the Energy Port is not as certain as the durability of a nation state, and while actors operating in the port change over time, big projects such as the development of LNG from the ground up (before 2010 there was no LNG in Rotterdam whatsoever) require a relatively stable set of actors — both public and private — operating in a relatively stable network. Furthermore, businesses do not invest in land and infrastructure to build up their operations just to move away again a year later. A measure of stability can be assumed. It is thus safe to say that the durability criterium can be defended.

36 Of course there is an economic argument for Energy Port actors to be found here as well: businesses will always be businesses. But that does not erode efforts made by them to minimise the climate effects of their day-to-day operations.

All in all, it can be concluded that the Rotterdam Energy Port is a case befitting MLG, which validates the use of MLG theory to generate research questions and theoretical expectations to further guide this dissertation. For the remainder of this thesis, Energy Port will thus be treated as an example of multi-level governance. It is, however, not a unique case to MLG, and neither is it revelatory. The method of data collection does not include longitudinal data collection, so Energy Port is also not an example of a longitudinal case. This process of elimination leaves two possible case types: the critical case and the average case. Part of the rationale of the critical case is that if a theory holds in the critical case, it will probably also hold in average cases. However, nothing in the Energy Port case suggests that the case may have such critical and exemplary value that whatever it shows for MLG, other cases should also show. The case is therefore an *average case*; an example of how multi-level governance works in the European Union in terms of bringing multiple hierarchical levels together in both public and private settings. The unique value of the case lies in the academic novelty of it (ie. no previous known application of MLG to a port-related situation).

3.3. OPERATIONALISATION

The theoretical framework proposed in chapter two and specified in this chapter provides theoretical understanding and background for what I expect to find in the case study. Several important concepts can be identified in the three propositions. These concepts will each be discussed and operationalised in this section.

3.3.1. Measurement of Key Concepts

Chapter one presented a very brief overview of the major players in the Energy Port community. Figure 1.2 will be further fleshed out per nested case in chapters five and six. What results is a qualitative social network analysis (QSNA) providing the reader with a information regarding the most important actors in the network, shown from the point of view of the Port of Rotterdam Authority. It will therefore be an ego-network (cf. Freeman, 1982) in which the organisations (separate DGs, the PoR, ministries, companies, etc.) make up the nodes. The edges (or the connections between the nodes) symbolise governance ties between actors, ie., direct coordination with the purpose of providing collectively binding rules or collective goods. The ego network graph will be controlled for betweenness centrality (the number of shortest paths going through a node - gauging how important a node is within the network), modularity (checking for separate communities within a network) and degree, or how many other nodes a node is directly connected with (Freeman, 1982: 293; Borgatti, Meyra, Brass & Labianca, 2009:892). The actors present in Energy Port, along with their interests and interdependencies, have mostly been discerned through active participation and observation and confirmed either through desk research or interviews. The relationships between actors are based on resource flows which structure their (inter)actions through their preferences and interests (Eising & Kohler-Koch, 1999:5). The preferences and goals of actors have been identified through a careful reading of the public statements they made and other relevant desk research, along with interview questions geared towards uncovering implicit preferences. Since social network analysis does not help much in uncovering agency and meaning in a network, concepts requiring more content will be studied through different means. Extensive observation and participation in the Energy Port network, coupled with data from fifty-one interviewed experts[37], allowed for thick descriptions to be incorporated into the social network analysis. Thick descriptions thus supplement the social network analysis and provide information for the measurement of concepts such as the agency and the role of territorial government. Table 3.1 gives a grand overview of the theoretical expectations, the underlying key concepts and their qualitative measurement.

I will discuss the key concepts one by one in this section, starting with interdependency between actors on an international level. This concept encompasses transnational advocacy networks or other substantial cross-border cooperation between business, civil society, and government. Therefore, a specific focus will be placed on the existence of cross-border networks (and the participation of Energy Port actors in these networks) and on actor representation in international organisations or associations. For the sake of feasibility, only clear examples of interdependency have been taken into account where expert interviews have pointed towards the existence and importance of an organisation or association. This decision was made to exclude obscure networks and dormant participation[38]. Policy coordination at the X level of government, the third concept, is used to analyse the specific governmental level at which policy coordination takes place. Input for the measurement of this concept is provided by the contextual analysis of the policies relevant for the Energy Port (see also chapters one and four) and by collecting data on policy output at the national and supranational level of government. Wessels' (1997:275) indicator for increasing harmonisation may be of use here, since a higher policy output at the supranational level could indicate necessity of policy coordination at that level. Therefore, only binding decisions will be taken into account. To further strengthen the validity of this concept, data has also been gathered on national references to EU policy, or the necessity for EU policy. If the Dutch government explicitly states that EU decisions are needed in a certain area, it would

37 39 interviews. Some interviews were dual interviews while some were written up as fieldwork.

38 By 'dormant participation' I mean official participation in a transnational network or organisation without actually contributing to it. It can be beneficial for one's image to be included in certain organisations or networks, but that does not necessarily imply active and meaningful exchanges, which are necessary for interdependencies to arise.

Table 3.1. Key concepts, indicators and measurement

Theoretical expectation	Key concepts	Indicators	Measurement
1. Actors create interdependencies between business, civil society, and government on an international level, which necessitates policy coordination at not only the national level but also the supranational level *-> The PoR is one of many actors active at international level because the policy solutions the PoR needs cannot be provided at national level alone*	Interdependencies at international level	Substantial transnational/cross-border connections between business, civil society, and government	1. Cross-border networks 2. Representation in international organisation or associations
	Policy coordination at the X level of government	1. Relevant binding policy decisions at national and supranational level 2. National references to EU-level decisions	1. Policy output of national and EU level 2. National policy documents referring to EU decisions or to the necessity for EU decisions
2. Regional coordination in territorial matters is more efficient than national coordination, which leads to the strengthening of local policy actors *-> PoR is empowered due to being able to employ its resources effectively when stimulating activities in Rotterdam*	Coordination of activities	Development and implementation of activities at local versus national level	Level of government at which most policy activities or implementation occur
	Local empowerment	Local actors are empowered	1. Local coordination of activities (see previous concept) 2. Local actor(s) emerging as central (resource dependency in their favour) actor(s) in network analysis
3. Cross-linkages between private and public actors lead to private parties assuming public responsibilities and public parties acting like private groups *-> PoR develops economic activity in cooperation with the private sector and advocates its interests at EU level alongside Dutch governmental actors to obtain favourable policy conditions*	Cross-linkages between public and private actors	Formal cooperation between public and private actors of Rotterdam Energy Port	1. Resource flows 2. Joint goal/target setting
	Blurring of state and society	1. Private parties assuming public responsibilities 2. Public parties acting like private groups	1. Tasks with a public nature carried out by private actors 2. Lobby activity towards another level of government or coalition forming with various actors

Source: author's own composition.

imply that coordination is necessary at not only the national level but also the supranational level. Policy coordination and the interdependencies between actors together help draw conclusions regarding the first theoretical expectation.

The next key concept, coordination of activities, is not about policy coordination — otherwise it would overlap with the previous concept —, but about coordination of activities at the local level, be they carried out by a governmental authority or a private party. In this case, activities are defined as 'policy implementation or the creation of policy initiatives'. If activities are carried out by and coordinated on the local rather than the national level, somebody needs to be responsible for it. As the expectation is that local coordination is easier to organise due to greater homogeny (social efficiency), economic efficiency, and administrative efficiency (Piattoni, 2010:45-48), it is likely for a local actor to become the coordinating policy actor. My expectation is that the Port of Rotterdam Authority fulfils this role. The original idea was to identify core actors in the network by looking at the distribution of resources. However, it proved empirically difficult to get a representative picture of the distribution of resources among the various actors. To be able to draw conclusions regarding the empowerment of local policy actors, the fourth concept, then, I have relied on interview data checking for how experts talk about local actors. An authority can be important when it is *seen* as important. If the national government is lobbied by the local government, its position apparently is one of importance. The facilitation of Energy Port affairs by the city of Rotterdam would have to be publicly legitimised and should also be accounted for in official documents, such as a yearly financial report. Interviews with experts in the field will supplement the findings and methods such as observation and participation have also proven to be especially useful to unearth power relations, because such information is often of a sensitive nature and therefore not easily documented. If the PoR or the city were *perceived* as (potentially) empowered, it was deemed enough. The empowerment of local actors leads to a shift in the centre - periphery divide, and consequently puts pressure on central government.

The third expectation is divided in cross-linkages between public and private actors and the blurring of state and society. An important part of the reconceptualisation of MLG is the explicit recognition of public and private linkages, which makes the study of multi-level governance dynamics even more interesting (Zürn, Wälti & Enderlein, 2010:3). For the purposes of this thesis, it is important to look at these linkages, but they must fit the chosen definition of governance. Therefore, the cross-linkages must have a formal aspect. A private actor sending a public actor an email with a newsletter therefore does not qualify as a cross-linkage. A measure of *cooperation* will be looked for when measuring this concept, which is expressed in resource flows from one actor to another. Resources flow when actors cooperate through cooperative agreements, joint projects, and joint participation in think tanks or platforms. Furthermore, joint goal or target setting, such as mutual agreements on climate and energy targets, can also express cross-linkages between public and private actors. The Port of Rotterdam Authority itself already provides and interesting example of cross-linkages at play due to its status as a hybrid organisation: publicly owned but governed by private law. The PoR has a dual public and private function and can prove to be an important link between purely public and purely private actors. The sixth concept, blurring of state and society, essentially has two indicators: private actors assuming public responsibilities and public actors behaving like private groups. These indicators can be found wherever cross-linkages are identified. As stated previously in this chapter, an example of a private actor performing a public task is advising a governmental authority on policy matters. Therefore, documents can be a reliable source of information for the measurement of this indicator. The second indicator will most likely be expressed in public statements, contracts, agreements, and actions showing lobby activity (whether or not in coalition with others) towards another level of government. Desk research is well-suited to collect the data for these concepts due to the often codified nature of cooperation. Additionally, other methods of data collection such as interviews, observation and participation have been employed to triangulate the findings. Taken together these two concepts provide qualitative evidence testing the third theoretical expectation.

The three theoretical expectations end up uncovering the dynamics of European climate and energy governance applied to the port of Rotterdam context. In trying to identify how the agency of actors matters, Piattoni's three shifts will provide necessary information regarding who has played a role where, when and how. Power may play a facilitating role as it structures the relationships between actors. Hierarchical relations are at play in the background of this dissertation and these relations are of a dynamic nature. At the same time, these relationships are infused with power and therefore so is this thesis. Chapters five, six and seven will show how power comes up retroductively. Governance is not static and can vary across themes, platforms, policies, and so on. It is highly likely that various ways of dealing with policies will be observed in the case study, sometimes showing a strong hierarchical aspect and at other times showing much defiance of hierarchy.

3.3.2. Levels of Analysis

Applying multi-level governance implies analysis at multiple levels of hierarchical authority. Each nested case has been analysed at three levels of governance (see figure 3.1): the supranational level, the domestic level, and the private level. Doing so allows for a reconstruction of two distinct narratives: a political and an industrial narrative. The supranational and domestic level show how governmental authorities, guided by politics, construct policies and coordinate their implementation. The private level will show how third parties view these policies and what their consequences are for them. Narration was chosen to illustrate the data buried within the cases because of their function as sense-making tools. We humans are story-telling animals. The narrative is "an ancient method and perhaps our most fundamental form for making sense of experience" (Flyvbjerg, 2006:240). The narratives, added into the chapters as boxes, will provide the reader with an inside view of a formative event within

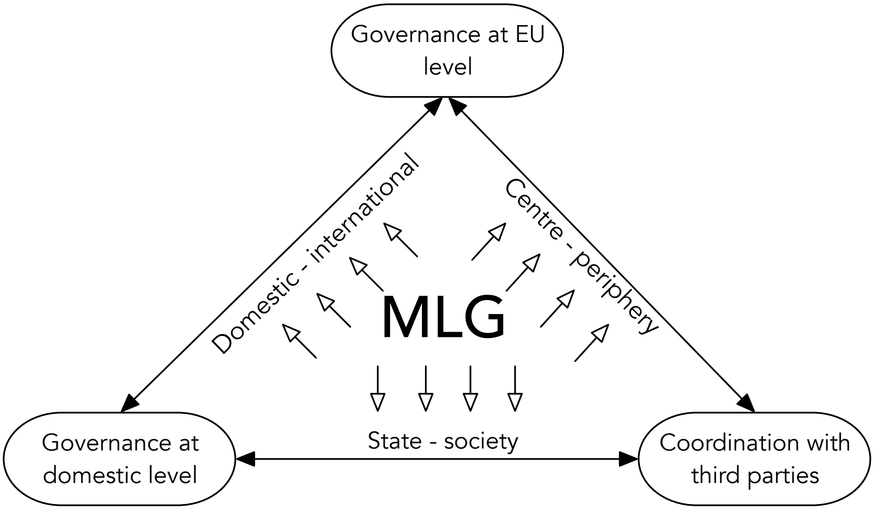

Figure 3.1. Three levels of analysis along three pressures on the nation state
Source: author's own composition.

LNG or CCS and serve to illustrate why certain theoretical claims are made in this thesis. In a situation where both the political and private narratives are not in concordance, governance might not be successful. However, changes in politics, policy and polity are conceivable in both a situation where the narratives are aligned and a situation where they are not. What the addition of these narratives then does, is shed light into why changes happen instead of just showing that they happen.

The empirical cases also make extensive use of interview quotes to illustrate how the interviewed experts view important mechanics guiding the case. It is important to note that, wherever the interviews took place in Dutch, the quotes have been translated to English as precisely as possible for ease of readership.

3.4. APPROACH

Data for each key concept is presented in chapters five and six. Chapter seven compares the data for both cases and derives governance mechanisms, thereby providing conclusions per theoretical expectation. Chapter eights brings everything together and delivers an answer to the main research question. The theoretical expectations can be numbered one through three and linked to the crucial factor they embody. Table 3.2 shows the consolidated approach of this dissertation.

Table 3.2. Methodological approach

Sub-question	Theoretical expectation	Methods of data collection	Method of analysis	Chapter
I: Which EU climate and energy policies are relevant for Rotterdam Energy Port?	Exploration of policy context needed for all theoretical expectations	Desk research, interviews, participation and observation	-	4
II: Which (multi-level) governance mechanisms are present in the implementation of these policies?	1. Spreading out of policy coordination over several governmental tiers 2. Local policy actors and coordination 3. Far-reaching blurring of state and society	Desk research, interviews, participation and observation	Content analysis using thick descriptions and QSNA	*Single case*: 5, 6 *Comparison*: 7
III: How can the governance of climate and energy in the Rotterdam port area be improved?	Examines the usefulness of MLG as analytical framework for prescriptive purposes	Data gathered in fieldwork conducted for sub-question I & II	-	8
IV: What are lessons the Port of Rotterdam Authority can learn for its public affairs management of future rounds of climate and energy policy-making?	Examines the usefulness of MLG as analytical framework for prescriptive purposes and builds a connection to public affairs management	Data gathered in fieldwork	-	8

Source: author's own composition.

The starting point is an exploration of the relevant policy context to illustrate within which policy domain the nested cases can best be placed and through which means this policy domain is governed (sub-question I). Chapter four provides a comprehensive overview of dominant EU climate and energy policies, how LNG and CCS fit within these policies, and how the EU's efforts to coordinate trickle down to the national level. Chapter four also provides insight in the progress made to reach EU goals and shows the inherent tension between the domestic and international level in the areas of climate and energy policy.

The chapters covering the nested cases start with a comprehensive qualitative social network analysis and a discussion of the context and key events driving the case. Data for the chapter on the CO_2 hub was collected over the period of October 2015 through March 2016, while data regarding the LNG hub was collected between February and September 2015. Empirical data collection for the LNG hub took longer, both because this case was investigated first and because it is the least documented of the two topics[39]. Desk research has been the most important starting point to collect data for the analysis, including online archival research in the municipality of Rotterdam to gather information on how the city responded to CCS and LNG projects and to European and national policy measures. This data is complemented by audio-recorded interviews and, when too sensitive, more informal interviews[40] (51 experts total), observations and participation. The CCS case has data from 22 expert interviews and 6 field work reports. The LNG case was fed by 19 expert interviews and 13 field work reports. Interviews were held with representatives from multiple DGs within the European Commission (such as DG ENER, DG MOVE, DG CLIMA), two ministerial departments in The Netherlands (energy and climate), policy officers working for the province of South-Holland, civil servants from the city of Rotterdam, director-level employees of the Port of Rotterdam Authority, researchers at applied research institutes who also write reports advising the national government, environmental NGOs, and a variety of people working for private companies at different positions. All these people are experts within their field and have been recommended by people working for the PoR or the government. The interviews were anonymised insofar that readers of this dissertation will know if a statement was made by someone from the public or private sector and which type of government they work for, without being able to discern the exact department or person. Where specific people are quoted, permission has been asked beforehand.

The field work reports mainly consist of conversations with important stakeholders 'over coffee' but also include notes of my participatory observation activities, however only for the LNG case. The large difference in field work reports between CCS and LNG is explained by the enormous activity on LNG whilst the research was ongoing, whereas CCS was not in active development during the research phase. The interviews there had more of an *ex-post* nature while the LNG interviews dealt with topics that were in the midst of being legislated and developed. Both the interviews and field work reports have been coded using MAXQDA software. The coding scheme was developed both deductively (according to the operationalisation of MLG earlier in this chapter) and inductively (themes, like 'power', that kept popping up were eventually coded for) and can be found in annex I. The dataset ended up with close to 3000 coded segments; two-thirds of the codes are from the public sector and one-third is from private sector statements. Information gathered from publications, academic or otherwise, and websites was not coded.

39 In the end I decided to place the CCS chapter before the LNG chapter because CCS was further along in policy implementation than LNG and also an example of unsuccessful governance attempts.

40 Coded as 'field work'.

A 'map' of the PoR's ego network results from each nested case and serves to provide information about important actors and who they are connected to in governance processes. The next phase in each nested case study consists of content analysis using data gathered for the social network analysis in order to answer sub-question II. Thick descriptions (cf. Geertz, 1973) will serve to add content to the analysed network so that agency and meaning may be uncovered (Jack, 2005:1239; Rhodes, 2007:1252; Weber, 2012:1). Wherever necessary, additional data has been collected through interviews. The three theoretical expectations will be examined in this phase, uncovering governance mechanisms and their underlying drivers and challenges. The resulting data will be used to answer the second sub-question.

The third sub-question will be answered by comparing the results of both the CCS and small-scale LNG cases so that conclusions can be drawn with regards to improving governance in the port area. Attention will be paid to the validity of such a generalisation. The result will provide the answer to the main research question posed in chapter one: *How do the European Union's efforts to address climate and energy issues affect the Rotterdam port community, and what role can the Port of Rotterdam Authority play in its governance in order to reach climate and energy policy goals?*

At the end of the dissertation, MLG theory is evaluated using empirical data from this thesis. A specific focus on the assumed shifts in the dimensions and the role of various levels of government will allow for a reasoned evaluation of MLG as theory. Additionally, sub-question IV invites recommendations to be made to the Port of Rotterdam Authority with respect to its own position in the governance of Energy Port. These recommendations are based on the results of this dissertation and the opinion of the researcher and connect results from MLG analysis to public affairs management. The recommendations are not a formal part of the thesis, but rather a practical benefit of it. The choice was made to include them at the very end of the dissertation so that they are recognised as resulting from the work done for the thesis and to strengthen its societal relevance. Likewise, recommendations will be given to governmental authorities.

3.5. NESTED CASE SELECTION

Even though the research design involves a single case study, a choice was made to involve two embedded, or nested, cases. In order to reflect on the type of nested cases in the research design, two main approaches can be considered. The 'most similar' case design is geared towards explaining *X*. The researcher will therefore choose cases that strongly vary on the independent variable *X* to be investigated, but which are similar in their control variables (Blatter & Haverland, 2012:43; Sekhon, 2004). In contrast, the 'most different' case design is geared towards explaining *Y*. The researcher will therefore choose cases that have a similar outcome so that the factors leading to that outcome can be established. There should therefore be no variation in *Y* (Blatter & Haverland, 2012:49; Sekhon, 2004). The most similar and most different case designs are not applicable to this dissertation because of the nested nature of LNG and the CO_2 hub. The cases exhibit, by definition of being nested, certain similarities. Furthermore, there is no clear delineation of variables and hypotheses to be tested. Rather, the research design allows for more general conclusions to be drawn about the 'governance of Energy Port' through guidance by several key concepts and theoretical expectations.

The thick descriptions that are used alongside the qualitative social network analysis come somewhat close to the technique of causal process tracing, without necessarily claiming causality. When doing process tracing, there is no emphasis on the co-variation of variables across cases, and so the case study design is less important. Most important is that the cases are *accessible* in terms of information and that they *meet the research goals*. *Internal validity* is also very important; a case that has practical and social importance and can show a lot that is relevant to the studied group (Blatter & Haverland, 2012:99-103). The nature of this dissertation calls for these criteria to be judged of highest importance. Accessibility and internal validity should help get at the necessary depth and detail within the nested cases and allow for thick descriptions to guide the analysis. Both nested cases are accessible and both the LNG and the CCS community can stand to benefit from this analysis. Lastly, it is important to note that there is significant knowledge about the nested cases prior to studying them. The choice is therefore well-informed.

As mentioned in the introductory chapter, Rotterdam Energy Port is concept spanning multiple energy sectors. It is not possible to study all of them within the scope of this dissertation (see also annex II). Therefore, this thesis will adopt two embedded cases which will be studied in-depth. In order to make it possible to answer the research question, the following case selection criteria have been applied. Both cases:

1. must fall in the period after the Port of Rotterdam Authority's corporatisation in 2004;
2. must fall under the Energy Port concept;
3. must have been brought to the attention of the European Commission;
4. must be local (include participation of the Port of Rotterdam Authority), and
5. can still be ongoing but must exhibit interaction (either positive or negative) between the European Commission and the Port of Rotterdam Authority.

The decision to only include cases after 2004 has two reasons. The first is that the Port of Rotterdam Authority had a different legal status before its corporatisation[41], which could potentially have an impact on network dynamics and would therefore muddle the results. The second reason is that 2004 roughly coincides with the emergence of the Energy Port concept[42] and therefore with policy surrounding it. The cases must be part of the Energy Port concept to enable the use of Energy Port as an illustrative case. Cases concerning the five pillars of the Energy Port fall under the Energy Port concept: the LNG hub, the coal and biomass hub, the CO_2 hub, (sustainable) electricity generation, and energy efficiency. Because the focus lies on studying the governance of Energy Port in its multi-level and multi-actor context, the case must have been taken to the European level (with most probably a concrete lobbying purpose). Purely Dutch affairs — if there still are any in this field — defeat the purpose of this research. On the local level, the researcher is interested in the role of the Port of Rotterdam as well, since it is at the heart of the main research question. Therefore, there must be participation of the Port of Rotterdam Authority, and so the case cannot solely be an industry affair. In order to be able to draw any conclusions, the case must have conclusive results in the sense that it is not enough for the EC to have been informed about the case (which could also occur through the national level), but there also has to be a response that is indicative of two-way communication. In short: a form of interaction must be present. Such interaction can also be negative (for example, the EC indicating it will not speak with the PoR directly).

The above discussion on the case study design has established that the design entails an *embedded single-case study depicting the average case for MLG and with accessibility of information and internal case validity being of importance to the overall case study design*.

Table 3.3. Embedded case selection results

	Present after 2004?	Part of Energy Port?	Brought to EC level?	Local?	Interaction?
LNG hub	Yes	Yes	Yes	Yes	Yes
Coal & biomass hub	Yes	Yes	No	Yes	Yes
CO2 hub	Yes	Yes	Yes	Yes	Yes
(sustainable) Electricity	Yes	Yes	No	Yes	No
Energy efficiency	Yes	Yes	No	Yes	No
Fuels hub	Yes	No	No	Yes	Yes

Source: author's own composition.

41 In effect, the Port of Rotterdam Authority went from being an actor governed by public law to an actor being governed by private law. Naturally, some behavioural changes are to be expected.

42 This information follows from conversations with R. Melieste and P. van Essen (both Port of Rotterdam Authority), June-July 2013.

It has also been mentioned that the nested cases will exhibit some natural similarities simply because they are part of one and the same main case. To conclude this methodological discussion it can therefore be interesting to look at the similarities and differences between the nested cases across the criteria identified above (see also table 3.3).

The first criterium is met by all considered cases, as they represent current hubs identified by the Port of Rotterdam Authority. The fuels hub is not part of Energy Port policy[43] and therefore does not meet the criteria. While the coal and biomass hub has been presented to the EC, no action has been undertaken by the Port of Rotterdam Authority to lobby on its behalf, thereby eliminating it from the list of possible cases. Sustainable electricity generation is mostly a national target and had not included interaction between the EC and the port until 2013. The same argument goes for energy efficiency. The two bottlenecks appear to be the criteria that a case must have been taken to the EC level and that interaction between the port and the EC must take place. Only two of the five pillars fit all criteria: the LNG hub and the CO_2 hub[44]. The LNG hub has been called a success by the Port of Rotterdam Authority, while the CO_2 hub so far has not. They have both been under the attention of the European Commission after 2004, and in fact very recently from about 2009 until 2013, when the case selection was made[45]. They are also closely tied to relevant EU policy. The Port of Rotterdam Authority has actively participated in both hubs, trying to bring the cases to the attention of the EC and the Dutch government. Since one hub has been called a success and the other a failure, conclusive results from the EC side are present and indicative of some form of interaction. The conclusion is that both hubs fit the case selection criteria and have therefore been chosen as the nested cases to be studied. The CO_2 hub mainly consists of the ROAD CCS project (and the cancelled Green Hydrogen project). Whereas the Green Hydrogen project did not receive EU funding, the ROAD project did. Due to the predominant focus on CCS I will call this case the CCS case from this point forward. The LNG hub consists of large-scale LNG, as energy commodity, and small-scale LNG; a fuel. I choose to focus on the small-scale LNG aspect due to its relative novelty. Small-scale LNG can be both maritime LNG (Highways of the Sea project) and LNG deployed on inland waterways (LNG Masterplan). Both projects have received EU funding, though the dynamics in each project are different enough to warrant a focus on just one of them. I will investigate the inland waterways aspect of the small-scale LNG case. Both nested cases can be related to

43 The fuels hub is not 'formally' part of Energy Port policy, which is odd since it would fit well within the concept. However, that would make it more difficult to claim that Rotterdam Energy Port is sustainable and green.

44 Confirmed by R. Melieste, October 2013.

45 Confirmed by J. Hoogcarspel (Air Liquide - CO2), H. Schoenmakers (ROAD - CO2) and E. Groensmit (VOPAK - LNG). October 2013.

statements issued by the EC in documents such as the *Green Paper on Energy Efficiency,* the 2030 climate and energy framework*,* and the *Energy Roadmap 2050*.

3.6. CONCLUSIONS

This chapter has sought to explain why a nested case study design was chosen to answer the main research question posed in the introductory chapter. Choosing Rotterdam Energy Port as the main case, it showed how governance of the Energy Port fits within the multi-level governance approach. The theoretical foundations and expectations laid in chapter two were operationalised to guide data collection and analysis in the empirical part of this dissertation. Most importantly, the three shifts identified by Piattoni — domestic - international, centre - periphery and state - society — were chosen as guiding lights to uncover what European efforts to coordinate climate and energy policies mean for the port community in Rotterdam, and what role the Port of Rotterdam Authority can play in the governance of Rotterdam Energy Port. Within the case two nested cases were chosen: CCS and small-scale LNG. These two nested cases will be investigated in chapters five and six. This chapter also discussed the research approach which is characterised by an in-depth qualitative analysis of governance mechanisms using thick descriptions, drawing heavily on expert interviews, and a depiction of the PoR's social ego-network showing governance ties between the most important actors per nested case. Where potentially illuminating, narrative boxes will be used to showcase key tensions between the public and private sector, but also their strengths when both sectors find themselves on the same side of the table. The next chapter will dive deeply into European climate and energy policies and show how the nested cases relate to overarching European policies and their domestic counterparts. This overview is necessary to understand the policy frameworks guiding the governance of CCS and small-scale LNG.

4

From ‘Dirty’ to ‘Clean’ and in-between: European Climate and Energy Policies

4.1. INTRODUCTION

“[E]nergy has a crucial role to play in tackling climate change” (IEA, 2013:15). The EU-28 is responsible for 6.1% of global energy production and 11.9% of global CO_2 emissions. These figures make the EU rank last in energy production[46], yet fourth in CO_2 emissions and final energy consumption (European Commission, 2014c:11-19). Logical conclusions that can be drawn from these figures are that 1) the EU contributes relatively highly to the climate change problem and 2) the EU imports more energy than it produces. In fact, the EU’s energy import dependency stood at a grand total of 53.4% in 2012, with the highest level of dependency on petroleum and products. The most important exporting countries are Russia, Norway, and Saudi Arabia for crude oil, Russia, Norway, and Algeria for natural gas, and Russia, Colombia, and the US for solid fuels (*ibid*.:24-26). The EU will therefore not achieve much by only focusing on reducing emissions at the source, where economic fundamentals and geopolitical considerations are the main drivers (European Commission, 2011b:4). While climate objectives are often agreed upon internationally, their implementation has a national character. Energy policy is a national affair as well. Any analysis of EU climate and energy policies must therefore focus on the nation state as well.

46 Identified regions are EU-28, China, United States, Middle East, Asia (excl. China), Russia, Africa and ‘Rest of the World’.

However, policies alone are not enough. The author of *The Energy of Nations*, Jeremy Leggett[47], warns against five global systemic risks which influence energy policies and challenge businesses around the world: oil shock (mismatch between supply and demand), climate shock, further crash in the global financial system, carbon bubble in capital markets, and the shale gas boom. The dominant view is that peak oil is far off, so there is nothing to worry about. The same goes for the climate shock; while many agree that there is a threat to the earth and mankind due to emissions, adaptation is viewed as being possible and so there is no reason to be too concerned about it. The carbon bubble adds to this problem by continuing investments in fossil fuels even though we know that there is more carbon in them than mankind can *afford* to burn. Should governments decide to counter this trend, fossil fuel assets will decline in value so dramatically that the carbon bubble will burst. The shale gas boom adds to global uncertainty because of the concerns guiding the exportability of it as a concept. Finally, the inability to rein in the financial sector versus the resiliency and cyclical nature of capitalism provide risks in the financial sector, with further crashes possibly having a detrimental effect on energy markets (Leggett, 2014:xiii-xv). Why are these five systemic risks relevant to this dissertation? They painfully show the interconnectedness of energy markets on a global scale, not only with each other but also with the financial system and with the policies adopted by the world's nations. A port aptly showcases the importance of connections: without connections, there is no reason for a port to exist. Therefore, this chapter addresses both European climate and energy policies affecting the Dutch situation and the global context EU and port developments are embedded in. I start (§4.2) with a discussion of the history of EU climate and energy policies up until now, including current progress and global developments, then turn to Dutch energy and climate policies (§4.3) before concluding with the statement that the guiding policies are of a highly fragmented nature (§4.4).

4.2. ENERGY AND CLIMATE POLICIES: TWO SIDES OF THE SAME COIN?

Sustainable energy is a phrase that appeals to many audiences. Most people would not even think about the controversy that is implicit in the term. The desirability of sustainable energy is not translated into an actual global movement towards the abandonment of fossil fuels, because investments into it are very expensive and many systems are designed to run on fossil fuels. Energy and climate thus do not always go together, even though the concept of sustainable energy aims to fuse them. In the world of policy, the link between

47 *The Energy of Nations* is not an academic publication, but its author, Jeremy Leggett, is an Associate Fellow at Oxford University's Environmental Change Institute. The book was published in 2014 and provides an interesting account of the danger of peak oil and of risks inherent in the global energy system.

energy and climate is not necessarily obvious either. Climate change action is often seen as an emissions reduction problem and not as an energy problem (Shaw, 2011:743). From its early commitments under the 1997 Kyoto protocol, the EU has gradually shifted from aspiring to fulfil its climate obligations as a climate leader, to wedding the economies of energy and climate in an effort to reduce the stress human activity places on the planet. Yet even though the EU has extensive competencies to combat climate change, large parts of energy policy still fall under the sovereignty of its member states (MS). Articles 191 through 194 TFEU[48] establish competence in the areas of environmental and energy policy. The EU's competence in the environmental area is well-established, but it has no say in a country's energy mix. Individual MS thus often make their own energy strategies and do not always implement EU internal market policies properly (Vogler, 2013:629-639). The organisation of both policy fields in the Commission lies with two separate DGs — DG ENER and DG CLIMA[49] — with no formal coordination between them (Toke & Vezirgiannidou, 2013:544; Vogler, 2013:629) until 2014. They often differ considerably in their opinion on the same matter (Skovgaard, 2014:12). Problematic are the multifaceted aspects of energy policy, which include market policies, security of supply, trade, but also a heavy national security component.

4.2.1. A Brief History of Climate and Energy Policies in the European Union

Energy security was the basis for peace in Europe after the Second World War[50], and member states are reluctant to surrender control over such an important part of their national security (Vogler, 2013:630). Energy cooperation is part of the EU's history since the 1950s, yet *real* cooperation is still difficult to achieve. The Single European Act of 1986 foresaw convergence of energy policies across the European Community and was subsequently spurred along by exogenous events such as the fall of the Berlin wall, the Gulf War, and the fall of the Soviet Union (Schubert, Pollak & Kreutler, 2016:105-108). National monopolies in the gas and electricity sectors were cut with the adoption of market liberalisation and third party trade directives in 1996 (electricity) and 1998 (gas). Since oil is not as bound to infrastructure as gas and electricity, national monopolies were of much lower concern there although Europe's dependence on oil import from non-EU countries was a potentially problematic issue (Claes & Frisvold, 2009:213-214). Fully realising that a disruption in energy supply directly affects citizens' welfare, member states became very worried about their energy security in the

48 Treaty on the Functioning of the European Union, see the 2012 consolidated version at [http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12012E%2FTXT].

49 DG CLIMA was established in 2010 when DG Environment was split into two DGs. The Juncker Commission (2014 onwards) has kept DG ENER and DG CLIMA as two separate DGs but under one Commissioner. Perhaps more synergies will now occur between energy and climate policy.

50 For a comprehensive historical account of EU energy policy, see Schubert, Pollak & Kreutler, 2016:92-124.

wake of tensions between Russia and the EU and the problems in the Gulf region. Using coal became interesting again since it could be mined in the EU (*ibid.*:216).

The first international climate conference took place in 1988 when over 300 scientists and world leaders discussed the impact of energy consumption on climate change. Basing itself on the IPCC's 1990 report showing a decrease in emissions in all sectors except transport, the European Commission took a leadership role and published its first communication on energy and environment in the same year. The Commission used strong statements such as "sufficient energy and environmental quality are essential for the survival of the human race" (European Commission, 1990:6) and "[a] high level of environmental protection requires stringent legal measures to be applied in all Member States" (*ibid.*:15). The EC tried to establish a leading role in policy-making towards CO_2 reduction by 'inviting' the Council to "collaborate closely with the Commission in the execution of this important work" (*ibid.*:12). The resulting document, the United Nations Framework Convention on Climate Change (approved by the EU in 1993), sets out to stabilise the concentration of GHG in the atmosphere, marking the first international agreement focusing on the impact human activity has on the climate[51].

Subsequent proposals to introduce an energy tax were shot down by EU member states, but the environment was now firmly on the EU's agenda (Schubert, Pollak & Kreutler, 2016:112). The first Kyoto Protocol (1997) saw the introduction of quantitative GHG reduction targets for 2008-2012. The EU kickstarted its implementation by establishing the European Climate Change Programme (ECCP). Coal, attractive for its positive energy security component, became problematic from a climate perspective. Yet a country's energy mix is up to national governments themselves. Most countries — also globally — treat energy and climate policies as two separate domains. Even so, some reconceptualisations of energy security now involve sustainability (Toke & Vezirgiannidou, 2013:538-547). There is an obvious link between energy security and sustainability, which is often forgotten in the realm of public debates on this topic: many negative climate impacts (f.e., water stress, sea level rise, tropical cyclones) will make fossil fuel extraction and transport much more difficult and costly, thereby necessitating climate action *simply to keep the engines running* (IEA, 2013:92). The IEA writes

51 That is not to say there were no *protective* measures before the '90s. The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter of 1972, also called the London Convention or the London Protocol, attempts to reduce pollution of the seas caused by waste dumping by vessels, aircrafts and platforms. It also includes a prohibition on transboundary CO_2, making it illegal to 'trade' CO_2 for the purpose of offshore storage. An amendment has been made to change this situation, but it has not been ratified by the required amount of states. Furthermore, if the CO_2 is used as a product (for example for EOR), trade is allowed. Another important convention, the OSPAR Convention of 1992, is meant to protect the North-East Atlantic and prohibits the storage of CO_2 in the water columns or on the seabed. Sub-surface storage is allowed.

> "[u]nless the resilience of our energy system to climate change is considered more explicitly, energy supply and transformation will be exposed to greater physical risks, which will increase capital, maintenance and insurance costs, impair energy supply reliability and accelerate the depreciation and deterioration of assets" (IEA, 2013:97).

There should thus be a clear incentive for governments and energy companies alike to aspire to successful climate change mitigation alongside the economics of energy security. Reframing energy security to make sustainability be a part of it makes investments into sustainability less 'sacrificial' to people, yet others argue that, as a result, sustainability will become a secondary consideration (Toke & Vezirgiannidou, 2013:541-542). This dissertation shows that the critics are partly right.

4.2.2. Towards 2020 and Beyond

Over the years the EU has tried to link debates surrounding energy and climate issues. Early examples of climate and energy policy links are the ECCP and EU ETS, but they were not components of a "wider energy and climate security strategy" (Vogler, 2013:637)[52]. The turning point was a European Council meeting in 2007, led by the German presidency, which was later dubbed the 'Merkel Miracle'. After the Lisbon Strategy and the European Constitution failed, Commission president Barroso tried to re-establish the Commission's honour by initiating the *Climate & Energy package* (the '20/20/20 goals') with support of Commissioners Piebalgs, Dimas and Verheugen. The goals included binding GHG reduction targets for member states and were supplemented by the Fuel Quality Directive (FQD) — regulating emissions from transport fuels — and standards for CO_2 emissions from cars. During the meeting of the European Council, German Chancellor Merkel succeeded in ensuring unanimous support for the 20/20/20 goals. Member states were united and leading in their ambitions to save the climate. Some, most notably Germany, Denmark and The Netherlands, even announced stricter reductions than the EU-level agreement (Claes & Frisvold, 2009:218-219). Hindsight teaches us that these commitments, though revolutionary as they were at the time, would be subject to political whims. Even so, the onset of 2009 saw energy security and climate discourses finally brought together, yet not fused.

The Europe 2020 Strategy (COM(2010) 2020 final) was introduced in 2010, right after the economic and financial crisis hit the European Union. Its predecessor, the Lisbon Strategy (2000 - 2010), addressed the EU's place in a global competitive environment in an attempt to transform European economies and solve socio-economic problems such as ageing, growing

52 From 2001 onwards there was a concrete EU renewable energy policy.

globalisation, and rapid innovation (Natali, 2010:5). The focus was very much on ensuring the EU's competitive position in a global perspective, which meant not only strengthening economic governance but also liberalising the energy market, improving education and social policies, increasing overall productivity and employment, and protecting the environment (Begg, 2008:427-429; Natali, 2010:5). Governance was a focal point of the strategy. The EU believed very much that a lot could be achieved through soft coordination and its newly introduced Open Method of Coordination (OMC)[53]. In cases where the EU did not have sole regulatory power, soft coordination hinging on flexibility, participation, use of benchmarks, and multi-level (policy) integration, was to aid in the harmonisation of policies across the EU (Borrás & Jacobsson, 2004:185-189)[54]. Its influence on domestic policies and participation was heavily questioned by the time the Europe 2020 strategy was launched (Natali, 2010:19-20). Furthermore, the importance assigned to liberalising financial markets under the Lisbon strategy left the EU disappointed in the wake of the financial crisis (Gros & Roth, 2012:10-11). As a result, the Europe 2020 strategy was to be more focused and include clearly quantifiable, reachable goals (*ibid.*:77). Its main goal — to achieve smart, sustainable and inclusive growth — reflects the impact of the crisis. Barroso's words in its preface deliver a clear message: "*2010 must mark a new beginning. I want Europe to emerge stronger from the economic and financial crisis*" (European Commission, 2010b:2, emphasis in original). In order to deliver the goals, European leaders agreed on five 'headline targets':

1. Employment
   - at least 75% of 20-64 year-olds employed;
2. R&D
   - 3% of the EU's GDP invested in R&D;
3. Climate and energy
   - 20% reduction in greenhouse gas emissions as compared to 1990 levels;
   - 20% of energy from renewables in final energy consumption;
   - 20% increased energy efficiency;
4. Education
   - at least 40% of 30-34 year-olds completing tertiary education;
   - early school leaving below 10%;
5. Fight against poverty and social exclusion
   - at least 20 million fewer people in or at risk of poverty and social exclusion.

53 The Open Method of Coordination (OMC) is an example of an emerging form of EU governance around the 2000s. For more information on the OMC, see for example the Eurogov paper by Citi & Rhodes: 'New Modes of Governance in the EU', 2007.

54 The OMC was, through its emphasis on multi-level participation, another form of multi-level governance.

A caveat of the Europe 2020 strategy is that member states are given the freedom (except in the area of climate and energy) to formulate their national goals themselves in their National Reform Programmes (NRPs). In the areas of employment, R&D and social cohesion the sum of these domestic goals does not add up to the goals European leaders have formulated at the EU-level (Gros & Roth, 2010:85)[55]. Since only the climate and energy goals are binding (except for energy efficiency), one would expect higher success in reaching Europe 2020's energy and climate goals than in the other areas. However, section 4.2.5 will show that even this success is not yet guaranteed. Figure 4.1 provides an overview of the relevant policy and financial coordination mechanisms in place at EU level since 2010. The green boxes show which policies are the focus of this dissertation.

To support the headline targets under Europe 2020 the European leaders agreed to the launch of seven flagship programmes. The flagships are meant to help reach the targets and boost economic growth in European countries by making coordination between EU institutions and national authorities a prerequisite. The seven flagships are fitted into the 2020 Strategy as shown in table 4.1. Because Europe 2020 was introduced in times of economic crisis, it is important to consider not just the coordination of policy but also the financial mechanisms that guide the implementation of the strategy. The European Economic Recovery Programme (EERP) was launched in 2008 and aims to resolve the crisis. Its main pillars are the establishment of mechanisms for crisis resolution, financial reform, and to reinforce EU economic governance. A very important tool to reinforce economic governance is the European Semester, which was launched in 2011. The European Semester is an annual, cyclical coordination mechanism geared towards harmonising economic policies across the EU (Gros & Roth, 2010:79). It requires member states to submit their National Reform Programmes — the economic policies — and Stability and Convergence Programmes (SCPs) — the budgetary policies — to the Commission for an in-depth review and recommendations. These reports also feed into the EC's economic forecasts and, most notably, its Annual Growth Survey (AGS). Member states are invited to report on their action plans and progress towards achieving the Europe 2020 goals in the same cycle. These plans are also discussed in the European Council and the European Parliament. The European Semester is thus a tool of economic coordination and also provides a direct link to the policy coordination strategy introduced in Europe 2020, and can potentially impact (progress towards) the Europe 2020 goals (*ibid.*:79).

55 See also the 2015 annex to the key 2020 parameters on the European Commission website: [http://ec.europa.eu/europe2020/pdf/annexii_en.pdf].

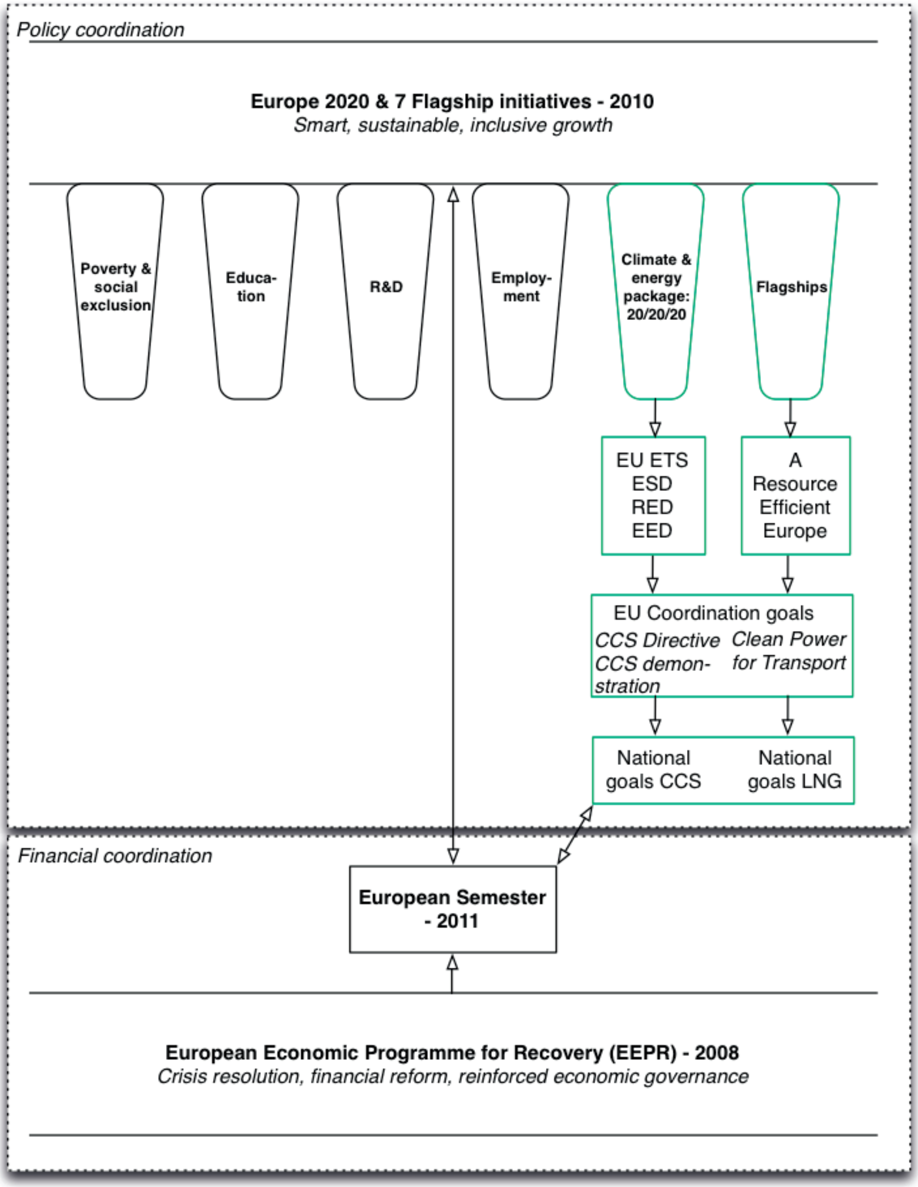

Figure 4.1. European policy and financial coordination through Europe 2020 and EEPR
Source: own composition based on policy documents mentioned above and EC website.

Table 4.1. Flagship programs under Europe 2020

Europe 2020 goal	Flagships	Brief summary of goals
Smart growth	1) Digital Agenda for Europe	1) Digital Single Market promoting access and economic growth
	2) Innovation Union	2) Fostering an innovation-friendly environment
	3) Youth on the Move	3) Promoting young people to study, train or work abroad
Sustainable growth	4) A Resource Efficient Europe	4) Promoting resource efficiency and the transition to a low-carbon economy
	5) An Industrial Policy for the Globalisation Era	5) Promoting a competitive and sustainable European industry
Inclusive growth	6) An Agenda for New Skills and Jobs	6) Increasing employment and equipping people with the right skills for the future
	7) European Platform Against Poverty	7) Promoting social inclusion and fighting poverty

Source: European Commission's Europe 2020 website (http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/flagship-initiatives/index_en.htm).

4

4.2.2.1. Agenda-setting in an energy insecure Europe

The road to 2020 began with two catchphrases: *competitiveness* and *energy efficiency.* The 2004 Green Paper on Energy Efficiency, called "*Doing More With Less*", stresses the importance of competitiveness and represents the era during which the EU was trying to be 'the best'. Saving energy and efficient use of energy are examples of ways to ensure future EU competitiveness. The Green Paper aims to increase this cost-effective and efficient use of energy by reformulating the existing EU energy policy (European Commission, 2004:4-5), and, following the 2009 package, the subtitle of the ensuing *Energy 2020* strategy (European Commission, 2010a) — "*A strategy for competitive, sustainable and secure energy*" — neatly summarises the reformulation into three pillars. Incidentally, this reformulation happened after the EU realised that being the best was no longer a realistic expectation in a rapidly changing world where emerging economies where forcing the EU to focus on remaining afloat. EU leaders decided not to place all their eggs in one basket; aside from conventional coal, oil and gas, increased focus was placed on the role of renewables, nuclear energy and LNG. Domestic energy production could increase and its supply could be diversified to reduce import dependency on Russia. Geopolitical considerations were important agenda setters for EU energy policy, and incidentally helped climate efforts as well. The EC had to find a way around exclusive member state competency and climate changed provided a good way to do so.

Around 2007, all sectors except for the transport sector were showing a break in the growing emissions trend. To the dismay of many governments and the EU, the transport sector was stubbornly emitting more each year. The Merkel Miracle also saw the adoption of standards for CO_2 emissions from cars, but the car lobby was not thrilled. They campaigned for a so-called *integrated approach* which could "spread the burden of carbon intensity reduction over all parties contributing to carbon emissions" (Breemersch, 2015:3). Alternative fuels came up as an option to reduce emissions in novel ways and the Fuel Quality Directive (FQD) focused on mixing-in biofuels for easy CO_2 reductions. But a focus on just cars was not enough. The Joint Expert Group on Transport and Environment (JEGTE) explored additional options and came to the conclusion that heavy transport could not be approached in the same way as passenger cars. Each modality needed a specific approach. JEGTE's advice for the Commission was to address alternative fuel routes for trucks, aviation, rail and waterways separately[56], which later morphed into the *Clean Power for Transport* Directive.

4.2.2.2. Decision-making and outcomes: back to square one?

> *"The price of failure is too high"*
>
> — (European Commission, 2010a:2, emphasis in original)

The introduction to the EU's Energy 2020 strategy says it all: the Union needs energy that is secure, safe, affordable, competitive, but also sustainable. The Lisbon Treaty has addressed energy policy as a shared European competence for the first time and laid down the goals of the Union's energy policy: security of supply, competitiveness and sustainability. The EU's energy goals have been formulated in the knowledge that if the EU does not diversify its energy resources and modernise its energy infrastructure, European society will face large costs and higher insecurity for both the short and the longer term future. The Energy 2020 strategy was formulated when the realisation hit that the EU is adapting too slowly to the changing energy reality, and that decisive action is necessary if the EU is to successfully face upcoming energy and security challenges (*ibid*.:2). The entire 2020 Climate & Energy package was proposed and adopted within a span of 15 months. By the end of November 2008, all proposals were adopted by the committees of the EP and awaited a final vote. The EU took its 2020 targets to the Poznań Climate Change Conference in December 2009, and the EP voted on the climate and energy package after the conference ended. From that point onward swift adoption of the whole package was seen as desirable by the EU and by national governments to serve as input for the 2009 Copenhagen Climate Change Conference, or COP-15. The EU was keen to maintain its international leadership on climate

56 Personal communications with R. Cuelenaere. The report can also be found at [https://ec.europa.eu/transport/sites/transport/files/themes/urban/cts/doc/jeg_cts_report_201105.pdf].

change and energy (Council of the EU, 2008:3; Kulovesi, Morgera & Muñoz, 2011:830; Skjaerseth, 2016:509)[57].

As stated previously, this dissertation focuses on the 'green' boxes of figure 4.1: the *Climate and Energy Package* and the flagship programmes *A Resource Efficient Europe*. The other pillars of the strategy come with their own policies, but these will not be discussed in this dissertation and are therefore left blank. The 2009 policy package for energy and climate was incorporated into the Energy 2020 Strategy[58] under Europe 2020 a year later. Its goals have been directly imported into the climate and energy headline of the strategy (see table 4.2). The package rests squarely on two pillars: ETS and effort sharing, with two technology-specific directives included to make it easier to sell the package politically (Skjaerseth, 2016:516-520). At the time the package was proposed, DG ENV had a climate department which issued climate-related proposals. It established the EU ETS in 2003, much to the dismay of DG Energy (then DG TREN). They disliked interference with their domain (EU ETS influenced the prices of fossil fuels, nuclear energy and renewables) and feared market distortions. Cooperation between DG ENV and DG TREN was necessary and key people in both DGs began working on finding synergies between both policy fields (*ibid.*:513-14). The Renewable Energy Directive will not be discussed further in the context of this dissertation, though it is important to state that Directive 2009/28/EC dealt with highly contentious issues and needed much deliberation in the Energy and Environment Councils, especially on the topic of biofuels. The CCS part of the package was likewise deliberated on within both the Energy and Environment Council and became linked to the ETS Directive during negotiations.

The EU-15 were generally in favour of a more stringent climate policy, whereas the newly accessed Eastern European countries were more concerned with their energy security. Full policy coordination was not reached. The 2020 package provides a mixture of binding, yet nationally established goals and a politically constructed effort sharing. The poorer countries were promised such compensation in turn for their backing of the package (Skjaerseth, 2016:516-517)[59]. Contrary to energy efficiency, the GHG emission reduction goal and the renewable goal come with legally binding targets at the national level. These targets have been set with regards to the difference in wealth between individual countries; wealthier economies have to put in more effort whereas less wealthy economies have lower targets (Eurostat, 2015:84-85). Even though such effort sharing was necessary to get all member

57 On April 6th, 2009, the Council unanimously approved the amended proposal at the first reading, along with the other proposals in the energy and climate package.

58 COM(2010) 639 final.

59 Though the inclusion of the NER 300 for CCS purposes could potentially benefit a country such as The Netherlands as well.

4

Table 4.2. Energy and Climate under Europe 2020

Proposal	Summary of main issues	Document number	Leading DG
EU ETS Directive - (ETS)	1) Establishes an EU-wide cap for GHG emissions from power generation, industrial plants, and aviation 2) Allocation methods, carbon leakage, NER fund, and application to small installations	Directive 2009/29/ EC*	DG CLIMA (at the time of introduction still part of DG ENV)
Effort Sharing Decision - (ESD)	1) Defines legally binding national GHG emission targets for the non-ETS sectors 2) Issues of flexibility and interaction with ETS	Decision 406/2009/EC	DG ENV
Renewable Energy Directive - (RED)	1) Defines the EU renewable energy target in gross final energy consumption for 2020, defines legally binding national renewable energy targets, requires formulation of National Renewable Energy Action Plans by 2010 2) Renewable transport fuels, reinforcing measures	Directive 2009/28/EC	DG ENER (at the time of introduction DG TREN)
Energy Efficiency Directive - (EED)*	1) Defines the EU energy efficiency target for 2020, requires member states to set an indicative national target, requires formulation of National Energy Efficiency Action Plans by 2014 2) Energy saving in distribution and retail, building efficiency, renovations, empowering consumers, energy audits, monitoring	Directive 2012/27/EU	DG ENER
CCS Directive	1) Lays down a framework for safe capture, transport and storage of carbon dioxide and the composition of CO2 stream 2) Proposes solutions for permitting, monitoring, transfer of responsibility, capture readiness and financing issues	Directive 2009/31/EC	DG CLIMA (at the time of introduction still part of DG ENV)

Source: Commission documents (see numbers in table). * Originally introduced in 2005, now in its third phase (phase I: 2005-2007, phase II: 2008-2012, phase III: 2013-2020, phase IV: >2021). Iceland, Liechtenstein and Norway are also part of the EU ETS. ** The Energy Efficiency Directive is a loose-standing directive that is part of Energy 2020.

states to agree to the directives, it has led to nearly half of the EU's countries[60] being allowed an *increase* of GHG emissions rather than a decrease to stimulate their economic growth. Overall, the EU-28's progress shows positive signs.

As visible in figure 4.2, GHG emissions dropped quite drastically after the recession hit. The 2010 rebound appears to have been temporary as emissions have dropped continuously afterwards. The emission rise in 2015 could be another such brief rebound reflecting an improving economic situation throughout the EU. Major contributors to the decrease in

60 Bulgaria, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Malta, Poland, Portugal, Romania, Slovenia and Slovakia are allowed a net increase in non-ETS emissions in 2020 (as compared to base year 2005). See also Annex III.

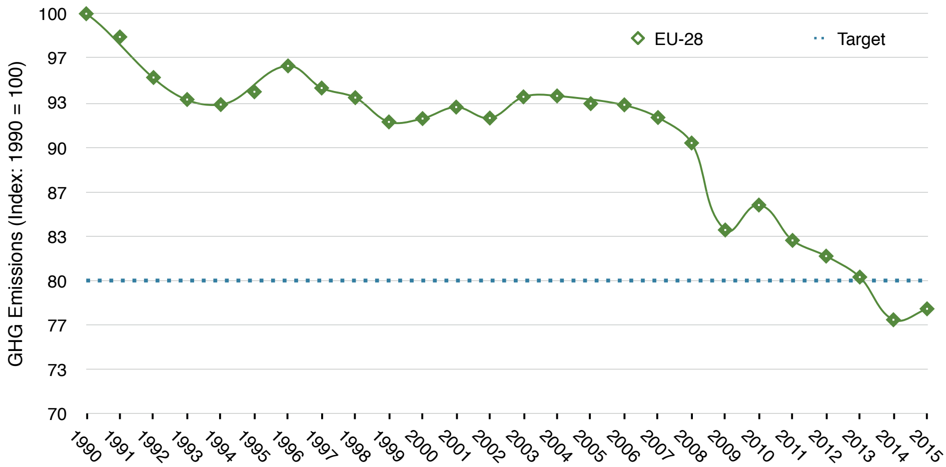

Figure 4.2. Greenhouse gas emissions for EU-28 *, 1990 - 2015

* Emissions include aviation but exclude emissions from land use, land use change and forestry (LULUCF). Source: Eurostat (online data code t2020_30).

emissions are electricity and heat production, manufacturing industries (including iron and steel), and residential fuel use (EEA, 2016:vi). Member states reporting the largest reductions in 2013-2014 are Germany, the UK, France, and Italy. However, for non-ETS emissions Germany is among the worst performers, along with The Netherlands, Belgium, Finland, Denmark and Luxembourg[61]. Furthermore, emissions from international aviation and international shipping increased by 95% and 24% respectively between 1990 and 2014, contributing to 6% of the EU's GHG emissions in latest reports (*ibid*.:xi).

By 2014, the EU-28 had reached its GHG emissions reduction target for 2020. The share of renewables in final energy production was 16% in the same year, with best performers being Sweden (52,6%), Latvia (38,7%), Finland (38,7%) and Austria (33%), and worst performers being Luxembourg (4,5%), Malta (4,7%), The Netherlands (5,5%) and the UK (7%). In total, nine out of 28 member states had reached their 2020 target[62]. The 10% biofuels in transport target has been under considerable duress from the beginning, suffering from differences in opinion between member states, critiques that biofuel production and usage hurts other sectors, and doubts about the environmental friendliness of biofuel production. The results are mixed success across the EU, with Sweden being a high outlier (The Netherlands stood at 5% in 2012) and little or no progress being made in Bulgaria, Spain and Estonia

61 Annex II to COM(2014) 130 final/2.

62 Some of the best performers, for example Latvia, had not reached their target even though they were far above the 20% share by 2014. Source: Eurostat, online data code t2020_31.

(Schubert, Pollak & Kreutler, 2016:170-173). Lastly, the energy efficiency target for the EU-28 also had not been reached by 2014, standing at an aggregate of 15,7%. Most EU member states reported a decrease in primary energy consumption, with Finland, Poland and Estonia being the exceptions[63]. It can be concluded that the EU as a whole is on track to reach the 2020 targets, but that MS performance varies considerably which makes the outlook for 2030 quite bleak; the 40% GHG reductions target will not be met with current policies, renewable energy share has ceased to be a legally binding target at national level and the Energy Efficiency Directive — with merely indicative targets formulated at national level — had not been legally transposed by the majority of member states by 2015 and needs additional measures in particularly the building, transport and energy generation sectors (European Commission, 2015a:11-13). The fact that the Commission cannot decide on a country's actual energy mix makes harmonisation at the EU level only possible with decisive activity at the national level[64]. While 2010 may have been a turning point for the climate in the EU's discourse and high-level ambitions, performance is lagging behind. The ongoing tensions between EU-level commitments and national interests are discussed in section 4.2.5.

4.2.2.3. The role of CCS

The CCS case will be discussed at length in chapter five, though this section will provide a comprehensive overview of the relevant CCS policies in place. The 2007 Strategic Energy Technology Plan[65] (SET-Plan) identified six priority technologies: wind, solar, electricity grids, bioenergy, carbon capture and storage, and nuclear fusion. On the political agenda of the EU, the potential of CCS was first recognised in 2005 (Martínez Arranz, 2015:249; Nykvist, 2013:683) following the IPCC's special report examining the potential of CCS to stabilise the climate (IPCC, 2005). Before that, the technology was studied extensively in academia (especially in The Netherlands) and advocated by scholars outside of IPCC as well. The EU responded by establishing a cross-sectoral think tank to advise the EC, the Zero Emissions Platform (ZEP)[66]. Furthermore, in 2005 a cap-and-trade system for CO_2 emissions was introduced with the EU ETS, to which the price of capturing and storing CO_2 was subsequently linked as part of the EU ETS review in the climate and energy package for 2020.

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63 Source: Eurostat, online data code t2020_33.

64 Instead, what the Commission has been doing is investing funds into R&D and pilot projects to stimulate private sector involvement (Schubert, Pollak & Kreutler, 2016:179), which is its classic response when its competences in a certain area are weak (cf. Van Schendelen, 2017).

65 COM(2007) 723 final, originally a required output of the 2007 March Council meeting. Since 2015-2016 supported by European Technology and Innovation Platforms (ETIPs). The 2020 timeline of the SET-Plan is supposed to aid in reaching the goals of Europe 2020. Mentioned in bibliography as 2007b.

66 Currently ZEP is also one of the European Technology and Innovation Platforms (ETIPs) that helps implement the integrated SET-Plan under the Energy Union strategy.

That package also contained a communication on supporting early demonstration of sustainable power (COM(2008) 13). It is a supportive document to the CCS Directive and outlined the Commission's view on how CCS should be deployed in the EU. The goal was to have CCS commercially feasible in power plants around 2020 with strong support from a well-functioning EU ETS (European Commission, 2008:3). While the EC admitted that CCS is very expensive, the expectation based on industry estimates was that the costs of CCS could be brought down by 50% by 2020. Wide application could then lead to CO_2 emissions reductions of 161 Mt in 2030 and 800-850 Mt in 2050, which would amount to respectively 3.7% and 18-20% of the overall EU CO_2 emission levels in 2008. A role for CCS was also envisaged in the energy intensive industries. To overcome the legal and financial obstacles to CCS, the Commission proposed the CCS Directive and stressed the importance of quick adoption and transposition by member states (*ibid*.:4-6). Energy companies were expected to be willing to invest into CCS to retain their market position and gain new business opportunities, but the Commission also admitted that public funds may be needed for a limited time[67]. The EC's trust in the promise and possibility of CCS is visible in the following confident statement:

> "Without bold funding decisions by the companies at the earliest opportunity, complementary public funding may not be triggered. The longer the power industry takes to start embracing the CCS technology, the more policymakers will be obliged to look at the option of compulsory application of CCS technology as the only way forward" (European Commission, 2008:9).

To this day, the Commission's implicit threat has not been made reality because it would not pass voting in the Council. The EC further asserted that it is in the member states' interest to develop CCS, hinting at the responsibility of the national governments to provide additional funding where needed, yet also stating that co-funding from the EU would be a possibility. The Seventh Framework Programme (FP7) and the European Investment Bank (EIB) were mentioned as possible catalysts for CCS investments at EU level (European Commission, 2008:9-10). Clearly, the potential promise of CCS for European decarbonisation led to a technology-biased approach from the EC. It would later discover that such an approach does not work.

67 In general, a distinction is made between the development/demonstration phase and the commercial phase. Public support is often expected — and granted — in the demonstration phase but not in the commercial phase as companies are expected to be able to apply the technologies competitively.

The CCS Directive was discussed seven times in the energy and environmental setting of the European Council between February[68] and December 2008. On December 17, 2008, the European Parliament adopted the Directive in the first reading with an overwhelming majority[69], proposing 144 amendments prepared by two committees (Environment, Public Health and Food Safety, and Industry, Research and Energy). The Directive's main parliamentary rapporteur was Chris Davies, who had previously attempted to put in place a financial mechanism for CCS and to stimulate the creation of a regulation for Emission Performance Standards (EPS) in the dirtiest power plants in the EU. However, his attempts were opposed by the EC and the Council. The overall opinion of the EP was favourable to the CCS Directive, although the possibility of EPS was greatly favoured by the Green Party over CCS investments. The Greens wanted EPS and the exclusion of EOR, with one German member stating that "the commitment with which a technology that does not even work yet is being canvassed seems absurd"[70]. The EP made sure to underline that CCS is but one of the means to combat climate change and that its use should not increase the number of power plants burning fossil fuels. The EC accepted the amended proposal on the same day the EP approved it. Similarly to the optimism reflected in EU proceedings at the time, the Dutch opinion on CCS was also very positive. In Rotterdam, and especially with the help of the Rotterdam Climate Initiative, it was seen as *the* way to decarbonise the mainport region.

Recognising that the demonstration of CCS was necessary to further develop the technology and make it more affordable for upscaling until 2030, the June 2008 Council agreed to try to make 12 CCS demonstration projects happen across the EU by 2015 to at least make it a *possibility*. The Commission was to play a role in this development through (financial) incentives[71]. These were provided under the NER 300 — led by DG CLIMA — and the European Energy Programme for Recovery (EEPR) — led by DG ENER — but due to the financial crisis and high public investment into renewables the CO_2 price under EU ETS fell too sharply to make the business case for CCS demonstration even remotely positive[72]. Lacking other targets, CCS in EU policy is now officially only covered by the CCS Directive, which mostly has a legal and technical nature to ensure that implementation conditions are harmonised across EU member states. However, even this directive faced delays in

68 The CCS Directive was sent to the Council and the EP in January 2008.

69 623 in favour, 68 against, 22 abstentions. The other components of the package were adopted as well and with similar majorities, although the Shared Effort decision had a harder time with 555 votes in favour, 93 against and 60 abstentions (source: Europarliament votes document number PE 417.804/ 12).

70 See CRE 16/12/2008 - 13 on the Eur-lex website for more information on the EP debate.

71 See Decision 2010/670/EU.

72 These issues are discussed in more detail in section 5.1.2.3. of chapter 5.

implementation in *all* EU member states (except Spain[73]) and was eventually transposed in different ways across the EU[74]. Whilst officially part of the climate and energy package for 2020, CCS has no current targets embedded in EU policy and getting the private sector to invest is proving to be extremely difficult.

4.2.2.4. The role of LNG

Whereas CCS was originally meant to offset emissions from the burning of coal, European leaders have also recognised the transition potential of gas. Gas-fired power plants achieve about 50% lower CO_2 emissions than coal-fired power plants (IEA, 2015a:35). In 2010, increasing the use of gas instead of coal was therefore also politically attractive, but it came with issues of dependency (mostly on Russia). The global gas market has been changing, most notably through the shale gas boom in the US and Canada. Using LNG will make the gas market increasingly global since transport will be more independent from pipelines (European Commission, 2011a:12), which would satisfy the energy security criterium. In fact, LNG is becoming a cornerstone of EU energy policy precisely because it enhances Europe's energy security and diversity (Schubert, Kreutler & Pollak, 2016:244). But LNG can be used for more than a source of energy supply. One of the possibilities that offer great potential to reduce GHG emissions (from shipping) is provided by the development of LNG as fuel. This development is part of a larger EU strategy to transition towards more sustainable fuels for transport. The EU linked the climate impact of transport to energy policy in a 2000 Green Paper (European Commission, 2000:66) on security of supply, noting that the transport sector was responsible for 28% of CO_2 emissions in 1998. Reducing energy use and diversifying sources was paramount. In its 2001 White Paper on European transport policy, the Commission stated the need for reducing EU oil dependency by introducing alternative fuels, noting that

> "[t]he most promising forms are biofuels in the short and medium term, natural gas in the medium and long term and hydrogen in the very long term" (European Commission, 2001a:86).

The EC also stressed the importance of synchromodality (flexibility in transport mode usage allowing for highest efficiency), arguing that one 135m container carrier vessel could substitute up to 470 trucks, making inland shipping a good alternative for road transport (*ibid.*:43-44). Even though there was not yet a concrete vision on alternative fuels, a heavier

73 Spain was the first country to start a CCS demonstration but the project was cancelled before it the real demonstration phase.

74 For a detailed discussion, see section 5.2.3.1. of chapter 5.

emphasis on inland shipping fit within the preferences of a river-laden country such as The Netherlands. With increasing emphasis on environmental performance, greening the fleet was also an interesting option for the Port of Rotterdam to reduce port-related emissions.

The Europe 2020 flagship *A Resource Efficient Europe*[75] stimulates clean transitions in the energy, agricultural, industrial and transport systems. To deliver a low-carbon transport system by 2050 the EU commits itself to developing and executing a vision on how to transition to a cleaner transport system (European Commission, 2011e:5-11). The resulting 2011 *White Paper on Transport*[76] provides the starting point, announcing the development of an alternative fuels strategy including appropriate infrastructure development (European Commission, 2011c:24). The EU sets as goal to reduce transport-related GHG emissions with 60% by 2050 (European Commission, 2011b:3). Whilst no targets are set for inland shipping, the EU wishes to see maritime CO_2 emissions cut, using low-carbon fuels, by 40% by 2050. After 2001, the EC lost its adamant advocacy of inland waterway transport (IWT). The 2011 White Paper mentions only that inland navigation needs a suitable framework to integrate it with other modalities and that there is ample capacity to be filled (*ibid*.:19). This change in focus likely has to do with the fact that most EU member states have little or no IWT capacity, rendering advocacy of the sector useless in the eyes of most countries. Furthermore, inland shipping is perceived to be relatively clean, although that is not necessarily true since the EU's NAIADES programme calculated that, if one looks not just at the climate change costs but also the air pollution costs, IWT's external costs roughly equal those of road transport (European Commission, 2013d:7). Finding ways to reduce emissions from inland shipping therefore remained important in the eyes of DG MOVE[77].

The 2011 White Paper morphed into the *Clean Power for Transport* Directive[78] (CPfT) in 2014. It marks the EU's first holistic coordination attempt aimed at structurally changing the EU's fuel usage[79]. Before 2013, the Commission tried — and failed — to incentivise cleaner light-duty vehicles using voluntary agreements[80] and to lay down requirements to increase

75 COM(2011) 21 final.

76 COM(2011) 144 final: Roadmap to a Single European Transport Area.

77 An example of a development often mentioned in the interviews were engine standards. For ships, these are regulated through the EU's Non-Road Mobile Machinery (NRMM) Regulation, even though inland shipping only comprises about 2% of all engines governed by NRMM. Every manufacturer has to comply with this Regulation, and member states need to keep an eye on that.

78 2014/94/EU.

79 As discussed in the CCS chapter, biofuels were part of the 2009 Energy & Climate package but they only cover a small range of possibilities to make European transport more sustainable.

80 COM(2007) 19 final. Mentioned in bibliography as 2007c.

the share of biofuels in the EU[81]. The *Clean Power for Transport* Directive[82] proposes wider development of liquefied petroleum gas (LPG), liquefied natural gas (LNG), compressed natural gas (CNG), gas-to-liquid (GTL), electricity, (liquid) biofuels, and hydrogen as fuels for the transport sector (European Commission, 2013a:2). CPfT's first draft provided every member state with country-specific targets[83], but this approach did not make it through the negotiations. It is up to member states to decide how large they want the contribution of LNG to be. LNG thus becomes part of a larger European narrative advocating climate action through transport policy instruments. The benefit of LNG is its broad application in the sense that

> "LNG development into a global commodity can improve security of energy supply in general by boosting the use of natural gas as fuel for transport. LNG use in transport can also increase the value of gas otherwise flared" (European Commission, 2013g:5).

This quote from the EC communication (COM(2013) 17) showcases the discursive coupling of climate change mitigation and energy policy, stating the security of energy supply aspect as an important benefit of relatively clean LNG initiatives. Since the security of gas supply is higher than that of oil, LNG is seen as a potentially vital resource to help reach climate targets while ensuring security of energy supply. Furthermore, the economic argument of the value-increase of gas otherwise flared is another example meant to make climate change action seem more desirable. Even though the industry still largely needs to be convinced of the added benefits of LNG, the price of LNG is attractive. From an environmental perspective, it is worth it; LNG fuel allows for a reduction of sulphur emissions to nearly 0%, reductions of NOx by 53,5% as compared to Euro VI, PM by 95% as compared to Euro VI, and well-to-wheel CO_2 is reduced by 15% in dedicated LNG engines (LNG Platform, n.d.:3). Its use can aid European states in achieving the targets set out in the Commission's National Emission Ceilings and Air Quality Directives[84].

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81 Directive 2003/30/EC and Directive 2009/28/EC. There is a binding target for biofuels until 2020, but the Commission decided not to set another target for the period after 2020, partly because of indirect land-use change.

82 Adopted by the Council on the first reading on December 5th, 2013 and subsequently with suggested amendments by the European Parliament on April 15th, 2014. The European Commission approved the EP's amendments on July 9th, 2014.

83 See [http://europa.eu/rapid/press-release_MEMO-13-24_en.htm] for the initially proposed targets.

84 Currently, heavy-duty road transport is subject to the Euro VI norm regulating truck emissions. However, the real driving emissions of many trucks exceed the Euro VI norm, especially concerning NOx emissions. If diesel fuelled trucks are not maintained properly, their emissions will rise further after several years. Countries can therefore also attempt to get their NOx emissions down by adopting more stringent inland shipping emission norms to regulate another part of the transport market as well. LNG becomes very interesting to get these NOx emissions down. (Information based on interviews 9 and 10.)

The directive further prescribes the building of LNG refuelling points in all maritime and inland waterway ports of the TEN-T network by the end of 2025 (for maritime) or 2030 (inland). Aside from the formulation of national policy frameworks, the Directive includes the requirements as outlined in table 4.3. The EU has also committed itself to establishing technical and legal rules for the safe use and transport of LNG and is providing financial support through the TEN-T program and the European Investment Bank (EIB) (European Commission, 2013f:3). Since LNG is not a renewable source of energy, using it as fuel does not count towards the auxiliary goal of 10% energy use from renewables in transport under the Energy 2020 strategy, unless it is bio-LNG. The transport White Paper and the *Clean Power for Transport Directive* are clear examples of the EU's efforts to harmonise transport policies across member states. The importance of being less dependent on oil is stressed, but heavy emphasis is placed on the climate as well.

Table 4.3. National Requirements of Clean Power for Transport Directive

Coverage	Timing
Electricity and CNG in urban/suburban and other densely populated areas	End of 2020
CNG along the TEN-T core network	End of 2025
Electricity at shore-side	End of 2025
Hydrogen in MS who choose to develop it	End of 2025
LNG at maritime ports	End of 2025
LNG at inland ports	End of 2030
LNG for heavy-duty vehicles	End of 2025

Source: European Commission, 2014b.

Technological development is to move along Horizon 2020 funding, the roadmaps under the EU's transport technology strategy[85], public-private partnerships, and via EU joint research centre projects. The Transport Council asked the European Economic and Social Committee (EESC) and the Committee of the Regions (CoR) for their opinions[86]. Both organs expressed a favourable opinion even though they had some concerns as well. EESC's main worry was the focus on biofuels due to the indirect land-use change discussion, and it also warned against investing too much into LNG for shipping while better, cheaper or cleaner alternatives were being developed. In terms of financing, the EESC underlined the importance of trans-border continuity of infrastructure coverage because of:

85 COM(2012) 501 final.

86 EESC's opinion is marked TEN/506 and CoR's opinion is can be found in JO C/2013/280/66.

> "the level of investment costs and uncertainty of markets the EESC takes the view that there will be a general and long term need for public financing of dedicated refuelling/recharging infrastructure for alternative fuels" (EESC, 2013:8).

The original EC proposal did not indicate the necessity of long term public financing. CoR, unsurprisingly, underlined the importance of regional and local authorities in helping to draw up a policy framework which can ensure local viability. Furthermore, CoR stated that general energy policy has to be considered as well and that alternative fuels are therefore not just a transport issue. In CoR's view, businesses are beneficiaries of the Directive and should therefore do the investments themselves. Both institutions were in favour of EU-level coordination. The Transport Council expressed a favourable stance towards the Directive in December 2013.

The European Parliament approved the Directive on the first reading. The transport committee[87] proposed 119 amendments, its members largely being in favour of the Directive. Most importantly, the EP wanted to underline that the list of alternative fuels may change in the future and that it is important for the EU to be technology neutral. More explicit references to the climate impact of transport (and the Directive's contribution to 2050 goals) and the need to reduce oil dependency were added as well. The EP's debate underlined the importance of common standards an technical harmony, yet some MEPs suggested that 'national egoism' was delaying or watering down agreements. Especially the greener-minded parties expressed regret for not being able to agree to more ambitious goals. Eventually, the EP approved the Directive in April 2014, upon which the EC accepted the amendments in July and the Council voted in favour in September 2014.

Whilst there is no hard LNG target, and the directive has not yet passed its transposition date, it is too early to measure its success but especially in The Netherlands there have been public and private investments into small-scale LNG deployment. Furthermore, the construction of refuelling points across core ports in the EU does imply use of LNG as fuel, simply because it would make no sense to build access points only to leave them unused.

87 The rapporteur from the transport committee (TRAN) asked the environment (ENVI), agriculture (AGRI), industry (ITRE), internal market (IMCO) and regional development (REGI) committees for an opinion, but only ITRE decided to give one.

4.2.3. Global Climate Progress and Objectives

Following the lack of clear mitigation commitments in the UNFCCC in the '90s, the EU decided to start acting as the global agenda-setter in climate matters (Schubert, Pollak & Kreutler, 2016:168). In 2010, around the formal adoption of the 2020 targets, the European Commission established a special Directorate-General for Climate Action and gave it the climate-related competencies previously held by DG Environment. While part of the split was due to the enlargement of the EU and subsequent need for more Commissioner functions, it also marked a turning point in the EU's view of its own role in climate action. The internal dimension of EU energy and climate policy was geared towards preventing the potentially disastrous consequences of climate change and mostly revolved around increasing the share of renewable energy across the EU. The external face of the policy was meant to make the EU an example for the rest of the world to follow (*ibid.*:167). This frontrunner role was advocated globally, yet succumbed under the weight of the declining competitiveness of the European economy[88]. Worries about carbon leakage to the US and China led to a less ambitious climate and energy framework for 2030 (*ibid.*:250), as discussed earlier in this chapter. However, in preparation for the Paris Climate Summit of December 2015, COP-21, the EU restated the need to move away from uncoordinated national energy policies and towards an integrated, sustainable European Energy Union (European Commission, 2015b:3)[89]. The change in discourse was to be followed by a change in practical implementation. At the same time[90] the Commission published the *Paris Protocol* which would serve as the EU's input for global climate negotiations. The Commission restated the EU's ambition to reduce CO_2 emissions by at least 40% by 2030 and called for global action as the only way to effectively mitigate climate change. The EU's vision was to promote both public and private financing for clean technologies while at the same time restating that it is up to countries themselves to choose which technologies to support (European Commission, 2015c:11). Just like what happened around the Copenhagen summit, the EU was able to unite in the wake of COP-21. International pressures help persuade EU member states to commit to EU-level goals which are otherwise difficult to negotiate.

COP-21 led to the Paris Agreement which the Commission calls "a historically significant landmark in the global fight against climate change" (European Commission, 2016a:2). The agreement includes a commitment to keep global warming below 2°C above pre-industrial

88 Which, painfully, was the opposite of what the EU had been trying to achieve with its Lisbon strategy.

89 The subtitle of the Energy Union package says it all: 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy'.

90 Both Communications were published in February 2015. Their identifiers are COM(2015) 80 final and COM(2015) 81 final.

levels and an aspiration to limit it to 1,5°C. The agreement entered into force in November 2016 and stands at 126 ratifications (out of 197 parties) in January 2017 (UNFCCC, 25 January 2017). Parties are obliged to pursue domestic mitigation measures in an effort to reach the goals of the agreement. The EU acts as a facilitator between member states and their obligations under the Paris Agreement and is committed to revising the ETS to make it more functional again and adapting the ESD whilst "providing maximum flexibility for Member States and striking the right balance between national and EU level action" (European Commission, 2016a:9). What this means for the vision of an integrated, sustainable Energy Union remains to be seen. COP-21 does not contain enforcement measures. Its legally binding nature is therefore limited.

The aftermath of COP-21 may have given credence to the Commission's *2030 Climate & Energy framework*, but the national authorities are still in the driver's seat. Aside from the development of member states being unwilling to commit to legally binding targets after 2020, each member state still chooses its own future energy mix as it pleases. In the words of Schubert, Pollak and Kreutler (2016:252):

> "Once again, the negotiations behind the 2030 framework revealed that the old game between the Commission and the member states continues unabated. The Commission proposes big changes, the Council confirms, but then waters them down, while the member states take their time selectively implementing those aspects that best befit [*sic*] their national interest. The EU's member states continue to sing the same song, but dance to a different tune."

Whereas the Scandinavian states seem to be taking the renewable route, Germany's investment into renewables is being offset by an increase in the usage of coal and The Netherlands has chosen to rely more on gas as a transition fuel than on renewables. Harmonisation across the EU therefore still seems far off. This development is also visible in the policy processes surrounding LNG and CCS.

4.2.4. What About Ports?

There is no overarching port policy in the EU, yet activities from several of the Commission's DGs impact ports on a day-to-day basis. Since the existence of the European Union, Europe's ports have resisted becoming 'captured' by the EU policy-making process. This phenomenon is mainly due to too much variety in port characteristics, rendering a comprehensive policy framework difficult to 'sell' to the more than 800 ports Europe currently counts (Pallis, 2007:491-492; Suykens & Van de Voorde, 1998:255; Pallis & Tsiotsis, 2008:17; Chlomoudis

& Pallis, 2005, Verhoeven, 2009:79). Differences between ports are visible in, for example, size, geographical location, management, operations, labour type, and financial autonomy (Suykens & Van de Voorde, 1998:256; Verhoeven & Vanoutrive, 2012:184-185). In fact, the European Commission itself admits that "no two ports [are] operating in exactly the same way" (European Commission, 2013c:5). Previous research has shown that efforts to Europeanise have consistently led sectors to unify in Eurofeds (Eising, 1999:213). Indeed, the differences between ports have led to a slow start towards a European Ports Policy with Europeanising efforts consistently being thwarted by the ports themselves and their European umbrella organisation: the European Sea Ports Organisation (ESPO). European legislative 'successes' have mainly led to policies in the fields of transportation and infrastructure, but other than that the European Union has employed a policy of non-intervention with respect to ports for a long time (Chlomoudis & Pallis, 2005:21-22). Member states are responsible for their own port policies and diversity in port management and operation is to be respected.

In 2007, the European Commission published a communication on European Ports Policy (EPP), which mainly deals with issues of port performance, a level playing field and respect for the environment (Verhoeven, 2009:87-88). While this Communication states the importance of sustainable transport in ensuring the vitality of hinterland connections and port performance as a whole, it also states that, at this stage, it leaves "this matter to regional and national authorities and to the market" (European Commission, 2007a:4). The Communication also explicitly states that the EC does not wish to intervene in the way member states organise their port management, effectively leaving ample room for the heterogeneity that characterises the European port system at present. It does, however, recognise and underline the economic efficiency of ports that enjoy a 'sufficient' degree of autonomy, i.e., landlord-type ports (European Commission, 2007a:8) such as the Port of Rotterdam. In other words, even though there have been tendencies to Europeanise which continue through soft law practices, there has been no real European Ports Policy because he EC cannot seem to get a grip on ports. The European Commission admits the 'failure' of its 2007 incentive in its 2013 revision of EPP and states that the soft measures proposed in 2007 have had "little or no impact" (European Commission, 2013c:4). Since ports are seen as vital to the functioning of the EU, the Commission sees ample reason to propose more intensive regulation. The 2013 revision, called "*Ports: an engine for growth",* reiterates the earlier finding that there are structural performance gaps in the European port system. This situation is seen as problematic, because even though just three ports[91] are able to handle 20% of today's import of goods, the predicted volume of goods will increase by about 50% by 2030. The EC underlines the necessity for better inclusion of other ports in

91 These are the ports of Rotterdam, Antwerp and Hamburg.

the Trans-European Network (TEN-T) to accommodate the expected rise[92]. The Commission is reluctant to try to impose a uniform model for ports (*ibid.*:5), probably having learned from previous experiences with negative outcomes.

Instead, the Commission attempts to influence ports indirectly through the creation of links with other policy fields, most notably through funding arrangements. Transport policy has shown that the EC can attempt to Europeanise through the advocacy of post-material values, drawing in actors sensitive to these values and thereby creating 'soft issue alliances' (Aspinwall, 1999:128). Furthermore, the EC is trying to use earlier agreements under transport policy — and the related TEN-T and Connecting Europe Facility (CEF) programs[93] — to influence port management. Connecting the development of small-scale LNG to ports is logical due to their position next to roads, rail- and waterways. The regulation of inland navigation in Europe is governed by multiple bodies, such as "river-specific navigation commissions, the EU, UNECE and pan-European ministerial conferences" (UNECE, 2011:37). Of the river-specific navigation commissions, most important for the Rotterdam region is the CCNR, which governs through the Mannheim Convention of 1868. UNECE is most well-known for its 2000 European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN). Pan-European ministerial conferences are organised every couple of years and mostly focus on harmonising and integrating the regulatory frameworks for inland navigation. There is now also attention for environmental issues. The EU itself is increasingly gaining importance in this sector by its attempts to legislate (through the NAIADES Programme) and stimulate harmonisation between its own regime and that of CCNR (UNECE, 2011:38-58)[94].

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When port authorities are looking for EU funding, the Commission will assess the added value of the proposed projects for EU transport policy (European Commission, 2013c:7). The same goes for environmental policy. The EC is very much aware of the impact ports have on emissions, noise, water and soil pollution. Emissions from maritime transport account for 3% of global GHG emissions today and are expected to rise to 5% by 2050 (European Commission, 25 September 2014). As yet, maritime transport is not included in the EU's GHG emission reduction system even though it contributes up to 4% of EU-wide GHG

92 Even so, the revision of EPP (*ibid.*:9-12) still only consists of five core measures: 1. Common rules to ensure port service charges are fair and that economic activity is subject to competition rules; 2. Rules to ensure transparency on the relationship between a port authority and public authorities; 3. State aid subjected to strict rules; 4. A degree of autonomy for port authorities to establish their own port dues, as long as they are fair and transparent, and; 5. Rules governing working conditions and safeguarding workers' health in port areas. While these rules certainly can have an impact on ports that still rely greatly on state aid, the scope of EPP remains small.

93 More on CEF and TEN-T in the LNG chapter (chapter 6).

94 Through a newly established organ called CESNI.

emissions. In fact, only for the EU, the emission rise is expected to amount to a whopping 51% by 2050 as compared to 2010 levels (European Commission, 2013a:2). The European Union has adopted an expectant attitude towards the integration of maritime transport into any emission schemes, instead preferring that any action be undertaken by the International Maritime Organisation (IMO). However, the IMO has to date not been able to agree on clear targets for emission reductions. Integrating maritime emissions into the emissions regime is therefore proposed through a gradual approach consisting of three steps. The first step is the implementation of a monitoring, reporting and verification (MRV) system for maritime emissions. Based on this MRV, the second step will be to define the reduction targets for the sector as a whole. The third step is to apply market-based measures (MBMs) in order to stimulate emission reductions. The Commission prefers to work with MBMs as it sees such incentives as cost-effective and flexible (European Commission, 2013d:4-5). Interestingly, this COM document explicitly mentions a link to the 2030 climate and energy framework. Future considerations regarding maritime emissions should consult the energy and climate framework to ensure consistency (*ibid.*:5). Another interesting example in the environmental policy field is the policy covering birds and habitats guidelines, which is also applicable to port areas (European Commission, 2013c:12). Better said, almost all activities covered in climate and energy policy are not necessarily port-related; they just happen to take place in a port area (such as the ROAD CCS project). The result is an intertwinement of port activities with different policy fields at the EU level, the origins of which are varied and guided by logic that does not *de facto* cover ports. As the Commission's DGs are often at odds with each other (Aspinwall, 1999:127), it is only expected that port authorities will find European policy confusing yet hugely important in their day-to-day management.

The Dutch national government has used the concept of 'mainports' since the end of the '80s and recognised the importance of a port such as the Port of Rotterdam to the Dutch economy (Rijksoverheid, 6 January 2014). In devising policy, the government has acknowledged the fact that the Port of Rotterdam is not simply a transport hub, but also a vast industrial complex. It has sought to strengthen this complex (Edelenbos, Gerrits & Van Gils, 2008:52-53; Kuipers & Manshanden, 2010:7). Some scholars take their argument even further. In their article, Edelenbos, Gerrits and Van Gils conclude that the Dutch port policy system seems to follow port developments, instead of the other way around, and devises policy to fit what is already happening in practice. This empirical observation implies efforts to "codify and maybe support the actual developments of the port" (Edelenbos, Gerrits & Van Gils, 2008:57), rather than trying to determine the exact future of the port. It should be noted that this conclusion does not suggest that the port is not influenced by national policy making at all, however. The authors speak of co-evolution and concede (Edelenbos, Gerrits & Van Gils, 2008:56) that the port and national port policy systems influence one another. The PoR thus becomes a policy actor. By contrast, while the EU has formally recognised the possibility of the existence of industrial complexes in ports and the importance of the Rotterdam case for the Dutch economy (European Commission, 2013b:1), further actions have not been undertaken, and in issues of transport the EU remains an advocate of spreading opportunities instead of focusing on one strong mainport[95].

4.2.5. Reaching Goals? The EU versus National Governments

Even though highly ambitious in its vision to create a sustainable future for every citizen of the EU, the Commission has also criticised actual progress towards reaching the ambitious targets. Member states have been developing National Energy Efficiency Action Plans since 2008, yet the Commission has called the quality of these plans "disappointing" (European Commission, 2010a:3). In 2010 it was judged that the renewable target of 20% by 2020 was not the problem, but the energy efficiency was another matter altogether. The bleak outlooks published by the IEA in 2009 and 2010 were set aside and even the Ukrainian gas crisis did not lead to concerted European action towards a more secure and energy efficient Europe. Yet, only three years later, the Commission reported (European Commission, 2013b:2) positively on the progress towards the Energy 2020 targets. The years between 2010 and 2013 were marked by the aftermath of the financial crisis (which affected the transport sector as well), milder winters (except in 2012), increasing energy prices for households, and a relatively large increase in renewable energy share (EEA, 2014a:3-4). Eurostat provides the most recent data (currently until 2015 - see table 4.4).

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Table 4.4. Progress towards the 2020 objectives for climate and energy

Target	2020 objective	Progress until 2015
GHG emissions reduction	20% reduction	22,1%*
Share of renewables in energy mix (consumption)	20%	17%
Energy efficiency	20% more efficient energy use	16,7%

* Reported CO_2 reduction was 28% between 1995 and 2010. Source: Eurostat (2016); Eurostat, online data codes t2020_30, t2020_31 and t2020_33.

Overall, the EU seems to be on track towards reaching the targets as set out by the Energy 2020 strategy. This progress is not only due to the energy and climate policies the EU has put in place, but is also the result of milder weather conditions and the economic and financial

95 This notion has been further confirmed in Commissioner Kallas' (DG Transport) speech of 23 May 2013. The EU's reason to advocate spreading opportunities fits within its integrative mission and attention for development of underdeveloped regions. It is therefore understandable that the Commission does not want to seem to favour any port over another.

crises that hit the EU since 2008. Nevertheless, the EU notes challenges to the European energy system. The centre of gravity of global energy demand has shifted towards emerging economies such as China and India. Energy prices (and price differences) are rising in the EU as compared to other countries, and an internal market measure such as the Emissions Trading System (ETS) has led to an ineffective and low carbon price. Renewable energy development has taken off but at the same time also challenges the existing balance in the energy system. The German *Energiewende* and the consequences of energy dumping in The Netherlands have been discussed in the introductory chapter as an example of such a challenge. Additionally, climate change scholars continue to publish studies confirming the impact of human agency on climate change. Along with the systemic changes noted above, the confirmation of human influence on the world's climate has led the EU to reconsider its climate and energy strategy. The results are twofold: a general 2050 strategy called the *Energy Roadmap 2050* and the *2030 Climate and Energy Framework*. The table below outlines the envisaged progress to 2030 and 2050 as compared to the Energy 2020 strategy. It is important to note that there are only legally binding targets up to 2020. As table 4.5 shows, the 2030 and 2050 objectives are not met with commitments at MS level.

Table 4.5. European Energy and climate objectives between 2020 and 2050

Target	2020 objective	2030 objective	2050 objective
GHG emissions reduction	20% reduction	40% reduction	80-95% reduction
Share of renewables in energy mix (consumption)	20% (10% binding target for renewable use in transport fuels)	27%	Majority is renewable
Energy efficiency	20% more efficient energy use	27%	30%

Sources: COM(2010) 639, COM(2011) 885, and COM(2014) 15.

The need for clear milestones has driven the EU to also establish a 60% GHG emissions reduction target by 2040 (European Commission, 20 October 2014), which neatly sits in between the 2030 and 2050 objectives. The 2030 target is set to be achieved in two ways. Sectors covered by the EU ETS system need to reduce their emissions by 43%, while sectors outside the ETS need to cut their emissions by 30% (both below 2005 levels). Whilst the GHG reduction target is most relevant to this dissertation, the three main targets are interrelated.

Compared to the 2030 climate and energy framework, the *Energy Roadmap 2050* is a more visionary document. The lack of, for example, a clear 2050 objective for the share of renewables in the European energy mix shows that this document has more of an agenda-setting purpose than a prescriptive nature, which is ideal for zooming into policies which are meant to govern markets that are still very much in development[96] but also reflects the unwillingness of member states to make long-term commitments. The 2050 Roadmap acknowledges that decarbonisation is possible and even states that the costs associated with transforming the energy system are not that different from a scenario that the Commission calls the Current Policy Initiatives (CPI) scenario (European Commission, 2011a:5). The Commission foresees electricity to play an increasing role in the future energy mix, not only for heating and cooling purposes but also in transport. Crucial for any success of EU energy and climate policies are energy savings and the increasing share of renewables in the European energy mix, which both contribute to decreasing GHG emissions. These predictions fit the 2020 and 2030 strategies. Conversely, those strategies remain silent about nuclear power while the 2050 Roadmap identifies nuclear power as having an important contribution to make in the process of energy system transformation (*ibid.*:5-8). An example of this ambition is the approval by the EC and UK to build two new nuclear reactors at Hinkley Point C in the UK (Financial Times, 8 October 2014).

The combination of Europe 2020, the economic crisis, and coordination through the European Semester led to a turning point in European energy and climate policy. The pre-2010 focus on competitiveness was replaced by a focus on sustainability while remaining competitive. In the most recent Juncker Commission (after 2014)[97], DG CLIMA and DG ENER have — for the first time in EU history — the same Commissioner. This move is not illogical; the majority of global emissions is energy-related, and even when emissions are not directly related to energy, they often stem from human practices that are 'energetic'[98] (Shaw, 2011:744). Treating energy and climate policy as a single policy is a feature that is fairly unique to the EU. Unfortunately, there are still many disjunctures between the two domains (Toke & Vezirgiannidou, 2013:543). The differences in GHG emission goals across EU member states and fears surrounding carbon leakage show that competitiveness still has the upper hand. Discourse has linked energy and climate, but action is largely lacking. Part of the incoherence stems from a largely supranational environmental policy and a fragmented climate policy, in contrast to the MS-exclusive components of energy policy. Another reason for ineffective coupling of energy and climate policies is the tension that arises between energy and climate solutions, which are often contradictory. For example, natural gas is cleaner than coal but it also makes the EU more dependent on external suppliers who are not always reliable (Vogler, 2013:631-640). In essence, Skovgaard (2014:2-5) argues that there are two conflicting frames at play: green growth ('win-win') and trade-off ('sustainability

96 Both LNG and CCS policy — the two case studies covered in this dissertation — fit in this category.

97 See Annex IV for an overview of the two Commission formations — Barroso's and Juncker's — spanning this dissertation.

98 Waste treatment is an example of a human practice that is energetic.

is bad for the economy'). There are people who see the relationship between climate and economic growth policies as potentially synergetic, but others see conflicts. Economy often wins, though sustainability appears to gain some land in times of prosperity. Both these frames will be visible in the case studies.

4.3. CLIMATE AND ENERGY POLICIES IN THE NETHERLANDS

This section discusses the relevant Dutch climate and energy policies for the two nested cases studied in chapters five and six: CCS and LNG. Dutch energy policy is cemented in the *Energieakkoord* and updated yearly through the *Energierapport.* The *Energieakkoord* resulted from extensive consultations with civil society and the private sector, epitomised in the way it was published: not by the government itself, but by the Dutch Social and Economic Council (in Dutch: *Sociaal-Economische Raad*, or SER). Its core components are energy saving, increasing renewable electricity production, decentralised electricity production, a strong energy network, a functioning EU ETS, a responsible decrease in coal-fired power plants, emissions reductions in transport and mobility, an increase in jobs in the energy sector, energy innovation and export, and programmatic financial incentives. These ten pillars are cemented in a governance structure in which the government is responsible for the formulation, implementation, execution and evaluation of policy measures and the private sector is responsible for meeting the goals they agreed to. Continuing interaction between all involved parties is facilitated through a permanent commission under the SER that consists of representatives of all involved sectors. No formal control and enforcement mechanism was agreed upon (SER, 2013:12-27).

The most recent *Energierapport* (2016) includes a 'CCS vision' even though there are still no CCS projects operational[99]. The government states that if CCS is not developed in The Netherlands, where the technology is among the most promising due to an abundance of offshore gas and oil fields for storage, the costs for effective climate mitigation will increase significantly (Ministerie EZ, 2016a:117). At the end of 2016, the Dutch government released the *Energieagenda* (translated: energy agenda) outlining its goals for the period after the *Energieakkoord* ends. Dutch energy policy consists of three key assumptions: energy and climate policy is international policy, CO_2 reduction is the focal point, and a long-term vision is essential (Ministerie EZ, 2016b:23-25). The government's logic for the first assumption is that if just The Netherlands adopts stringent policy to reduce GHG emissions they will be emitted elsewhere, so international agreements are necessary. The empirical chapters show that this argument can also be used as an excuse for inaction. The second assumption

99 CCS is slated to be responsible for up to 50% of Dutch low carbon options (Ministerie EZ, 2016a:119).

has as a consequence that the Dutch government does not want further binding energy efficiency and renewables goals past 2020, which fits with the EC's inability thus far to set binding goals for 2030 and beyond. The third assumption admits that the private sector needs long-term goals to guide their investment decisions, though when push comes to shove the Dutch government appears reluctant to make strong statements regarding its domestic fuels mix policy, favouring technology neutrality in the national policy documents such as the *Brandstofvisie* (Ministerie I&M, 2014a). The lines set out in national documents largely follow EU policy and existing initiatives and in the *Energieagenda* the government speaks of a *Dutch* energy policy and a *European* climate policy. The implications are clear: stay out of our energy mix, but ensure a level playing-field when climate policy is concerned. *Brandstofvisie* furthermore acknowledges that the bulk of Dutch policy in this regard follows the European *Clean Power for Transport* Directive (Ministerie I&M, 2014a:6-38) and is therefore adaptive rather than pioneering. The Dutch government did not make the choice to rely heavily on renewables, as seen in the *Energieakkoord*. Arguably, keeping fossil fuels in should give a technology such as CCS a fighting chance and even though there has been a lot of (political) opposition against CCS, it has been a stable factor in policy documents since 2007.

With respect to seaports, The Netherlands has formulated a working programme for seaports (in Dutch: *Werkprogramma Zeehavens 2014-2016*) for the period 2014-2016 (Ministerie I&M, 2014b:4-12). It was established as a joint effort between the national government, seaport authorities, the private sector established in the ports and the *Topteam Logistiek*[100]. Based on a threat-assessment and the importance of Dutch seaports for Dutch and European economy and industry, the working programme outlines six policy priorities with a level playing-field and supporting sustainable initiatives being the most notable for this case[101]. The Dutch maritime strategy (in Dutch: *Nederlandse Maritieme Strategie*) for 2015-2025 formulates the government's wish to support the transition towards zero-emission ships. The elimination of legal barriers hampering this transition are also discussed, along with the potential of the *Clean Power for Transport* Directive (Ministerie I&M, 2015:9-16).

100 Topteam Logistiek is a group of elite people from business, government and academia and represents the top sector logistics. For more information on Dutch top sector policy, see [http://topsectoren.nl/english].

101 Full six priorities: a level-playing-field, better hinterland connections, lessening the administrative burdens of the business sector and improving training, supporting sustainable initiatives (BBE, CCS and LNG are mentioned), sharing of best practices under *Natura 2000*, and fostering cooperation between ports plus defending national interests.

4.3.1. The Netherlands and CCS

The Netherlands has to implement EU environmental law, but is free to set stronger goals. At present, this is not being done, although organisations such as Natuur & Milieu (2016:7) call for more activity from the national government when it comes to setting stricter standards or increasing the carbon price. With ETS as it is, however, doing so could lead to an even lower EUA price (Groenenberg & De Coninck, 2008:658). Specifically for CCS, The Netherlands will only accept offshore storage after the Barendrecht debacle. Furthermore, in the implementation of the CCS Directive the Dutch government has decided to give a single permit for the whole CCS chain up until the end of the injection process. The Mining Law (in Dutch: *Mijnbouwwet*) was changed to allow for these permits. The consequence is that Dutch law does not allow for simultaneous ownership of both a storage permit and an operation permit as needed for EOR/EGR, which can cause legal issues for CCS projects.

In The Netherlands, EU proposals go through a procedure called BNC fiche prior to approval. The CCS Directive case file[102] stated that CCS was an indispensable part of the climate goals of the cabinet at the time. However, the Dutch position was such that it was hesitant to provide funding mechanisms — hence the contentment with the possibilities offered by NER 300 — and it also had its reservations regarding some of the proposal's details. The Dutch wanted primary responsibility for CCS development to lie with member states so as to reduce red tape, but also wanted the EU to finance CCS projects without telling the national government how to allocate its national budget. From this position follows that in terms of financing there was some discrepancy between the expectations the EU had and those of the Dutch government.

The Dutch position underwent a change from being an ally of the 2020 package (although the government's views differed from those of the EU regarding who should be paying for CCS projects) to an opponent of renewed EU coordination. The Netherlands had its separate EU-related CCS debates between 2009 and 2015; various files within the BNC dossier were attributed to CCS[103]. In 2009 the Dutch Parliament voiced negative opinions about investing in CCS, which was subsequently linked to energy efficiency plans in 2011. By then, the government was backing ROAD in the EEPR funding race by promising a 150 million euros investment. Its initial stance that the EU should be covering the funding had shifted with the realisation that The Netherlands, as a fossil fuel country, could reach its climate targets while continuing to use fossil fuels. However, in 2013 the Ministry of Infrastructure and

102 Number 22112 - 619. Available on the website of the Dutch parliament.

103 All files have the base dossier number 22112. Between 2009 and 2015 the CCS related discussions were recorded in files 822, 1232, 1756, 1952 and 1998. They are accessible through the website of the Dutch parliament.

Environment sent a letter to the Parliament stating that CCS is not happening in the EU right now but that it still is important for the 2030 climate and energy plans. Therefore, even though CCS had an explicit place in the *Energieakkoord*, the EU should fund it. The Netherlands, along with several other countries such as the UK, Italy and Poland, further opposed the setting of new binding renewable energy and energy efficiency targets at EU level (European Commission, 2013b; Ibec, 2013), representing a turn away from the ambitions of the 2020 package and underlining national sovereignty. In a 2015 letter from the Ministry of Infrastructure and Environment, the government reiterated its wish for a light governance structure of the Energy Union with respect for national competency. It wanted as little red tape as possible yet with a view towards accomplishing 2030 and 2050 objectives. National efforts to generate more funding for the ROAD project increased in an attempt to further stimulate CCS. The Dutch wanted to reap the fruits of EU funding without accepting further interference with domestic energy policy. A representative from the Dutch government illustrated Dutch efforts as follows:

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> *"What's typically Dutch is that we try to just barely reach goals by putting in the least amount of money as possible."*[104]

In light of the most recent discussion about low-carbon investments and their link to the EU's NER 400 programme, CCS was again a topic of debate. No new projects or nationwide CCS initiatives resulted from parliamentary deliberations. In fact, similarly to what happened with the inclusion of the CCS Directive in the 2020 Climate and Energy package at EU level, the Dutch government decided to incorporate its 'CCS Vision' into the *Energierapport* so as to avoid a CCS-specific discussion in the Parliament[105]. Similarly, the EU has not put a new regulatory proposal for CCS forward due to extremely low interest across EU member states (European Commission, 2013c:2). The Netherlands did not even respond to the consultation.

The province of South Holland is committed to realising national and European energy and climate goals, but does not make policy in these areas. It is the responsible authority for environmental permits and (sub-)surface operations and delegates executive tasks to DCMR. The city of Rotterdam supports the development of CCS and even made an agreement with the ROAD project partners that their power plants were not allowed to commence operations without the simultaneous application of CCS. Unfortunately, the delay in the final investment decision (FID) regarding ROAD led to problems between the parties, with the city eventually agreeing to allow the plants to start up even without CCS. Rotterdam has its own sustainability program *Programma Duurzaam*, through which it aims to become the

104 Interview 31.

105 Confirmed by a government employee, interview 31.

cleanest port city in the world by 2030. Similar to the Dutch government, the city prefers re-using CO_2 over storing it. RCI's 2007-2010 programme calls for the establishment of a CCS Platform and a CO_2 cooperation agreement (RCI, 2007:16). During a city council discussion in December 2007, there was a big debate about the appropriateness of the construction of Electrabel's (now Engie) coal power plant after adopting highly ambitious climate goals for the Rotterdam region. Opponents (GroenLinks, Leefbaar Rotterdam and SP) feared the power plant would not use CCS because it cannot be made obligatory, whereas proponents (CDA, VVD, ChristenUnie-SGP) expressed their trust and stated that CCS is necessary for climate mitigation. Without CCS, no RCI goals would be achieved[106]. CCS was part of the ambitious Energy Port goal to reduce CO_2 emissions by 50% in 2025[107] in the port-industrial complex. The start was to be made in the power sector, which amounted to 30% of port-related CO_2 emissions in 2005. Infrastructure would be developed and Deltalinqs — an RCI partner — would seek businesses willing to sign five letters of cooperation for CCS projects in the near future (RCI, 2009:21-25). Of the 3,5 million euros available RCI funds (for 2009) for developing the Energy Port, nearly 2 million was earmarked for CCS purposes. Almost half of those funds were accounted for by DCMR, which had extensive responsibilities under the RCI programme. A year later 1,7 million euros was earmarked for CCS (*ibid.*:13).

4.3.2. The Netherlands and LNG

The Dutch government is obliged to create and communicate a framework for implementation of the *Clean Power for Transport* Directive by November 18, 2016 (Article 7 Directive 2014/94/EU)[108]. The European Commission will have another year to consider the coherence of all the national frameworks. The Dutch government is also obliged to send progress reports concerning the implementation of the Directive and will have to follow guidelines for reporting as established by the EC. The government will have some leeway transposing the Directive and choosing appropriate instruments for policy implementation — it can therefore decide for itself how it values the contribution of LNG to the Dutch transposition of the Directive —, but will have to comply to the terms of the Directive at set deadlines[109]. Recommendations from the EC may be sent should The Netherlands be judged to do an

106 Notulen raadsvergadering 20 december 2007. Accessible at the Rotterdam city archives [www.ris.rotterdam.nl]. To provide a full picture of the positions, D66 and PvdA expressed doubts but were not necessarily negative.

107 Baseyear 1990.

108 In doing so, the Ministry of Infrastructure and Environment consults with actors such as the Port of Rotterdam Authority regarding TEN-T participation and LNG safety requirements.

109 The Directive outlines deadlines for 2025 and 2030.

insufficient job of implementing the Directive[110]. The question is whether sanctions will follow should a country not implement *CPfT* correctly. Since the EC seems internally divided over the usefulness of the Directive — with some DGs dismissing alternative fuels in favour of electrification — the enforcement of proper implementation of the Directive is unsure.

A year after the Commission published the *Clean Power for Transport* Directive, the Ministry of Infrastructure and Environment led the negotiations surrounding a national fuel plan which would include LNG. The *Brandstofvisie* immediately fit within the requirements of the Directive but also kept an express link to Dutch energy policy because of the importance of LNG to energy security. In November 2014, the Dutch cabinet[111] reaffirmed its position to keep applying for CEF funding, noting that LNG could be one of the focal points in the Dutch CEF strategy. The Dutch government envisages four tools which can be used to support a sustainable business case: regulations/standards, subsidies for R&D, policy that offers positive discrimination to the use of sustainable fuels, and fiscal policy. The latter is problematic for LNG, as both the shipping sector and the LNG sector pay low taxes. The other three tools can thus be more effective (Ministerie I&M, 2014a:12-32). *Brandstofvisie* (Ministerie I&M, 2014a) also reflects on the relationship between the various governmental levels. There is explicit recognition of complexity due to globalisation, multiple levels of policy-making, the economy, and various other factors. Sustainable transport policy therefore crosses several different hierarchical levels. The *Regeling Groenprojecten* (sustainable projects regulation) of 2010 includes the possibility to provide tax benefits to project owners of single fuel LNG engines and dual fuel engines for inland ships.

Local governments are asked by the *Energieakkoord* to consider climate and sustainability in their spatial policies in the future. The private sector played a large part in the formulation of both the *Energieakkoord* and the *Brandstofvisie*, indicating the importance the Dutch government attributed to the private sector. LNG came up at the municipal level in Rotterdam in 2009-2010[112], when the port bye-law (in Dutch: *Havenbeheersverordening*) was changed to accommodate the construction of the GATE terminal. The Gas Port (in Dutch: *Gashaven*) concept was added to the law and the RCI and the private sector began looking at how the cold produced at GATE (to keep the LNG cool) could be used for other means. One of the first thoughts was to make a connection between GATE and the coal-fired power plants and liquefy captured CO_2 for transport and storage (RCI, 2010:38). Transport applications were

110 This goes for all other European governments as well.

111 See Dutch parliamentary proceedings, #21501-33 512.

112 The online city archives show 70 unique results (not including concept documents) when performing a search for 'LNG brandstof' between 1-1-2010 and 11-8-2016. The results include policy documents, documents of auxiliary organs, year reports, college letters informing the Council, and laws. Interestingly, no meeting notes of the Council discussing small-scale LNG show up.

considered immediately as well, and within the Regional Air Quality Programme (In Dutch: *Regionale Aanpak Luchtkwaliteit*) 500.000 euros was set aside to look at the possibilities of small-scale LNG in Rotterdam[113].

4.4. CONCLUSIONS: FRAGMENTED BUT AMBITIOUS CLIMATE AND ENERGY POLICIES

The EU stands before a fundamental problem of wanting to act against climate change whilst ensuring the competitiveness of the European economy. Its member states have committed themselves to help solve the problem, but question the solutions in the wake of the need for global action. Broadly speaking, the EU's climate and energy policy can be divided into a pre-2010 era and a post-2010 era (see table 4.6). The pre-2010 era was marked by a focus on European competitiveness in a globalising world. The Lisbon Strategy addressed the need for sustainability but the modernisation of the European economy was a more pressing concern. Within the European Commission one large DG Environment was responsible for both climate and environmental concerns and GHG emissions declined particularly because of a switch to less carbon intensive fuels (eg. coal to gas) and higher efficiency in electricity production (EEA, 2014b:3-4). Energy and climate policies were drafted separately. The period after the economic and financial crises hit marked a turning point in European discourse on and organisation of energy and climate policies. The *Climate and Energy Package* of 2009 incorporated binding national targets for both GHG emissions reductions and the share of renewables. The climate department within DG ENV became its own DG CLIMA and energy and climate were mentioned as a single headline target under the ambitious Europe 2020 Strategy.

Table 4.6. EU climate and energy focus shifted in goals, beliefs, results and instruments

EU approach on climate & energy policy	90s - 2007	2007 - 2010	2010-
Policy goals	Competitiveness	Competitiveness + sustainability	Competitiveness + sustainability
Underlying belief	No technological preferences	Technological preferences (fe. CCS)	Technological neutrality
Policy result	Energy efficiency as main focus	Energy efficiency & renewables as main focus	"We support everything" (but preferably energy efficiency & renewables)
Target formulation	-	Hard	Soft

Source: author's own compilation based on desk research and interviews.

113 See Herijking RAP/RAL 2011 in the online Rotterdam city archives at [http://www.ris.rotterdam.nl].

The results show mixed success. Whereas the EU is on track to meeting the 2020 targets for climate and energy, there are large differences in performance across its member states. Why? European leaders have been unwilling to commit to further binding targets for 2030 and beyond. There are vast differences between member state preferences in the high-level politics area of energy policy. National agendas on climate change do not converge, and EU policies can be summed up to edging more toward the "multidimensional pursuit of comprehensive energy security" (Schubert, Pollak & Kreutler, 2016:125). National governments still seem very much concerned with their own energy security and sovereignty, not wanting the EU to dictate their energy mix choices. Sweden and Denmark prefer renewables, The Netherlands has chosen the gas route, Germany has invested heavily into renewables but is also burning a lot of brown coal, Poland is mostly operating on coal, France is heavily nuclear and the UK has invested in both renewable energy and nuclear energy. The EU's recent Energy Union strategy — an attempt to harmonise energy and climate policies *and* governance across the EU — will not necessarily lead to more integration as countries have chosen to maintain in the driver's seat even after the success of the global Paris agreement at COP-21. The EU's ambitious climate leadership is further offset by the increase in global GHG emissions. We are observing a multi-level interplay of political logics that often do not fit together nicely.

Within the European Commission there has been a noticeable switch from making technological choices in the pre-2010 era — also visible in the original SET-Plan — to attempting to be technology neutral post-2010 and seeing the energy system as an integrated whole under the Energy Union. Fostering innovation and R&D is the EU's harmonisation tool by providing funding for technological development that aids in reaching both the 2020 goals and longer-term goals. The new iteration of the SET-Plan, however, continues the EU's earlier focus on renewables (also in transport) and energy efficiency. Additional financing mechanisms are provided by funds such as the NER 300 and the TEN-T Programme, which support the notion of nation state sovereignty regarding their energy mix; both CCS and small-scale LNG can receive funding from these programmes even though real European policy goals regarding these developments are lacking. It is difficult to predict whether the Energy Union strategy will lead to a more unified European climate and energy policy, but the inherent tension between climate and energy remains. The empirical part of this dissertation will show the trade-off between the three pillars of EU energy policy: is the quest for simultaneous energy security, competitiveness *and* sustainability doomed to fail?

5

CCS: A Case of EU Multi-level Governance Failure?

5.1. INTRODUCTION

Rotterdam's developing CO_2 hub is geared towards reducing emissions and making CO_2 a commodity to be traded on the market. The longer term vision is that CO_2 will be transported to Rotterdam (for example, using barges commuting to and from the Ruhr area on a regular basis) where it can be stored or traded as a product to be used in other industries. Broadly speaking, there are two ways to handle excess CO_2: it can be stored, or it can be used. Carbon Capture and Storage (CCS) entails the capture of waste CO_2 and storing it so that it does not enter the earth's atmosphere. Carbon Capture and Usage (CCU) uses up the gas instead, for example in the horticultural sector to stimulate plant growth or by embedding it in a product. In doing so, CCS and CCU can help to mitigate the contribution of fossil fuels to global warming, and therefore contribute positively to combating climate change. However, CCS is a very contentious issue in many countries, mostly due to citizens' fear of the technology's safety and the often used criticism that CCS enables large emitters to retain their methods of production instead of having to significantly change their processes. CCS is thus often seen as a palliative measure. While the main focus in this chapter lies with CCS, CCU will also be discussed where relevant as it is a new development with much ongoing research.

This chapter tells the CCS story in Rotterdam as part of Dutch and European efforts to mitigate CO_2 emissions. I start with an overview (§5.2) of the context within which CCS operates, introducing CCS and motivations for its application, examples of CCS projects already underway and discussing milestones and other important developments. This part ends with a brief overview of recent developments and a summary of the policies applicable to CCS. In the next part (§5.3) I apply Piattoni's theory to the case, diving deeply into the governance of CCS, drawing extensively on interview data and desk research. Section §5.4 discusses the consequences of this case for the Port of Rotterdam and the role its authority can play. Section §5.5 discusses the theoretical and empirical conclusions for the governance of EU energy and climate policy based on this case.

5.2. CCS: WHAT, WHY AND WHEN?

What every reader must know before delving into this case study is that CO_2 essentially is a waste product of the combustion of fuels necessary for industrial activity and transport, which is why the greenhouse gas is emitted on a large scale. It is also part of the natural environment as we know it and necessary to ensure plant growth. However, too much CO_2 in the air (>10%) can also kill people (EEA, 2011:24). The impact of CO_2 and other GHGs on the climate is measured by looking at their Global Warming Potential (GWP), which indicates how long the gas remains in the earth's atmosphere, thereby heating it up[114]. Methane (CH_4), for example, is estimated to be 34 times as bad for the climate as CO_2 over a period of 100 years (IPCC, 2013:714). However, CO_2 is emitted in much higher amounts than methane, as visible in figure 5.1.

Of all these emissions, more than half comes from the energy sector (including all transportation other than maritime and aviation), and another ±13% is due to agriculture (EPA, 2014a). While North American and European CO_2 emissions have more or less stabilised or even decreased, Asian emissions have nearly doubled since 2002 (EPA, 2014b). Since industrial activity is paramount to humanity's current way of life, and because CO_2 emissions are harmful to the climate, methods for reducing emissions while ensuring industrial activity have been developed. According to the International Energy Agency, a key role in the decarbonisation process will be played by CCS (IEA, 2015b:5). Since the energy sector is by far the largest sector emitting CO_2, the remainder of this introduction will focus on the application of CCS within the energy sector.

CCS can be broken down into the three components that it is conceptually comprised of: carbon capture, carbon transport, and carbon storage. Each of these components will be discussed briefly to provide a basis for understanding of the case. Carbon capture — the most expensive component of CCS (IPCC, 2005:342) — entails the separation of CO_2

114 CO_2 is used as the reference gas upon which the GWPs of all other GHGs are based.

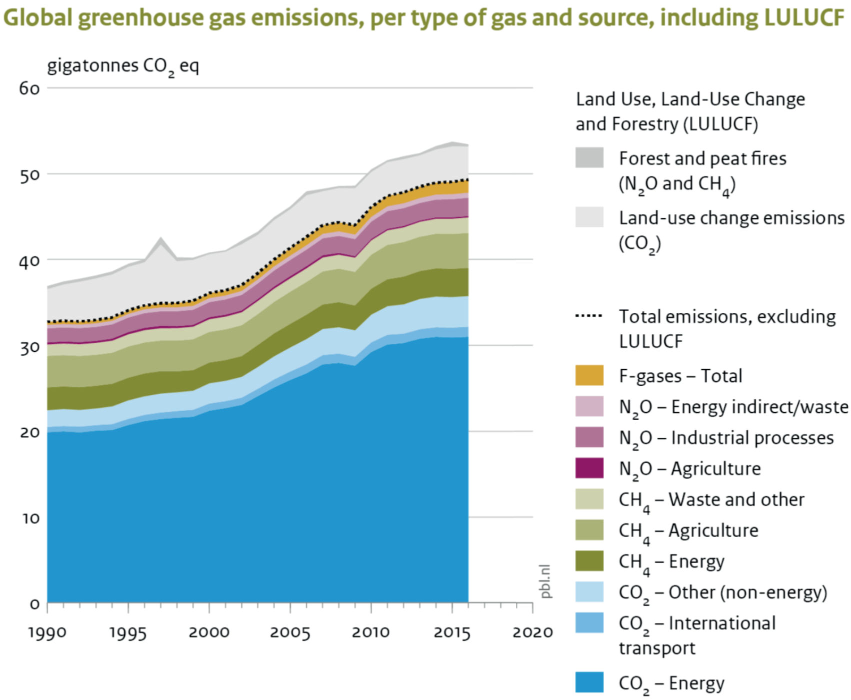

Figure 5.1. CO_2 emissions highest of all global GHG emissions
Source: PBL, 2017:9.

from fossil fuels or biomass. Carbon capture can be applied to coal-fired plants as well as natural gas plants. Co-firing of biomass also leaves the possibility to apply CCS. The capture technology[115] can be installed in new power plants or added to already existing power plants after they are remodelled. The latter can be very expensive, especially when the plant is far from the storage site[116]. An important consideration in the application of carbon capture technologies is the energy penalty associated with it; because the capture technology needs to be powered as well, a power plant will need more resources to generate the same amount of electricity than it would without the application of CCS. Consequently, non-CO_2 emissions from that power plant will increase if the plant continues to produce the same amount of electricity (EEA, 2011:6-14).

115 There are four technologies that can be used to capture CO2: post-combustion, pre-combustion, oxyfuel combustion, and by establishing it in industrial processes. For those interested in the technical aspects of these techniques I would like to refer to the EEA report (2011) on the 'Air pollution impact of CCS'.

116 The plant - storage site distance can prove especially problematic in countries where there are no (or few) adequate storage opportunities. Examples are Finland and Luxembourg. Refitting coal-fired power plants for CCS can be highly cost inefficient in such cases.

The transport of carbon dioxide can occur through a pipeline, using ships, trucks or trains, although pipelines and ships seem most promising due to possible volumes and the associated costs (EEA, 2011:18). One limitation to any plans concerning CO_2 hubs is the ban on transboundary CO_2 under Art. 6 of the London Protocol, which effectively means that countries are not allowed to trade CO_2 for dumping purposes, since it is considered a waste product (IEA, 2011:8-10). Cross boundary trade would be necessary for countries without suitable sequestration locations to be able to apply CCS. The 2008 amendment to the London Protocol[117] allowing for CO_2 trade for purposes of sequestration has not yet been ratified by enough parties to enter into force (IEAGHG, 6 January 2016). CO_2 trade for CCS activities is thus still forbidden.

Carbon storage — also called sequestration — is the step that makes CCS interesting for policymakers concerned with decarbonisation. It entails the storage of CO_2 in order to prevent its emission. CO_2 can be stored in deep geological media, in oceans, and through surface mineral carbonation. At present, of these three options the only viable option is storage in deep geological media, such as depleted oil or gas fields. The other two options are very costly and pose dangers to the environment. Furthermore, the EU's CCS Directive[118] prohibits sequestration in oceans (EEA, 2011:18-19). Aside from depleted oil and gas fields, other options for storage are in deep saline formations and in deep non-mineable coal seams. While deep saline formations are expected to allow for the largest amount of storage (*ibid.*:19), injection in oil and gas fields becomes especially interesting when the fields are not yet depleted. Injection of CO_2 can help with the extraction of the oil or gas, which is referred to as Enhanced Oil Recovery (EOR) and Enhanced Gas Recovery (EGR) respectively[119]. The irony of such practices is that it facilitates the continued use of fossil fuels — making it one of the main arguments of environmental NGOs arguing against CCS — but some argue that it may be the only way to get CCS going in the first place. The main concern with carbon storage is the potential of leakage, although the European Environment Agency reports that they consider the risk of carbon leakage "relatively small" (EEA, 2011:23). Since the storage capacity across the globe is estimated to be very large, and the retention time is very high (up to millions of years), carbon storage is seen as a promising tool to combat climate change (EEA, 2011:19).

117 See Resolution LP.1(1) [http://www.imo.org/blast/blastDataHelper.asp?data_id=17614&filename=01.pdf] or IEA, 2011 [https://www.iea.org/publications/freepublications/publication/CCS_London_Protocol.pdf].

118 Directive 2009/31/EC, Art. 2 outlines the prohibition of CO_2 storage in oceans.

119 Legally speaking, however, EOR/EGR are not seen as CCS. For CCS a specific storage permit is needed under the EU's CCS Directive, whereas EOR/EGR activities require different permits. Furthermore, some people would argue that injecting CO_2 to extract more oil or gas to be burned later is not climate-friendly and therefore not a part of CCS.

Wide and quick application of large-scale CCS throughout the world is unlikely due to the lack of a comprehensive policy framework (Deetman et al., 2013:159), associated costs, the competition with renewable energy, the limits of storage, and the fact that CCS does not mitigate CO_2 production. These are significant hurdles for a further development of CCS. Furthermore, the aspect of safety has shown — as in the Dutch Barendrecht case — that a negative public opinion can block CCS projects entirely (Van Alphen et al., 2007:4369). Even so, certain steps have been made. The key developments influencing Rotterdam are summarised in the timeline in figure 5.2. The carbon price seems related to the ebb and flow of CCS projects, with projects being developed during high carbon price and stalled when the carbon price drops.

5.2.1. Historical Context and Recent Developments

5.2.1.1. 1970 - 1988: Carbon capture, injection and usage

None of the components of CCS are technologically 'new'. Carbonated drinks are an example of captured 'injected' CO_2, and the gas is often used for food packaging or made into solid form (also called 'dry ice') to aid in the wine making process. In The Netherlands, companies such as Air Liquide and Linde Gas have been selling CO_2 for years. This type of carbon capture has purely economic motives: the CO_2 is used in chemical, industrial or other processes to facilitate the manufacturing of products. These practices constitute small-scale activities, whereas the climate enthusiasts focus on large-scale CCS where much larger volumes are captured and processed. As such, carbon capture initially did not have any climate-oriented component.

The injection of CO_2 for Enhanced Oil Recovery also is not new. The oldest running EOR project is Val Verde in Texas, USA. Since 1972, CO_2 there has been captured in natural gas treating plants and transported through pipelines to oil fields. The second oldest project started in 1982, also concerns EOR and is situated in Oklahoma, USA, at the Enid Fertilizer plant. Captured CO_2 is used in depleted oil fields in the southern part of Oklahoma[120]. These early EOR projects were also fed by economic incentives, rather than concerns about the climate. It is the 'storage' component, binding capture and transport together into a single chain, that provides the novelty of CCS as a still pre-commercial technology even though its separate components have already proved themselves (Krahé, Heidug, Ward & Smale, 2013:754).

120 Source: Global CCS Institute, project view: [https://www.globalccsinstitute.com/projects/large-scale-ccs-projects#overview].

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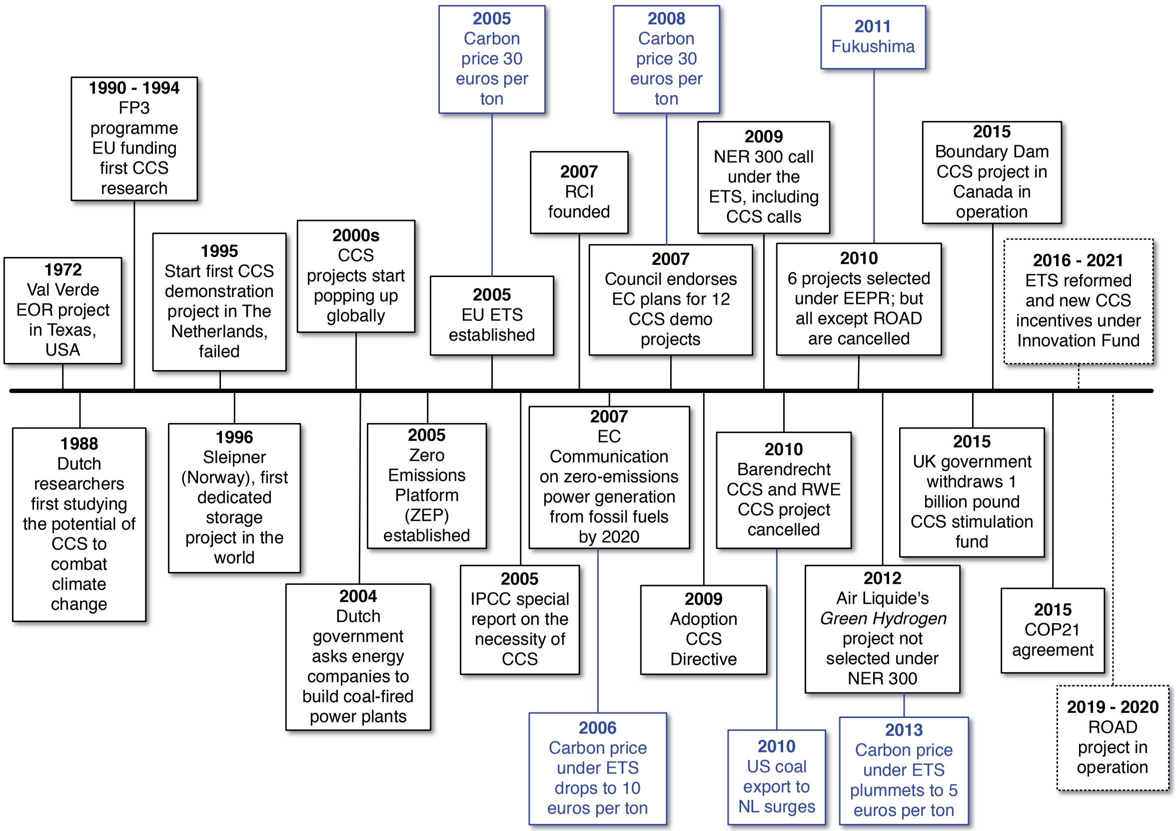

Figure 5.2. Timeline of CCS and related economic events
Source: author's own reconstruction.

5.2.1.2. 1988 - 2005: Thinking about CCS and the climate

Whereas academics have been concerned with anthropogenic climate change well before the 1990s, it was not until then that the debate shifted from whether we have enough fossil fuels left on this planet to how much we can still use before global climate disasters start to happen. CCS fits into this new debate, as experts and policy-makers began to think about other ways to get rid of excess CO_2. In 1992 the United Nations Framework Convention on Climate Change (UNFCCC) was established, underlining international concern for the climate (IPCC, 2005:20). Globally, power plants and the industry emit much more CO_2 than can realistically be used with current (and prospective) technologies (Styring, De Coninck, Reith & Armstrong, 2011:10). Finding a way to store carbon dioxide without letting it escape into the environment therefore became a priority. Underground storage of CO_2 makes no sense economically: there is no added value to storing the gas without the application of EOR. The addition of dedicated storage to carbon capture is therefore purely climate-oriented (Krahé et al., 2013:754; Nykvist, 2013:684). Dutch researchers at Utrecht University began looking into CCS in 1988 and in 1990 the SOP research programme (in Dutch: *Samenwerkend Onderzoeksprogramma*) was launched, which included CCS as a research topic (De Vos, 2014:35). In 1995 a first attempt was made to start a CCS demonstration project, but this failed due to low interest from the Dutch ministries of Economic Affairs and Finance (Van der Hoeven, 2008:40)[121]. Norway then took over and, in 1996, developed Sleipner, the first dedicated geological storage project in the world. Sleipner captures CO_2 during natural gas processing and directly injects it into a deep offshore location[122]. The Dutch continued their research on CCS, but there were no implementation attempts. However, when in 2004 the Dutch government feared electricity shortages, it asked the private sector to build coal-fired power plants to diversify the country's energy sources and secure affordable energy for its citizens. Two of the resulting power plants, Uniper's (formerly E.on) and Engie's (formerly GDF Suez) plants on Maasvlakte 2, were built with concrete plans to apply CCS as of 2013.

Simultaneously with Dutch activities the European Union undertook its first CCS research initiative under the third Framework Programme (FP3) between 1990 and 1994. However, it was not until 2005 that CCS started to appear on the political agenda of the EU (Martínez Arranz, 2015:249; Nykvist, 2013:683). By then, CCS projects had started to pop up globally and the IPCC had published its special report examining the potential of CCS to stabilise the climate (IPCC, 2005). The IPCC states that a combination of technologies is needed to bring

121 Also confirmed in interview 20. Then Dutch Minister of Finance Gerrit Zalm supposedly said that it is nonsense to put money underground (in Dutch: *het is onzin om geld onder de grond te stoppen)*. See also the article 'Dromen van verstoppertje in de broeikas' in Volkskrant, 25 February 2006.

122 See footnote 5.

about the required emissions reductions, but also stresses that "CCS has the potential to reduce overall mitigation costs and increase flexibility in achieving greenhouse gas emission reductions" (*ibid*.:3). The Zero Emissions Platform was then established by the EU, bringing together a variety of CCS stakeholders from the public and private sector, research institutes and NGOs and geared towards advising the European Commission on CCS issues (ZEP, 9 June 2016). The Commission also launched the Emissions Trading System (ETS) in 2005 as one of the tools to implement the Kyoto Protocol. The overarching vision was that ETS will help "promote reductions of greenhouse gas emissions in a cost-effective and economically efficient manner"[123].

5.2.1.3. 2005 - Today: CCS projects, or not?

Serious Dutch attention for CCS started with the establishment of the CATO programme in 2004, which had as objective to find out if CCS is a promising option for The Netherlands. The city of Rotterdam became interested in CCS and made it one of the main priorities of the Rotterdam Climate Initiative[124]. In 2008 the Public Task Force CCS was established, led by ex-prime minister Lubbers. Still, the Dutch government chose to leave the choice to the market, meaning there was no active push towards CCS development. Two notable onshore CCS projects were developing around this time: the Barendrecht project[125] in the province of South Holland and the Eemshaven project[126] in the northern part of The Netherlands. However, the political and public tide turned against storing CO_2 onshore and close to populated areas, not in the least due to failed communication regarding the specifics and safety of the project (Feenstra, Mikunda & Brunsting, 2010:28-30). The public's fears that the CO_2 would leak out of the reservoirs and pose a danger to public health trickled into the political debate. Shell and the Ministry of Economic Affairs undertook attempts to repair their communication towards citizens, but the Barendrecht project had become societally unacceptable[127]. Eventually, the minister of Economic Affairs decided to cancel Barendrecht and banned onshore CO_2 storage for the foreseeable future. Again, Dutch CCS developments seemed to come to a halt.

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123 Art. 1 ETS Directive (2003/87/EC).

124 Launched in 2007 after Clinton (and the Clinton Climate Initiative) challenged Rotterdam to reduce its emissions.

125 Operated by Shell.

126 Operated by Essent (now part of RWE).

127 For further reading on what happened with the Barendrecht case, see Feenstra, Mikunda & Brunsting, 2010. Accessible from [http://www.globalccsinstitute.com/sites/www.globalccsinstitute.com/files/publications/8172/barendrecht-ccs-project-case-study.pdf].

As for the EU, CCS picked up speed in 2007 when the Commission published a Communication titled *Sustainable power generation from fossil fuels: aiming for near-zero emissions from coal after 2020*. The title reveals a goal which — we now know — will definitely not be attained by 2020, but it does mark the start of EU funding for CCS projects. The Zero Emissions Platform (ZEP) called for a CCS flagship program in order to ensure that CCS would be economically viable by 2020 (ZEP, 2007). The flagship program for CCS was launched under DG Climate's NER 300 programme. The *Green Hydrogen* project by Air Liquide attempted to get funding under that programme, but failed. Eventually just one CCS project was awarded funding under NER 300[128]. In 2008 the European Council called for a mechanism — to be created by the EC — to incentivise investments into CCS, specifically asking for the construction of twelve CCS demonstration projects by 2015[129]. Following the economic crisis, the European Energy Programme for Recovery (EEPR), led by DG Energy, was also launched. It contained the call for six CCS projects to be spread all across Europe and covering all possible aspects of CCS *together*. In The Netherlands, energy companies were considering the implications of CCS for their own operations. E.on (now Uniper) and Electrabel (now Engie) were doing research to try to obtain funding for a CCS project. EEPR would divide 1 billion euros equally among the winning projects. The rule was that only one project per country could be selected for the competition, so Dutch companies had to compete with one another. In total there were three Dutch projects: E.on, Electrabel, and Nuon (in the north). Since E.on's and Electrabel's plants were situated merely 1km apart, both companies thought it better to bundle forces and create a project together so as to increase their chances of being selected by the government. Their project, ROAD, received a positive EU funding decision in 2010. The Rotterdam region also applied for project funding for Air Liquide's CCS project under NER 300. The project was highly feasible; most of the steps were already part of common practice in the energy industry. The newer, most risky, part was the injection of CO_2 into the ground. This process was not part of Air Liquide's responsibility, but would be taken up by Danish Underground. However, Air Liquide could not vouch for the safety of the process, since it lacked knowledge on the topic. The official story is that the project was not awarded funding when the Dutch government could not guarantee a matching subsidy, which was a precondition for funding, and due to a wrongly ticked box on the application form. The unofficial story as told by people involved in and around the project is that DG Climate found an inventive way to kick CCS projects out of NER 300 because it favoured the development of renewable energy[130]. The truth is probably somewhere in the middle.

128 The project that did get funding commitment under NER 300 was the White Rose CCS project in the UK. However, since the project has been put on hold it has not received any of the funding (yet).

129 This led to Commission Decision 2010/670/EU of 3 November 2010.

130 This claim has not been verified.

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The outlook for CCS seemed promising in 2009 with the demonstration plans under the EEPR and the adoption of the CCS Directive (2009/31/EC). The Directive outlines a framework within which the EU feels CCS should operate in Europe, thereby leaving considerable leeway for MS to implement the Directive in whichever way they want. It specifically calls CCS a "bridging technology that will contribute to mitigating climate change" and states that CCS "should not serve as an incentive to increase the share of fossil fuel power plants"[131]. However, CCS alone is foreseen to contribute to about 15% of CO_2 reductions by 2030. Whereas CCS appeared to have a bright future around the time the economic crisis started, that promise did not last long. Under the ETS the CO_2 price dropped from 25 euros per ton in 2008 to around 5 euros per ton in 2013. CCS projects suddenly became unattractive due to the financial hole created by the low CO_2 value. Of the 6 projects selected under EEPR, the projects died one by one until only one (ROAD) survived. The dramatically low price of CO_2 was the primary reason for premature CCS death across Europe, since businesses now faced a tremendous financial gap in their CCS business cases. Neither the EU nor national governments have renewed their efforts to financially incentivise CCS after 2010. In fact, in November 2015, the UK government decided to end its 3-year running 1 million pound CCS competition programme, which may lead to all of the proposed CCS projects there to be cancelled as well.

The Paris agreement (COP-21) of December 2015 represents global commitment to keep the temperature rise under 2°C, and preferably under 1,5°C, and came at a time when an important technology identified by the IPCC became difficult to develop in the EU. Near the end of 2015 the discussion regarding the legitimacy of coal-fired power plants flared up in The Netherlands, likely leading to a ban on unmitigated coal burning by 2030. Applying CCS may now be the only possible license to operate companies such as Engie and Uniper will have. While the exact consequences of this discussion are not yet known, it may very well be that they will get CCS going in The Netherlands.

5.2.1.4. Facts and market developments

Early in 2016, of the six projects selected in the EEPR program only the British and the Dutch projects were left, yet both were still not in operation. Overall, there seems to be issue competition between CO_2-reduction and renewables within the EC[132]. There are more member states developing renewable energy than CCS. With declining economic advantages,

131 Directive 2009/31/EC, 05-06-2009, preamble (4), p.1.

132 There is much literature on issue competition, linking the victory of certain issues over others to, for example, competing demands or the dominance of political parties or ideologies. See also Green-Pedersen & Mortensen (2010), Baumgartner, Jones & Wilkerson (2011) or Wolfe, Jones & Baumgartner (2013).

the EU's interest in developing CCS has waned. In the last EEPR round no CCS project was put forward, and the same seems to be happening in the current round.

The International Energy Agency (IEA) has identified CCS as a game changer in climate change and has stated that CCS is necessary to mitigate global warming. Due to American coal dumping in Europe, CCS would seem promising but is as yet undeveloped. Countries still relying on coal for their electricity supply, such as Poland, can benefit from CCS because it allows them to keep using coal while reducing carbon emissions. In this way CCS ties into energy security strategies as well as into sustainability.

According to the Global CCS Institute[133], there are 40 large-scale[134] CCS projects existing worldwide, of which 15 are operational, 7 under construction, 6 in a very advanced stage of development planning, and 12 in an earlier stage. There are six projects in Europe, although the only two operational projects are in Norway[135]. The UK has three projects[136] in the early stage of development and The Netherlands has one project (ROAD) with a planned operation date by 2020. All projects in Europe concern carbon storage in a dedicated geological site, whereas worldwide there is a fairly equal division between geological storage and EOR. By far the most popular form of carbon transportation is by pipeline. Outside the EU there is one notable project in the power generation sector: the Boundary Dam CCS Project in Canada, which is operational since 2014 and stores CO_2 by employing EOR[137]. Just like in the EU, CCS is only barely developed globally.

5.2.2. Policy Context

Any case study in this field should consider the political and legislative contexts it operates in. Chapter 4 discussed the relevant policies at length. This section acts as a brief summary and foregrounds key policies, goals and tools. As with other climate-related issues, EU

133 The information in this paragraph can be found on the website of the Global CCS Institute [https://www.globalccsinstitute.com/projects/large-scale-ccs-projects] and is offered in an interactive format. Last checked on July 15th, 2016.

134 A large-scale CCS project involves the capture, transport and storage of CO_2 of at least 800,000 tonnes annually (coal-fired power plant) or at least 400,000 tonnes annually for other emissions-intensive industrial facilities (Global CCS Institute, 7 January 2016).

135 Sleipner (1996) and Snøhvit (2008), both used for natural gas processing and not for electricity generation.

136 Don Valley (2020), Caledonia Clean Energy (2022) and Teesside (2020s), all in the power generation sector, although Teesside has a broader scope allowing for other industries to hook up as well.

137 Other notable projects that are already in operation are in the U.S. (since 1972), Canada (since 2000), Algeria (since 2004), Brazil (since 2013) and Saudi Arabia (since 2015).

involvement seems quite obvious. Transboundary problems require supranational action to set goals, although their implementation is done nationally or even locally. As discussed in chapter 4, CO_2 reductions are part of the 2020 Climate and Energy package, the 2030 Energy and Climate framework and the 2050 Roadmap. These documents provide a basis for EU involvement; if MS are to reduce their carbon emissions, the EU can help them develop CCS by funding research and pilot projects. However, options are kept open for MS, meaning that they do not necessarily have to invest in CCS. Under the current Emissions Trading System (ETS) it is cheaper to emit CO_2 than it is to store it.

Figure 5.3 shows the price of the carbon allowances (EUA) under the ETS between 2005 and 2015. At the time when CCS projects started popping up in Europe, the price was about 30 euros per ton CO_2. Most projects were cancelled between 2011 and 2013 when the carbon price dropped below 5 euros due to low prices in commodity markets, permit surpluses and subsidies given to renewables. Currently, a good business case for a CCS project in the power sector needs a carbon price of between 40-50 euros, which could drop to around 30-35 euros. For the industry a carbon price of 80-90 euros is needed[138]. It is clear that the EU ETS price is nowhere near a good CCS — or any other costly low-carbon technology — business case, and the price volatility does not help either. Many policy-makers, companies and politicians alike feel that this is part of the reason why ETS reform

Figure 5.3. Carbon price trends showing dramatic drop in CO2 price without recovery
Source: EEA, 2015:22.

138 Interviews 19, 27.

is needed. Furthermore, agriculture and horticulture are not included in the ETS, which means that they have no incentive to participate in reduction strategies such as CCU. One of the reasons why ETS reform is slow is because the competitiveness of European companies needs to be safeguarded as well; with a very strict ETS and absent a global ETS, European companies are at risk of losing competitiveness. Table 5.1 shows a brief summary of the CCS policy context.

Table 5.1. Governments want sustainability, but policy to support CCS lacking power

Level of government	Main policies	Goals	Policy instruments
EU	1. ETS Directive 2. CCS Directive 3. Energy 2020 4. 2030 Energy & Climate Framework 5. Energy Roadmap 2050 6. (National Emission Ceilings Directive) 7. (Industrial Emissions Directive)	• Ensure safety of CCS (for public and environment) • Drop of total emissions (43% in 2030) of ETS sectors • 80% total CO_2 reduction by 2050 • 30% energy efficiency • Majority of energy is renewable	• Funding (NER 300/400, EEPR, Horizon 2020/Era-net, Innovation Fund) • Emissions legislation and environmental law • Gives opinion on MS-proposed storage permit • No hard or soft targets (except for previous 12 demos by 2015 goal)
Dutch national government	1. Energieakkoord 2. Energierapport	• 80-95% CO_2 reduction in 2050 • 16% renewables in 2023 • CCS demonstration • Only use CCS if no other options are available	• Funding (for ROAD) • Coordination of Era-net for ROAD • Awarding storage permit • Prohibition on on-shore CCS demonstration • Energy policy (+ competence to introduce emission ceilings) • Green Deals
Province of South Holland	1. Energieagenda 2. Beleidsvisie Duurzaamheid en Milieu	• 20% energy saved in 2020 • 20% lower CO_2 emissions in 2020 • 14% renewables in 2020 • Stimulate re-use of waste (such as CO_2)	• No specific instrument to support CCS, but is in charge of environmental permits • Environmental and (sub-)surface legislation • Delegates tasks to DCMR • Participates in Green Deals
City of Rotterdam	1. Programma Duurzaam	• Cleanest port city in the world by 2030 • Re-use of waste (such as CO_2) • Stimulate CO_2 capture (first CCU, then CCS)	• Construction permits energy/industry • Active through RCI • Mostly political pressure

Source: author's own composition based on desk research.

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The Port of Rotterdam develops its CO_2 hub within the described policy context and therefore encounters multiple layers of government regarding different aspects of the hub. As becomes clear from table 5.1, the European level is responsible for long-term goals and short-term project funding. While the national authority is allowed to go beyond European goals, it currently chooses not to do so. Instead, it broadly adheres to EU goals and participates in CCS funding efforts and research. The decentralised levels of government have very specific tools needed for CCS, such as the permits. While they do have certain policy goals, they are not involved in actual policy-making regarding CCS. The city of Rotterdam did place a strong emphasis on the contribution of CCS to its sustainability, especially around the time Rotterdam Climate Initiative was created. In that sense, the city has been important for the Port of Rotterdam's ambitions regarding its potential hub-function for CCS.

5.3. BEHIND THE SCENES: THE GOVERNANCE OF CCS

The previous part of the chapter focused on the context of the CCS case. The second part of this chapter will focus on the governance dynamics driving the case. This section will thus introduce the empirical data collected through the interviews conducted with experts, desk research and observations made at the Port of Rotterdam Authority.

For the Port of Rotterdam, CCS is part of its plans to be a CO_2 hub; a hub for large-scale capture, trade and storage of CO_2. It is therefore very important to the PoR that the first demo project, ROAD (*Rotterdam Opslag en Afvang Demonstratieproject*, which literally means Rotterdam Storage and Capture Demonstration project), is realised. Furthermore, the hub function also spreads to the use of carbon in, for example, horticulture. Investments are made in pipelines to this sector as well as in infrastructure to make ROAD possible. ROAD is a project jointly led by Uniper and Engie. The project is a CCS demonstration project for offshore (25km) storage. Originally, the plan was to capture and store 1,1 million tonnes of CO_2 coming from Uniper's coal-based power plant on Maasvlakte 2 for a period of 5 years and starting in 2015. The Dutch government required a 5-year running period as basis for funding. This project received EU funding under the EEPR Program but is still struggling with a financial gap and a delayed final investment decision, leading to changes in its scope and running time. Mid-2016 the project runtime was revised to 2-3 years, starting in 2019 or 2020. For the further development of the Rotterdam CO_2 hub, the OCAP pipeline makes carbon streams through the port possible and both Shell and Abengoa supply regional greenhouses with their waste CO_2 this way. Efforts are being made to supply greenhouses with excess heat generated in the industry — thereby possibly increasing the transport of CO_2 as well — within the province of South Holland under a project called *Warmtenet*.

5.3.1. The 'CCS Network'

Who is actually involved in CCS in, or related to, the Rotterdam area? This question is an important one to answer if the impact of this case on European energy policy is to be considered. Figure 5.4 shows the involved actors in the multi-level context. A more detailed overview can be found in annex V.

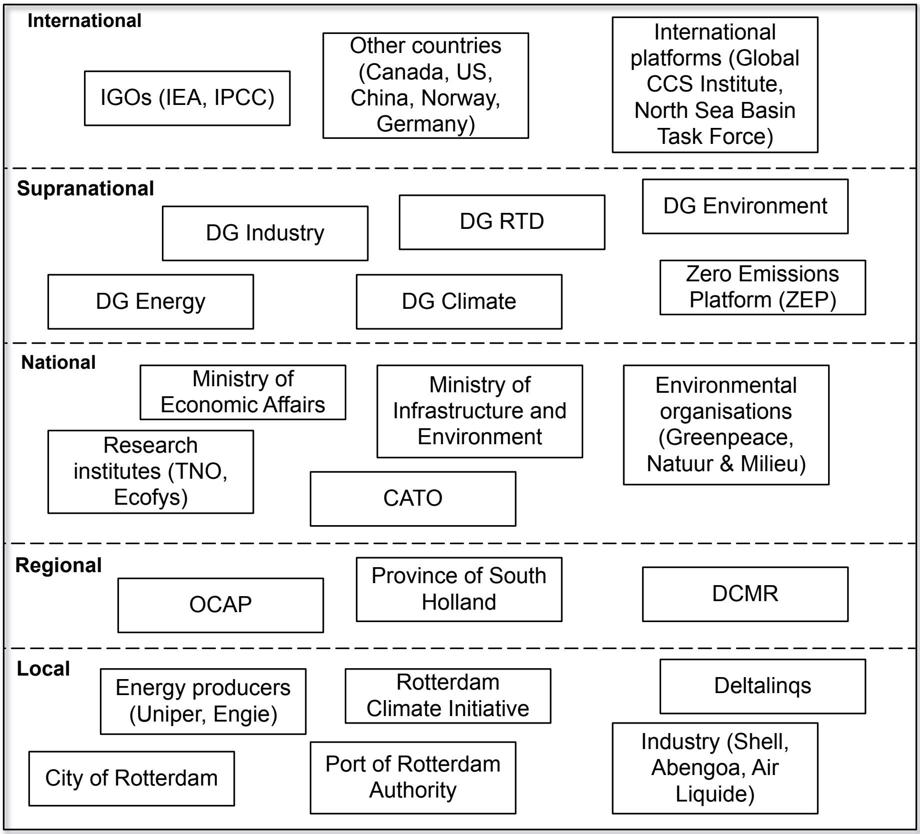

Figure 5.4. The CCS network in multi-level perspective
Source: author's own compilation based on fieldwork. Companies such as Shell are labelled local even though they operate on all levels and could be placed in multiple categories.

Not every actor can be considered in this dissertation. The ETS and CCS Directives are implemented by other EU member states as well, although The Netherlands and the UK presently are the only countries with a CCS project that might see daylight. Non-EU countries applying CCS have been discussed in section 5.1.2.4. and will be referred to when they contribute to the Dutch case. Multiple governmental and non-governmental organisations have published on CCS and their data will be used throughout this chapter when relevant. Not all the actors in figure 5.4 are part of the CCS core network. The interviews probed how actors are related to each other in this case, specifically looking at whether they have specific governance ties with the purpose of delivering public goods. Figure 5.5 shows the ego network for the Port of Rotterdam Authority in the CCS case.

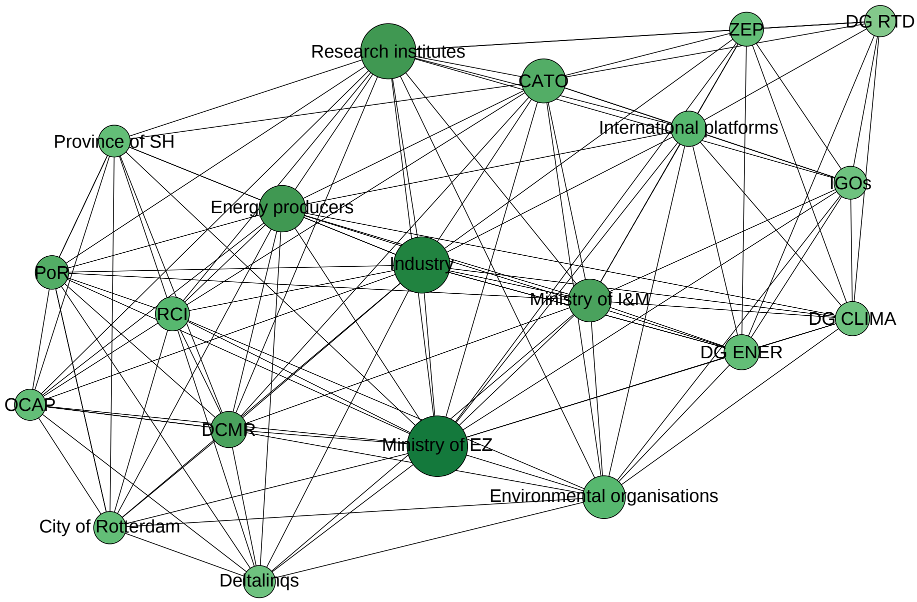

Figure 5.5. CCS ego network for the Port of Rotterdam Authority
Source: author's own composition based on fieldwork. The darker the node, the higher its degree. Minimum set edges per node is 10 (maximum is 20). The average degree is 12.4, the density is 0.653 and the modularity is 0.19, so there are no analytically meaningful communities in this network. Used software: Gephi (ver. 0.9.2).

A surprising finding of this study is that, in the PoR's small-scale CCS ego network, the PoR does not seem to have a pivotal place[139]. Its betweenness centrality is 1.35, meaning others would still be connected to each other if the PoR were removed. However, the PoR is also represented in RCI (the same goes for the city and DCMR), so RCI's connections should also be counted towards the PoR. Outliers are the Ministry of Economic Affairs (12.51), the industry (10.7) and research institutes (10.31). The Ministry can potentially be powerful, yet the question is whether it uses its power to advance or block the interests of others. As the qualitative analysis will show, EZ has actively tried to acquire more international funding for the ROAD project, though this study determines that EZ's own policy-making is rather passive. The industry is well-connected both at national and EU level, speaking to

139 In the minds of other actors, however, the PoR does play a large role. See section 5.3.4.1. for further discussion.

private sector actors, policy-makers and researchers alike. The pivotal role of academia has also been discussed earlier in this chapter so its centrality is unsurprising, though research institutes otherwise lack resources to really make deployment happen. Actors with the lowest betweenness centrality — potentially low influence — are DG RTD (0.4) and DG ENV (0.0). DG ENV watches CCS from the sidelines, while DG RTD has been important for CCS research but apparently does not offer many unique connections. Figure 5.5 provides justification for leaving other countries out of the analysis unless relevant on a micro-level.

5.3.2. Governance at EU Level - the Domestic — International Dimension

As discussed earlier in the historical overview, the connection between CCS and climate change mitigation was first made in academia. The Dutch government then officially began to consider the prospects of CCS, but no large-scale demonstration projects were carried out before the EU's CCS Directive (2009/31/EC) was launched. MLG hypothesises a shift from domestic to international coordination spurred by the necessity for supranational coordination due to international interdependencies which cannot be ignored. It is therefore expected that policy coordination — in increasing amounts — will take place at the European level (Piattoni, 2010) and that the PoR is also active at the international level since the required policy solutions cannot be provided by the national government alone. This section will look specifically at this first theoretical expectation and present its key concepts: the *interdependencies at international level* (with substantial cross-border connections between business, civil society and government) and the *level at which policy coordination occurs*. I will start with the latter and show where most of the relevant binding policy decisions are taken and whether the Dutch government actively refers to the necessity of EU decisions.

5.3.2.1. CCS as part of larger EU energy and climate policy coordination efforts

From the onset, CCS was seen as a way to drastically reduce CO_2 emissions in Europe. The European Commission deftly incorporated it into its efforts to coordinate climate mitigation policies across the EU by proposing the CCS Directive as part of a larger, first of its kind[140], climate and energy package in 2009. The Commission argued for its competence in this area by stressing that "in a world of global interdependence, energy policy necessarily has a European dimension" (European Commission, 2006:17). In other words, the EC was seeking harmonisation of energy policies across Europe. As discussed in chapter 4.2.2.2, it was aided by serendipitous circumstances: international climate negotiations. The EU's quest for a political victory led to domestic acceptance and upscaling of policies to the EU level.

140 An earlier (1991) effort to link climate and energy policies failed (Skjaerseth, 2016:512).

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Box 5.1. When political victories lead to unwanted side-effects

The choice for CCS - the political narrative
COP15 was just around the corner in 2008. The financial crisis was in its early days, and the EU was recovering from a failed Lisbon Strategy and the rejection of the European Constitution. The European Commission needed a political victory. It set out to formulate the Climate & Energy package, heavily aided by German chancellor Merkel, who was able to secure unanimous support for the package. The technocratic Commission saw great potential in CCS technology to drastically reduce European emissions. A CCS Directive was included in the package. The European drive to present itself as the global climate leader during COP15 (2009) led to a swift adoption of all the legislative documents under the Climate & Energy package. Demonstrating low carbon technologies such as renewable power generation and CCS was linked to the EU ETS in an effort to spur them along. The EU showed climate leadership in Copenhagen, but the implementation of the packages was yet to come.

The choice for CCS - the industrial narrative
With the formulation of the CCS Directive in 2008 and the underlying financial instruments to get CCS demonstration going, the European power generation sector set out to define CCS demonstration projects. Spirits were high because there seemed to be political support and the carbon price under the EU ETS was at a good 30 euros per ton. As projects were being lined up, European member states began to implement the CCS Directive. Nearly all countries delayed proper implementation or made it difficult to get permits and additional financial instruments. Some countries invested heavily into renewables, granting large subsidies that pressed on the carbon price, which dropped by 50% in 2010. The CCS projects that had been approved by the EU in the meantime started to flounder. Without a functioning national legislative framework and the ability to make a business case, companies started cancelling their CCS projects one by one.

The EU's drive to be a global climate leader and its ability to gain support from its member states shows how international interdependencies reflect back onto the decision-making process at the domestic level. The climate and energy package lost its momentum after it was adopted, not in the least due to the economic crisis and the continuously dropping CO_2 price under the ETS. However, the implementation of the package also posed problems for some countries (Skjaerseth, 2016:521). As mentioned in box 5.1 and discussed in more detail in section 5.2.3, the implementation of the CCS Directive was delayed in many countries. A Commission representative showed the EC is aware of its lack of success and linked it to the original wish to be a global climate leader:

> *"If ROAD will be built, it will show that the EU's plans for CCS were only largely a failure instead of a complete failure. The plan was to have 12 plants operating by 2015. That plan was definitely not achieved. But having ROAD in operation would be a game changer, showing we do have a CCS plant in the EU."*[141]

141 Interview 29.

The quote above also helps explain why a lot of effort has been made by the Commission to get ROAD going. Yet, as box 5.1 shows, the larger picture remains unchanged: the EU attempted to coordinate the development of CCS, but in reality each MS retained its own CCS policy preferences.

5.3.2.2. A vicious cycle of policy coordination

After the adoption of the 2020 Climate and Energy package, expectations regarding CCS development in Europe were high, but the 12 CCS projects the EC and the Council hoped for did not come to fruition. In a televised debate on June 22nd, 2016[142], one of the DG CLIMA deputy heads, Tom van Ierland, stated that private investors mostly blame the low carbon price under the EU ETS for the lack of CCS projects. My interviews confirm that the EU ETS is often called the main driver for CCS, but that it is currently not driving it. Most actors are therefore calling for ETS reform, implicitly (sometimes explicitly) claiming that policy needs to be coordinated at a higher level than the national level. One employee from the Dutch government put it as follows:

> *"The incentive for companies to demonstrate CCS is low. The ETS does not help incentivise this, but The Netherlands cannot do much about this on its own. The national government is powerless in this respect. The Netherlands is also looking at what other countries are doing to maintain a level playing field. That is important because otherwise the industry could go elsewhere and that is a problem as well."*[143]

Just as judicial sentencing creates precedents, so does EU coordination. The EU's natural response to failing policy coordination seems to be more policy coordination, but using a slightly altered approach. In 2013 the European Parliament reviewed[144] the development and implementation of CCS and stressed again that the technology might have a big role to play in Europe's ambitions to decarbonise. The EP also stated that the member states who foresee a role for CCS in their future cannot expect the private sector to do everything on its own; a financing mechanism is necessary. Those MS who do not want CCS should consider their 2050 strategy in their National Action Plans (NAPs) and critically reflect on what they need to do to reach long-term climate targets. In other words, the previously adopted

142 The debate was organised by ViEUws and can be found at [http://www.vieuws.eu/live-panel-debate/cop21/paris-deliver-low-carbon-investment-signal-europe-needs-22-june-2016-live-panel-debate/].

143 Interview 22.

144 Procedure 2013/2079(INI).

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technology-biased approach was traded in for a more technology-neutral approach, which befits the wishes of governments and businesses alike[145]. An official from the Commission made the following statement during an interview:

> *"Nowadays, the Commission's stance is starkly technology neutral. That was not the case in 2008/2009. Back then there were very specific targets. But targets are an indication of a certain preference. What is really needed is to achieve emission reductions in the cheapest possible way. That is also why the ETS was set. The market can then find the cheapest solutions."*[146]

Apparently, setting a regulatory framework with specific targets in place was not sufficient to spur development. The EU's approach therefore shifted from prescribing targets in directives to believing in market-based strategies and facilitating incentives through (co-)funding: covert coordination. Yet the carbon price under the EU ETS remained low, making it difficult to place trust in its effectiveness to stimulate decarbonisation. Lacking member state support for further ambitious climate and energy initiatives, the EU tried to coordinate in yet another way in 2015, when the European Commission (2015f:2-22) reviewed the state of the ETS and proposed the adoption of two financing mechanisms: the Modernisation Fund and the Innovation Fund. If adopted, the Modernisation Fund will be made up of 2% of the overall quantity of allowances and should help modernise the energy sector of low income countries, with a particular focus on small-scale installations. The Innovation Fund is basically an extension of the NER 300 programme and supports new low-carbon initiatives in the power sector as well as in the industry. The Directive has not yet been adopted as it is awaiting discussions in the EP's committees in December 2016. The EU's continued attempts to coordinate are linked to the concept of international interdependencies, which is discussed next.

5.3.2.3. International interdependencies cause counteracting forces

The previous two sections show that national governments have willingly created interdependencies at international level, both due to a global political context (COP-15) and in order to maintain a level playing field across countries. The Dutch were one of the early advocates of CCS — which is also visible in the CCS research conducted since the early '90s — yet some interviewees have stated that politically CCS was never a done deal at the national level

145 See also [http://ec.europa.eu/energy/en/consultations/consultation-future-clean-coal-technologies-and-carbon-capture-and-storage-ccs]. Confirmed in my interviews with EC officials and business representatives.

146 Interview 28.

either. Between and within ministries, opinions on CCS differed[147]. Barendrecht failed due to opposition from the general public (see also box 5.2), but offshore CCS remains an option. CCS is called an *end of pipe* solution, which means that unwanted substances are still created but are being prevented from being emitted: the artificial cleaning of a polluting stream[148]. An interviewee from the private sector aptly summarised the feeling of unease that surrounds CCS:

> *"It is sort of crazy to put new gas under the ground in the most highly populated country of the world."*[149]

Piattoni claims that international interdependencies are also created by actors such as NGOs, sub-national authorities and business. Let's review these actors for the CCS case, starting with NGOs. An NGO such as Greenpeace has actively campaigned against CCS, arguing that it prolongs the life of fossil fuels, though the potential of CCS for heavy industries such as the steel and cement industry is being considered. However, Greenpeace has actively chosen not to participate in joint public - private discussions for fear of being misrepresented as being supportive of CCS merely by showing up. It does speak privately with the national government and provides input for the *Energieakkoord*[150]. Another Dutch environmental organisation, Natuur & Milieu (in English: Nature & Environment), does participate in public - private discussions and sees potential in CCS when applied to gas-fired power plants (in the transition phase to renewables) and heavy industry[151]. Yet the best examples of agenda-setting and subsequent creation of awareness for international coordination have been the IPCC, IEA, and ZEP (IGOs). Hedging CCS technology as a potential 'climate saviour' and arguing for a global carbon price stuck in the minds of many domestic policy-makers; some using it as a reason to push forward with CCS, others using it as a way to excuse themselves from domestic initiatives whilst letting the EU struggle to adopt legislation. ZEP is the only platform specifically new for CCS; the other channels are long established.

Second, and in contrast to Piattoni's model, my interviews did not confirm any particular importance of sub-national authorities in propelling international coordination. The Rotterdam Climate Initiative locally is a well-known initiative and strong coalition of the municipal government, DCMR, Deltalinqs, and the Port of Rotterdam Authority. RCI acknowledged the necessity of the application of CCS in the Rotterdam region, but none of the Commission

147 Interview 31, 37, field work reports N, Q.

148 It fits the Dutch idiom '*dweilen met de kraan open*', which hints at the pointless activity of fighting symptoms but not the disease.

149 Interview 24.

150 Interview 38.

151 Interview 39.

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experts I interviewed had heard of it even though RCI actively advocated CCS. The German *Länder* (provinces) actually counteract EU coordination with most of them banning on-shore CCS in their implementation of the CCS Directive. Section 5.3.3 will investigate whether SNAs are empowered domestically, but in international policy-making they seem to have played a marginal role and have certainly not created cross-border linkages. The PoR, in turn, also advocated the ROAD project together with the project partners and received much traction at national level and even among friendly Commission officials. Its *Havenvisie 2030* vision is well-known to them and policy-makers listen eagerly to the PoR's vision on a potential transnational CO_2 hub, especially in light of its potential to store the CO_2 emitted by industries in Germany. The potential international significance of the ROAD project — partly advocated by the PoR — is the reason why The Netherlands, Germany, Norway and the EC have been developing a separate funding mechanism for ROAD under Era-net[152].

Third, business mechanics have played an important role in this case *not* because of the existence of CCS business networks but rather through policy-makers' fear of potential carbon leakage if climate policies (and measures such as carbon taxation) spanned too little territory, which was readily confirmed by potentially affected industries (using their traditional umbrella organisation channels). Their rationale is that if individual countries, or even just the EU, adopt too stringent climate measures, the industry will just pack up and leave for greener pastures elsewhere where the climate is not regulated too strictly. Losing chemical industry and heavy industries could hurt the European economy severely and therefore the incentive to subject these industries to stringent targets has been small. Most of these industries are exempted from the EU ETS or get free allowances, causing them no worries in their production process. The power generation sector is often tied to national governments or infrastructure and is therefore not easily subjected to carbon leakage, which is why it made sense in the minds of policy-makers to start demonstrating CCS in that sector. However, companies called for financial support to demonstrate the technology in order to kickstart its upscaling, which caused political unease due to discussions surrounding government support of fossil fuels and the public's negative perception of the safety of CCS. Box 5.2 shows how differing opinions in the industry were eventually politically outmatched by public opinion.

To summarise this first section, most of CCS activity went through already established channels, creating very few new cross-border linkages and maintaining policy coordination in domestic hands rather than subjecting to the EC's attempts at supranational coordination. The call for coordination on the international level implies a shift away from the domestic level, yet the power remaining in the hands of national governments cannot be ignored. It is up to them to decide whether there is a place for CCS in their energy mix and climate

152 Interviews 28 and 31.

Box 5.2. When public opinion outweighs differentiated industrial opinions

Deploying CCS - the political narrative

The Dutch national government has tried to develop CCS projects since the '90s. A key demonstration project would have been Shell's Barendrecht project, though the public's negative opinion of the safety of CCS and their fear of suffocating if the gas escaped underground reservoirs caused the government to pull the plug out of the project and ban on-shore carbon storage for the foreseeable future. Looking toward off-shore storage, the government decided to support the ROAD project. National realisation of EU climate targets for 2020 were in large part dependent on the success of ROAD. The public did not seem as negative about ROAD because the CO_2 would be stored in the sea and not on land, lowering its perceived threat. However, a political discussion regarding the legitimacy of subsidising CCS for coal-fired power plants flared up, and public opinion turned against 'prolonging coal'. The government could no longer legitimately show open support for ROAD by increasing its funding, yet also found itself in a difficult position due to making its climate mitigation success dependent on CCS. Behind the scenes, it began helping ROAD to secure more financing through the EU and other national governments.

Deploying CCS - the industrial narrative

Shell severely burned their fingers on the Barendrecht project and decided in its aftermath to move their CCS operations to the United Kingdom. Engie and Uniper, as the main partners behind the ROAD project, knew they had to decrease their CO_2 emissions under a functioning EU ETS and saw a potential license to operate their coal-fired power plants provided they implemented CCS. While CCS was used widely on a small-scale and for EOR purposes, its large-scale use for dedicated storage purposes needed more demonstration, also to show the public that it is a safe technology. A further decline of the carbon price increased the need for additional funding to support a failing business case, but would help The Netherlands reach its climate targets and hopefully turn the tide of public opinion. Yet the support for CCS in the power generation sector was not matched by support from other industries, who warned policy-makers about potential carbon leakage if climate measures would go too far. They had no interest in being subjected to EU ETS. Differentiated interests in the private sector made it difficult to advocate CCS effectively.

mitigation strategy. Multi-level governance illuminates the complex intertwinement of the domestic and the supranational level. The CCS case shows a symbolic shift to the supranational level, to be filled with the activity of national governments or further hollowed out by them. The PoR has actively tried to use the EU's support to elicit domestic change.

5.3.3. Governance at National Level - the Centre — Periphery Dimension

5.3.3.1. One directive, 28 implementations

Before delving into the centre - periphery dimension, this paragraph provides international context to how domestic actors in The Netherlands have behaved. Whereas the adoption of the CCS Directive went quite flawlessly, its implementation is an entirely different matter. Only Spain had transposed the Directive to the Commission's satisfaction within the set time limit[153]. Poland and Croatia[154] were the last two countries to report full transposition of the Directive (Shogenova et al., 2014:6663). Some countries still prohibit CO_2 storage while others allow it and have laid down laws to facilitate it[155]. The significant leeway this directive gives to national authorities in terms of its transposition has therefore not led to a harmonised CCS policy framework across the EU. By the time the directive was implemented, the CCS projects proposed under NER 300[156] and EEPR had started to disintegrate. Most of the newly accessed member states noticed that the issues linked at EU level in the 2020 package did not work that well at the domestic level, which is a perfect illustration of the tension between domestic and supranational agendas. Poland, for example, voted in favour of the package due to high hopes for ETS revenues, CCS and renewables. But the trade-off between investments into low-carbon technologies and carbon price market mechanisms thwarted their plans (Skjaerseth, 2016:519). The first grand energy - climate package of its kind was a sour lesson learned. Table 5.2 summarises the six main EEPR projects and their reason for cancellation.

Interestingly, Spain, which completed the transposition of the CCS Directive first, was also where the first pilot project under the EEPR took place. While it was ultimately cancelled for the scale up phase, it did fulfil its obligations under the EEPR programme. The other projects suffered from a combination of lacking national regulatory frameworks and a financial gap, which makes it difficult for businesses to legitimise positive investment decisions. The German, Polish and Italian projects have been cancelled due to problems with their respective governments, ranging from the lack of transposition of the CCS Directive to problems regarding permits. The Don Valley (formerly *Hatfield*) project has changed ownership and scope since 2009 but is officially still scheduled for 2020[157]. Its transport and storage infrastructure were being developed in tandem with the White Rose project,

153 Art. 39 of the Directive requires its transposition, and the notification thereof, by national authorities by June 25th, 2011. The EC sent letters of formal notice for non-communication to the other 26 states and reported satisfaction with the Directive's transposition for 20 of the 28 countries by the end of 2013; more than two years overdue.

154 Poland was initially opposed to the 2020 Energy and Climate package and even threatened to veto it (cf. Skjaerseth, 2016). Croatia only entered the EU in July 2013 and immediately transposed the CCS Directive upon entry.

155 CO_2 storage prohibited in Finland, Luxembourg, Austria, Estonia, Ireland, Latvia, Slovenia, Sweden, and the Brussels capital region of Belgium. CO_2 storage restricted in Czech Republic and Germany. CO_2 storage allowed in the remaining countries (European Commission, 2014a:3). Whilst the countries themselves are in charge of the permitting process, Art. 10 of the CCS Directive requires national authorities to send draft storage permits to the Commission for an opinion. The Netherlands was the first country to submit a draft permit and received an opinion in 2012 (European Commission, 2014a:4). Since then only the UK submitted another draft permit meant for Shell's Peterhead project (European Commission, 2016b:2).

156 NER 300 only awarded a positive funding decision to one project: White Rose in the UK, which was cancelled in 2016 due to the UK's withdrawal of its Competition Fund.

157 The project has had a bumpy ride being denied both NER 300 funding and being excluded from the — now cancelled — 1 billion pound CCS fund of the British government.

Table 5.2. The six CCS projects under EEPR

Project (country)	Reason for delay/cancellation	Year delayed/ cancelled
Don Valley (UK)*	Financial gap; sold to a Norwegian company at the end of 2014 which changed the scope of the project	Now scheduled to start in 2020
ROAD (Netherlands)	Financial gap	FID delayed until end of 2016
Jänschwalde (Germany)*	Cancelled due to delayed transposition of CCS Directive into German law	December 2011
Bełchatów (Poland)*	Financial gap, technical risks and lack of transposition of CCS Directive	May 2013
Porto Tolle (Italy)	Permitting problems (resistance from environmental groups and local industry) and financial gap	August 2013
Compostilla (Spain)	Pilot study completed in 2012, then decision not to commence full scale demonstration by the company	2013

Sources: European Commission, 2013e, 2015; MIT, 2016.* These projects also applied for NER 300 funding but were not selected.

which did receive NER 300 funding (European Commission, 2015d:5) but has since been cancelled. The Dutch ROAD project remains on hold, with current prospects for a financial investment decision to be taken at the end of 2016[158]. This project also experienced a change in scope, reducing transport and storage costs so as to decrease the financial gap (*ibid.*:6)[159].

5.3.3.2. CCS as an issue for decentralised levels of government

The domestic - international shift was shown to be mostly symbolic: there is EU coordination because member states desire EU funding for expensive CCS projects, yet new cross-border connections are hardly established and coordination is mostly national. What does this mean for peripheral activity? After nearly all CCS projects under the EEPR were cancelled, Rotterdam suddenly became very important for DG ENER's CCS ambitions. However, involving sub-national authorities at the European level does not necessarily mean they are influential. It is important to look at whether the pull exerted by decentralised governments can be reflected in the *level at which the coordination of activities* takes place and the *level of empowerment of local actors*, which make up the key concepts of the second theoretical expectation posing that regional coordination is more efficient than national coordination and

158 Well after the period of data collection for this case study ended, it was announced that ROAD has been cancelled entirely. In this text, however, it is treated as being in the FID phase.

159 The EEPR's success regarding CCS is largely absent, but the programme as a whole also covered gas and electricity infrastructure and offshore wind projects. Of the total EEPR programme, 34 out of 59 projects were fully completed by June 2015 (European Commission, 2015d:2).

that this efficiency strengthens local policy actors. The PoR and the city of Rotterdam could thus potentially be empowered. Table 5.3 reviews CCS activities at each level of governance.

Table 5.3. The ambivalence of coordination of CCS activities

Level of governance	Activity
EU	Funding, coordination and monitoring, policy papers, plus organisation of platforms such as ZEP
National	Funding (also for research), expected to coordinate and formulate a vision, but currently lacking
Regional	Active when competent (permits) but otherwise more passive, mostly monitoring emissions
Local	Lot of activity through RCI, yet currently no clear role in CCS goals or ambitions from the city of Rotterdam, however there is lots of local activity within the private sector and the PoR

Source: author's own composition based on fieldwork.

The previous section showed that the EU as centre of policy coordination has spurred little direct peripheral policy activity. Rather, nation states have retained their gatekeeping role. Yet Rotterdam has not been passive. The most prominent example of CCS being taken up by a local government is RCI's focus on the technology. CCS was part of the ambitious Energy Port goal to reduce CO_2 emissions by 50% in 2025[160] in the port-industrial complex. Without CCS, no RCI goals would be achieved[161]. The start was to be made in the power sector, which amounted to 30% of port-related CO_2 emissions in 2005. Infrastructure would be developed and Deltalinqs — an RCI partner — would seek businesses willing to sign five letters of cooperation for CCS projects in the near future (RCI, 2009:21-25). Of the 3,5 million euros available RCI funds (for 2009) for developing the Energy Port, nearly 2 million was earmarked[162] for CCS purposes. A year later 1,7 million euros were earmarked for CCS (*ibid.*:13). As such, serious effort was made in Rotterdam to stimulate CCS.

Early CCS development in Rotterdam is a perfect illustration of how triple helix cooperation can be effective. During and after the Barendrecht debacle — which was also discussed in the city council[163] — new environmental alderwoman Van Huffelen introduced the ROAD project and the city kept stressing the project's importance for the achievement of RCI goals. The city's *Programma Duurzaam* (sustainability policy programme) of 2011 adopted

160 Base year 1990.

161 Notulen raadsvergadering 20 december 2007. Accessible at the Rotterdam city archives [www.ris.rotterdam.nl]. To provide a full picture of the positions, D66 and PvdA expressed doubts but were not necessarily negative.

162 Almost half of those funds were accounted for by DCMR, which had extensive responsibilities under the RCI programme.

163 See, for example, the meeting notes of the December 3, 2009 Council meeting and the alderman Grashoff's letter dated 01-02-2010. Available in the city archives.

CCS as a policy goal and roughly 1,6 million euros was to be spent on CCS activities such as developing ROAD, helping the Green Hydrogen project prepare for its NER 300 subsidy application, activities under the CCS Platform, and contributions to the national CATO2 research programme[164]. A year later, CCS was losing its momentum. Box 5.3 shows how the ROAD partners and the city drifted apart due to their different means of assessing a project's desirability. By November 2014, ROAD was perceived dead by the Council and RCI's budget was to be reduced and its goals changed[165]. It can be concluded that the city of Rotterdam tried to get CCS going by (financially) supporting partnerships between governmental agencies and businesses and cementing these efforts in the RCI programme, but its physical effects have been minor. Rotterdam might not realise a large-scale CCS demonstration, and the city's squabbles with the ROAD partners and the province hurt its image[166].

Box 5.3. When investment logic does not match politics

Political promise or business case? - the political narrative

In 2004, the Dutch government asked the electricity sector to build coal-fired power plants, fearing future electricity shortages. Engie and Uniper commenced the building of their plants on the Maasvlakte. At the same time, much to the appreciation of the city of Rotterdam, the province of South Holland and the Port of Rotterdam Authority, they launched the ROAD CCS project. The companies held many discussions with city representatives, saying they would deploy CCS to capture part of their carbon emissions and thereby contribute heavily to the city's climate programme. The municipality viewed this as a political promise. Their RCI programme was heavily dependent on ROAD; political careers were on the line. When the ROAD partners began backing out of the project due to a large financial gap, the city's environmental alderwoman angrily reminded them of their promise. Rotterdam tried to add an obligation to deploy CCS to the plants' permit, but the province declined their plea, arguing that the promise had no legal stature.

Political promise or business case? - the industrial narrative

When the ROAD partners launched their CCS project, the carbon price was high and both the EU and the Dutch government had funding available to cover part of the project. Demonstrating CCS would give the companies a longer term license to operate and be good for their PR. In their discussions with the city of Rotterdam the ROAD partners indicated their willingness to demonstrate CCS, thereby securing political support for their investment plans. When the carbon price unexpectedly declined to a dramatic low it could not seem to recover from, the CCS business case dissipated quickly. Together with the Dutch government, Engie and Uniper began looking for additional funding. They delayed their FID awaiting the result. In their eyes, they did not promise to deploy CCS and going forward with the project without the proper finances would hurt their financial stability.

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164 See letter to the Economy, Port, Environment and Transport Commission by Van Huffelen on July 28th, 2011. Accessible through the city archives [www.ris.rotterdam.nl].

165 See meeting notes of the November 6 and 11, 2014 Council meetings in the city archives. Also confirmed in field work report M.

166 Interview 23, 31 and 32. Field work report O.

5.3.3.3. The quest for local empowerment

As the previous paragraph shows, sub-national mobilisation seemed very effective in 2007 - 2009, and later it declined. However, whether this decline is a consequence of the domestic - international shift or other factors (politics, EU ETS failure) is hard to tell. My interviews and analysis of the city archives[167] give an impression that most battles are fought locally — between the public and private sector — while the coordination of funding and policy comes from higher up. This discrepancy makes sense due to the local nature of CO_2 storage projects. Furthermore, the concept of a CO_2 hub is by definition a local affair, since it involves the creation of a cluster. Even though the projects have a local nature, at present they cannot exist without national and supranational (financial) support. I have shown that during and after the conclusion of the centralised policy-making process, peripheral activity was high but *without success*. Theoretically, Rotterdam would still be an ideal place to create a CO_2 hub, which would strengthen the region's economy and make it an important player in Dutch emissions reduction activities. Furthermore, the longer-term possibilities of a CO_2 hub would allow Germany and Belgium to transport their CO_2 to storage fields through the Port of Rotterdam. In a situation where industries could share and easily dispose of their waste products (such as CO_2) in an environmentally responsible way, a CO_2 hub could provide an attractive investment climate. These arguments are also used to advocate Port of Rotterdam Authority activity:

> *"[T]hey could be a catalyst. They should unify opinions because they have access to different industries with different interests and different views, and they can mediate between them to make the business case for CCS possible. Finding synergies is important, so that every stakeholder can find a reason to participate and engage in the CCS story. If they don't have a reason to participate, they won't. That is a challenging task, but a public authority can also keep in mind the common interest."*[168]

The synergy argument — for both companies and as a way to link to other policy sectors such as employment — comes up in other interviews and field work as well[169] and is often well-received at the EU level[170]. Box 5.4 illustrates this argument. A hub would arguably empower the Rotterdam region, but at present this hub does not exist. Neither the city nor the PoR have thus far succeeded in developing the hub — though their advocacy of

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167 101 separate CCS-related documents found between 2007 and March 2016.

168 Interview 19.

169 Interviews 22, 29, 31, 33, 34, and field work report M.

170 An emphasis on synergies, after all, was how the 2020 Climate & Energy package got adopted in the first place.

Box 5.4. The hub narrative

The attractiveness of hubs - the political narrative
The European Commission is set up to be a neutral, EU-minded organ. It therefore is a great proponent of cross-border projects and any developments that benefit a larger European region or the EU as a whole. Ports, and especially seaports, cater for a larger region by nature. In the EU's efforts to combat climate change and get its members to agree to meet certain climate targets, the Commission welcomes any ideas that have the potential to make climate mitigation easier across borders. The Port of Rotterdam's CO_2 hub fits perfectly into this mindset, for it not only helps reduce Dutch emissions but can potentially store German and Belgian CO_2 as well if the right infrastructure is in place. As such, placing CO_2 infrastructure can be a catalyst for CCS development in multiple EU member states, making the Commission eager to support it.

The attractiveness of hubs - the industrial narrative
The Port of Rotterdam Authority does not own large chimneys through which CO_2 enters the atmosphere. It is therefore not the most likely partner for CCS projects, but its role as infrastructure provider is crucial: the ROAD project benefited greatly from the PoR's willingness to invest into the needed infrastructure to transport CO_2. Having this infrastructure in place makes the port of Rotterdam attractive to other businesses, since they would be able to plug into the infrastructure and deploy CCS more cheaply. If climate targets continue to get more strict, a CO_2 hub will make for an increasingly attractive investment climate. Because of the potential to aid not just Dutch industry but also German and Belgian industry, the PoR's economic reasoning to develop this hub matches the EU's mindset perfectly. It therefore makes sense to develop the infrastructure even if the ROAD project does not come to fruition.

it makes great sense — nor have they led a CCS project to see daylight. One interviewee went as far as to state that

> *"If the ROAD project eventually does happen, it will solely be due to the efforts made by the EU. They have made a lot of subsidy available and have consequently put programs on it. Multiple Commissioners have really made an effort as well. So if negotiations succeed now, it will really be due to the perseverance of the EU."*[171]

This quote represents an extreme opinion, but it does show the limits of local (semi-) governmental power and provides a good example of the fickleness of politics. Whereas it can be argued that, per Piattoni's MLG, there is a lot of potential for local empowerment and efficiency, the local level currently mostly looks like a battlefield and its empowerment seems limited due to external factors such as political and public battles over the desirability and safety of CCS, differentiated MS interests, and a low carbon price. In the CCS case, the periphery can only be empowered when the context is right. This finding adds a very useful (temporal) nuance to the centre - periphery dimension.

171 Interview 18.

5.3.4. Coordination with Third Parties - the State — Society Dimension

We have arrived at the third theoretical expectation focusing on the cross-linkages between the public and private sectors leading to a blurring of state and society. National governments still have considerable autonomy when it comes to CCS, yet if projects face local battles and difficult circumstances due to other agreements at supranational level, what then is the consequence of EU CCS initiatives for the coordination with third parties, such as the Port of Rotterdam Authority[172] and businesses in the port area? Piattoni (2010) identifies a state — society shift in which cross-linkages between the public and private sector with joint goal-setting and a blurring of state and society comprise key elements of governance structures. She also defends the notion that government needs society to govern effectively. A discussion of these *cross-linkages* and the *blurring of state and society* shows that the EU is an enabler of public-private cooperation, yet that this mostly happens along traditional lines.

5.3.4.1. Cross-linkages are enabled by the Port of Rotterdam and the EU

I have operationalised the cross-linkages as the extent to which there is resource interdependency and if the public and private sector jointly set goals. Figure 5.5 showed that the PoR does not have a high betweenness centrality in the CCS case. Theoretically, without the PoR other actors would still be connected to each other. Yet such analyses can lack important qualitative nuances: the companies are dependent on the PoR as their landlord to lease them their land. With it come requirements, which makes the PoR an important actor in the network. It is often said to be able to act as a catalyst and facilitator because it has good connections to both governments and the private sector. The CCS Directive itself had no direct impact on the Port of Rotterdam Authority and ports were not part of the deliberations at EU level. However, the larger 2020 Climate and Energy package the directive was part of contains commitments to reduce GHG emissions. As such, the ambitions the Dutch government ascribed to have a direct impact on the business conducted in the port area. As one of the main partners in RCI, the PoR was already active in climate policy before the adoption of the European package. RCI also responded on behalf of its partners to the 2013 Commission consultation regarding the future of CCS. RCI outlines the potential strength of the North Sea region for CCS application and calls for additional mechanisms atop EU ETS, since the low carbon price does not incentivise much needed CCS demonstration[173]. Implicitly, the port wants the EU — not the Dutch government! — to

172 It can be argued that the PoR is not a 3rd party in the sense that companies such as, for example, Engie and Uniper are because of its semi-public nature, yet it is not involved in CCS policy-making and its company-like characteristics allow for some leniency in this regard.

173 All responses to the consultation can be found at [http://ec.europa.eu/energy/en/consultations/consultation-future-clean-coal-technologies-and-carbon-capture-and-storage-ccs].

prioritise the Rotterdam region (as part of the North Sea area) and offer financial support to demonstrate CCS and develop its CO_2 hub.

CCS features in the *2030 Port Compass*, though it is noted that it is up to the port-based companies to develop it. Whereas the port authority itself cannot implement CCS, it is seen as a catalyst by governments and companies alike. In the words of an EC representative:

> *"If someone like the Port of Rotterdam is in, it keeps others on board too. They have a facilitating role. They also are able to keep the city of Rotterdam on board."*[174]

In other words, the PoR facilitates cooperation between public and private parties. And a representative from the Dutch government stated:

> *"The influence of the Port Authority on the way of thinking within Rotterdam is large. People listen to the opinion of the CEO of the Port Authority. They also have a lot of money they can invest."*[175]

5

Including the influential PoR in the ambitious RCI is logical, yet what is it that the port authority does? The PoR aims to develop its 'Rotterdam Coal Port' with respect to the climate, yet with an eye for economic opportunities[176]. As such, CCS and CCU are part of the PoR's ambitions, alongside biomass use (which can be burned in appropriately fitted coal-fired power plants) and re-use of waste heat (PoR, 2015:2)[177]. The PoR also shows its commitment to developing a CO_2 hub by investing 9 million euros in a pipeline for the ROAD project. Even though the PoR itself cannot apply CCS, it can invest into basic conditions that make CCS possible. It could also lobby for CCS and add CCS requirements to the contracts it signs with port-based businesses, although at present this is not being done[178]. Over the years, the port authority seems to have become more ambivalent to CCS. The PoR's capabilities in

174 Interview 29.

175 Interview 31.

176 In other words, even if Dutch power plants stop burning coal, the German industry is still likely to need it and therefore the PoR will continue to facilitate the transshipment of coal.

177 Interview 36. Keeping the newly built Uniper and Engie coal-fired power plants in business is in line with the policy priorities of the PoR, provided they keep their emissions in check. The PoR sees opportunities for the plants in both areas of biomass and use of waste heat. The plants can make connections to other industrial actors in the larger port complex, and even be part of a chain of heating and CO_2 distribution in the whole province. OCAP is already operating in the port area and providing a pipeline to distribute CO_2 to greenhouses in the western part of the country. Its current suppliers are Shell (oil refinery) and Abengoa (biofuel factory). Together they supply 0,5 million ton CO_2 to greenhouses, but demand is higher than that.

178 Interview 27.

this case do not stretch far beyond 'soft' power, and continuous disappointments regarding ROAD's future may have contributed to the PoR's attitude. Nevertheless, the port authority is an integral part of the CCS network by virtue of having a system overview and potentially advocating on behalf of a region instead of a single company.

In multi-level governance, mutual interdependencies lead to the sharing of resources in networks. These resource interdependencies are indeed present in the CCS case. There is an abundance of resource flows between the public and private sector in the area of CCS. In the 1990s and early 2000s most capital resource flows went from the public to the private sector to fund research on CCS. The knowledge gained was then sluiced back to the government. Now, when most policy-makers and businesses agree that projects are needed, the public and private sector seem caught in a funding deadlock: the private sector wants subsidies from the government to cover the high costs of CCS (and offset the uncertainty regarding longer-term policy priorities), but the public sector is hesitant to invest due to a history of public opposition to CCS and the lack of a clear vision on the role CCS should play in the (near) future. As one interviewee from the private sector put it:

> *"As long as governments do not think about their future energy mix thoroughly they will have no place for CCS either."*[179]

With the current price under ETS, it seems very unlikely that projects will happen without a capital flow from the public to the private sector. The advent of more EU attempts at coordinating CCS is an enabler for state - society cooperation (EU funding needs domestic support), though in The Netherlands such cooperation was definitely also present before EEPR and NER.

Knowledge and expertise still mostly lie with the private sector, although the heavy investments into past research have made experts out of knowledge institutes as well. The policy-making capacity lies with all levels of government, which has been discussed in section 5.2.2. While the EU is responsible for overall emissions reduction targets, it is entirely up to the national government whether to stimulate CCS or not, through either additional policy or funding instruments. As such, the government can require new coal-fired power plants to be 'capture ready', and it can also set emission performance standards or provide tax incentives to stimulate the price of CO_2. There is therefore a whole arsenal of policy instruments available to the national government, but it is not being used at present. As the permitting process for power plants goes through regional and local governments as well, they have agency in spatial planning and environmental requirements. In general, it

179 Interview 33.

seems that the existence of ETS is being used as an argument by governments to not set further CO_2 standards and by the private sector to not implement CCS, which leads to the situation where everyone is waiting for the EU to make a move[180].

Resource flows, as identified in table 5.4, can indicate cooperation between actors. The most crucial resources for CCS are policy-making capacity and capital. Both resources mainly reside with the public sector, although the private sector has significant own investment capacity which it does not use to develop CCS. In turn, the public sector needs information and expertise in order to make policy, but it can call on both the private sector and civil society (in a broad sense) to provide it. Research institutes and environmental NGOs are more than happy to share their CCS knowledge with governments. If the crucial resources lie with the public sector, and there are many cross-linkages, then is there also a blurring of state and society?

Table 5.4. Resource flows between state and society crucial in CCS

Resource	Summary	Direction of flow
Knowledge	Mostly embedded in the private sector and research institutes, shared with public sector through networks, meetings and research	Private —> public Civil society —> public
Policy-making capacity	Public sector prerogative, sets the framework in which the private sector operates	Public —> private
Personnel	Relatively low FTE capacity in public sector, private sector has also reduced FTEs for CCS, advocacy through several well-known people	None
Capital	Investment capacity relies on both public and private investments because of the high costs of doing CCS	Public —> private (+ private sector's own investment capacity)

Source: author's own field work and interviews.

5.3.4.2. Cross-linkages do not necessarily lead to a blurring of state and society

Piattoni refers to a blurring of state and society; a situation in which the public and private sector perform activities or tasks traditionally associated with the opposing sector[181]. The CCS case could potentially be the best case to show a blurring of state and society since no money can be made with it. CCS is an end of pipe solution; there is no end user buying the product. There is also a matter of risk sharing between the private and public sector (see box 5.5). Therefore if CCS is deployed, it must mean state and society cooperated in

180 Interviews 22, 24, 26, 27, 28, 29, 37, and 38. Also discussed in previous sections.

181 Please note that this is a very far-reaching interpretation of blurring of state and society. It is an extreme version of the cross-linkages between the public and private sector, which is the more traditional interpretation of blurring.

Box 5.5. Narratives of risk sharing

Risk sharing - the political narrative

The CO_2 that is captured can be stored in (nearly) depleted offshore oil and gas fields. Companies that 'work' these fields have permits to do so, and need a separate permit for CCS. The purpose of storing CO_2 in these fields is to contain it on a very long term: in principle, the gas should be stored underground permanently. However, storage operators and insurers face potential risks of residual leakage. While these risks are unknown, it is difficult for them to take them on especially since the long-term price of carbon is uncertain. Governments are asked to take on part of these risks to make CO_2 storage less of a liability. Furthermore, the field is transferred back into the government's hands when the field is full, as no profit-oriented company has an interest in monitoring the field on the long term. Governments are hesitant to take such assets back, fearing future leakages and societal costs.

Risk sharing - the industrial narrative

The company capturing CO_2 is not necessarily the company operating the storage site for the gas. Storage operators and capture operators run risks that are not easily extrapolated for and therefore difficult to insure. These uncertainties are not necessarily easy to bear for companies that depend on profit and the opinion of their shareholders. Since storage is essentially performed on lands owned by governmental authorities, it makes sense for the private sector to ask governments to share some of the risks. The private sector also does not want to have to keep monitoring a field after it has been filled up, since it does not provide them with any revenue. The CCS Directive prescribes the adoption of transferral times in national frameworks. In effect, many governmental authorities have several chosen decades before a field is transferred back to them. These additional risks make calculating a business case difficult.

providing a *public good*. However, as discussed earlier in this chapter, even though projects have been proposed there has not been real progress in the CCS field in the EU for years.

The clearest example of blurring at EU level is the widespread inclusion of business and civil society in consultations preceding proposals. In The Netherlands blurring is visible in the formulation of the Dutch *Energieakkoord*, which functions as the country's main energy policy document. Representing the wishes of the private sector in a policy document supposedly makes it easier to carry out the policy, but it does place the private sector in the chair of the policymaker.

One would expect governmental authorities to lobby for CCS toward either other governmental bodies or the private sector. Especially the Dutch national government has lobbied and tried to support CCS projects at the EU level. National government support (and funding) is a requirement for obtaining EU funding under NER 300 and the EEPR, so this support is to be expected to some degree. More unique are the efforts made by the Dutch national government to secure additional funding for the ROAD projects from other national governments. To this end, the EU's Era-net programme could soon facilitate extra funding for ROAD from the German and Norwegian governments. Additionally, the

Commission will add 50 cents to every euro spent by these governments, up to a maximum of 20 million euros. In this way, ROAD could benefit from an additional 60 million euros funded partly by other countries and with help from the Dutch government[182]. This is quite an interesting move which only makes sense if the Dutch government has significant interest in making ROAD successful. The demonstration of CCS — be it in the power sector or in industry — and extensive deliberations between state and society can be taken up in public-private partnerships, blurring the traditional areas of responsibility. Already there are government representatives lobbying for ROAD at the EU level, and private companies advising governments on the possible future role of CCS. The PoR is also seen to step in to coordinate and facilitate public-private connections. Extending these activities therefore shows promise, but it is not without risk.

As per Dutch tradition, many interactions between the public and private sector result in a measure of joint goal-setting. While most mentions by interviewees were positive, some also hinted at conflicts. The most visible conflict pitted the city of Rotterdam and the ROAD partners against each other, since the city maintained that a CCS promise had been made to them when applying for construction permits for the coal-fired power plants, while Engie and Uniper stated they shared the city's wish to reduce carbon emissions through CCS but that they had never made a binding promise to the local government to do so. The conflict escalated, receiving a lot of media attention and eventually led to appeasement efforts undertaken by mayor Aboutaleb[183]. Many interviewees underline the importance of public-private cooperation, especially since emissions reductions can be seen as a public good, but the emission sources (ie. the private sector) are the ones who need to implement emission reductions. In the present situation the financial picture for CCS does not give much hope, and the national government's lax attitude coupled with the EU's now mostly soft coordination keeps progress at bay. To conclude, while there is much activity between state and societal actors as predicted, when push comes to shove CCS is too contentious and everyone prefers to stay in their own corner. The expected far-reaching blurring of state and society does not seem present. The PoR, while able to bridge the gap between public and private actors, is also too dependent on both sectors to be able to make a difference on their own.

5.3.5. Discussion of the Three Theoretical Dimensions

CCS could be one of the solutions to the problem of climate change. It is tackled through the adoption and implementation of climate and energy policy at EU level and within nation

182 Interview 23, 28, 31 and 34.

183 Interview 31.

states. Three shifts were explored in this chapter: the state - society shift, the domestic - international shift, and the centre - periphery shift. These shifts are connected to each other through the dynamics that occur within them. MLG focuses on contestation along these three dimensions, since it does not assume that there is complete coherence between them (Piattoni, 2010:87-88). The three shifts, along with areas where they clash, will be reviewed now (see table 5.5).

Table 5.5. Results of CCS case per key concept of MLG

Dimension of MLG	Key concepts	Results of CCS case
Domestic - international dimension	Interdependencies at international level	1. Hardly new cross-border networks created 2. Representation in international organisation or associations along traditional lines
	Policy coordination at the X level of government	1. EU attempts to coordinate policy, but mostly in national hands 2. National policy documents do refer to the necessity for EU decisions as excuse to do nothing (level playing-field)
Centre - periphery dimension	Coordination of activities	Many local attempts at coordination, first through effective triple helix cooperation and then characterised by conflict
	Local empowerment	1. Many attempts at local coordination 2. PoR perceived as important locally but potential empowerment of local actors blocked by external factors
State - society dimension	Cross-linkages between public and private actors	1. Many resource flows between public and private actors, capital and policy-making capacity are crucial 2. Joint goal/target setting present but not without debate
	Blurring of state and society	1. CCS potentially perfect example of blurring through risk sharing but currently not happening 2. Dutch government lobbies other governments for funding for ROAD project. Other than that hardly any blurring of state and society

Source: author's own composition based on case study.

In terms of the state - society shift it becomes obvious that neither the (supra)national government's aim to reduce carbon emissions nor the PoR's wish to become a CO_2 hub can be realised without participation of the private sector. The governance of CCS is therefore not a government affair, but a *governance* affair, ie., non-governmental actors are indeed needed to govern climate and energy policies effectively, which lends credibility to the newer, more horizontally oriented reconceptualisation of MLG. However, this study shows that the hierarchical dimension remains important as well. Lacking a clear long-term signal regarding the future of CCS in governmental policies, and facing poor business cases due to the low CO_2 price under the EU ETS, companies are reluctant to invest in carbon capture and storage. They call for governmental authorities to provide stable guidance using the resources they have at hand: capital and policy-making capacity. A representative from the European Commission argues why stability is key:

> *"CCS is a long-term investment, so one cannot play around with investors and support CCS one year and not another year. They need a predictable framework so that they know what they are committing to. Changing the rules in the middle makes them run away, and that is what's going on right now."*[184]

National governments are either criticised by the EU or the private sector for their lack of a long-term energy and climate strategy, or they are dependent on each other to instigate changes at EU level. A reform of the ETS, for example, has to go through the regular EU decision-making procedure and will take time. This dependency on the international dimension (or, the shift away from the domestic level) is used by the Dutch government to legitimise inaction. In addition, the national government seems unwilling to set emission performance standards or to implement a CO_2 ceiling[185], which would spur the private sector into action. Wanting to ensure a level playing-field enables the national government to push responsibility over to the EU level or even the global level. Paradoxically, EU funding schemes rely on financial support from national governments (in for example NER 300 and EEPR, but also in the newly established Era-net/ACT)[186], which means that national governments are forced to think about their position with regards to CCS and whether they are willing to fund it. The long timeframe of CCS demonstration and implementation necessitates a long-term vision from national governments, which is lacking. As such the shift from domestic governance to international governance was first initiated, and then slowed by national governments. Applying MLG uncovered these tensions in this case quite well.

The unintended effects of political debates, supranational policy-making and the adoption of the 2020 package also had its consequences for the centre - periphery dimension. While the decision-making regarding the legal framework for CCS was centralised, the periphery was very active in its application. In fact, precisely because CCS has a local impact it makes sense to look for concrete developments at that level. RCI tried very hard to enable CCS in Rotterdam: CCS alone would contribute 60% to the city's decarbonisation goals. Its ambitious policy goals could not be realised because of the constantly declining business case for CCS. The EU ETS did not work as intended and even hampered investments into

184 Interview 19.

185 Leaving aside whether such a ceiling would be advisable or not, as opinions differ on this matter.

186 For more information, see [http://www.act-ccs.eu/news/].

low-carbon technologies. In Rotterdam, this problem led to a clash between the city and the ROAD partners. Eventually, local politicians turned against the technology as well and the city lost its drive to make CCS happen. There is high potential for a strong CO_2 cluster in Rotterdam, which is also acknowledged by the EU, but this potential has not been realised (yet). The Port of Rotterdam is committed to CCS and is willing to invest in the necessary infrastructure, but it has not been able to achieve more than that. The port authority is seen as a catalyst and mediator between public and private parties, but it lacks 'hard' power. This study adds more nuance to MLG by showing that the local level is potentially efficient, but cannot be empowered without the right framework in place. *The international (EU) dimension is therefore a leading factor* in the CCS case, both in terms of its policy frameworks backfiring and in the minds of domestic actors who are waiting for the EU to change. Future policy-making and implementation of CCS may thus be extremely difficult.

5.3.6. Secondary findings; the Role of Power and Uncertainty

Two concepts were often mentioned in my interviews, though the questions did not explicitly probe for them[187]: the role of power on the one hand, and uncertainty on the other. Both will be discussed in this section. MLG has long been criticised for its lack of a good conceptualisation of power (see chapter two for a discussion). However, power, and especially politics, seems to play an important role in the CCS case. In the brief words of someone from the private sector:

> *"Energy is politics and CCS is extremely so."*[188]

Two issues regarding power are of particular interest: public opinion and member state sovereignty. First, it is clear that during the initial phase of the CCS Directive, the EU expected member states to jump into any financing gap and help the private sector kickstart investments into CCS. The EU was willing to stimulate such developments both financially and through the CCS Directive, but expected national government activity. When that did not happen the EU first called upon the governments' responsibility to think through long-term energy and climate strategies. This effort did not get the expected results either. The EU's current, officially technology-neutral, approach is to again give financial support to promising projects hoping to get CCS going in this way. Specifically for the ROAD project increased coordination is being organised through the Eranet-ACT co-fund and a possible

187 Their importance became apparent during the coding of the interviews when many statements could be attributed to either power or uncertainty.

188 Interview 24.

Horizon 2020 call[189]. Furthermore, CCS continues to be mentioned in the 2030 Climate and Energy framework and the 2050 Roadmap but both documents offer fewer strict climate targets and implicitly favour the economics of energy policy, reflecting a move back to the pre-2009 situation where EU targets were mostly soft and non-binding (Skjaerseth, 2016:512). While this continuous cycle of policy coordination seems supported by national and private sector actors as well, activity is as yet not guaranteed. Policy coordination, as one interviewee states, might not be sufficient to bring about change:

> *"The real breakthrough will eventually have to come from Europe. But everything starts with wanting to do something. We first need to want it."*[190]

This simple statement is of crucial importance in the CCS case. When asked about the discrepancy between official documents stating the necessity of CCS and actual non-existence of CCS projects across Europe, almost all respondents replied that there is indeed a feeling of unease surrounding the technology. Polarisation runs rampant in debates. Words such as 'absurd' and 'crazy' are not uncommon, whereas CCS enthusiasts see it as the rational way to decarbonise an economy they know will be driven by fossil fuels for some time to come. Perhaps not in all of the EU, but definitely in still developing countries. Public opinion is generally against CCS, which makes governmental financial support difficult. A previous study shows that even citizens are more inclined to be convinced by economic arguments than climate-oriented arguments, which runs counter to the primary goal of CCS (Broecks et al., 2016:64-65). One of the results of the 2013 review of the future of CCS shows that

> "39% of all respondents (most citizens) consider that successful CCS demonstration has been prevented by its own absurdity and harmful effects" (European Commission, 2013h:10).

Both the supporters and adversaries are probably right to some degree, and as long as it is unclear which direction governments take, the private sector faces risky investments into a technology that is not guaranteed to provide a return on their initial investment.

Second, EU members retain considerable sovereignty in their climate mitigation efforts and energy policies, even though the EU is perhaps better at formulating a long-term vision than national governments. Especially the private sector is waiting for concrete changes at the EU

189 Interview 23, 28, 31 and 34.

190 Field work report O.

level (for example ETS reform)[191]. Now, the Commission will probably not receive support to tweak its CCS policy although most national governments are unlikely to decline any financial incentives from the EU. The national government seems fine with that because it allows them to justify inaction that way. In the words of a Commission official:

> *"In climate, energy and environmental files there is a lot of divergence between Member States in terms of how readily they accept the proposed goals. Some are much more hesitant to push for these goals. It is already a big fight to set the GHG reduction targets. For these targets efforts need to be shared. But for the renewables target, for example, it's an EU-level target which needs to be reached by Member States individually. It is unknown if they will actually reach the target, and it's a big question what the Commission can do to ensure they reach the targets […]. The trade-off made when agreeing on the 2030 targets was the consent to a 40% GHG emissions reduction target and 27% renewables, but leaving a lot of leeway for Member States in deciding how to reach these targets."*[192]

Paradoxically, a lot is left to national governments whereas at the same time nearly everyone agrees that supranational targets are necessary when it comes to decarbonising the economy. In an analysis of the decision making process preceding the package, Skjaerseth (2016:514) found that significant respect for member state autonomy was necessary to get them to agree to the package. However, in the process of negotiations heavy emphasis was placed on climate and energy synergies, whereas potential trade-offs were ignored. CCS was linked to the EU ETS to accommodate heavy-industry friendly member states (such as Germany) during the negotiations of the 2020 package. Wanting quick adoption of the package to show international climate leadership in Copenhagen (COP-15), the EU did its best to sell the package by linking issues that provided an advantage and offering side payments through, for example, NER 300. Now, the Commission is restrained by lack of member state support and ever since national governments experienced the trade-offs of the ambitious 2020 package, no highly ambitious package has been adopted. Instead, many member states are now underlining their sovereignty and resisting further binding climate and energy targets at the EU level. Both CCS and renewable energy projects have suffered from these developments (Skjaerseth, 2016:516-518)[193]. Multi-level governance might face conceptual challenges

191 Interview 24, 30, 33, 37, 38, and field work report O.

192 Interview 35.

193 As part of a side payment to heavy-industry friendly countries (with Germany in the lead), 300 million allowances under EU ETS were auctioned off to finance CCS and renewable projects. They suffered from a drop in carbon price, explaining these mechanisms due to its underlying belief that Europeanisation will lead to ever greater coordination and restrict the power of national governments. This assumption does not hold when the majority of European states turns against further EU coordination.

Policy uncertainty was also found to have explanatory value in the CCS case. Investments into CCS are expensive, future carbon prices are uncertain and national governments are hesitant to support CCS. When a government does not try to enforce its policy goals by either legislation or financial incentives, the market faces uncertainty in the actual longer term policy priorities of the government. Box 5.6 illustrates how this uncertainty is a major hurdle to get projects going which only pay themselves off in the long run. Furthermore, companies also invest based on the perceived costs and benefits of their investments. According to Barradale (2014:521-531), investors make their decisions not so much based on the (expected) carbon price, but on what the author calls 'payment probability'. The probability of having to pay for carbon-intensive investment rises if governments adopt carbon policies, if no exemptions (also called *grandfathering*) are provided by governments

Box 5.6. Narratives of uncertainty

Waiting for policy choices - the political narrative

CCS development was linked to the EU ETS at EU level when the NER 300 financial mechanism was set up which was tied to the carbon price. The consequence of a low carbon price is that NER 300 grants became lower than intended, and CCS projects faced ever increasing financial gaps. The Dutch government has always stated it wants the ROAD project to happen. In order to help cover the financial gap, the Dutch government has an array of possible instruments: it could, among others, provide the project with more funding, institute a national carbon tax, lobby the EU for a revised EU ETS, or obtain funding from other countries. Thus far, the government has been unwilling (and perhaps politically unable) to tinker with the finances at national level, and has therefore advocated an EU ETS revision and tried to secure funding from other countries. To the private sector it has given one message: we cannot do anything on our own, we need to wait for EU action.

Waiting for policy choices - the industrial narrative

The ROAD project is looking less and less likely to reach a positive FID phase. Linking CCS to the EU ETS has led to unwanted and unpredicted side-effects. Uniper and Engie are unwilling to invest in the project if the financial gap remains large. Since CCS seems to play a large role in Dutch ambitions to reach European climate targets, the ROAD partners turn to the Dutch government for a solution. Given that demonstrating CCS has value in itself and could help kickstart further CCS development in the port of Rotterdam, they hope the government is willing to help bridge the financial gap. They are happy to hear that the government is trying to secure funding through Era-net, but policy-wise not many changes are on the horizon. A revision of EU ETS will take years. The companies have no choice but to invest more themselves, or wait for governmental authorities to take action.

lowering actual funding and creating financial gaps for CCS projects.

and if the costs cannot easily be passed on to someone else (for example, the tax payer). Therefore, if

> "people in the industry anticipate various possibilities for investors to avoid paying the price of carbon [...] then policy impact is weakened" (Barradale, 2014:531).

If governments implement lax policy or easily give permits lengthening the life of carbon-intensive investments, investors may not have any incentive to pay for expensive technologies such as CCS since they will not have to pay for their carbon emissions anyway. Public opposition to CCS further shows that, without support from non-governmental actors, governments may not be able to govern the energy and climate domain effectively. Table 5.6 summarises the hurdles most often mentioned by interviewees.

Table 5.6. Which factors prevent CCS from seeing daylight?

Politics/policy	Finance	Technology
Political will lacking / it feels wrong	CCS is expensive	Benefits are unclear and not demonstrated
No long-term vision and CCS is not needed to reach short-term goals	Low carbon price under EU ETS	Safety concerns
Fossil fuel lock-in fears	Funding problems at national and EU level	
Lobby against CCS and unfavourable public opinion	Level playing field lacking	

Source: interviews, each hurdle has been mentioned by at least four people and is commonly found in evaluative documents. Ranging from most to least mentioned in this table.

On the politics and policy side the lack of political will and a long-term vision causes uncertainty for investors because they do not know how governments see the future of CCS and it is therefore very difficult to calculate the real costs of it. This uncertainty contributes to companies asking for public funding for their CCS projects, which can be seen as a proxy for approval of the technology in future policy. In the words of Shell:

> "CCS also suffers from the lack of a long-term signal that it will play a key role in EU decarbonisation efforts. CCS has a huge potential to support EU decarbonisation goals. Low carbon technologies have historically succeeded by policy makers giving a clear indication that they will play a role and by setting appropriate milestones for their development and deployment. In addition to a long-term signal, CCS projects have suffered from a lack of capital support. [Shell] notes the need for an effective demonstration fund, potentially linked to the ETS, which improves on the experience of the NER300 and delivers much needed investment support to CCS projects." (Shell, 2013)

This position is supported by umbrella organisation Eurelectric, which also calls on the EC to make better use of its soft powers by stimulating cross-sectoral CCS discussions (Eurelectric, 2013). All these hurdles create uncertainty for those involved in CCS; be it in the public sector or the private sector. The Port of Rotterdam Authority as facilitator and catalyst lacks formal mandates and cannot solve these problems on its own, since power is spread across actors in all level of governance.

5.4. CONSEQUENCES FOR THE PORT OF ROTTERDAM

How much can the port authority do on its own? It is clear that the PoR wants to develop a CO_2 hub, but that it is dependent on many other parties to make it happen. The PoR is often seen as a strong ally able to keep others on board and mitigate between public and private parties. However, it has its own preferences and interests as well. Since CCS projects have chiefly been cancelled due to delayed transposition of the CCS Directive (now solved) and financial gaps caused by the low carbon price under the EU ETS (as yet unsolved), the PoR has to take into account that its vision for the CO_2 hub is currently constrained by forces operating at EU level. The Dutch government seems reluctant to set its own carbon pricing or follow in the footsteps of pro-active countries such as Germany and the UK, so it is likely that only changes at the EU level will turn things around for the PoR. In the meantime, what the PoR can do — and is doing — is keep local parties on board and continue preparations for CCS, for example by laying out a CO_2 infrastructure. Especially with a view towards a possible future where the industry might have to apply the technology, the PoR has the tools in hand to think ahead and formulate a CCS strategy.

Solving long-term problems such as climate change requires long-term solutions. Such solutions can be problematic for national governments due to their inclination to not look far beyond their governing period. The Port of Rotterdam Authority, although facing the uncertainty of governmental policy-making as well, can make long-term visions more easily. At the very least it should be able to give (potential) investors in the port area clear policy signals for the future by expressing the direction in which it wants to go. If activities for the construction of CO_2 infrastructure are planned or underway, it might attract companies to the port. The PoR's network is established well enough for it to be able to cooperate with interested parties towards clear goals. However, not everyone is happy with the PoR's position as a spider-in-the-web in the CCS case. Representatives from environmental organisations have stated that while they see that the PoR is interested in the business model created by the transport, storage and re-use of CO_2, they do not understand the PoR's role in these developments and feel that these efforts counter any climate efforts undertaken by the port authority[194]. Government representatives show support for the PoR's facilitating role, adding that it helps create jobs and supports synergies between businesses in the port[195].

The international domain is more and more important for the port because of the level playing-field argument as well. The cross-border nature of climate change and the market-driven energy trade keeps national governments aiming for agreements at international level. Stricter energy and climate goals and applying CCS in the industrial sector will have an impact on the PoR's day-to-day business. As there is a lot of industry in the port region and carbon leakage remains an issue, the PoR is considering a scenario in which 50% of current industry in the EU will have disappeared by 2030. As a landlord port it is in the authority's interest to avoid empty plots, meaning that the PoR has to take into account that a different business model could be impending.

The advantage the PoR has is its soft power; local and national influence. Initially, it also benefitted from strong local support for CCS, although the city lacks resources to make CCS happen. The Port of Rotterdam is also extremely important for the Dutch economy, making the Ministry of Economic Affairs a natural ally. In CCS matters, the position of the Ministry of Infrastructure and Environment is more unsure and poses a higher risk. At the EU level, potential allies are DG ENER (generally pro-CCS and worked hard to get ROAD going under the EEPR), DG GROW (considering CCS in the industry but only if it does not harm the sector) and DG RTD (for research and development), with some ambivalence within DG CLIMA. The climate department's initial enthusiasm seems to have dwindled and its focus is now more heavily placed on renewables. Whereas the PoR decided to respond to the 2013 CCS review under the banners of RCI, this choice is not viable anymore due to the slow but sure withdrawal of support for RCI from the city's side. EU decisions impacting the energy and industrial sectors indirectly impact the port, so there should be significant interest in making sure that the port authority retains its position as mediator in the network. Its ability to provide a system overview rather than a single company standpoint is a unique selling point.

5.5. CONCLUSIONS

Looking at this case from a MLG perspective uncovers the dynamics of a seemingly local initiative, which is highly dependent on EU-level efforts. The complexities of energy governance in the EU lead to a cascade of responsibilities and competencies which make untangling its governance difficult. Nevertheless, this chapter has sought to provide insight in the dynamics

194 Interview 38 and 39.

195 Interview 19, 27, 31 and 34.

of the governance of CCS. Table 5.7 summarises the conclusions per theoretical expectation, and though not strictly part of the framework, this concluding section will also reflect on the effectiveness of the governance of CCS.

Table 5.7. CCS conclusions per theoretical expectation

Theoretical expectation	Conclusions for CCS case
Actors create interdependencies between business, civil society, and government on an international level, which necessitates policy coordination at not only the national level but also the supranational level *-> The PoR is one of many actors active at international level because the policy solutions the PoR needs cannot be provided at national level alone*	Symbolic shift (just soft coordination) from the domestic to the international, with governmental authorities retaining their decision-making competencies and crucial position in ensuring risk sharing (strengthening vertical governance). Mutual interdependencies are maintained in traditional networks by actors such as the PoR, and by societal actors in a broad sense, but supranational coordination is mostly spurred through nation state and EU activity due to global climate negotiations.
Regional coordination in territorial matters is more efficient than national coordination, which leads to the strengthening of local policy actors *-> PoR is empowered due to being able to employ its resources effectively when stimulating activities in Rotterdam*	Creation of a new centre at EU level yet seems blocked by national government passivity. External factors such as politics and low carbon price hamper local effectiveness. The dependence on international action renders peripheral actors such as the Port of Rotterdam Authority and the city of Rotterdam (nearly) powerless.
Cross-linkages between private and public actors lead to private parties assuming public responsibilities and public parties acting like private groups *-> PoR develops economic activity in cooperation with the private sector and advocates its interests at EU level alongside Dutch governmental actors to obtain favourable policy conditions*	Shift from the state to society due to the critical nature of resource flows, resulting in more horizontal governance, where the public and private sector jointly — yet not blurred — attempt to implement a technology to meet climate targets. The PoR is politically successful in advocating its CO_2 hub concept with the private sector and at EU level, yet implementation is still lacking.

Source: author's own composition based on case study.

The 2020 Climate and Energy package they negotiated contained the first ever legal framework for CCS and was meant to streamline *and* kickstart its development across the EU. This effort was matched by funding opportunities at the EU level through the EEPR and NER 300. Yet the governmental authorities and EU bodies did not foresee that their package would lead to trade-offs. When carbon prices dropped during the financial crisis, the willingness to invest in low-carbon technologies faded away. The EU was left with an ambitious package no-one wanted to implement. National governments, and especially the Eastern European countries, learned that issue linkage at the EU level may not be beneficial at the domestic level. Supranational CCS policy is a case of symbolic policy coordination while national governments keep the reins firmly in hand.

Supranational coordination did not lead to empowered peripheral activity, partly due to the vast differences in implementation of the CCS directive across EU members. Furthermore, the EU is often mentioned as the reason for a passive attitude from both the national government *and* the private sector. The state of the EU ETS is used as an argument for inaction, and therefore it is up to the EU to change the situation. Yet within the larger climate and energy package the EU ETS and effort sharing (in non-ETS sectors) together cover all emissions, so a technology-specific directive such as the CCS Directive was *not strictly necessary*. The EC used the opportunity to get a better grasp on energy policy coordination in proposing these directives. Both EU institutions and national governments fell short in the construction of the Climate and Energy package. On the one hand, the private sector can therefore not be blamed for its resistance to investing into CCS. On the other hand, if climate change is to be taken seriously, the private sector will have to take its responsibility and heavy emitters could be expected to pay for making their business cleaner, be that by using CCS or other methods.

At the local level, it is clear that the city of Rotterdam, the Port of Rotterdam Authority, the other RCI partners and companies such as Engie and Uniper have been important. Without their commitment to CCS the ROAD project might already have been cancelled alongside the other projects under the EEPR. These local actors have actively sought to cement their efforts at the national level, gaining traction in the Ministry of Economic Affairs — which sought to diversify the Dutch energy mix by adding coal to the mostly gas-powered electricity sector — and causing CCS to be part of the *Energieakkoord* and the *Energierapport*. However, the Dutch parliament continuously questions the implementation of the *Energieakkoord* and there is little support for public financing of CCS projects. So far, none of the efforts undertaken by the EU, the Dutch government, the PoR or other actors have led to effective governance: the problem of high emissions is still not solved, and CCS as one of its solutions has not developed. Supranational coordination has provided a catch-22 for CCS: it is deemed necessary by all parties involved, but it creates problems which persist because the necessary level of agreement to solve them is now absent.

What is the ‘engine’ that seems to be at work in this case but is frustrated by other factors? The wish the EU and its members have to be a global climate leader led to permission from MS to harmonise climate goals at EU level. The result was an EU-wide vision guiding COP-15 negotiations and resulting binding climate targets at EU level, including a CCS Directive. With the Directive came EU funding for CCS demonstration projects. So far, so good. Normally, one would expect demonstration projects to happen successfully, leading to more rounds of EU policy harmonisation as actors learned from the demonstration projects, resulting in wider implementation and cemented EU competencies. However, national governments hesitated in their implementation of the CCS Directive, resulting in delays and various interpretations of where and how CCS could take place. These delays, and the dramatic drop in the carbon price under EU ETS, made the implementation engine grind to a halt. Demonstration did not happen, member states had no interest in subsequent rounds of revision of the CCS Directive, public opinion turned against CCS, and potential large-scale implementation of CCS became unlikely. Especially The Netherlands, as one of the most promising countries for CCS, hesitated after the Barendrecht CCS project left both the government and the private sector (in this case Shell) scarred. The Port of Rotterdam cannot break through so many showstoppers at various levels of governance. Getting CCS back on track might require a fresh start, for example as a result of the EU's ambitions under COP-21.

Multi-level governance shows how the policy processes work at the EU level and reminds us that governments are dependent on each other and on non-governmental actors for effective governance. Exactly because energy and climate policy in the EU works through complex multi-level governance mechanisms, the absence of political, legal or financial factors *at any level* make governance problematic. The CCS case shows that initially effective regional coordination can be nullified by unforeseen effects of international coordination. While public-private cooperation is necessary, the predicted far-reaching blurring of state and society has not occurred. However, increasing (soft-)coordination attempts by the European Commission do enable more public-private cooperation at domestic level in order to get favourable arrangements at EU level. Concepts such as power and uncertainty add their explanatory value here as well, showing how a technology such as CCS can become deeply political (and thus not 'neutral') and giving insight into how multi-level governance helps tackle uncertainties surrounding the role of CCS in European climate and energy policy. Whether power and uncertainty are covered adequately by Piattoni's conceptualisation of MLG will be discussed in chapter seven, after exploring whether the small-scale LNG case also shows that power and uncertainty help explain governance mechanisms.

6

Small-scale LNG: A Case of EU Multi-level Governance Success?

6.1. INTRODUCTION

This chapter analyses the complex dynamics behind the governance of small-scale LNG to see whether the theoretical expectations reflect reality and give MLG a further theoretical boost. By identifying the challenges of governance and how power links into its dynamics, I demonstrate that MLG can be improved upon. While there are multiple options to make transport more sustainable, this chapter focuses on just one of these options: using liquefied gas as a fuel. Liquefied Natural Gas (LNG) is natural gas that has been converted to liquid. In order to liquefy natural gas, the gas must be cooled to about -162°C. Because LNG has a lower volume than compressed natural gas, liquefying the gas makes its transport over long distances more cost-efficient. Although LNG is mostly converted back to compressed natural gas after transport (large-scale LNG), an increasing number of vehicles and vessels have now started to use LNG as a source of fuel (small-scale LNG). Risks associated with LNG are high flammability after conversion to its gaseous state (when certain conditions are met), freezing, and asphyxia. Therefore, LNG is subjected to strict regulation. In contrast to CCS, not much academic work could be found on small-scale LNG during the data collection process (chiefly February through September 2015). This chapter therefore is the first to offer a thorough case study, applying MLG to it and showing what small-scale LNG means for a port.

This chapter is comprised of two distinct parts: a discussion of the (international) small-scale LNG context (§6.2) and the application of Piattoni's theory to the case. Within Energy Port the small-scale LNG case is part of the LNG hub. While the science behind using LNG has been developing for decades, the use of LNG as a relatively clean fuel is still considered an emerging technology. Section §6.3 dives into the governance of small-scale LNG in Rotterdam, guiding the reader through how multi-level governance works in this case and making extensive use of interview data to show its mechanics. Section §6.4 discusses the consequences of this case for the Port of Rotterdam and the role its authority can play. Section §6.5 discusses the theoretical and empirical conclusions for the governance of EU energy and climate policy based on this case.

6.2. LNG: WHAT, WHY AND WHEN?

LNG 'simply' is natural gas in its liquid phase. Natural gas is one of the most important commodities on the planet and accounts for roughly a quarter of the world's energy demand (IGU, 2015b:6). At the same time, the global energy sector is the number one contributor to GHG emissions and is in second place[196] when it comes to methane emissions. In 2010, more than two-thirds of the world's GHG emissions came from the energy sector. If climate change is to be tackled effectively, the energy sector needs to change. Even so, the projections are that global energy consumption will increase in the future and that fossil fuels will play a major part in this consumption (IEA, 2013:15).

Not all fossil fuels are equally polluting. For instance, switching from coal to natural gas is often mentioned as a way to at least *improve* the emissions situation. Burning gas leads to lower emissions than burning coal; on average, natural gas is twice as clean as coal, although the increased methane emissions associated with the production and distribution of natural gas decrease the relative cleanliness of gas (*ibid.*:28). Still, gas has become more popular in recent years and the possibility to easily transport it in liquid form has sped the market along. LNG can be an important step towards a cleaner use of what essentially still is a fossil fuel.

Because there is potential in LNG, the trade has increased to levels that warrant close study[197]. The share of LNG has grown faster than any other source of gas; in 1990 the share of LNG in the global gas supply was only 4% and the projections for LNG only show growth in the near future (IGU, 2015b:6). In the EU, LNG imports peaked in 2011 and then dropped by 50% in 2014. The somewhat dramatic drop in imports may be partially explained by competition from the shale gas boom in the US, increasing US domestic gas consumption and decreasing US demand for coal. Coal was then 'dumped' on the European markets for a very low price.

196 Agriculture is the world's largest source of methane emissions.

197 In 2014, global LNG trade reached 241 million tonnes, which constitutes about 10% of the global gas supply.

Power plants operate in a merit order with the cheapest power plant being turned on first. Thus, when coal prices in Europe plummeted, coal consumption in the EU rose as coal-fired power plants were favoured over gas-fired power plants[198]. The worsening economic situation and the uptake of renewable energy also led to a declining demand for natural gas (PwC, 2013:34). In addition, the 2011 Fukushima nuclear disaster caused a rise in the demand for LNG in Japan, bumping up its prices in the Asian region. LNG transports were therefore rerouted to Asia where a higher price was paid for the commodity, causing the demand for gas in the EU to decline further (IGU, 2015b:12-15). So, how and why did small-scale LNG develop in times of decreasing LNG demand in Europe? To answer that question, it is imperative to first consider the potential costs and benefits of small-scale LNG (summarised in table 6.1).

Table 6.1. Small-scale LNG is promising but will not save the world

Pros	Cons
Benefits climate	System-wide change needed (different engines, refueling hoses, bunker points, regulation, training, etc.)
Benefits local air quality	Expensive
Single fuel engines very clean	Dual fuel engines have methane slip
New market opportunities for shipping sector and fuel production industry	Still a fossil fuel (unless bio-LNG)
Best option for newly built vessels	Retrofitting a ship takes it out of service

Source: author's own composition based on sources cited in this section.

In its 2013 special report, the International Energy Agency shows where several major policies overlap with climate change mitigation. Three policies are considered: energy security, environment, and economic/social development (IEA, 2013:20). Interestingly, transport is not mentioned as a separate policy field. In the case of LNG, transport policy can prove to be a powerful policy area to help combat climate change. The use of LNG as fuel has benefits for both air quality and the climate. According to the European Commission "the EU population will benefit from reduced emissions of substances that are harmful to human health, in particular NOx and PM" (European Commission, 2013i:24). This benefit to local air quality is such that both port cities and cities along the European riverbanks will probably benefit the most from the improved air quality. In the Rotterdam region, 40% of the particulate matter (PM) emissions is due to the transport sector alone (shipping: 22% and road: 18%). Another 41% comes from the industry in the region (MSR, 2010a). The concentration of PM in the Rotterdam region is the root cause of 200-300 hospitalisations per year, with most people suffering from lung diseases and heart conditions (MSR, 2010b).

198 Also based on interview 3.

The Netherlands wants to meet the EU's required emissions reduction norms. In 2012, The Netherlands still emitted 93% of the GHG emissions emitted in 1990. In comparison, the EU-28 average was 82%. Note that this low decrease in emissions does not necessarily mean total Dutch GHG emissions are high, it merely means that the reduction of emissions is not proceeding as quickly as in the rest of the EU. For the EU as a whole, in 2011 10% of GHG emissions came from commercial transport. The acidifying gases (SO_2, NOx, NH_3) that were released in the same year had a transport share of 14% (Eurostat, 2014:150-160). The emissions problem is therefore twofold: it is bad for human health and it is bad for the climate and the environment. Greening the fleet can contribute to improving this situation, and LNG could have a part to play in the solution. On the other hand, the Commission also states that "[t]here may be marginal environmental effects, both positive (reduced CO_2 and PM emissions) and negative (increased methane emissions)" (European Commission, 2013i:24). The EC is thus also looking at the negative climate effects of using LNG as fuel, as there is a significant methane slip if the ship uses a dual fuel engine and does not possess extra treatment facilities[199]. Dedicated LNG engines are more environmentally-friendly, but this benefit comes at the cost of being unable to handle changes in power demand well due to their relatively low capacity. However, increased use of LNG may have a positive effect on the market opportunities for the shipping sector and the fuel production industry (*ibid.*:24).

The downsides of LNG are the associated costs with the switch and the necessity for what is basically a system-wide change: for LNG to be a competitor fuel, LNG infrastructure will have to be built across Europe. The *Clean Power for Transport* Directive (see section 6.1.3) goes a long way towards demanding the construction of such infrastructure, but a change in laws, regulations and even the mindset of shipping companies is also paramount to ensuring the development of the small-scale LNG market. As of yet there is no standardisation of LNG equipment, which makes the costs of retrofitting a ship to accommodate the new fuel very high. Furthermore, retrofitting operations take a ship out of service for a limited amount of time, resulting in a loss of potential income for the shipper (*ibid.*:24). Analyses performed by — among others — the EC, have also shown that the adoption of LNG is most beneficial for newly built vessels which are either large or have to perform heavy-duty tasks (*ibid.*:25; Panteia, 2013)[200]. LNG is therefore not the best option for 'everyone'. Other challenges for LNG development will be discussed in section 6.4, but for now it is important to know that the small-scale LNG transition is mainly driven forward by environmental concerns and at the same time slowed down by financial and regulatory challenges. For The Netherlands specifically, small-scale LNG demand rose to counter decreasing large-scale LNG demand.

199 A methane catalyst would help solve the problem, but requiring its use would increase the prices of LNG engines; a prospect which grates engine manufacturers.

200 Also backed by interviews 1, 5, 12 and 16.

Figure 6.1 illustrates the key events marking the rise of small-scale LNG in Europe. Major tipping points for Rotterdam are the construction of GATE and the *Argonon*, the adoption of *Clean Power for Transport*, and subsequent legalisation of overall LNG operations in the Rotterdam port area. Note that the upswings of LNG seem to happen right after peaks in oil price, and the downswings happen after drops in the oil price.

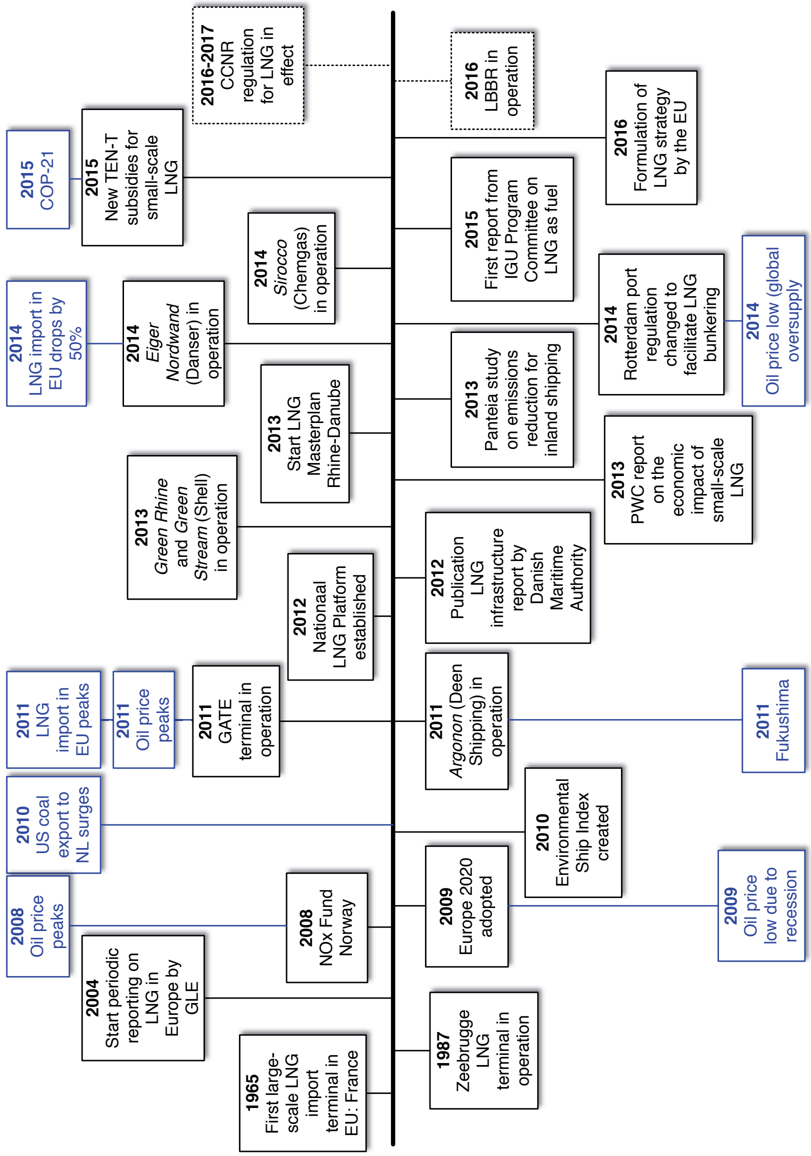

Figure 6.1. Timeline of small-scale LNG in Europe and major global (oil-related) events
Source: author's own reconstruction.

6.2.1. Historical Context and Recent Developments

6.2.1.1. 1965 - 2000: Large-scale (conventional) LNG

The act of liquefying natural gas is not a new development. Natural gas often is freed during the process of oil drilling and used to be considered a byproduct. Without the necessary pipelines from the well to a market demanding gas, there would be no use for the gas and it would therefore be flared. However, as energy markets started to change due to new technologies and the exploration of new — often remote — gas fields, companies started to liquefy both the gas-byproduct from oil drilling and the gas from gas wells for overseas transport to LNG import terminals. Suddenly gas could be transported across the globe by ship and re-gasified once transferred to a terminal, increasing the world's potential gas supply. The origin of LNG thus is that it is a solution to a transport problem: while ways of transporting gas over long distances were absent, there was no LNG. Especially in European countries such as Spain (as early as 1969), Italy, France (as early as 1965) and the UK, LNG was imported and then injected into the gas grid once returned to its gaseous state (IGU, 2015b:79-81). The mostly South-European LNG terminals[201] and the large energy companies together are at the head of half a century of experience in transporting and storing LNG in large tanks. Engie (formerly GDF Suez) is an example of a big energy company with 50 years of experience with LNG. Shell also has about 50 years of experience with the transport of LNG in seagoing vessels. These two companies are major players in the European LNG sector. Northern Europe followed its southern neighbours with the construction of an LNG import terminal in Zeebrugge (Belgium) in 1987. The main use of LNG in these years was re-gasification and injection into national gas grids, which is also referred to as the conventional — large-scale — use of LNG. The Netherlands did not need LNG because it was extracting gas from the country's own gas reserves and using its pipeline system to transport it. The government did consider constructing an LNG terminal in the 1970s (interestingly, Eemshaven in the north was preferred over the Port of Rotterdam), but public concerns about safety and the onset of risk calculations in spatial planning of industrial and energy activity took the upper hand (Oostendorp, Zwaard, Van Gulijk, Lemkowitz & Swuste, 2013:75-80).

6.2.1.2. 2000 - 2010: From large-scale to small-scale LNG

Small-scale LNG essentially means using LNG in transport (as fuel) instead of on the energy market (as an energy carrier), as previously intended. Small-scale LNG can be used for road transport, maritime transport, short-sea, inland shipping, and break bulk[202]. For inland

201 The LNG experience started in Southern Europe because of LNG imports from Algeria.

202 Break bulk entails sending small ships filled with LNG to supply the resource to a small terminal or end user.

shipping, switching over to LNG became a chicken-and-egg challenge: the infrastructure was not being built due to low use of LNG as fuel, but shippers were also hesitant to adopt LNG because of the lack of infrastructure (cf. Danish Maritime Authority, 2012:15; PwC, 2013:25; IGU, 2015a:63; Innovation Norway, 2015[203]). The first European country that made the move from large-scale to small-scale LNG was Norway[204], due to its multitude of off-shore drilling platforms, a lack of pipelines, and largely due to the 2008 NOx Fund[205]. Since LNG can contribute strongly to the reduction of NOx emissions, using it as a fuel was an easy match for Norway and subsequently kickstarted the development of small-scale LNG in other parts of Europe. Many Norwegian companies are involved in the LNG sector and have conquered a leading position in LNG distribution; Gasnor (nowadays a sister company of Shell) provides LNG bunkering at ferry berths, Wärtsilä builds LNG engines, Statoil is a large LNG distributor, and DNV GL holds a lot of LNG expertise and technical know-how. The Norwegian experience with small-scale LNG started to trickle down to the rest of Northern Europe through partnerships (for example, Shell - Gasnor and Cofely's involvement in Norway's small-scale LNG sector) and data collection and reporting by Gas LNG Europe (GLE)[206]. GLE started reporting on the status of LNG in Europe in 2004, focusing on the conventional use of LNG with attention for the small-scale terminals proliferating in Norway. The possibility to use LNG as fuel reached Deen Shipping when in 2006 the company began to think about ways to make ships cleaner and thereby meet longer term emission standards. Eventually this led to the construction of the *Argonon*, which is the first new-built tanker ship sailing on dual fuel in European waters[207].

6

In 2008, at the start of the economic crisis which would later cause EU gas demand to decrease, 55 of the world's key ports agreed to put more effort into reducing GHG emissions and cemented their commitment in an initiative called the World Ports Climate Initiative (WPCI, 2008). The oil price was high, making LNG an attractive alternative. One of the WPCI's key projects is the Environmental Ship Index (ESI), which came to life in 2010. ESI offers tools to evaluate the environmental performance of maritime — or seagoing — ships by looking at their NOx, SOx, PM and GHG emissions. Ports can then offer financial rewards to ships meeting current IMO emission standards (WPCI, 2010:1-4). The Port of Rotterdam,

203 Innovation Norway gave a presentation about the potential for LNG in India in which the chicken-and-egg problem is mentioned (slide 19).

204 Note that Norway is not a member of the European Union.

205 The NOx Fund is an environmental agreement between the Norwegian government and 15 organisations in which it is possible to pay a participant fee instead of having to pay NOx taxes. The government then offers financial support for projects that contribute to NOx reduction (nortrade.com, 2011). In Norway, the first LNG-powered ferry was built in 2000, followed by dual-fuel supply vessels and more ferries between 2003 and 2010

206 Now part of a larger umbrella organisation Gas Infrastructure Europe (GIE).

207 The *MTS Argonon* was christened in November 2011.

for example, rewards clean ships (such as LNG ships) by reducing their seaport dues[208]. While ESI focuses on seagoing ships and not inland ships, it does promote the uptake of LNG in the maritime sector and could indirectly influence the uptake in the inland shipping sector as well.

6.2.1.3. 2010 - Today: Small-scale LNG in the EU on the rise

Small-scale LNG took flight in the EU since 2010. In The Netherlands, change occurred when the lifespan of the country's own Slochteren gas started to shorten. The endangered competitive position of the Dutch gas market was reason enough to reconsider LNG, which led to the construction of the Gateway to Europe (GATE) terminal by Vopak and GasUnie. This terminal would import LNG and use it in the conventional way; re-gasify it and send it onward as simple gas. Because of the previously mentioned risks associated with LNG, GATE had to be located in a separate dock (in Dutch: *insteekhaven).* GATE was under construction when European LNG imports were rising and the oil price was high. However, Slochteren gas made a transition and was suddenly cheaper when hauled out of Qatar. Furthermore, the free market dynamics favoured Slochteren gas and the Japanese nuclear situation also had an effect on the energy sector as a whole, with LNG being rerouted to Asia to fill the energy gaps created by the nuclear failure. Fukushima also sparked the German *Energiewende* and the resulting rise in renewable energy reduced EU gas demand further, right after the import of LNG peaked in 2011. GATE, which entered into operation in that year, now faced an economic problem as it was not being used enough to be economically viable. As stated earlier in this chapter, LNG imports in the EU peaked in 2011 and then dropped dramatically in the next few years, while the oil price went down as well (making conventional oil-based fuels more attractive again). When LNG ships finally began docking at GATE since mid-2013, this increase in activity still was not enough to make GATE profitable. The response was to look for alternative solutions, which is how the use of LNG on a small scale was introduced as an extra goal for GATE. The terminal has been expanded to accommodate space for liquid break-bulk terminal operations (LBBR) which have officially commenced in 2016. Small-scale LNG in The Netherlands thus was meant to offset the effect of the maturing Dutch gas market. The Dutch government became a staunch supporter of LNG in order to kickstart the process of legislative adjustment at the international level to enable the use of LNG as fuel.

Policy-making needs expert knowledge. In 2012, the Danish Maritime Authority published an influential (and EU-funded) report on the future possibilities for the use of LNG as a fuel in shipping, including recommendations regarding infrastructure development and ways

208 For more information see [https://www.portofrotterdam.com/en/shipping/port-dues/discounts-on-port-dues/esi-discount].

to get the LNG to the end user[209]. Among the contributors to the report are the Port of Rotterdam, Zeebrugge, Gasnor, MAN, and even Gazprom. The Dutch National LNG Platform was established in the same year with the goal to speed up the Dutch uptake of small-scale LNG in the road transport and shipping sectors[210]. The Danish report served as a baseline for EU thinking about small-scale LNG, which led to several developments in the next year. The *Clean Power for Transport* Directive was adopted in 2013 and includes LNG — to a large extent due to the strong Dutch advocacy for it — as an option to make transport more sustainable[211]. A largely technology neutral approach was chosen to ensure support in the Council, since some MS have better access to certain technologies and fuel types than others. The Directive was generally well-received among the EU countries (Council of the European Union, 2013:8). Another study on the climate contribution of LNG as fuel was published by Panteia, which also served as input for EU policy. It compares different ways to reduce emissions from inland shipping from an environmental, social and economic perspective. Both retrofits and new-built ships are considered. The study concludes that LNG is a good option for inland shipping but that more R&D is required to solve the methane slip problem. The difficulty with financing is also discussed and the report mentions that there is no clear delineation of tasks between multiple governmental levels, which makes the creation of a good funding landscape difficult (Panteia, 2013:109-120). This last conclusion is practically problematic, but academically interesting where MLG is considered.

The year 2013 also saw Shell revealing its two newly built LNG tankers: *Greenstream* and *Greenrhine*, and the Port of Rotterdam receiving EU funding for a major European LNG project called 'LNG Masterplan'. The nature of the project is such that if it ends up being successful, the infrastructure and ships resulting from it would cover Europe's main arteries: the Rhine and the Danube. LNG dispersal on Europe's main arteries could have a significant impact on the small-scale LNG business as a whole. The new LNG ships coupled with the LNG project meant the PoR had to introduce a change to its port regulation to allow for LNG bunkering. As of 2014, LNG bunkering is officially mandated in the port. That year also saw the birth of two additional LNG ships in The Netherlands: the *Sirocco* (Chemgas) and the *Eiger Nordwand* (Danser). Additionally, more LNG projects were approved under the CEF Program, including

209 The report looks at the demand and supply of LNG in Europe, the available infrastructure, oil price relations, technical and safety aspects, and regulatory concerns. It concludes that LNG must be treated as a 'dangerous good' which requires proper personnel training, safety measures and a coordinated permit process (Danish Maritime Authority, 2012:13-14).

210 In The Netherlands, PwC published a report on the economic impact of small-scale LNG in The Netherlands, concluding that the use of LNG in the transport sector can lead to about €2.7 billion worth of economic growth and 8000 extra FTE by 2030. Investments into LNG infrastructure, bio-LNG, a pricing mechanism that is beneficial in comparison to oil, and a good business case for end users will be necessary (PwC, 2013:4-49).

211 For more information see chapter 4, section 4.3.2.

projects in the Rotterdam area. Shell has committed to chartering thirty LNG ships for a longer term and is thereby trying to push the market forward. Engie announced plans to realise about the same amount of ships. The reason these companies are committing now is because the Central Commission for Navigation of the Rhine (CCNR) — responsible for regulation covering Rhine navigation[212] — has made regulations to facilitate the use of LNG as fuel on the Rhine[213] and because they have an interest in the development of this market. CCNR has five members (Germany, Belgium, France, The Netherlands, and Switzerland) and also fosters an observer's agreement with the EU. For a while, letting a ship filled with LNG sail down the Rhine was prohibited by the CCNR. The new rules entered into force in 2016-2017. In the meantime, national regulatory bodies in combination with the CCNR were tasked with giving legal exemptions to allow for the use of LNG as fuel (European Commission, 2013i:10). Small-scale LNG is thus beginning to become institutionalised in the EU and international organisations such as CCNR and IGU. At the same time, the EU is giving a lot of attention to the strategic importance of large-scale LNG by formulating an LNG Strategy, which was published in the first quarter of 2016.

6.2.1.4. Facts and market developments

This section discusses how the small-scale market is embedded in the global LNG market, as the developments on the global gas markets have a significant impact on the attractiveness of LNG fuel for the private sector. Small-scale LNG developed in times of decreasing EU gas demand and in part to offset that trend and to take action against climate change. What is the situation now? The map in figure 6.2 shows the LNG landscape in and around Europe in late 2015. As becomes clear, LNG is not (yet) readily available throughout the EU. LNG is mainly imported in the southern and western parts of the EU. South-Europe was frontrunner in this development due to the availability of Algerian LNG as early as during the 1960s. In countries such as Spain and Portugal the contribution of LNG to their gas supply has even been nearly 50% (IGU, 2015b:13). The construction of LNG terminals spread to other key seaports on the continent and LNG is now also available in, for example, the UK, The Netherlands, Belgium and Greece. Central and Eastern Europe have been heavily dependent on Russian gas, which is imported through the extensive pipeline system running from Russia to large parts of Europe. It is therefore no surprise that these countries have not yet secured access to LNG. However, terminals are now planned or even under construction in Finland, Lithuania[214], Poland, Estonia and Latvia. In addition, Ukraine and Turkey are planning to build LNG import terminals as well. Among LNG exporting countries around the EU are Norway,

212 Other rivers are regulated by similar commissions, such as the Danube Commission for the Danube river.

213 Adjustments to the ADN will follow as well.

214 The Lithuanian terminal is actually a floating terminal and entered into operation in late 2014.

Russia, Algeria, Egypt and Libya. As stated in the introduction of this chapter, however, the use of LNG makes it easy to import it from all parts of the world. Other notable LNG exporters, then, are Qatar, Malaysia, Australia, Nigeria and Indonesia. US export of LNG started in 2014 and is on the rise as well (IGU, 2015b:9).

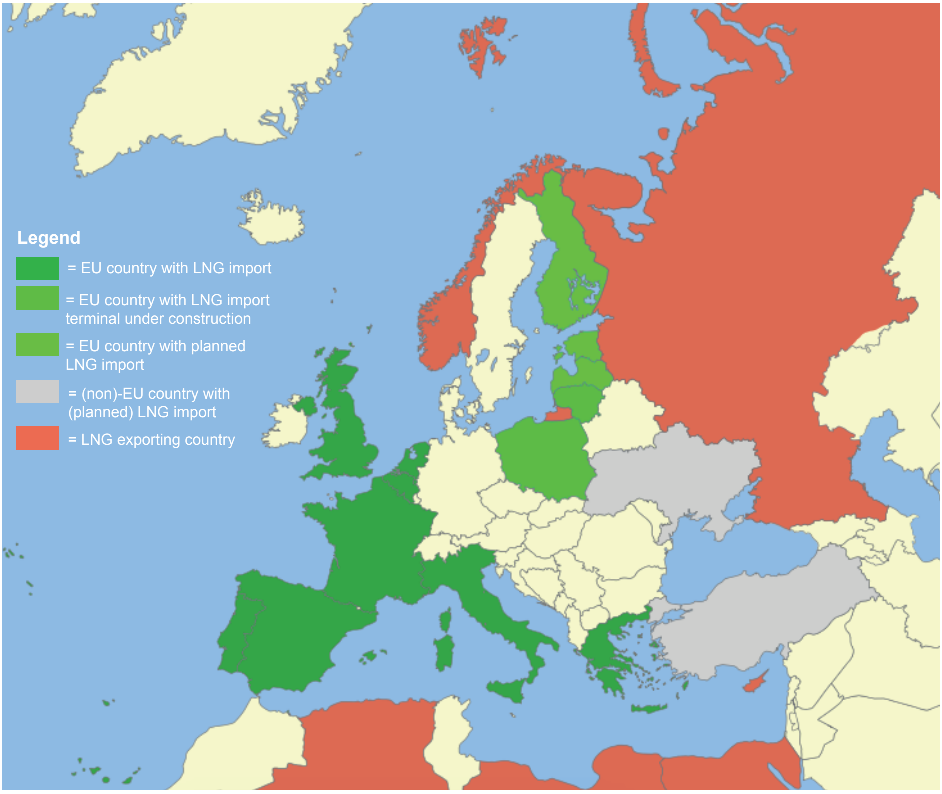

Figure 6.2. LNG not available in all European countries
Source: IGU, 2015b.

The global LNG market is not an integrated market. Broadly speaking, there are two 'basins': the Asian-Pacific Basin and the Atlantic Basin[215]. Both basins have their own pricing mechanisms, but are also interconnected due to the strategic positioning of Qatar on the border of both markets. Since the Fukushima disaster a lot of the LNG from Qatar re-routed to the Asian market. However, three developments will most likely introduce lower demand and/or higher price competition in the Asian LNG market: Japan is reintroducing nuclear

215 These two basins came into being due to the two geographic bottlenecks existing in maritime transport: the Suez Canal and the Panama Canal. According to a respondent (interview 3) the prices to go through either of the canals vary between 0.5 million and 1 million euros per ship. Traversing both canals is very expensive so there must be a good price-related reason for a company to use them.

energy into its energy mix, the Chinese economy is stagnating and Australia is investing a lot into the construction of new LNG export terminals. With its new terminals, Australia will be able to supply the bulk of the demand in the Asian-Pacific Basin, which could lead to a rerouting of LNG exports from Qatar to the European market. Analysis of these market forces suggests that it is quite likely that the LNG price in the EU will go down, making LNG imports attractive. Especially from the point of view of securing independence from Russian gas, the EU may stimulate LNG imports from other parts of the world. The European LNG market is also dependent on the price of oil[216]. According to PwC, the LNG pricing mechanism used in Europe has come under pressure because "high oil-linked gas prices no longer reflected gas supply-demand fundamentals. This has led to moving away from oil-linked prices to more hub-based prices" (PwC, 2013:34), such as what is used in the US. Still, a low oil price makes it more attractive for ship owners to continue to use oil-based fuels instead of making the switch to LNG. Longer term projections of global oil and gas prices, however, expect oil prices to increase again and gas prices to decrease, making LNG more attractive in the near future (*ibid.*:37-39). The global demand for LNG has grown 7% per year on average since 2000 and the current investments into LNG throughout the world do not suggest a stagnation in the near future. The end of the economic crisis may also make life better for shipping companies and increase their investment possibilities (IGU, 2015b:12).

6.2.2. Policy Context

Any case study in this field should consider the political and legislative context it operates in. Chapter 4 discussed the relevant policies at length. This section acts as a brief summary and foregrounds key policies, goals and tools. The 2001 White Paper on Transport placed heavy emphasis on stimulating the modal split through the EU's Marco Polo Program. According to the EU,

> "The biggest missing link is the lack of a close connection between sea, inland waterways and rail. For centuries sea and river dominated goods transport in Europe. […] Nowadays, despite a slight revival, water transport is the poor relation even though it is a mode which is not expensive and does less damage to the environment than road transport" (European Commission, 2001a:41).

The inland shipping sector was seen as quite clean in the early 2000s, yet transport as a whole had already been identified as a major source of GHG emissions. The 2001 White Paper

216 In North America the price of LNG is set at liquid trading hubs, whereas Europe and Asia tend to prefer oil-linked pricing (IGU, 2015b) mentioned natural gas (preferably bio-gas) as a potential fuel in the medium and long term (European Commission, 2001a:86). That medium term arrived in the 2011 White Paper on Transport, which has a much more urgent tone when it comes to GHG emissions. A strong emphasis was placed on investing into R&D for alternative fuels (European Commission, 2011c:24). Several years later, the use of LNG as fuel has become part of a larger EU strategy to transition towards more sustainable fuels for transport. Table 6.2 shows which level of government employs which types of policies aimed at the shipping sector.

Table 6.2. Shipping-related policy competencies are spread over hierarchical levels

Government level	Competency
EU	Standards, maritime policy, inland shipping policy, innovation policy
National government	Fiscal policy, innovation policy
Local government	Contextual policy, innovation policy

Source: *Brandstofvisie*, Ministerie I&M, 2014a.[217]

MLG contends that the multi-level context asks for coordination between levels and policies. While all policies identified in table 6.3 have an impact on the LNG hub in Rotterdam, it is clear that they differ in scope. The goals set and tools used at the European level tend to be more all-encompassing (for example, developing alternative fuels for transport) while goals and tools at decentralised levels of government tend to be more concrete (for example, the fund for NOx-free ships). At the same time, it appears that the more binding and strategic policy goals are set at higher levels of government and that the decentralised levels then have the freedom to act within these goals.

6.3. BEHIND THE SCENES: THE GOVERNANCE OF SMALL-SCALE LNG

The first part of this chapter focused on the context of the LNG case. The next part delves into the application of MLG to the case in an effort to reach behind the scenes. This section thus introduces the empirical data collected through the nineteen interviews conducted with experts, desk research and observations made at the Port of Rotterdam Authority. Before delving into this data, a few words on the focus of this case. This case study deliberately focuses only on inland shipping — and not on maritime shipping — to offer a precise analysis of the governance mechanisms of small-scale LNG to help this field develop.

217 Shipping policy for seafaring ships is also made on the international level by the IMO, while inland shipping policy is also part of the daily work of the CCR. With 'contextual policy', the *Brandstofvisie* document refers to, as examples, parking privileges and emission-free zones.

Table 6.3. LNG policy context: a patchwork of policies at all levels of government

Level of government	Main policies	Goals	Policy instruments
EU	1. Clean Power for Transport 2. Europe 2020 3. 2030 Energy & Climate Framework 4. Energy Roadmap 2050 5. NAIADES 6. National Emission Ceilings Directive 7. Air Quality Directive 8. Non-Road Mobile Machinery Directive	• Development of alternative fuels for (commercial) transport • 80% reduction of CO_2 by 2050 • Majority of energy is renewable • 30% energy efficiency • Reduction of GHG emissions • Improving air quality • Cleaner ship engines	• Mix of soft and hard targets. Emission performance of ship engines is a regulation, which does not allow any deviation. On the other hand, renewable energy has no hard target and its implementation possibilities vary per country • Financing/subsidies through CEF or EIB
Dutch national government	1. Energieakkoord 2. Brandstofvisie 3. Werkprogramma Zeehavens	• 60% GHG emissions reduction from transport by 2050 • 80-95% reduction of CO_2 by 2050 • 16% renewable energy in 2023 • Level playing field for ports and supporting sustainable initiatives	• Green Deals (= cooperation with private sector) • Mix of hard and soft targets. The emissions reduction targets are compulsory but the support for sustainable initiatives in ports is a policy commitment • Financial incentives
Province of South Holland	1. Visie Ruimte & Mobiliteit	• All public transport fossil fuel-free by 2035 • Fostering connections between industries and strengthening clusters	• Financial incentives through the EFRO program (indirect EU subsidy) • Granting of permits • Approving use of land
City of Rotterdam	1. Stadsvisie Rotterdam 2. Programma Duurzaam	• Cleanest port city in the world by 2030 • Cleaner transport	• Financial incentives (fe., for NOx-free ships) • Mostly informal: networking and expertise sharing

Source: desk research and interviews.

The European mainland can be divided into seven basins, also called ‘corridors’: Rhine-Danube, Azov-Black-Caspian seas, Baltic area, Czech-Slovak centred network, Rhône-Saône basin, Seine-Oise basin, and the coastal routes connecting to inland waterways. The largest corridor, Rhine-Danube (47,6% of the total), is of critical importance to The Netherlands. In 2010, nearly 7000 inland vessels were operational on the Rhine river alone, totalling a capacity of 108,550,000 tonnes (UNECE, 2011:10-15). An average inland vessel with a 2000 tonnes capacity roughly equals 80 trucks, or 50 railway cars, allowing for an enormous carrying capacity per transport unit (Naiades, n.d.). About 84% of the Rhine fleet dates from before 1990 (some 600 vessels date from before 1930), indicating the long lifespan of inland vessels (UNECE, 2011:15).

The Netherlands, especially Rotterdam, is a good subject for the study of inland shipping due to the exceptionally large contribution inland shipping makes to the Dutch transport sector. The Netherlands also has the largest inland shipping sector in Europe. The table below compares the Dutch modal split to the EU-28 average and several other countries.

Table 6.4 shows that the Dutch inland shipping sector is much larger than it is in other parts of the EU. Several states have next to no inland shipping sector, which can be explained by their geographic location and the absence of large rivers flowing through them. Other countries with a considerable inland shipping sector are Belgium, Romania, Bulgaria, and Denmark. Ports and companies located in the first three countries are also part of the LNG Masterplan yet only the Netherlands has built several inland LNG ships, marking its importance as a case.

Table 6.4. Modal split in the EU varies strongly per country (in percentages)

Country	Road (%)	Rail (%)	Inland waterways (%)
The Netherlands	56,2	5,1	38,7
Belgium	58,3	17,5	24,3
Romania	53,3	24,2	22,5
Bulgaria	74,7	8,9	16,4
Denmark	64,6	23,1	12,3
Poland	81,9	18	0
Italy	85,9	14	0,1
France	80,6	15,2	4,2
United Kingdom	87,7	12,1	0,1
EU-28	*75,1*	*18,2*	*6,7*

Source: Eurostat, 2014:132. Data is from 2012.

It is worth noting that the inland shipping market for LNG has experienced a lift from mid-2015 due to the improving economic climate and aggressive pushes onto the market coming from Shell and Engie[218]. Of the 44 LNG as fuel or bunkering projects listed in the database of the Observatory of European Inland Navigation (OEIN), 30 were still ongoing or being planned. Twenty of those are (partly) Dutch projects (OEIN, 12 October 2015). The maritime LNG business case still looks more promising, not least because of the explicit regulation of sulphur emissions in the Sulphur Emission Control Areas (SECAs). Small-scale LNG essentially lengthens LNG's value chain by adding new end users and applications. Figures 6.3 and 6.4 illustrate this extension from the moment LNG is imported. For the Port of Rotterdam, the significant value of small-scale LNG begins with the reloading activity, which constitutes any activity that does not re-gasify the LNG for injection into the gas grid.

218 Referring back to the ±30 LNG ships each company will be putting on the market in the coming years.

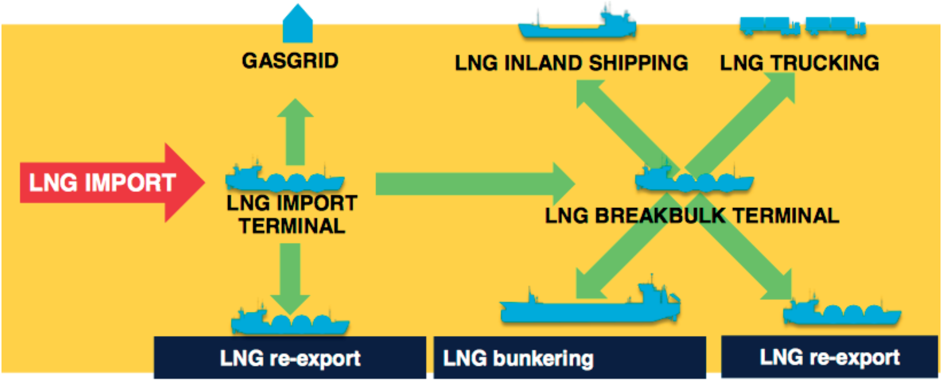

Figure 6.3. LNG applications as gas, fuel and export material
Source: Port of Rotterdam (presentation).

Figure 6.4 shows how small-scale LNG potentially increases the size of Rotterdam's LNG hub. The reloading of LNG for small-scale operations adds a whole chain of activities that can be performed in the port and therefore generate income for a port authority.

Focusing only on the Rotterdam region means this case study is not telling the whole small-scale LNG story, but it does have the benefit of being able to dive deeply into the details and dynamics of the case. As the next part of this chapter will show, such detail proves highly enriching for the study of multi-level governance.

6.3.1. The 'Small-Scale LNG Network'

Who is actually involved in small-scale LNG in the Rotterdam area? This question is an important one to answer if the impact of this case on European energy policy is to be considered. Figure 6.5 shows the involved actors in the multi-level context[219]. While this study cannot examine every possible actor involved in small-scale LNG, it has gone beyond past previous studies in providing depth to what motivates actors within this field. The efforts of other EU member states, who also have to implement *Clean Power for Transport,* cannot be discussed within the scope of this dissertation, but the fact that several Eastern European countries have begun constructing LNG terminals and LNG-fuelled ships is a testament to the further rise of LNG in the EU. Ports in other European member states influence the development of LNG in Rotterdam, as it is no use developing a new type of fuel if the ships using that fuel cannot refuel in any other ports than Rotterdam. For purposes of manageability they

219 A more detailed overview can be found in annex VI.

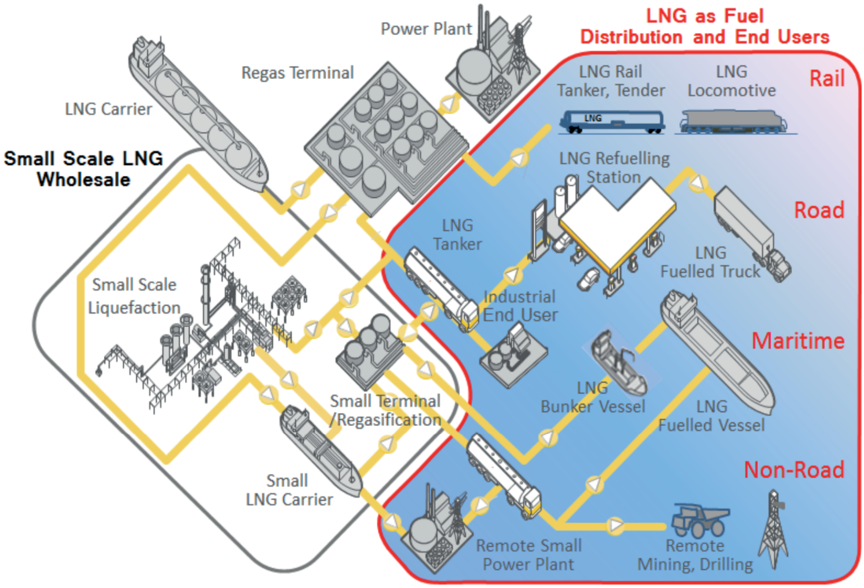

Figure 6.4. Small-scale and LNG fuel value chain extends port operations
Source: IGU, 2015a:11.

will not be considered specifically, but may be referred to when relevant. The international LNG producers and exporters will also be left out of the analysis, since the small-scale use of LNG comprises only 1-2% of total LNG import[220]. The international LNG producers are thus not highly relevant in this case, though the global market developments are (see §6.3.2.1). The remaining actors will be discussed where relevant. Lastly, companies such as Shell — now called 'local' because they have an office in Rotterdam — operate on all levels and can therefore be placed in multiple categories. One actor that is not mentioned in the figure is the IMO. The International Maritime Organization does not concern itself with inland shipping, which is why it was left out of the figure. However, it is important to note that any emission standards or other LNG-related requirements set by the IMO for the global maritime sector may have an influence on the prospects of LNG fuels in the European inland shipping sector. Where that is the case, the IMO will be mentioned in the analysis.

Not all of the actors shown in figure 6.5 are part of the LNG core network. Throughout this chapter it will become clear that there are many crucial actors at local level, but that they are dependent on the regulatory authority of the Dutch government, the European

220 Based on interview 3.

Commission, and international bodies. Unsurprisingly, while there are multiple Commission DGs involved in the LNG dossier, DG MOVE is the most connected. The other three DGs (CLIMA, ENV and ENER) are important due to their respective areas of competence, but within the theme of sustainable transport it is mainly DG MOVE that coordinates and devises policy. Furthermore, interviews with representatives from the other DGs revealed that areas of competence appear to be strictly divided between DGs, with one DG being unwilling to say much about another DG's area of competence. In one of the interviews, when asked to reflect on the link alternative fuels policy creates between energy policy, transport policy and climate policy, a respondent replied by saying: "*my unit does not look at this*"[221]. This reply is very illustrative of the attitude DGs have towards each other's policy area and begs

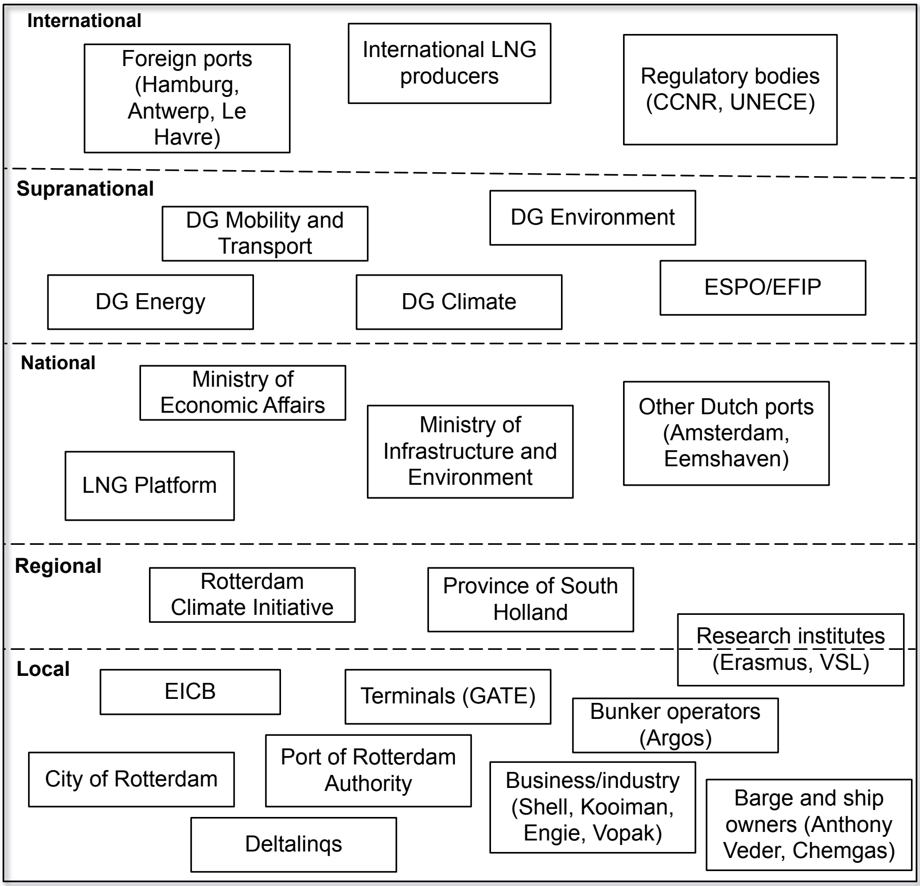

Figure 6.5. Rotterdam's small-scale LNG network in multi-level perspective
Source: author's own compilation based on fieldwork.

221 Interview 15.

the question whether policy integration has a chance of succeeding, since it has not before (Geerlings & Stead, 2003:189-195).

A surprising finding is that, in the PoR's small-scale LNG ego network, DG ENV falls out of the picture. It has a role to play through the Commission's inter-service consultation procedure and devises contingent policies which impact small-scale LNG, but has no direct connection to the PoR in this matter. Regarding betweenness centrality two actors stand out on the high side: the PoR and the Ministry of I&M. That the PoR has a high betweenness centrality (19.78) makes sense due to the local focus of the network (small-scale LNG development in *Rotterdam*) and its role as port authority. The Ministry's high betweenness centrality (14.36) indicates it is potentially powerful, yet the question is whether it uses its power to advance or block the interests of others. As the qualitative analysis will show, I&M has chosen a degree of passivity in the LNG case after an initial period of high activity. Actors with the lowest betweenness centrality — potentially low influence — are bunker operators and research institutes (0.94). These actors will likely not make or break the case.

Figure 6.6 provides justification for leaving foreign ports and international LNG producers out of the analysis unless relevant on a micro-level. Another actor that does not meet the set degree requirements but will be mentioned often in this chapter is GATE. Along with the other purely private sector parties (energy companies, barge and ship owners, bunker operators) GATE is mostly concerned with its business case. However, companies are tied to the public sector or umbrella organisations to regulate this new market by helping to provide, for example, regulations for standardisation of equipment. In the end, these activities help their business case as well but are also meant to provide collective goods.

6.3.2. Governance at EU Level — the Domestic - International Dimension

Chapter four and section 6.2.2 provided a comprehensive overview of the LNG policy context as it currently is in place. MLG hypothesises a shift from domestic to international coordination spurred by the necessity for supranational coordination due to *international interdependencies* (the first key concept) which cannot be ignored. The second concept is the *level at which policy coordination mostly occurs*. I expect the PoR to use its various ties to respond to policies. As this chapter will show, the consequences of increased EU and international legislation are indeed that strategic decisions are taken at those levels while the national government retains competency for practical issues. The PoR moves freely within this arena, though international focus on IWT is limited. The national government is far from obsolete, but is pushed into a different role than it used to have.

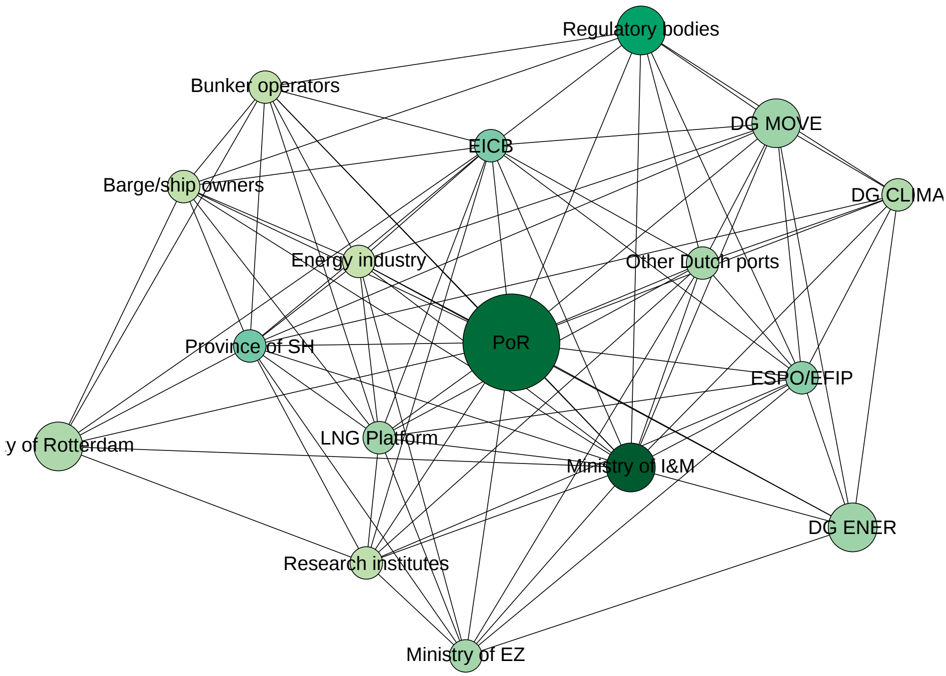

Figure 6.6. Small-scale LNG ego network for Port of Rotterdam Authority
Source: author's own composition based on fieldwork. The darker the node, the higher its degree. Minimum set edges per node is 9 (maximum is 20). The average degree is 10.8, the density is 0.568 and the modularity is 0.148, so there are no analytically meaningful communities in this network. Used software: Gephi (ver. 0.9.2).

6.3.2.1. International interdependencies as key manifestation of MLG

Mutual interdependencies drive the multi-level governance of EU energy and climate policy, which is why investigating how they work is important. At EU level, inland shipping has not been a main priority. The *Clean Power for Transport* Directive went through the legislative process quite easily, even though it was watered down in negotiations. Piattoni (2010) identifies two mechanisms structuring international interdependencies: the inclusion of sub-national authorities in European policy-making and the interdependencies created by business and civil society operating across national boundaries. Both mechanisms are discussed below. In addition, the CCS case found another mechanism affecting the level at which policy coordination occurs: nation states creating interdependencies of their own volition. This case adds a fourth factor: the influence of global market dynamics.

First, even though a member state can decide on its energy mix, the Commission makes an effort to play a coordinating role in setting up a European LNG strategy. As port areas are very important in global energy flows (Meyer, Nillesen & Zonneveld, 2012:80), the EC welcomes the input of port authorities and decentralised governments, which the PoR readily provides. Regarding cities, my interviews did not reveal a large emphasis on their inclusion in the European process of policy-making for alternative fuels for inland shipping, even though the sector is partly covered by projects running under the Covenant of Mayors[222]. Save for a recognition of the impact local government action can have, no Commission official indicated that including cities and regions in this policy area is of paramount importance[223]. On the other hand, research has also shown that to "seize and make use of these political, informational, and administrative resources required spontaneous initiatives on the part of regional leaders" (Smyrl, 1997:298) and that at times regions get captured by the national government acting as a gatekeeper to the EU (*ibid.*:305). In the case of small-scale LNG, stimulating the use of LNG as a fuel is part of the ESI initiative set up under the WPCI (see section 6.1.2.2). Port authorities are, in large parts of the world, still part of local governmental authorities, and their initiative to cooperate in making ports more sustainable is a good example of decentralised authorities working together in a cross-border context. The ESI program is supported by sea-ports umbrella organisation ESPO, thus also by the PoR, and complies with EU directives regarding emission norms. It also fits within EU ambitions to make reporting of ship emissions mandatory[224]. Both initiatives, however, focus on maritime transport and not on inland shipping. While it is a recent addition to the EU's climate worries, attention to reducing emissions from inland shipping still is not copious. In fact, during one interview with a Commission official the following statement was made:

> *"If you disregard fuels for international flights and international marine transport, then 95% is cars, so road transport. And all the rest is marginal. If you want to devise a policy that is relevant for the current emissions in transport […] what are you looking for? Are you looking at this tiny little sector or are you looking at the 95%?"*[225]

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222 The Covenant of Mayors is an EU-supported initiative stimulating cooperation between local and regional authorities in the EU in the area of sustainable energy. For more information see [http://www.conventiondesmaires.eu/about/covenant-of-mayors_en.html]. An example of an initiative covering small-scale LNG is the Baltic Energy Forum. Furthermore, the Province of South Holland is asking for EU attention for cleaner inland shipping through the CLINSH Project (DG ENV).

223 In the broader sense of the potential impact of city-wide policies for climate change adaptation and mitigation, however, scholarly research has shown that cities have a significant role to play in combating climate change due to their ability to mobilise local action (Betsill & Bulkeley, 2006:141-143). This role has been recognised by the EU in an initiative called 'LA21', which promotes the articulation of local agendas and cooperation between cities, both nationally and internationally. The Dutch *Brandstofvisie* (Ministerie I&M, 2014a) also explicitly recognises complexity due to globalisation, multiple levels of policy-making, the economy, and various other factors.

224 Regulation 2015/757.

225 Interview 2.

This attitude, while on the extreme side, is very telling of the general attitude policy-makers seem to have towards the inland shipping sector. Because it traditionally is not the most polluting sector, and because it is relatively small, they prefer to focus on other sectors and therefore often overlook the inland shipping sector[226]. Contrary to MLG's thesis, in small-scale LNG policy-making subnational authorities mostly play a symbolic role.

The interdependencies created by civil society (such as NGO activity) and business are the second factor mentioned by Piattoni. The activities of NGOs award low priority to inland shipping, mostly focusing around advocating cleaner road transport and aviation, with maritime transport being a secondary concern. Even European NGOs such as Transport & Environment and the Climate Action Network Europe focus more on maritime transport than on the inland waterways of Europe[227]. None of the people interviewed mentioned NGO activity as being crucial in advocating sustainable inland shipping in the EU, which appears to confirm the low policy priority of the sector. As such, NGOs also do not spur supranational coordination in this case.

In keeping with Piattoni's line of inquiry, one must ask whether business creates the interdependencies at an international level? Not for small-scale LNG for inland shipping. Cross-border networks are present of necessity through the nature of the energy and shipping business; shipping is international and many companies are multinationals operating in more than one country. They are often represented in umbrella organisations at EU-level (for example the European Community Shipowners' Associations, ECSA) through their own national association. Furthermore, ports themselves are part of various formal cross-border networks (for example ESPO and the European Federation of Inland Ports, EFIP) and informal networks. None of these cross-border networks are new or appear to be sticklers for sustainability. While sustainability is acknowledged to be important, economic viability and ensuring a level playing-field seem to be the top priorities of these networks[228]. According to EFIP,

> "EFIP supports policies aimed at further reducing emissions from inland waterway transport. At the same time, the relatively bleak economic situation of the sector should be taken into account. Stricter emission standards therefore need to be

226 The EC was even criticised for this omission in the consultation round for the mid-term review of the 2011 White Paper on Transport (European Commission, 2015e:10). A city such as Rotterdam, with a port heavily dependent on IWT, does focus on inland shipping emissions through its *Programma Duurzaam* and *RAP/RAL*.

227 See their aims, goals and projects on their websites at [http://www.transportenvironment.org/] and [http://www.caneurope.org].

228 See, for example, ESPO's and EFIP's yearly reports. There is some focus on sustainability in general, but it is clearly not their main concern.

accompanied by meaningful financial support measures, in particular for the retrofitting of the existing fleet" (EFIP, 2014:23).

Arguably the most prominent example of business activity, although initiated by the EC, is the European Sustainable Shipping Forum (ESSF); an expert group under DG MOVE[229]. It is mostly made up of MS authorities, companies, and business associations and has a subgroup on LNG in which the PoR is active. The ESSF is meant to assist in policy formulation and implementation and functions as a platform for the exchange of views on sustainable shipping. It relies heavily on the expertise brought in by non-state actors. Again, maritime LNG receives more attention than IWT.

As the above analyses have indicated, Piattoni's two factors indicating growing interdependencies at the international level do not resonate strongly in the small-scale LNG case, mostly because the focus on inland shipping is limited. My interviews show two other important factors: nation state activity and global market dynamics. My network analysis deliberately left out the IMO — a UN subsidiary — since the IMO focuses on maritime transport rather than on inland waterways. The IMO, however, does have an influence in this case. An employee representing the Dutch government at the CCNR explained:

> *"Member States refer to IMO-norms when it comes to engines. Engines for inland waterway vessels have the same bandwidth as engines for sea-faring vessels. Many engine manufacturers thus sell both types of engines, not in the least because the inland shipping sector is relatively small; fewer than 200 engines sold per year in Europe. For them it is very annoying if inland shipping norms are different from maritime emission norms. The norm that holds for maritime transport, IMO Tier 4, therefore is often used as starting point in the discussions concerning emission norms for inland shipping. Some small tweaks can then still be made, such as regarding PM or methane slip, and it does allow engine manufacturers to sell the exact same engine for both maritime and inland transport, with small adjustments."*[230]

Since all EU member states are IMO members, agreements made in the IMO are automatically relevant for the EU as a whole. In the interest of a level playing-field, the shipping sector and national authorities prefer to let IMO negotiate and try to come to legislation and emission

229 Registry number E02869. See [http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=2869] for more information.

230 Interview 12.

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standards so that the rules apply to as large a group as possible. Thus, nation states willingly maintain the interdependencies that necessitate supra- or international coordination, at the same time knowing that the established channels like the IMO are slow due to specific catering to the interests of the shipping sector, the difficulty of finding consensus between so many participants, and their view that other transport modes should also decarbonise (Oberthür, 2003:195-199)[231]. When it comes to pure CO_2-reductions, the shipping sector is very divided. As a result, the international shipping community has not been able to set a CO_2-reduction target[232], although the IMO does have an energy efficiency design index. Since the engines used by inland shipping are often adjusted maritime engines, an LNG push in the maritime sector could be a catalyst for the transition in the inland shipping sector.

Rivers do not heed national borders. The Netherlands thinks it can be an LNG hub because of the strong positions of the ports of Rotterdam and Amsterdam[233]. At the same time, *Brandstofvisie* acknowledges that the bulk of Dutch policy in this regard follows the European *Clean Power for Transport* Directive (Ministerie I&M, 2014a:6-38) and is therefore adaptive rather than pioneering. National governments hardly have a choice but to cooperate when inland waterway transport is concerned. According to a Dutch policy officer:

> *"the national government is […] more and more dependent on international bodies"*[234].

These 'international bodies' are mostly existing bodies. The CCNR coordinates cooperation for the Rhine river. However, the CCNR's policy cycle is shorter than the EU's, which leads the EU to struggle to keep up with new rules adopted by CCNR. The EU can influence[235]

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231 From a cynical point of view, that may also be a reason why national authorities prefer international standard setting over national standard setting; if no standards are agreed upon, countries will not have to act.

232 Some other agreements are in place as well. The MARPOL (short for Marine Pollution) Protocol is a UN document prescribing limits to pollution coming from sea-faring ships. A result of this protocol are the Emission Control Areas (ECAs), which limit certain emissions (mostly sulphur oxides) in defined areas such as the North Sea and the Baltic Sea. Currently the Mediterranean Sea is not included in the ECAs, but there are plans to do so on the short term. The ECAs are not popular amongst all companies. The short-sea sector was especially against setting more stringent emission norms. The Dutch government was a strong proponent, as was the European Commission. The PoR took up a position favourable to the ECAs because of the construction of Maasvlakte 2, which requires ships to have low emissions due to the potential impact on the environment. Based on respondents 3, 10, 11, 12, 13, 14 and 17.

233 Another way of looking at the possible interest of The Netherlands in LNG is when considering the switch Shell has been making from being an oil company to being a gas company with significant stakes in the production, trading and use of LNG.

234 Interview 13.

235 See the 'Administrative arrangement concerning a framework for cooperation between The Secretariat of the Central Commission for the Navigation of the Rhine and The Directorate-General for Mobility and Transport of the decision-making in CCNR and usually adopts agreements made by it as EU law (CCNR, 6 April 2015)[236]. However, with the EU delaying transposition and the CCNR left without one of its main policy instruments, the development of new emission norms for inland shipping has come to a standstill over the last few years. When it comes to the safety of LNG, the ADN Safety Committee (under UN ECE), tasked with the safety check for LNG ships, is also an important party due to legislation concerning the transport of high-risk substances. CESNI, a newly founded EU entity, allows EU-wide membership and is responsible for the drafting of technical and crew requirements for the inland shipping sector. The standards developed by CESNI automatically become part of the EU's and CCNR's legislation (Council of the European Union, 2015)[237], so national governments cannot ignore them. CESNI is the best example of nation states willingly creating *new* international interdependencies, which lead to supranational coordination.

Box 6.1. Choosing LNG for different reasons

The choice for LNG - the political narrative
The Netherlands traditionally is a gas country with excellent gas infrastructure. As the only net gas producing country in the EU, The Netherlands has significant interest in maintaining the status quo for natural gas. With Slochteren gas decreasing in quantity and production, the government needed a viable substitution for its natural gas supply, preferably independent from Russian gas. Importing LNG from production facilities spread across the globe was an attractive alternative. The Dutch government therefore became a staunch supporter of the construction of the GATE terminal, meant to secure the nation's gas grid. Small-scale LNG is a non-issue compared to the importance of national energy security, though gains saliency when GATE struggles to be competitive.

The choice for LNG - the industrial narrative
Exogenous effects such as the Fukushima disaster and a low oil price cause a dramatic drop in LNG imports in the EU, right after the GATE terminal enters into operation. The sparse LNG ships docking at GATE can provide natural gas to the Dutch gas grid, but GATE's business case is in jeopardy. To safeguard GATE's profitability, Gasunie and Vopak explore their options and arrive at the great potential for the use of LNG as fuel; small-scale LNG. They begin talks with the Port of Rotterdam Authority to explore possibilities for using LNG as fuel in the port. The LNG Masterplan and the construction of the liquid breakbulk facility commence shortly afterwards, giving GATE value beyond its role in national energy security, yet securing it at the same time. Market possibilities drive decision-making regarding LNG.

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European Commission', signed in Brussels on 22 May 2013.

236 EU members — such as The Netherlands — are not allowed to agree to change emission norms in another international body (eg., CCNR) without consulting the EU first. It is expected that the CCNR will fully regulate the use of LNG as fuel by 2017. The consequence of this regulation is that the Dutch government should not have to keep reviewing every single LNG ship prior to approval by classification bodies.

237 Based on interview 12.

The fourth, perhaps strongest, important factor in this case concerns global market dynamics. The LNG market is globalising, which in turn creates new interdependencies. The EU imports most of its gas, and with the increased use of LNG the potential sources of gas have diversified. In the first section of this chapter it was mentioned that the use of LNG as fuel flows from the large-scale use of LNG to supply national gas grids. To that end, The Netherlands built the GATE terminal (see also box 6.1). Small-scale LNG developed because the large-scale market did not provide enough business prospects, which was an important driver of the thought processes regarding possible alternative uses of LNG. Currently, LNG terminals are being built all over the world. These market dynamics regulate the interdependencies between countries in terms of their energy policies and therefore also impact the options the EU has to make its transport cleaner. If the amount of LNG being pushed onto the market increases, thus decreasing its price even further in comparison to oil, it will become a more interesting fuel for inland shipping. As an expert put it:

> *"LNG could take up a large share of the fuels mix in the inland shipping sector. Europe is investing heavily in LNG, also outside of its application in inland shipping, which will cause supply to rise further and further, and therefore also the supply of LNG as fuel. The price difference between oil and LNG will probably only increase, which will make the switch to LNG financially interesting."*

The choices made by the EU in terms of its energy policy and energy mix may therefore also impact the development of LNG as fuel. These choices are at least partially dependent on the global energy market[238]. Likewise, small-scale LNG developments in other EU countries could impact the Rotterdam case as well. A market-building project such as the LNG Masterplan creates interdependencies at the European level due to the connection between the Rhine and Danube rivers and European coordination of the project. Efforts to introduce LNG as fuel for shipping have thus been made in Romania and Bulgaria, albeit with little success so far[239]. With growing availability of LNG in those parts of Europe the situation may change. Global market dynamics thus influence choices made by countries individually, but also as part of, the EU. This finding adds more nuance to MLG's domestic - international dimension.

238 Based on interviews 3, 6, 7 and 15.

239 In fall 2015, twenty implementation projects for small-scale LNG outside of The Netherlands were planned or on-going, the bulk of which were meant for German waterways, one in France, and two in the Danube-Main corridor (OIEN, 12 October 2015).

6.3.2.2. EU policy coordination leaves room for national diversity

My interviews confirmed that international coordination is necessary simply because a fuel can only be used if refuelling points at certain intervals are available. The Commission seems to be managing to make a measure of coordination happen where previously there was none. Whether this coordination will continue in the future is questionable, as box 6.2 illustrates.

Box 6.2. Narratives of EU policy coordination

EU policy coordination - the political narrative
The European Commission knows all too well it is difficult to agree on anything with 28 member states. When deciding on an attempt to coordinate national fuel policies in order to reduce emissions from transport and reduce oil-dependence, the Commission immediately decided to opt for a Directive, called Clean Power for Transport, instead of a Regulation, allowing national governments to retain control over the implementation. Such a construction, resulting in a measure of EU policy coordination, was deemed favourable over having no EU-wide alternative fuels strategy at all. Private parties are encouraged to invest in alternative fuels. The Commission watches developments across the EU closely to judge whether it can try to coordinate even further in the future.

EU policy coordination - the industrial narrative
Inland waterway transport often crosses borders. Even though rivers are coordinated by special river committees, national laws govern the berthing of ships and the handling of (dangerous) cargo. When laws and regulations differ across countries, shipping companies are left with a difficult choice: either comply with the strictest of standards, or change their operations. Since Directives leave a lot of room for national governments to diverge in their implementation of the goals, whilst transposition of a Directive is ongoing it is uncertain for the private sector what the variation across nations will be. It is also unclear whether ships will even be able to refuel at the needed intervals. Investing into long-range LNG powered ships becomes too risky and is therefore placed on the back-burner until policies are sorted out.

Originally the EC also wanted to use *CPfT* to dictate how many refuelling points each MS had to construct[240]. Even though The Netherlands responded favourably to the directive, its Parliament was concerned with the appropriateness of the EC deciding upon the amount of refuelling points needed, arguing that infrastructure is a matter of national competence. EU member states wanted more control and delayed the directive's timeline by five years. By 2015 the Dutch government was cautiously backing away from supporting LNG because of the methane slip associated with combustion of gas and a discussion surrounding potential lock-in of LNG, which the government fears could be harmful to development of hybrid and electric techniques. The environmentally oriented side of the Dutch government prefers

240 This information can be found in the Dutch parliamentary procedures, #21501-33 410 and #21501-33 457 at [https://zoek.officielebekendmakingen.nl].

transport to become electrified, which coincides with the positions of DG ENV and DG CLIMA[241]. One striking finding is the Commission's 2014 communication regarding GHG reduction targets for transport beyond 2020, in which the EC announces that:

> "The Commission does not think it appropriate to establish new targets for renewable energy or the greenhouse gas intensity of fuels used in the transport sector or any other sub-sector after 2020" (European Commission, 2014d:6).

The question why the EC chooses not to establish targets beyond 2020 was posed during an interview with a representative from the European Commission. The main reason behind this decision is that efforts to reach GHG reduction targets from transport have, thus far, been challenging and that the costs for mitigation from transport are too high. For now the EC prefers to mitigate climate change through cheaper means by using the ETS system[242]. Another directive such as *Clean Power for Transport* might thus not be proposed any time soon.

6.3.2.3. Soft coordination: implementation through TEN-T funds

Supranational coordination often takes on a *soft* nature, with funding instruments taking up a large portion of it (cf. Eberlein & Kerwer, 2004; Citi & Rhodes, 2007; Stephenson, 2013). This case confirms this claim. The Commission seeks to stimulate LNG development with "targeted, limited public financial support" and a "harmonised framework for rules and procedures" (European Commission, 2013f:3). Existing rules need to be scrutinised, and, where necessary, adapted to fit LNG. Pioneer projects are meant to shape the EU LNG framework and to enable learning through best practices (*ibid.*:3-5). The current TEN-T Regulation[243] focuses on removing bottlenecks, building missing cross-border connections and promoting modal integration and interoperability. Additional goals are to promote clean fuel, other innovative transport solutions and to integrate urban areas into TEN-T. To accomplish its goals, the Regulation divides the EU into nine corridors, three of which include

241 Based on interviews 2, 5, 8, 9, 10, 12, and 13.

242 Based on interview 2.

243 Regulation 1315/2013, amended in 2014. The TEN-T network and its link to the EU's alternative fuel strategy goes back to the origins of EU transport policy in the Treaty of Rome (1957) and the resulting extremely slow cross-border infrastructure development. The situation started to change when the Treaty of Maastricht (1992) obliged the EC and EP to make Trans-European Network (TEN) guidelines. For transport, the first TEN-T guidelines were made in 1996, then revised in 2004 and 2013 (Fraunhofer ISI, 2015:17). See annex VII for a comprehensive overview of the TEN-T corridors.

Rotterdam and are therefore important to The Netherlands[244]. The effect of soft coordination, as shown in this study, through funding is that cross-border networks between companies are built which obtain EU funding and liaise with EU officials. A good example is the LNG Masterplan, supported by key public and private actors from the Rhine-Danube corridor.

Box 6.3. Funding narratives

Funding - the political narrative

The EU has multiple funding mechanisms the private sector can call upon to implement new technologies and new fuels. These funding mechanisms rely heavily on the construction of infrastructure to aid the deployment of ships sailing on alternative fuels. National governments therefore decide not to subsidise deployment in their own country too heavily, since EU funding is available and they do not want other member states to receive more financial support than they do. When private sector parties talk to national governments about their LNG plans, the national government tells them to apply for EU funding. Initiatives are supported by the national government as well, but this support never covers the requested financial support.

Funding - the industrial narrative

Obtaining EU subsidies is a tedious process involving much bureaucracy and a very low chance of success. The EU's method of spreading out subsidies over all regions as evenly as possible, to maximise economic gain, makes clustering of projects in a small region impossible. Smaller companies often lack the needed manpower to manage an EU-funded project, leading them to not try to get EU funding in the first place. Landing EU projects becomes the prerogative of large companies and actors such as port authorities. Since national funding is mostly absent, a small company will not invest in small-scale LNG unless it wants to be a pioneer and is financially able to do so.

National governments liaise with the Innovation & Networks Executive Agency (INEA) in implementing TEN-T. They need to make sure that their seaports have alternative fuels available, and that they support on-shore activities and intermodal connections. Inland ports are expected to adhere to navigability and inter-modality requirements. INEA also manages the funding instruments belonging to TEN-T: the Connecting Europe Facility (CEF)[245], by far

244 Note that these corridors are not the same as the IWT corridors on p.13 of this chapter. The Port of Rotterdam is part of the Rhine - Alpine, North Sea - Mediterranean, and North Sea - Baltic corridors running from north to south and west to east. A closer look at the work plans of each of these three corridors reveals an interesting finding: since most bottlenecks are identified in areas of the corridor *other than* Rotterdam, most of the activity (and funding) is geared towards improving those areas. The exception is the North Sea - Baltic corridor, which stresses that it depends on ports on both ends of the corridor for its success, but even so attention is then focused on the Port of Amsterdam. The sea lock at the Port of Amsterdam is identified as a bottleneck for further development. For the PoR, this focus is unfortunate since they would prefer to get (more) funding instead.

245 Regulation 1316/2013. The current CEF Programme runs from 2014 to 2020 and contains 22,4 billion euros, of which 87% has been awarded between 2014-2015. According to INEA, 42% of the funding goes to the private sector, 41% to the public sector, 16% to member states and 1% to 'other'. By far most of the funding goes to rail projects. The 3 corridors the Port of Rotterdam is part of receive less money as compared to other corridors. For alternative fuel supply points, 79% of funding goes to electricity projects, 10% to LNG, 10% to CNG and 1% to hydrogen (INEA, 2016). Nearly 90% of that funding went to cross-border infrastructure projects and 1,5%

the main funding instrument, and the relevant parts of Horizon 2020. National governments can submit projects for funding under these programmes, as well as under the Cohesion Fund and the European Regional Development Fund (EFRO)[246]. Clearly, the promise of massive EU funding incentivises cross-border cooperation for companies and governmental authorities alike. At the same time managing EU projects is a tiresome task (see box 6.3). My observations at and conversations with people from the PoR show that another EU-funded project is not likely to take place anytime soon with the same team of people[247].

6.3.2.4. The absence of coordinated policy

Having a directive in place does not imply EU-wide policy coordination. Policy documents often refer to the 'appropriate' level to tackle an issue, which can indicate policy coordination as I have operationalised it. Where the EU sees ensuring that there is an EU-wide network of LNG refuelling points as a supranational task, its member states and the private sector see standard-setting for the shipping sector as something the IMO and CCNR need to do. The EU is willing to provide the necessary regulation and limited funding, but is otherwise letting member states decide on their own how to meet the requirements of the *Clean Power for Transport* Directive. Consequently, the Dutch government is taking up that task, but also playing the ball back into the EU's court where financial incentives, the methane leakage, and ETS problems are concerned. *Brandstofvisie* has a clear message for the European level. It advocates placing CO_2-reductions and the methane slip on the EU agenda, as well as the creation of financial incentives by governments to stimulate LNG development and bunkering (Ministerie of I&M, 2014a:iii). Additionally, ETS problems are mentioned as a factor that hampers investments in clean technology (*ibid.*:32). Going even further down the hierarchical ladder, local governments are asked by the *Energieakkoord* to consider climate and sustainability in their spatial policies in the future. Furthermore, the City of Rotterdam had to make changes to its port bye-law to accommodate for small-scale LNG. The municipality is also financially stimulating clean ships in order to help The Netherlands meet the EU's air quality standards. Cross-referencing in policy documents emanating from several governmental levels clearly is very common, especially when governments want another level to carry out a task. The private sector, on the other hand, calls on these governments to solve the legal issues surrounding Rhine navigation and to financially support business

went to deploying sustainable and efficient transport (INEA, 2016:10-14). It should be clear that this funding instrument is not meant for actual vehicle deployment. A single LNG ship will most likely not receive funding under CEF.

246 The first Dutch LNG ship, *Argonon*, was partly funded by EFRO funds.

247 Most of their complaints were about the amount of bureaucracy involved with an EU project, which takes up much of their time while they prefer to spend it doing business development.

cases which would otherwise not be sufficiently promising. They want governments to act as facilitators.

Concluding this section, the bulk of the 'policy weight' seems to lie at a higher level than the national one[248], which supports MLG's notion of a shift from the domestic to the international and indicates a move towards potential harmonisation of transport policies through directives such as *Clean Power for Transport*. The setting of emission norms may theoretically become the sole prerogative of international organisations, supported by the EU. In practice, failure to coordinate effectively in the past has led to today's uncoordinated LNG policy[249]. When asked about who actually makes LNG policy, representatives from the Dutch government evasively said that 'everyone does a little bit'. In November 2014, the Dutch cabinet[250] noted that LNG could be one of the focal points in the Dutch CEF strategy and that *the international nature of transport requires international coordination*. Continuing the discussion on how to further stimulate the development of low- and zero-emission fuels at EU level therefore remains a priority for the government[251]. The possibility of funding serves as an instrument of implementation through soft coordination, with EU bodies presiding over the decision which projects fit within EU priorities, and which do not. The result is that the EU provides a long-term vision for its members to implement as they choose. The PoR responds by mobilising its network to make use of the EU's soft coordination tools and attract funding for the port.

6.3.3. Governance at National Level — the Centre - Periphery Dimension

According to Piattoni (2010:86), states are not unitary actors, but are comprised of multiple levels of hierarchy which are territorially distinctive. Decentralised authorities are thought to be better equipped to organise administrative, economic and social efficiency than national authorities, although the question is whether they will be able to make proper use of the tools at hand (Smyrl, 1997:298). My analysis of the domestic - international dimension showed that sub-national authorities have not been important in European small-scale LNG policy-making. In light of the criticism directed at MLG regarding its overstatement of the

248 In the interviews, most of the statements regarding policy output are related to EU policy and international agreements made in bodies such as IMO and CCNR. There are significantly fewer statements mentioning the Dutch policy output and hardly any mentions of the decentralised authorities.

249 Before the EU's LNG strategy (COM(2016) 49 final) was published in 2016 (2016c in bibliography), there was no LNG policy document. This strategy comprises the role of LNG in the EU's energy policy as a whole, which is of strategic importance to the EU. Also based on field work report C and interviews 6 and 15.

250 See Dutch parliamentary proceedings, #21501-33 512.

251 See Dutch parliamentary proceedings, #21501-33 578.

power of sub-national mobilisation (Jeffery, 2000:8; Jordan, 2001:201) it is important to analyse if the pull exerted by decentralised governments is reflected in the centre - periphery dimension consisting of two key concepts: the *level at which the domestic coordination of activities* takes place and the *level of empowerment of local actors*. Can the PoR use its resources effectively to stimulate regional activity?

6.3.3.1. How decentralised authorities matter

In attempting to coordinate the uptake of alternative fuels in transport, the EC invariably added IWT to its target groups even though not much energy is spent on the sector. At the national level, inland shipping receives more attention[252]. As discussed previously in this chapter, the slow uptake of LNG import through the GATE terminal led to a re-evaluation of possible uses of LNG[253]. The initial focus of the government lay with short-sea and inland shipping[254]. The Dutch focus on inland shipping does not fit with the EU's focus, but its ambitions — and reservations — regarding LNG as fuel resemble those of the Commission. At the city level, these reservations do not seem as strong. LNG came up in Rotterdam in 2009-2010, when the port bye-law (in Dutch: *Havenbeheersverordening*) was changed to accommodate the construction of the GATE terminal. While the safety of using LNG as fuel was a concern, the city was willing to be convinced of the fuel's safety through pilot projects[255]. Because the city wants to be the cleanest port city in the world, — a goal still remaining in its most recent *Programma Duurzaam 2015-2018* — it saw the LNG terminal and its possible applications as contributors to this goal, especially in terms of air quality benefits (Gemeente Rotterdam, 2011:18)[256]. Over time, the city accommodated developments within the port by adjusting the port bye-law so as to legalise all activities related to small-scale LNG and allowing the Port of Rotterdam Authority to incorporate plans to be an LNG hub into its long-term strategy (*Havenvisie 2030*)[257]. The most recent policy documents

252 When the Dutch government considered building an LNG import terminal in the northern part of the country in the 1970s, safety concerns and public opposition halted the project. Had the Dutch not reconsidered the construction of an LNG terminal in the mid-2000s, perhaps LNG as fuel option would not have developed so quickly in The Netherlands.

253 The Dutch also advocated for the use of LNG as fuel at an informal Transport Council in Antwerp in September 2010, and reaffirmed the importance of hubs to distribute LNG as fuel.

254 See Dutch parliamentary proceedings, #21501-33 290, #21501-33 292 and #21501-33 383 at [https://zoek.officielebekendmakingen.nl].

255 See the Replijst Commissie Economie en Haven for 2011 and 2012 in the online Rotterdam city archives.

256 The city (and PoR) has also argued that not all planned shore-power installations can be placed due to other circumstances, therefore proposing to use LNG as fuel could offset potential negative air quality consequences of having fewer shore-power installations than originally envisaged.

257 The city also mentioned the LNG Platform's plans to realise 50 inland ships, 50 maritime ships and 500 trucks by 2015 (Gemeente Rotterdam, 2013:92). This ambition has not been reached. In mid-2016 there were 350 LNG (for example the *Stedelijke agenda haven 2016*, the city's vision on the synergy between the city and the port) still support small-scale LNG as a contributor to national sustainable goals. Rotterdam has stimulated clean shipping with investments of up to 5 million euros in 2013 and 2014. Part of the reason to do so is to allow The Netherlands to meet the EU's air quality requirements. Furthermore, subsidies are available for the development of NOx-free ships (rotterdam.nl, 2 February 2015).

The relative ease with which the port and business could introduce small-scale LNG leads to the conclusion that it has not been a contentious issue. The local government cooperated with business, demonstrating economic and social efficiency as expected by MLG, and went unimpeded by the national government[258]. Especially the PoR emerged as a strong peripheral actor which was able to provide manpower, discounts for clean ships and land allotment for the purposes of developing small-scale LNG. Higher levels of government may provide a long-term vision, but decentralised authorities matter when it comes to achieving this vision.

Box 6.4. When narratives match — the case of Albert Heijn's LNG trucks

LNG trucks - the political narrative

Cities often have strict rules for the allowed restocking hours of retail stores, especially when these stores are located in highly populated downtown areas. Trucks are traditionally noisy, so restocking at night is not an option because it disturbs citizens' night rest. Supply hours therefore are scheduled during daytime, often leading to traffic congestions and air pollution through idling engines. When supermarket chain Albert Heijn comes with the proposal to do a pilot with LNG-fuelled trucks, several city governments decide to allow it. The pilots result in empirical evidence showing the trucks are silent and better for air quality than diesel fuelled trucks, so city governments permanently extend supply hours for LNG trucks to include evening hours and the early morning. City councils are satisfied because they can protect their citizens while reducing traffic congestion and cater to local retail.

LNG trucks - the industrial narrative

When a truck with fresh supplies is stuck in a traffic congestion, a store may not be restocked in time and the extra time needed to resupply costs money. It would be much more efficient to be allowed to resupply at night, but that is prohibited in most cities. Hearing of the potential of LNG-fuelled trucks, Albert Heijn decides to invest money in the acquisition of such trucks in order to be allowed extended supply hours. The supermarket chain convinces several city governments to allow a pilot, showcasing the delivery trucks' silence and reduced emissions. The pilots lead to permanently extended supply hours, allowing Albert Heijn to restock its stores outside of rush hours for more efficient operations, a green image and happy customers. The pilot also catalyses the small-scale LNG sector.

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trucks and 6 operational LNG ships, with 35 ships pending construction (LNG Platform, n.d.).

258 The growing use of LNG as fuel has recently begun to worry the Veiligheidsregio Rotterdam-Rijnmond (an organisation assessing threats in the greater Rotterdam region) as a higher amount of LNG vehicles on the road and the waters could lead to incidents with the substance, and, according to VRR, it should therefore be well-known how to deal with any incidents that come up (VRR, 2016:61).

Developing LNG infrastructure and pilot-testing the ships has a geographical component that necessitates local action and support from relevant local authorities. A good example is the introduction of LNG trucks (see box 6.4). If the participating cities had been unwilling to change the restocking hours for supermarkets on the condition that relatively quiet trucks were used, Albert Heijn may not have invested in switching over to LNG fuel. But it is not just about the municipalities. According to a safety expert from the private sector:

> *"The fire department also has to know how to deal with an LNG-related incident. […] The department can only give a positive recommendation [for projects] when they know how to respond to LNG incidents"[259].*

The first LNG ship sets an entire local chain into motion, which is based on the competence delegated by the national government. In addition, small-scale LNG touches upon territorial policies such as infrastructure policy and environmental policy, which are fundamentally local in nature and therefore not easily relocated to a different hierarchical level (Piattoni, 2010:250). Because of the territorial distinctiveness within decentralised states such as The Netherlands, the preferences of local governments (and business and society!) matter.

6.3.3.2. The limits of local empowerment

Unfortunately, the inland shipping sector is not as straightforward an example of empowerment of local authorities as was the case in the example of Albert Heijn's trucks. Betsill and Bulkeley discuss the role of cities in climate change mitigation and claim that

> "it is increasingly clear that nation-states will be unable to meet their international commitments for addressing climate change without more explicit engagement with subnational action. GHG emissions originate from processes that are embedded in specific places, and it is often argued that the local is the most appropriate political jurisdiction for bringing about necessary reductions in these emissions" (Betsill & Bulkeley, 2006:141).

Betsill and Bulkeley effectively reiterate the efficiency of local governments, though box 6.5 shows that problems arise when the local and national level are not sufficiently aligned. The competence of a city such as Rotterdam in efforts to make urban mobility more sustainable is straightforward. Rotterdam can, for example, choose to only use e-transport or stimulate the use of bicycles instead of cars. But it cannot do so alone. In the city's *Programma Duurzaam*,

259 Interview 8.

Box 6.5. When the local and national levels are not mutually reinforcing

Local or national? - the political narrative

Cities are very concerned about air quality, since it directly impacts the health of their citizens. Using LNG as fuel is good for air quality, making it an interesting alternative for conventional fuels. Aiding in the deployment of small-scale LNG, however, is difficult for local governments. The city of Rotterdam has a limited budget and since ships do not stay in Rotterdam for very long, it is difficult to legitimise spending financial resources on incentivising the use of LNG as a fuel. Instead, the city government makes sure manpower is put on small-scale LNG so that companies who do want to invest can apply for permits and prove compliance with safety regulations. The national government, in turn, is more concerned with the climate, more precisely, with CO^2 emissions, than with air quality. LNG scores mediocrely on the climate scale. Fearing a technological lock-in and favouring the promise of electric vehicles, the national government chooses to not support LNG financially too much either. It does make sure that a government representative is present during relevant CCNR, ADN and IMO meetings to obtain favourable regulatory conditions.

Local or national? - the industrial narrative

The private sector is called upon by the European Commission and the national government to deploy LNG fuelled vehicles and ships. Lacking enough support from both the local government and the national government, and knowing that heavy-duty transport will not be electrified in the near feature, the transport sector defaults back to oil-based fuels, especially during times when the oil price is low. Regulatory uncertainty does not help investment decisions into LNG either because it is difficult to convince shareholders that investments into small-scale LNG will repay themselves in the long run. Who should champion LNG?

the role of the Rotterdam Port Authority and Deltalinqs are explicitly mentioned as being of crucial importance in making the city more sustainable. My observations in the field have confirmed that the PoR’s activity was hugely important during the launch of small-scale LNG, providing much needed support to shipping companies through mutual business development and the provision of facilitating incentives.

As the Albert Heijn example shows, local entrepreneurship is not lacking, yet at the same time the city admits it only has a limited budget and that it can mostly play a facilitating role in providing expertise, bringing people together and conducting exploratory research (Gemeente Rotterdam, 2015:63-68). Practically speaking, local coordination of activities is the most logical course of action. That does not mean that the coordinative activities are actually performed by a governmental authority or that central government is not needed at all. With an international transport mode such as inland shipping, the power of the city is not so easily established. Rotterdam will not go too far in its support of small-scale LNG for inland shipping due to limited resources and because ships only spend several hours in the city before they sail elsewhere[260]. Coordination between governmental authorities is needed in order to align territorial preferences.

260 Based on interviews 5 and 9.

This study shows that local, business-driven processes such as the development of small-scale LNG eventually interact with and can be captured by a higher level of governance. In fact, the international nature of transport requires coordination on an international level. The coordination of legal exemptions has an international nature through negotiations between representatives from national ministries[261]. Furthermore, the source of funding is of crucial importance since the actor who finances projects also gets to lay down the rules. The development of LNG infrastructure is done locally or regionally (with some financial support from the territorial authorities), but in the case of Rotterdam the bulk of the financing comes from the EU. Since there is no point in establishing LNG infrastructure in just one port, initiatives for small-scale LNG often have a cross-border nature and are therefore eligible for EU funding under the CEF programme. Therefore, since the EU is funding many small-scale LNG projects, the Commission gets to make demands and coordinate the aggregated efforts across all of the EU. To conclude, it appears that an EU centre provides vision and funding opportunities to cover the necessary expensive investments, enabling the periphery to efficiently oversee the practical implementation of this long-term vision. Local actors can exert influence by marshalling local and regional forces, yet only within the confines of frameworks established by higher authorities. Remaining national competencies suggest that the boundaries of the centre and the periphery are being stretched. EU funding also places the private sector in direct contact with Commission officials[262], thereby defying hierarchy by bypassing the national government in the development the small-scale LNG market. This finding fits with MLG's expectations.

6.3.4. Coordination with Third Parties — the State - Society Dimension

Piattoni (2010) identifies a state-society shift in which *cross-linkages between the public and private sector* with joint goal-setting and a *blurring of state and society* comprise key elements of multi-level governance. This section will argue that especially the concept of cross-linkages between public and private actors, measured by resource flows and joint-goal setting, is crucial in the small-scale LNG case, and that the PoR acts as an intermediary.

261 Based on field work report B. Exemptions for Netherlands-based ships are officially given by the Inspectie Leefomgeving en Transport (ILT), yet only after prior approval by the countries represented in the CCNR.

262 There are project controllers who are responsible for monitoring progress. During an informal conversation with an EU insider, however, it was suggested that the amount of projects being monitored by EC officials is so large that the Commission is unable to manage them well. The Commission is considering a move towards co-financing, in part to make project management more manageable. Based on field work report K.

6.3.4.1. Resource dependency guiding state - society interactions

The various policy areas of energy, climate and transport policy are connected to each other in the LNG case, which allows for a variety of actors to be involved to various extents. Interconnectedness shows itself both in the connections between hierarchical levels of government and between the public and private sector, which results in different actors being 'responsible' for different parts of developing the small-scale LNG market, leading to a dense resource flow between actors, and efforts to coordinate objectives and activities (Börzel, 1998:259), as visible in table 6.5.

Table 6.5. Resource flows guide cross-linkages between public and private actors

Resource	Summary	Direction of flow
Knowledge	Mostly embedded in the private sector due to experience with LNG and transport, shared with public sector through platforms, networks and meetings	Private —> public
Policy-making capacity	Public sector prerogative, sets the framework in which the private sector operates	Public —> private
Personnel	Overlap in international organisations and relatively low FTE capacity in public sector	None
Capital	Investment capacity lies with both public and private sector (and banks!), with a general belief that the private sector should do the bulk of the investments	Public —> private (+ private sector's own investment capacity)

Source: fieldwork and interviews.

The government acts as a facilitator and an activator (Kohler-Koch, 1999:23-24), bringing public and private parties together, stimulating private sector efforts and fostering cooperation between both sectors. For example, the private sector played a large part in the formulation of the Dutch *Brandstofvisie* and *Energieakkoord*, indicating the importance the Dutch government attributed to the opinion of private sector. Without private sector action, none of the sustainable goals can be attained. The interdependencies go deeper when one considers how LNG as a fuel for shipping develops into a new market; new engines need to be constructed by engine-building companies, significant investments need to be made by shipowners to retrofit existing ships or to build new ships, new infrastructure that allows ships to refuel wherever they go is needed across inland ports and seaports, new safety procedures have to be established, personnel needs to be trained, the environmental impact of using LNG as a fuel needs to be analysed, and so on. In general, many respondents indicate that the public and private sector *need* each other to transition to a more sustainable economy and that joint goal-setting is necessary to ensure cooperation[263]. One interviewee aptly put it as follows:

> *"Broad support is necessary: cooperation between the public and the private sector and the inclusion of relevant agencies for implementation and control."*[264]

The experiences of private sector actors with LNG are crucial input for policy-makers, as information is needed on, for example, technical possibilities and actual emissions. Business cases are made by the private sector based on these experiences and on projections concerning initial and operational costs. In the case of the PoR, its corporatisation in 2004 left it in charge of its own port policy. The city of Rotterdam thus lost employees with extensive knowledge of port operations, which they are only now compensating for. The Dutch Ministry of Infrastructure and Environment has relatively few people working on LNG and port-related issues and therefore also lacks expertise. The same goes for the European Commission where civil servants have expertise in the area they work on but do not want to engage in cross-sectoral discussions, perhaps in fear of encroaching on the territory of another DG. In general, the interviews show that the public sector actors mostly lack the detailed knowledge necessary to make policy related to the use of LNG[265]. As policy-makers prefer to be on the safe side — it is no use enforcing a norm that is not technically feasible — they need precise information in order to devise policy. Or, as one respondent put it:

> *"It is important to be on the safe side when legislating because the shipping sector needs to be able to meet the norms."*[266]

As such, there is a *crucial* knowledge flow from the private to the public sector regarding technical feasibility which serves as input for policy-making.

Capital is hugely important yet also the most fuzzy of the resources. Both the public and private sector have investment capacity, albeit to a different extent and guided by different motivations. Many interviewees have touched upon the question 'who pays for sustainability?'. The answer is not clear-cut. In part, the private sector depends on governmental

263 As indicated by interviews 2, 3, 5, 7, 8, 9, 10, 13. Of course, such statements are also politically correct, yet that does not take away from what happens in practice.

264 Interview 9.

265 Indicated by interviews 9, 13, 14 and 16. The development is of a highly technical nature, with even information regarding the exact emissions of LNG engines still missing in mid-2015, two years after the LNG Masterplan started. A project to measure emissions was in preparation in late 2015.

266 Interview 14.

authorities for funding due to the high amount of investments necessary to transition to LNG fuel and the uncertainty surrounding long-term policy goals. Securing funding from the government is therefore a proxy for government support of LNG; the importance of which should not be underestimated in a sector that is dealing with severe economic and financial problems. However, the consensus seems to be that the larger part of investments should come from the private sector[267], preferably with some support from a public authority and with a large role for banks. One private sector respondent stated:

> *"If a government wants something, it will have to shape the framework within which that specific development can take place. That the government then does not invest all by itself is understandable. That's up to the private sector. They can complain […] but in the end they have to execute it. […] It does help if such plans can be made [by the public and private sector] together."*[268]

Conversely, private sector actors have also indicated that the market will provide whatever is needed if the government presents clear policy choices. Especially larger companies do not need to rely on public finances to invest in sustainability. Still, with new developments such as the use of LNG as fuel, a measure of public sector support is helpful. The Dutch government has been withdrawing from financial involvement, fittingly described by one interviewee as:

> *"at the Ministry of Infrastructure and Environment, the possibilities are as good as dried up."*[269]

Resource interdependencies create a necessity for cooperation between the public and private sector at multiple governmental levels (Börzel, 1998:259; Hueglin, 1999:249), even for a small part of the transition to come about. A certain measure of joint target-setting, as has been done in, for example, the Dutch *Brandstofvisie*, is therefore inevitable yet not without its own problems. When new ships for some reason do not get a legal exemption from CCNR, or their request is delayed, ship owners are likely to hold off investments into LNG due to the uncertainty of the regulatory outcome. Absent a political decision to actively invest in clean fuel deployment, the private sector has little choice but to look elsewhere or abstain from investing altogether (see box 6.6). Mutual interdependencies can thus also delay progress.

267 Indicated by interviews 1, 3, 4, 11 and 17. Some of them are representatives of private sector actors.

268 Interview 3.

269 Interview 5.

Box 6.6. Narratives of deployment; when worlds collide

Deployment strategy - the political narrative
LNG as fuel might be a fairly new market in the transport sector, but it is not a case of a technology that has recently been developed and is in need of demonstration and upscaling. Rather, using LNG as fuel can be done with existing technologies. It is therefore not allowed by European state aid rules to directly subsidise the construction of new LNG-fuelled ships. It is also politically contentious to do so because of the methane slip associated with (dual-fuel) engines and the fear of a technology lock-in, possibly delaying the more preferable switch to electric vehicles. But if technology is market ready, transport companies can meet NRMM standards better using LNG, and gas is cheap, why is the market not investing?

Deployment strategy - the industrial narrative
Ships have a long lifespan and are not often replaced by new ships. The inland shipping sector is in heavy weather, with many ships forced into receivership. It is clear to private companies that the Dutch government supports LNG half-heartedly: EU-funded projects are supported, but the government prefers electric vehicles even though they are not available for heavy-duty transport. Facing regulatory uncertainty with no early prospect of resolution, it is safest to resort to a well-known fuel. Why would a company invest in LNG if there is no certainty it is viable in the longer run?

6.3.4.2. Cooperation, though not much blurring of state and society

MLG theorists often speak about a blurring of state and society; a situation in which the public and private sector perform activities or tasks traditionally associated with the opposing sector[270]. Whilst there are not many examples of Piattoni's interpretation of blurring of state and society, the clearest example is the policy document made under the LNG Masterplan — fed by the pilot projects — which should serve as input for LNG related policy at EU level. The safety program set up under the auspices of the LNG Platform is based on questions asked by the public sector to which the private sector did not have an immediate answer. As the program continues and the private sector gathers the necessary data, this information will be used by the national government to devise LNG safety policy[271]. The private sector here acts as an advisor to policy-makers.

A second example is provided by the Rotterdam region. In the words of a representative from the energy business:

270 Please note that Piattoni's is a very far-reaching interpretation of blurring of state and society. It is an extreme version of the cross-linkages between the public and private sector, which is the more traditional interpretation of blurring.

271 Based on interview 8.

> *"Rotterdam is good at this. It was never that clear to me, but I'm starting to realise that more and more. What happens is the following: we, as the small-scale LNG industry, come together and make a plan. Of course you have to make sure whatever you do is within the boundaries of competition laws, but if you are transparent and invite everyone to join in, that's alright. So we say that we see this small-scale LNG market as an interesting development. LNG as transport fuel. These are the reasons why, and we want to do it this and that way. We are willing to invest this much into it. And then you go to the government and tell them 'we as an industry want to do this, and what we need of you is a change in this regulation, that regulation, some support for that, and information regarding this and that'. And then it is up to the government to see whether, given available alternatives in the market, they find it an interesting market and if they want to support and facilitate it. And that makes it possible to create the framework together. […] This happens quite often in the port of Rotterdam, and it's nice because otherwise these developments are impossible to launch."*[272]

This quote is not only a good example of public and private parties can cooperate at the local level and blur the boundaries between state and society, but it also nicely illustrates how Type II, bottom-up, networked forms of MLG eventually need Type I — a governmental authority — to make decisions, change regulations and support developments (Smith, 2007:6278).

The PoR itself has been a major driver in small-scale LNG development. One respondent from the private sector indicated that their company could have had a much harder time within the port without the support of the port authority. If small-scale LNG had not been one of the PoR's top priorities, the authority could have thrown up many obstacles preventing investment. On the other hand, this power implies that the PoR can also make things happen faster if an initiative is in their line of thinking. To that end the PoR employs many resources to find out what the businesses in the port want, which is valuable information for governmental authorities. The PoR's ability to act in the general interest and cooperate with companies is a good example of blurring of state and society. Yet a single port authority can only do so much. If small-scale LNG development is not on the list of priorities of other ports, transport companies or governmental authorities, its power to develop small-scale

272 Interview 3.

LNG into successful business will be very limited[273]. So even though the PoR may be a powerful supporter, if its network does not cooperate it will have to change its goals. As one respondent from the energy business put it:

> *"The Port of Rotterdam Authority does not determine everything. Nobody can, in this case. This market can only flourish if everyone does it together."*[274]

What the PoR can do, then, is act as a facilitator and catalyst. To support business activities on its land, the PoR can organise its public affairs such that it can gain political support for policies stimulating small-scale LNG development. It can also make sure that the infrastructure is there when private parties need it. As a semi-governmental organisation it can liaise with governments and it has the capacity to coordinate a large project such as the LNG Masterplan, thereby benefiting all other parties participating in the project. The PoR is a powerful initiator *provided* there is a secured following.

Furthermore, according to the six interviewees, contractors — i.e., the companies that want goods to be shipped, by law called 'consignors' — have to step up. They can request their transport loads to be fulfilled using LNG as fuel. According to some respondents this would be the best way to ensure more investments into LNG ships. If nobody cares which type of fuel is used or how clean a ship is, there is little reason to invest heavily in a clean, but expensive, ship. Consignors are thus *expected* to act in the interest of the many instead of the few, yet this actual championship of public goals by consignors is hardly happening. An expert from a knowledge institute put it as follows:

> *"The role of the private sector lies with those who stand to benefit from further development of LNG: engine manufacturers, suppliers of cryogenic technologies, and the LNG-suppliers themselves. They can all benefit from cleaner inland shipping because it increases their market share potential. They can therefore do something to stimulate this. The signal from the sector itself is that they, in general, want to be greener, but something needs to be done about their risk coverage. […]. There may be other parties who find a green image important. […]. Most likely are the LNG suppliers themselves: they can stimulate their market share at the same time and can thus create a win/win situation."*

273 Based on interviews 3, 5, 11 and field work reports C and F.

274 Interview 3.

The example of Albert Heijn's LNG trucks has been discussed earlier, and it shows how a potential win/win situation can get both private and public authorities to cooperate together. Obviously Albert Heijn stood to gain from this fuel switch, but the company did have to increase its investments into its logistical operations[275].

The other way around, governments at times act more like private actors when they attempt to lobby other governments. While Dutch ministries used to give subsidies and other financial incentives to the private sector, the preferred course of action is now to try to secure EU funding first[276]. To that end, private parties are required to obtain support from ministries in their European applications. Effectively, this development places the national government more in the shoes of a private party than of a public authority. The Dutch Ministry of Infrastructure and Environment helped secure funding for several TEN-T projects by drawing attention to them at the European level[277]. Since the Dutch national government is withdrawing from funding activities, it is expected that lobbying for money by the government will only increase in the near future. Experience with the LNG case shows that it is likely that such lobbying will be the result of a national public-private coalition bridging the divide between state and society.

To conclude, in response to Tortola's (2017:241-242) challenge to show that there is a natural connection between state and society, the small-scale LNG case depicts a situation in which regulation is lacking and much of the needed expertise lies with ports and businesses, rendering their inclusion in policy processes natural to provide good policies. There is a shift from state-oriented, top-down steering to heavy involvement of societal actors in policy-making in "more horizontally organized, relatively fragmented systems of *governance*" (Eikenberry, 2007:193 [italics in original]). However, also befitting MLG's claims, the nation state remains important, especially to spur an essentially technical development along. A high-level employee at the Rotterdam Port Authority formulated this as follows:

> *"Less is done from the viewpoint of the government trying to make changes and devising the needed regulations for that. Instead, the developments are bottom-up and the government then participates*

275 Example based on interview 9. The call for contractors to request LNG shipping is based on interviews 1, 5, 9, 13 and 16. One respondent also stated that the PoR could switch over to LNG for its own ships, thereby sending a strong message to others. According to an employee of the Port Authority, some ships would be eligible to make the switch to LNG fuel, but most of the PoR's fleet is too small to accommodate the necessary machinery. Still, the 'walk the talk' argument is convincing.

276 Part of this development is caused by the European state aid rules, which place restrictions on funding of projects that are not part of pre-commercial activities such as R&D.

277 Based on interviews 6, 12 and 13.

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> *to facilitate these developments, sometimes through regulations. This is significantly different from the model that was used before. There still are departments with a top-down way of doing things, but changes are happening."*

Participation of both the public and private sector is crucial to develop small-scale LNG, though Piattoni's far-reaching blurring of state and society is barely present.

6.3.5. Discussion of the Three Theoretical Dimensions

The three shifts identified in MLG theory are a domestic - international shift, a centre - periphery shift and a state - society shift. These shifts are also connected to each other through the dynamics that occur within them. MLG focuses on contestation along these three dimensions, since it does not assume that there is complete coherence between them (Piattoni, 2010:87-88). The three shifts, along with areas where they clash, will be discussed now (see also table 6.6).

The importance of the EU as a level of policy-making is especially clear in the small-scale LNG case due to the international nature of transport, emissions, and energy flows. Regulation at the EU level[278] (or higher) is deemed necessary not just by the EU but also by national authorities and the private sector, albeit for different reasons. The EU wants to legislate in order to expand its competencies while national authorities and the private sector — illustrating the domestic - international shift — create interdependencies to ensure a level playing-field. Private sector and societal actors do not only cooperate with the national government, but are also connected to these higher levels of governance. The resource flows are crucial here. Because the EU has become the main funder of projects related to small-scale LNG, it is connected to local and regional businesses and also gets to lay down demands. Still, contrary to the MLG framework, widespread influence of NGOs or business actors was not found in this case, largely due to the low priority attributed to greening the inland shipping sector. However, there is definitely a shift from the domestic to the

278 The EU itself, however, is internally divided concerning the answer to the climate change mitigation question. For the EU, LNG is just one of potential possibilities to make transport more sustainable. DG CLIMA and DG ENV are strong proponents of fully electric transport, although that future still seems far away. Furthermore, DG CLIMA's focus on CO_2 is getting a lot more attention at the domestic, EU and international level than DG ENV's (and cities'!) focus on the environment and air quality. Polluting ships in a large port such as the Port of Rotterdam have a significant impact on the local air quality in the city of Rotterdam. It would stand to reason that initiatives focused on improving this situation — such as the use of LNG as a fuel for inland (and maritime) shipping — would garner much support from DG ENV. Strangely enough, there are hardly any connections between PoR officials and DG ENV.

Table 6.6. Results of LNG case per key concept of MLG

Dimension of MLG	Key concepts	Results of LNG case
Domestic - international dimension	Interdependencies at international level	1. Hardly new cross-border networks created (examples are ESSF and CESNI) 2. Representation in international organisation or associations mostly along traditional lines
	Policy coordination at the X level of government	1. EU attempts to coordinate policy and offers soft coordination through funding 2. National policy documents do refer to the necessity for EU decisions due to international nature of IWT
Centre - periphery dimension	Coordination of activities	Local projects across the EU are coupled into EU-funded projects, Rotterdam facilitates LNG uptake where it can
	Local empowerment	1. Many attempts at local coordination 2. PoR perceived as important locally and is empowered alongside other local actors but interdependencies are high
State - society dimension	Cross-linkages between public and private actors	1. Many resource flows between public and private actors, capital and policy-making capacity are crucial 2. Joint goal/target setting present
	Blurring of state and society	1. PoR can spur blurring and the LNG Masterplan provides input for policy-makers 2. Dutch government supports Dutch projects at EU-level. Otherwise not much blurring

Source: author's own composition based on case study.

6

international, albeit mainly through different factors than identified by Piattoni. EU member states themselves willingly maintain existing international interdependencies, and global market dynamics create new interdependencies. The Dutch government is even compelled to push for international regulation by actors such as the Port of Rotterdam Authority. The insistence on a level playing-field necessitates international action, yet at the same time ensures slow progress towards sustainability. It is therefore also an excuse for the national government to not have to coordinate (or fund) at all, which probably meets the preferences of a department with a low budget to spare, such as the Ministry of Infrastructure and Environment. Even if driven by a different set of factors than identified by Piattoni, the result of the domestic - international shift remains the same; the high-impact strategic decisions seem to be taken at EU (or higher) level, while practical decisions (such as levying taxes per fuel type) are made nationally. A local voice in policy-making is missing.

At the same time, this shift clashes with the state - society shift due to the centrality of governments in international decision-making. The nation state remains important — hierarchy persists — but decentralised levels of government do have powers of their own and their preferences do not always line up with those of the national government. In fact, one could argue that the distinctiveness of local governments is another feature of the persistence of hierarchy, driven by the political belief that representative democracy is important and that accountability is better organised in a rule-based hierarchy (Lynn Jr., 2011:231-233). When taking the other two shifts into consideration, an interesting picture appears in the centre-periphery shift. One important peripheral actor, the PoR, is not part of representative democracy but can efficiently act as the linking-pin between governmental authorities and the private sector. As discussed above, the inclusion of society (in a broad sense) in state affairs speeds the governance process along, and much of the policy output stems from the EU and international level. The coordination of activities is mostly organised locally. Whilst the city of Rotterdam is not being heard in LNG policy-making, the absence of strong central steering — a lot of the transition to cleaner fuels is done through soft coordination — empowers local coalitions; the periphery. The interconnections and interdependencies necessitate high-level international coordination (often top-down) coupled with domestic practical implementation, testing and experimentation in a more networked fashion[279]. The national government is seemingly undergoing a change from setting the long-term visionary goals to taking care of practical issues based on EU policy. It therefore more and more acts like a decentralised authority than a national government.

6.3.6. Secondary Findings; the Role of Power and Uncertainty

Even though no interview question explicitly probed the issue of power, respondents often touched upon it in their answers. In fact, power relations seem of much higher importance in this case than initially assumed in the conceptual framework. When it comes to distribution of power, the international dependencies created by national governments also have their downside for governmental authorities. One such example is the revision of NRMM. As discussed previously, the methane slip of LNG engines is harmful to the climate. Without going too much into the technical details here, it is important to note that NRMM does not include a specific methane emissions norm, but implicitly covers it through a more general hydrocarbons emissions (HC emissions)[280] norm. The proposed norm by the EC was 6 gr/kWh. While fairly strict, during negotiations it appeared that this norm would be supported by member states and large parts of the private sector affected by the regulation. The Dutch government, however, proposed to change the norm to 3 gr/kWh[281], claiming the necessity

279 Based on interviews 3, 5, 9, 11 and 13.

280 Methane (CH_4) is a hydrocarbon.

281 This norm would only apply to new ships and thus not to retrofits. Existing and upcoming retrofits would therefore be safe not complying to the 3 gr/kWh norm.

for such a strong norm if LNG as fuel is to be used without a negative impact on the climate. The environmental department of the Ministry of I&M submitted the amendment, but insiders have claimed this went without support from the transport department. Support was also lacking at EU level[282]. Member states were hesitant to adopt a more stringent norm, probably due to the resistance from the private sector[283]. DG MOVE could not support the amendment without convincing proof that 3 gr/kWh was actually possible for ship engines. The Dutch proposal was outvoted[284]. While the Dutch government definitely has a say in the negotiations, in the end it is dependent on the greater consensus within the EP and the Council[285].

On the other hand, the national government maintains a powerful position as well. There are several reasons. First, energy policy is still an area in which EU member states retain competency, especially where their national energy mix is considered[286]. Even though the EU is trying to insert a measure of coordination between the national energy policies, bilateral activity remains prevalent. Second, it was mentioned earlier that the national government must lend political support to TEN-T projects. Without the signature of the national government, a project cannot be submitted to the Commission for funding. While it is in the interest of a national government to support as many projects as possible (otherwise the funds will go to another country), this competency disables the possibility to completely defy the existing hierarchy. Third, even though EU decision-making is based on consensus between 28 countries, this still means that the Dutch government has a vote in the policy-making process. Its policy priorities are therefore one of the determinants of the policies resulting from negotiations. Fourth, even in an area where the EU does have clearer competence, such as transport, MS retain some autonomy. Clean fuels for transport, to name an example, are governed by an EU Directive. Directives give MS leeway in the way they are transposed. The EU imposes the final goals, not the way in which these goals are reached. National governments can still be powerful in the implementation process. Multi-level governance

282 Although nobody stated it explicitly during the interviews, the prevailing feeling (which was quite clear during participant observation) that was communicated indicated a lack of trust in the national government, especially the Ministry of I&M. This lack of trust lives both in local authorities and in the private sector and is mainly due to the formal and distanced attitude of I&M and its internal conflict between the environmental department and the transport department. After openly supporting LNG as fuel for transport, the Dutch proposal to amend methane emissions in the NRMM regulation took both the PoR and the private sector off guard. Some actors took the government's action as an affront and saw it as an attempt to block further small-scale LNG development.

283 PoR was strongly against the 3 gr/kWh norm, so were other port authorities.

284 Example based on interviews 3, 5, 7, 8, 9, 12, 13, 14 and 16 and field work reports A and J.

285 The same applies within the CCNR, IMO, CESNI, and the ADN Safety Committee.

286 Art. 4 TFEU. Officially energy policy is a shared competence. See chapter 4, section 4.2.2.2. for more information.

does not disable the nation state; its governance capacity is stretched out over multiple levels of government and between multiple actors.

Power (im)balance is important within EU institutions as well. The Dutch 3 gr/kWh proposal was not adopted due to the lack of political support in other countries. Internal conflict within the Ministry of I&M[287] most likely also did not help the government in backing the proposal unilaterally. At the EU level, DGs often are at odds with each other (Aspinwall, 1999:127) and when push comes to shove, oftentimes energy policy (and economic gain) wins out on environmental and climate considerations. Even with the apparent fusion of DG ENER and DG CLIMA under one Commissioner it is not a given that both policy fields will be given equal importance. Energy security is of strategic and economic importance and is likely to continue to be treated with privilege. While both the 2011 White Paper on Transport (European Commission, 2011c:5) and the White Paper on Governance (European Commission, 2001b:28-32) mention policy integration as important, one insider in European diplomacy described reality as follows:

> *"At the end of the day, energy policy determines what will happen, and climate ambitions — if necessary — will be wiped from the table".*[288]

The integration of environmental issues into other areas of European policy-making thus still has a long way to go. The top-down way in which the Commission operates leaves little room for DGs such as CLIMA and ENV to upload their agendas effectively[289].

Between DG CLIMA and DG ENV there are power imbalances as well. DG CLIMA's focus on CO_2 is getting a lot more attention at the domestic, EU and international level than DG ENV's focus on the environment and air quality. Emissions other than CO_2 are usually translated into CO_2-equivalents. International climate negotiations also often focus on CO_2, placing this greenhouse gas in the area of high politics, i.e., the Hobbesian elements in politics that touch upon matters which are very contentious and deemed essential to the survival of the state. This contrasts with low politics, referring to more technical responses to concerns that do not endanger the nation state (Hix, 2006). As stated before, GHG emissions have

287 Interviews 3 and 9.

288 Field work report K.

289 With the advent of the Juncker Commission the DGs have handed in part of their power and have to fold to the political priorities established by Juncker and his VPs. In addition, the inter-service consultation is led by officials from the Secretariat-General, which places the real administrative power in their hands and not in the hands of individual DG officials. Still, the new VP structure introduced by Juncker could lead to more policy integration at the high, political level within the Commission. Based on field work reports J and K.

a global effect whereas air quality has a highly local impact. Reducing the local emissions impacting air quality therefore remains in the area of low politics. It is an area in which the local level is potentially empowered, most apparently through its regulating powers as attributed by DG ENV's Air Quality Directive[290].

While not part of the MLG framework, uncertainty drives much of what happens between the public and private sector. McKibbin and Wilcoxen (2002:115) claim that "uncertainty is the single most important attribute of climate change as a public problem". Cooperation between the state and society in a broad sense may be needed to break through this uncertainty. From a private sector perspective, investing into sustainable initiatives does not help short-term gain. From a public sector perspective, investing into sustainability is too expensive without support from the private sector. Parties involved in the development of LNG as fuel are fully aware that the real gain will come after several years, and that this market needs full support to develop first. This is also the reason why governments and companies want more stringent emission norms; the incentives created by firm emission caps should cause a further push toward cleaner transport. Paradoxically, these emission caps are very difficult to establish due to resistance from the shipping sector, mainly at the IMO. Table 6.7 summarises the most important uncertainties for small-scale LNG development, which often came up as shining examples in the narrative boxes.

Table 6.7. What prevents small-scale LNG development?

Politics/policy	Finance	Technology
Unclear long-term policy priorities, also regarding emission norms	Small-scale LNG (and retrofit) is expensive	Long lifespan of ships, slow turnaround
Geopolitical situation (energy independence?)	Inland shipping sector under heavy weather	Methane slip and actual emissions of LNG engines still unclear
Mindsets of shippers and consignors	Unclear LNG price development (in relation to other fuels)	Infrastructure lacking (also for large-scale LNG)
Intra-governmental competition	Financial tools do not always match the needs of the market	

Source: interviews, each hurdle has been mentioned by at least four people and is commonly found in evaluative documents. Hurdles range from most to least mentioned.

The public sector is cautious to formulate specific targets for sustainability because the rate at which cleaner technology becomes available is unpredictable. On the other hand, business seems to have trouble understanding the nature of governmental planning. While governments usually make financial plans of up to four years, a viable business case in this sector requires a certain financial stability of between five to ten years. When governments cannot give the private sector such assurances, the private sector becomes cautious to

290 Based on interviews 1, 3 and 10.

invest in expensive technologies. The public and private sector thus at times have difficulty understanding each other's language. Forcedly incentivising the market to provide a product can become very expensive, as became blatantly obvious when the Dutch government tried to stimulate the acquisition of electric vehicles through subsidies (Rengers & Schoorl, 2014)[291]. Coupled with the inherent uncertainty surrounding climate change as a public problem (McKibbin & Wilcoxen, 2002:115), the uncertainty of future policy choices in this domain (also mediated by power relations) and the uncertainty of the rate at which technological progress will occur are very important factors in the governance of small-scale LNG.

6.4. CONSEQUENCES FOR THE PORT OF ROTTERDAM

Ports can play an instrumental role in the transition towards sustainable transport and energy. Not only are they the obvious place for large concentrations of transport activities, they are also very important in global energy flows (Meyer, Nillesen & Zonneveld, 2012:80). Therefore, they are the prime suspect, so to speak, to watch when assuring the sustainability, competitiveness and security of European energy (and therefore also transport). Growing strategic importance of LNG as a large-scale energy carrier may push other LNG developments forward, although that is not certain because EU LNG import terminals already have overcapacity. Therefore an increase in LNG imports would not necessarily impact — positively or negatively — small-scale LNG developments. A promising possibility would be to tie small-scale LNG into the larger LNG strategy of the EU. Doing so would require cooperation between DGs and a more comprehensive policy framework than is currently available. Not only is it uncertain whether member states would allow that, but it is equally uncertain whether the individual DGs are willing to encroach on each other's territories. The efforts of the current Juncker Commission to mainstream Energy Union plans and climate plans into all of the EU's policy-making could mark the change needed to get to this comprehensive framework. The recent Energy Union plans look promising; transport, energy and climate are explicitly considered together in the Commission document and it is acknowledged that the climate objectives regarding decarbonisation of the economy will have to be expressed in concrete actions targeted at the transport and energy sectors (European Commission, 2015b). A link to ports, however, is still missing.

The potential importance of ports is especially relevant when the largest European port is considered. The Port of Rotterdam houses some of the world's largest energy companies and is a major transport hub through which many different transport companies traverse on a daily basis. A third of all energy brought into the port is processed within the port area,

291 Interview 9.

fuelling the cluster and producing energy carriers. Two thirds of the energy is transported further inland or exported[292]. A major consequence for the PoR is therefore that political choices made by governments impact its operations due to the direct impact of these choices on the private sector present in or making use of the port. Of course, this is not news to the port. But, as discussed in the three shifts in multi-level governance, governance is dynamic and relationships change. Especially before corporatisation of the PoR, the local and national governmental authorities were of paramount importance to the Rotterdam Port Authority. Now, the EU (especially DG ENER, DG MOVE and DG CLIMA) is becoming more and more important, even if there is no formal ports policy (yet). As an entity devising its own long-term strategies and goals, the PoR will have to deal with the shift from domestic longer term visions to strategies formulated at the European level. At the same time, the distance to that level is larger than the distance to the national level, even physically. The PoR also has to contend with many other players for EU attention. It remains to be seen whether the Port Authority is fully equipped to deal with this new reality. Its potential strength as a regional aggregator of interests may be an important catalyst for its public affairs management.

There is another reason why the EU is of increasing importance to the PoR. The Port of Rotterdam can afford to have a long-term strategy including investments that are potentially risky, or that will pay off five, ten, or even twenty years from now. This ability fits its role as infrastructure provider facilitating necessary provisions for companies. However, many of the businesses in the port cannot afford to invest in long-term payoffs due to them simply being too small to have sufficient financial stability for the future. Since strategic decisions of the PoR also rely on the information they receive from the private sector, it is difficult for the PoR to devise strategies based on the uncertainty of long-term private sector investment. With the uncertainty surrounding the national government's real (and realistic) priorities added to the mix, strategic planning for the PoR may become very difficult. One thing the PoR could, but will not, do is make a clear choice against another type of fuel (oil, for example) since that would harm its business. If other actors from the public or private sector make these choices, the port will follow to accommodate their wishes. The Port Authority is in danger of supporting everything (and therefore choosing nothing) in fear of missing out on an opportunity. Lastly, global uncertainty due to economic crises does not help either. While the above affects the EU as well, it is better able to provide more longer term financial stability and security than the national government, if only by virtue of EU decision-making being slow. The EU may therefore be better able to provide a guiding light for the port.

292 Port of Rotterdam Authority, internal presentation (2017). Total energy flowing in to the port on a yearly basis is 7620PJ.

The somewhat ambiguous status of the Port of Rotterdam Authority may prove challenging in the EU. Many European ports are still in the hands of governmental authorities, which makes it easy for the EU to know who to address if ports are considered. In its actions towards governmental authorities the PoR can either be advocating its own interests (mostly focused on ensuring a level-playing field) or as the aggregator of port-related company interests. It should be clear which position the authority is taking in each situation. Furthermore, in the LNG case both the local and international network seem quite small; PoR officials know people in certain positions at the EC and vice versa. Still, the Commission often prefers to speak with governmental authorities instead of actors such as the PoR. The corporatisation of the PoR means that they can operate relatively independently from the Dutch national government, although they are obliged to report to the Dutch government and the city of Rotterdam due to their status as shareholders. However, with the port authority being in charge of its own port policy and being able to define its own future, there is not much standing in its way when moving towards the EC rather than the Dutch ministries. In doing so, it can behave both as a public and as a private party. During a conversation with an employee of the PoR, it was stated that depending on the subject, the PoR alternates their statement whether they are a public or private sector actor in EU questionnaires. This ambiguity may therefore not work in their favour at the EU level where there is no full understanding of the exact status of the PoR. The implications are that if the Commission continues to prefer contact with a governmental authority over direct contact with a port authority, maintaining good relations with the Dutch government will be a must for the PoR.

During the interviews a question was asked regarding respondents' opinions on what the role of a port authority is in stimulating the transition towards more sustainable energy and transport. The overall opinion of what PoR is doing is favourable, though respondents do indicate that it could be more open in its goals and information sharing with other parties such as other ports. The leadership role PoR has taken up, however, is judged very positively. It is clear that the EC watches Rotterdam closely and that there are informal ties between the two actors. However, the bureaucratised way in which the EC operates does not make it easy for the PoR to pursue its goals at the EU level. As policy officers often are responsible for only a small part of an issue, the PoR inevitably has to deal with multiple officials. The PoR will also have to contend with the fact that outside The Netherlands there are more big players vying for access to the European Commission.

6.5. CONCLUSIONS

The application of MLG to this case addressed Jordan's (2001:201-204) criticism that MLG ignores the external level of the EU. Piattoni's factors covering the domestic - international shift were supplemented with two other factors: nation states willingly maintaining international dependencies, and the influence of global market dynamics. Coupled with Piattoni's factors, this case study is able to add to the continuously evolving MLG framework. The shift from centre to periphery actually revealed the formation of a new centre at the EU level, with an enlarged periphery consisting of domestic actors. It also partly confirmed earlier criticism of MLG regarding its overstatement of the influence of sub-national authorities. Even though the preferences and actions of decentralised authorities matter, and regions are *potentially* empowered, they do not overshadow the national government but rather build up to intergovernmental coordination in international institutions and the EU. Power relations were found to be more important than previously expected, which reflects a shortcoming of MLG as described by Jachtenfuchs (2001:258). This shortcoming will be addressed more fully in the last two chapters of this dissertation.

Multi-level governance as a theory is able to identify the dynamics occurring between actors and the challenges related to EU policy-making. It does, however, not predict *what* will happen, only *that* changes will occur (see table 6.8). The shift from state to society shows that the inclusion of business and civil society helps governments govern more effectively

Table 6.8. Small-scale LNG conclusions per theoretical expectation

Theoretical expectation	Conclusions for small-scale LNG case
Actors create interdependencies between business, civil society, and government on an international level, which necessitates policy coordination at not only the national level but also the supranational level *-> The PoR is one of many actors active at international level because the policy solutions the PoR needs cannot be provided at national level alone*	Shift from the domestic to the international, with governmental authorities retaining their decision-making competencies and voting powers in international bodies (strengthening vertical governance). At the same time, mutual interdependencies are created by actors such as the PoR, and by societal actors in a broad sense, but mostly due to nation state actions and global market developments (exogenous effects).
Regional coordination in territorial matters is more efficient than national coordination, which leads to the strengthening of local policy actors *-> PoR is empowered due to being able to employ its resources effectively when stimulating activities in Rotterdam*	Boundaries of centre and periphery are being stretched through the empowered activity of peripheral actors such as the Port of Rotterdam Authority, acting in coordination with the local private sector and implicitly backed by the passivity of the Dutch national government.
Cross-linkages between private and public actors lead to private parties assuming public responsibilities and public parties acting like private groups *-> PoR develops economic activity in cooperation with the private sector and advocates its interests at EU level alongside Dutch governmental actors to obtain favourable policy conditions*	Shift from the state to society due to the critical nature of resource flows, resulting in more horizontal governance, where the public and private sector jointly agree on sustainable goals and organise their implementation. The PoR moves between the public and private in an effort to maximise regional benefits.

Source: author's own composition based on case study.

through mutual resource dependencies. In turn, the private sector is heavily dependent on policy initiatives such as *Clean Power for Transport*. The shift from the domestic to the international illustrates how interdependencies are created at the international level, which necessitates international coordination. Yet supranational governance is not necessarily the most effective form of governance. When appropriate regulation at the international level is lacking, as for example with the legality of sailing down the Rhine in an LNG fuelled vessel, action from national governments is necessary. Or, in other words, the domestic level steps in when the international level fails — a stark contrast to the CCS case — provided that such action is within the interests of the nation state. The growing patchwork of EU policies regarding emission ceilings, transport policy, energy policy and climate policy suggests that EU policy output will continue to expand in the future. However, lingering uncertainties impede governance when actors do not know what the future will bring. These uncertainties go past practical regulation and are especially prevalent in the governance of climate change, as technologies and insights evolve and much is dependent on the mindset of policy-makers and entrepreneurs alike. Multi-level governance can help uncover these uncertainties.

The nation state remains at the heart of the governance of small-scale LNG, although its position is not one of an autonomous, directive authority. The national government retains competence in the area of energy policy and has room for manoeuvring when implementing EU transport Directives. However, the cross-border nature of IWT and required system changes for LNG implementation necessitate EU-wide coordination and provide powerful incentives for regional authorities to step into the arena. Crucial, then, is the fit between domestic initiatives and long-term European goals. Ensuring this fit will require cooperation at multiple governmental levels, with a strong role for the private sector due to the expertise and investment capacity of the sector. The value of MLG as a theory therefore is in showing that the authority of a national government can be stretched across multiple levels, yet paradoxically remain intact as well. The complex dynamics between the actors in multi-level governance strengthen mutual dependencies.

What is the ‘engine’ that seems to be at work in this case? EU member states requested the EU to formulate an alternative fuels strategy due to the cross-border nature of transport. Supranational coordination was desired. The Commission took up this task and defined the *Clean Power for Transport* Directive. Alongside the Directive came EU funding for alternative fuels infrastructure, pilot ships and efforts to standardise training and safety procedures. As national governments began transposing the *CPfT*, their own uncertainty regarding desirable alternative fuels for the future and discussions regarding lock-ins delayed implementation. Still, the Dutch government enabled small-scale LNG demonstration through a Green Deal which stimulated local activity in the Port of Rotterdam and the municipality. Especially the PoR can incentivise the use of LNG through discounts and infrastructure adjustments.

Large companies such as Shell and Engie can afford to invest in LNG (bunker) ships and infrastructure, but smaller shipping companies face larger financial insecurities. Explosive growth in the usage of LNG as fuel is therefore unlikely in the current situation. The lessons learned in the demonstration projects and infrastructure adjustments can be used in the revision of the alternative fuels strategy at EU level. The LNG 'engine' is running slowly, but whether it achieves further harmonisation and large-scale implementation is yet to be seen. However, the first results are promising.

The importance of power is a secondary finding of this case study. The European Commission can only do so much until it hits the wall of national interests and political pressures. Whichever (geo-)political direction the EU and its members choose with respect to energy policy *will* impact transport. Especially in countries where large-scale LNG infrastructure is lacking, EU emphasis on the importance of LNG for environmental purposes may help in its introduction as a fuel (Arteconi & Polonara, 2013:511). Due to the connection between transport and energy policy, changes in the transport regime will, in turn, also change European energy policy. This case study has shown multiple examples of power relations impacting the outcomes of governance, not in the least because of the tensions between climate considerations and economic gain. The next chapter will discuss whether the multi-level governance framework adequately considers the role of power in governance.

7

The Governance of Rotterdam Energy Port

7.1. INTRODUCTION

The previous two chapters dealt with two nested case studies illustrating EU climate and energy policies with relevant impact on the Port of Rotterdam: CCS and small-scale LNG. The case chapters uncovered the multi-level governance mechanisms present in these two cases, with differing results. While the mechanisms were discussed in the concluding parts of those chapters, they need further theoretical elaboration. This chapter will compare and contrast the two nested cases in an effort to give an answer to the second sub-question of this dissertation: *which (multi-level) governance mechanisms are present in the implementation of these policies?* The LNG and CCS cases will be compared at several intersecting themes (the origin, scale and impact, and problem ownership) and aspects of multi-level governance. The key concepts discussed in the methodological chapter (chapter three) will be linked to the results of the embedded case studies. Doing so will allow a critical review of the expectations formulated in the theoretical part of this dissertation. First, §7.1 and §7.2 discuss general observations and conclusions regarding the policy aspects of LNG and CCS, which aids in the explanation of these cases. Then, §7.3 reviews the theoretical expectations along the lines of the state - society, domestic - international, and centre - periphery dimensions of MLG. However, the case studies also showed two secondary findings that seemed important in both CCS and LNG: the role of power and uncertainty. In operationalising Piattoni's theory of multi-level governance, I have not very explicitly probed for either power and uncertainty. These concepts came up inductively during the expert interviews. This retroductive approach allows for a revision of initial theoretical expectations, though it is worth reflecting (§7.4) on whether Piattoni's MLG has enough explicit attention for power and uncertainty, or whether this framework can be improved upon. In itself, the MLG framework is generic yet attractive, which is why I have chosen to apply it to my empirical study of Rotterdam Energy Port. The goal is to understand the governance puzzle and give the theory of MLG another boost. This chapter ends with conclusions which will pave the way for this exercise in the final chapter.

7.1.1. Comparing LNG and CCS: the Contrasts

A face-value comparison of LNG and CCS reveals some contrasts: CCS is, by many, seen and advocated as something we 'simply must do', yet it is not happening in Europe right now. Small-scale LNG, on the other hand, is not advocated as a must do, yet it is happening (at the very least in West-Europe). Related to this observation is the concept of problem ownership. CCS is generally linked to solving the 'climate change' problem, which is often upscaled to the highest level possible: the global scale. However, arguing that a problem needs to be solved globally can also be used as an excuse to do nothing. After all, the whole world needs to participate actively to solve the problem of climate change. If nobody else moves, why should the EU move? Or a small country such as The Netherlands? Downscaling problem ownership by formulating the problem at a localised scale, which is visible in the air quality and noise arguments in the small-scale LNG case, might be more effective. Air and noise pollution have a decidedly local impact, which legitimises local activity. Incentivising cleaner shipping down the Rhine river is a very concrete measure that solves the smaller problems of noise and air pollution within the larger problem of global climate change. Effectively, using LNG as fuel becomes the 'must do' at the local level, which makes activity much easier than having to do something at the global level.

Another contrast is found in the actual scale and impact of LNG shipping and CCS activities. While LNG comprises international projects (for example inland shipping down the Rhine or the Danube) which have a local impact (improving local air quality), CCS is a matter of local projects (localised application at, for example, coal-fired power plants or the steel industry) with international impact (reducing CO_2 emissions). This global impact is exactly why CCS suffers from problems in its execution. CCS has a higher long-term potential impact on the climate than LNG since the latter does not have the potential to reduce emissions to zero, yet CCS is not profitable. Conversely, LNG as fuel is advocated as one of *the* routes to take to make heavy transport more sustainable and small-scale LNG activities are said to potentially add 8000 FTE in The Netherlands alone by 2030 (PwC, 2013:56). The positive economic impact is strong. On the other hand, the IEA calls CCS the 'game changer' in climate change. The question remains whether that label counts for something for a technology without end users. At present, it does not seem that way. Perhaps the prospect of CCU — using the carbon instead of storing it — will prove catalytic to CCS development.

While both cases hinge on the availability and the price of fossil fuels, they started in completely different environments. In The Netherlands, CCS has been a topic of research since the early '90s, yet it drags on without results. LNG started after the turn of the century, came up through the private sector, and is expanding. Both cases present developments that were ongoing in The Netherlands prior to their upscaling to the EU level. National processes were therefore already running before the EU commenced its harmonisation attempts, which seem to be driven by the price of CO_2 (in the CCS case) and the prices of oil and gas (in the case of LNG)[293]. The problem with CCS was that it was already presented with significant public resistance prior to the adoption of the CCS Directive. CCS, as will be discussed in the next section, is in a more advanced policy cycle than LNG, which is still in pre-review phase. It is therefore impossible to fully compare both cases in terms of effectiveness. However, the *Clean Power for Transport* does constitute a different approach from earlier (failed) attempts to reduce fuel emissions from transport activities. Furthermore, small-scale LNG is definitely not without its own hiccups. Of necessity, using new types of fuel constitutes a system change whereas applying CCS does not. While we can safely say that the governance of CCS thus far has largely been unsuccessful, the success of LNG seems more likely but cannot yet be ascertained. Table 7.1 summarises the thematic comparison of LNG and CCS.

Table 7.1. Contextual differences between CCS and LNG

Theme	CCS	LNG
Origin	Academia (long-term view)	Private sector (short-term view)
Policy field of origin	Climate policy	Transport policy
Scale & impact	- Local projects, global impact on climate - 'Game changer' in fight against climate change	- International projects, local impact on air quality - 8000fte in NL by 2030
Problem ownership	Global (GHGs impact everyone on the planet)	Local (air quality, noise pollution)
Problem solution owner	Heavy emitters (energy, industry) -> reluctant	Shipping companies -> reluctant, energy companies and port authorities -> willing

Source: author's own composition.

Whereas governments were not at the initial drawing table when it came to CCS and small-scale LNG developments, they have hooked into the process early on. The short-term

293 See also the timelines in chapters 5 and 6, which show how EU policies and implementation projects come up after a significant price change.

view associated with LNG is easier for governments to address than the long-term vision necessary for CCS, not in the least because of the democratic election cycle and the public accountability that goes with it[294]. To put it differently, of the 'three Ps' of sustainability — people, planet, profit — CCS is missing the aspect of profit. A discussion regarding the meaning of the origin is outside of the scope of this dissertation, but the struggle between short-term and long-term benefits definitely impacts governance mechanisms in both cases and is reviewed later in this chapter. For now, let's zoom in on the impact of policy on both cases, as there are observed differences that require elaborating.

7.2. POLICY OBSERVATIONS

For the Port of Rotterdam Authority, LNG and CCS are an integral part of the ongoing development of Rotterdam Energy Port. Yet political steering is not in the hands of the port authority, and the private sector leans heavily on policy when planning investments. CCS originally came out of the Commission's climate department (back then still part of DG ENV), which was small and lacked strength. Small-scale LNG came from the transport department, which has more stature and power through its TEN-T and CEF budgets. Even though both the development of CCS and small-scale LNG is in line with EU and national policy objectives, there is no 'CCS policy' or 'LNG policy' because governmental authorities want to be technology neutral and because developments happen at policy *intersections* with a different division of competences between governmental authorities: LNG moves in the intersection between energy, climate and transport policy while CCS operates at the intersection between energy, climate and industry. Within the European Commission these policy areas are part of different DGs (ENER, MOVE and ENTR) and it is no secret that bureaucratic dividing lines make holistic approaches difficult (Bache et al., 2015:12; Toke & Vezirgiannidou, 2013:544; Vogler, 2013:629). Therefore, even though both cases originated in one DG, they become trapped between the EC's many silos with each pursuing their own interests and goals. Another factor is at play in the area of energy policy; the European Commission is ambitious, but largely powerless. Member states are driven by short-term considerations rather than by long-term strategic planning (Schubert, Pollak & Kreutler, 2016:4), which implies that small-scale LNG may potentially be much more successful than CCS. The Netherlands, a country used to having gas fuel its economic motor, is especially

294 It is difficult to 'score' politically with a CCS project when its impact is long-term and no citizen can observe it. Conversely, cleaner ships have already made the areas around the Rhine much cleaner, less noisy, and greener, which is something citizens can sense.

interested in further developing LNG[295]. The EC's entrepreneurship may slowly be pushing the EU towards a common energy policy, but we are not there yet.

Current efforts can be reviewed in light of CCS and LNG. In both cases government representatives have stated that governments prefer to set targets, for example emission standards, and then let the market decide which technology to use to meet these standards. The question is whether this attitude is conducive to successfully combating climate change and developing Rotterdam Energy Port. At the very least, it could be helpful if governments make it clear which technologies will be supported for a certain amount of time. Imagine you run a business and it is unclear if your coal-fired power plant will still be allowed to operate ten years from now, are you likely to invest in expensive abatement technologies for it? Probably not. Clear policy regarding which goals the private sector should meet by 2030 is missing, but such timelines do drive investment decisions. Technology neutrality thus far therefore seems an argument devoid of consistent action. Setting vague, long-term CO_2 reduction standards is not enough, especially not when experience shows that nothing happens when these standards are not met. Table 7.2 roughly summarises the EU's current energy policy.

Table 7.2. EU energy policy is vague and sometimes contradictory

Goals	Actions
Sustainable energy	- Reducing CO_2 - Increasing energy efficiency
Affordable energy	- Building an internal energy market
Secure energy	- Building infrastructure - Diversifying energy supply - Reducing negative consequences of import dependency

Source: Schubert, Pollak & Kreutler, 2016:12-13.

These broadly defined actions, coupled with directives such as the CCS Directive and *Clean Power for Transport*, are not necessarily in harmony with each other — for example, coal and gas are cheap and help diversify the EU's energy mix but are not sustainable — and leave national authorities a lot of discretion. The European Commission is trying to harmonise policies across the EU in different ways. The CCS Directive was incorporated into the larger 2020 Energy and Climate package and was a smart attempt by the EU to make its member states *consider* CCS in their national policy framework. This attempt did not fully succeed, however. Member states delayed the implementation of the CCS Directive — only one country had implemented it in time — and some made provisions barring CCS from their territory. The countries that did allow CCS, such as The Netherlands, have legal frameworks

295 Germany, in contrast, is not convinced by the benefits of LNG and prefers to look at other alternative fuels such as hydrogen.

in place but no actual CCS projects that are running. The EU is now satisfied with the overall implementation of the CCS Directive, but it has not actually led to CCS being *developed* in the EU[296]. One does not build a kitchen to not cook in it. Deploying CCS was a clear ambition the Commission had and it can therefore be concluded that the governance of CCS has not been successful thus far. In the case of small-scale LNG, the *Clean Power for Transport* Directive is a loose-standing Directive, but it is aimed at policy harmonisation across the EU. Most notably, core ports in the TEN-T network are required to have LNG bunker points installed by 2030. Member states have to consider whether and how they want LNG to be part of their future fuels mix. Since the Directive is not past its due implementation date yet, it is too early to say whether this harmonisation attempt by the EU is successful or not. However, at least in The Netherlands LNG-fuelled ships are being built and retrofitted, and the CCNR and ADN Safety Committee have changed their regulations to allow for the transport of and sailing on LNG. The question remains whether this development will spread throughout the EU as per the ambition of DG MOVE, but its governance has thus far been more successful than the governance of CCS.

7.2.1. The Strengths and Weaknesses of Hard and Soft Coordination

The CCS case is a clear example of failure of soft coordination. Even substantive EU subsidy possibilities and the linking of CCS deployment to the ETS have not worked due to the low CO_2 price. In fact, linking CCS and the ETS appears to have been *detrimental* to the deployment of carbon capture and storage, overshadowing the potential impact of the fairly operational CCS Directive. The use of CCS requires the establishment of a regulatory framework clearly depicting the roles and responsibilities of public and private authorities. Typically, the private sector would be responsible for the field in which carbon dioxide is stored, but a company will not want to maintain that responsibility for a long time after storage operations have ended. The transfer of the field to the stewardship of public authorities brings with it legal risks and issues of risk sharing[297]. These processes are regulated by the CCS Directive and its national implementation, but as yet it is unclear what the actual ramifications are. As chapter 5 shows, the Directive is barely used in practice. Now, it appears that CCS may only develop through heavier investment from governments or through hard coordination: setting very strict standards such as emission performance standards or

296 A subsequent review of the CCS Directive did bring to light articles which could be made stronger, but the EC chose not to do so and fight the battles worth fighting (interview 28).

297 See also box 5.6 in chapter 5.

simply outlawing certain carbon-intensive activities without CCS[298]. The situation becomes extra problematic when low-carbon processes for currently carbon intensive industries, such as steel and cement production, are considered. These industries will, at least in the medium term[299], likely have to implement CCS if we are to meet our climate ambitions. The chance of the EU being able to do so is slim due to the resistance of many member states which are coal-heavy, fear high implementation costs, want a level playing-field, or feel the need to protect their industries. The CCS Directive will only be useful if the domestic levels of governance adopt CCS. The Netherlands might be a promising adopter because of the potentially high contribution of CCS to the national CO_2 reduction requirements. The Netherlands could be a test case for CCS; if it does not work there, it will not work elsewhere in the EU.

Another policy failure in the CCS case, thus far, was linking it to the carbon price under the ETS system[300]. Without going into the debate on whether the ETS actually works, it is clear that it does not currently incentivise CCS[301]. Changing the way the ETS works is difficult because of the way the European decision-making process works. It is also an example of how policy choices can be locked into a path from which it becomes difficult to stray. Path dependency may play a role in the potential future of CCS, since an expensive abatement technology may not further be developed in a situation with a low carbon price. This low carbon price is not necessarily a problem unless governments decide they want CCS to develop in their country. While the Dutch government could be criticised for vocally advocating CCS without employing all available means (such as a carbon tax) to make it happen, one could argue CCS might not be such a good idea if it will only happen through extreme governmental investment. Even so, for The Netherlands the mechanics of the ETS system have definitely presented problems for the Dutch ROAD CCS demonstration project. Small-scale LNG does not suffer from being locked into a European system of emissions trading. Rather, its price is linked to (global) gas prices. When natural gas is cheap, the private

298 Another promising venue is to develop CCS through CCU applications to garner support and create a better business case.

299 A lot of research is being done into full electrification of industrial processes, but full implementation of such technologies is still very far away (timeline: 2050).

300 In short: the low carbon price under the EU ETS has a negative effect on business cases hinging on the price of carbon. Additionally, the NER 300 fund which was based on allowances taken out of the ETS drastically dropped in value when the CO_2 price fell, leading to lower subsidies than previously anticipated. See chapter 5 section 5.3.3.1 for more detailed information.

301 I am not claiming it should, but ETS currently thwarts the achievement of the EU's ambitions regarding CCS demonstration projects.

sector is more likely to invest in LNG. Here, however, we see that LNG has suffered from the low price of gasoline, making it unattractive to switch to expensive alternative fuels[302].

The LNG case thus far shows a very different picture; mere domestic coordination is simply impossible due to the international nature of transport. Small-scale LNG of necessity needs to be upscaled to the EU level, which is what has happened when DG MOVE launched its directive. The promise of domestic and EU funding for LNG projects has attracted multiple interested private parties, and LNG ships have started to be delivered to the market, albeit in low volumes. Steering of LNG infrastructure development through *Clean Power for Transport* is quite concrete even though the targets have yet to be implemented. The international nature of transport also makes coordination risky as multiple countries will depend on each other to build the required infrastructure for ships to refuel. Laggards can therefore thwart a large part of the process, which makes effective governance highly important. Whilst targeted LNG coordination is of a soft nature — the Directive leaves ample room for national authorities to do what they want — overall engine emissions have become hard targets through the NRMM Regulation. Any newly built engine will have to meet the NRMM standards by January 2017[303], which could, slowly, further harmonise the way the inland shipping sector operates in the EU. With the requirement of complete adoption by national authorities, the Regulation harmonises the processes in the private sector by regulating engine manufacturing. Furthermore, stricter international sulphur regulations for maritime shipping are causing a move toward alternative fuels in the maritime sector as well. As the engine manufacturing of maritime and inland shipping is similar, a push in one sector also makes change in the other sector easier. Currently, the most promising outlook is to use LNG as fuel, but a lot of research is being done into the use of, for example, hydrogen and ammonia, as well. LNG is one of many options to make transport more sustainable whereas CCS seems to be one of few options to truly decarbonise energy and industry[304]. Yet when faced with a choice between being sustainable and being competitive and secure, governments may be prone to choose the latter (Skovgaard, 2014:2-5; Vogler, 2013:631-640).

Clearly, both soft and hard coordination have their own strengths and weaknesses, as outlined in table 7.3. Both types of coordination can be found in multi-level governance. Hard coordination illustrates the potentially tense interaction at domestic level, resulting in national governments preferring hard coordination to get their private and peripheral actors

302 Market mechanisms are a natural part of business and therefore perhaps not as limiting as the ETS, which is partly imbalanced due to high subsidies given to renewable energy by governments.

303 Regulation (EU) 2016/1628.

304 Industry more so than energy, since the energy sector could theoretically rely fully on renewables if ways to store electricity efficiently are found so that the market can deal with the volatility of renewable energy.

moving. Soft coordination illustrates the potentially tense interaction between the national and supranational level, granting opportunities to societal actors and subnational authorities in an effort to bypass their national government[305]. The coordination measures the EU is able to decide on relies heavily on the opinion of its member states and their readiness to give up (part of) their sovereignty to increase harmonisation of policies across the EU. These decisions are of a political nature and their consequences are that the implications of these decisions affect their implementation at the domestic level. In other words, power drives multi-level governance. Before delving into a discussion of how exactly power fits within the MLG framework, let us compare and contrast the conclusions of the CCS and LNG cases and review the theoretical expectations.

Table 7.3. EU soft and hard coordination has pros and cons

	Strengths	Weaknesses
Soft EU coordination	- Potential harmonisation through benchmarking and peer pressure - Leaves room for flexibility in implementation, potentially increasing national legitimacy - Can provide powerful incentives to private sector if the context is right	- Non-binding and non-enforceable - Can lead to large differences in implementation across EU countries, making cross-border operations for businesses challenging - Uncertain outcomes if tied to economics and market developments
Hard EU coordination	- Binding - Hard coordination in one sector can catalyse developments in another - Clear choices made by government which the private sector can base decisions on	- Very difficult to achieve in climate and energy policies - Often little room for flexibility in implementation (prone to high resistance) and can be rigid - Often perceived as grandfathering by private sector (last resort)

Source: author's own composition based on analysis of CCS and LNG cases.

7.3. THE MULTI-LEVEL AND MULTI-ACTOR CONTEXT OF ROTTERDAM ENERGY PORT

What can be said about multi-level governance in a situation where policies are of a general nature and consensus regarding policy choices is lacking? The next three sections will address the theoretical expectations formulated earlier in this dissertation. A summary of the results per expectation is provided in table 7.4.

Looking at the CO_2 and LNG hubs, the picture that arises is one where hierarchical relationships between governmental authorities shift whilst horizontal governance reaffirms the authoritative position of the government. Multi-level governance of these climate-related

305 More discussion on the link between soft/hard coordination and Piattoni's MLG follows in 7.3.

Table 7.4. Results for CCS and LNG case per key concept

Theoretical expectation	Key concepts	CCS	LNG	Role of PoR
Actors create interdependencies between business, civil society, and government on an international level, which necessitates policy coordination at not only the national level but also the supranational level	*Interdependencies at international level*	Partly: societal activity but mostly nation state & EU activity, most activities through established channels, level playing field concerns	Yes: due to international nature of shipping regulation, mostly driven by nation state activity and global market dynamics, most activities through established channels	Cooperation with other ports and regulatory authorities
-> The PoR is one of many actors active at international level because the policy solutions the PoR needs cannot be provided at national level alone	*Policy coordination at the X level of government*	(Soft) coordination attempts by EU, but MS very autonomous, high variety in implementation of CCS Directive across countries	No coordinated policy, but EU attempts to harmonise MS alternative fuel adoption through soft coordination and hard coordination (NRMM)	Attempts to influence policy-making at all levels of government, influential at local level
Regional coordination in territorial matters is more efficient than national coordination, which leads to the strengthening of local policy actors	*Coordination of activities*	Mostly local (fe., ROAD project), effective at beginning but now ineffective due to external factors	Mostly local and in international projects (fe., LNG Masterplan), effective, strengthened by supranational framework	Spider in the web bringing together public and private parties
-> PoR is empowered due to being able to employ its resources effectively when stimulating activities in Rotterdam	*Local empowerment*	Not much, attempts by city failed and national government needed to make CCS happen (hampered by domestic - international)	Much autonomy for practical matters, otherwise limited (no real policy competence, transport is international)	Has own autonomy (fe., ESI discount) but highly dependent on other actors to make things happen
Cross-linkages between private and public actors lead to private parties assuming public responsibilities and public parties acting like private groups	*Cross-linkages between public and private actors*	Many cross-linkages, both formal and informal, resource flow is crucial	Many cross-linkages, both formal and informal, resource flow is crucial	Spider in the web bringing together public and private parties
-> PoR develops economic activity in cooperation with the private sector and advocates its interests at EU level alongside Dutch governmental actors to obtain favourable policy conditions	*Blurring of state and society*	Some clear Dutch lobbying activity for ROAD, otherwise not much blurring, everyone stays in their own corner	Not much found in terms of blurring, consignors expected to act in general interest and generate market pull	Spider in the web bringing together public and private parties, own status is ambiguous

Source: author's own composition.

issues thus leads to a call for governments to perform their classic duty of directive policy-making in addition to more horizontal governance. In order to be able to do so, governments need to cooperate with non-governmental actors due to information imbalances and for implementation purposes. Both horizontal and vertical aspects of governing remain strong. We have also seen that the far-reaching blurring of state and society, as Piattoni defines it[306], does not resonate strongly in both cases even though linkages and cooperations between public and private partners are flowering due to their interdependence. For the CCS case, the centre - periphery shift caused no real empowerment of local actors when policy choices at the EU level led to unintended effects. For LNG the effect is the other way around: supranational activity has enabled regional empowerment and efficiency. The axis with the highest impact, then, seems to be the domestic - international shift. As the EU increasingly tries to harmonise climate and energy policies across its member states, domestic actors invariably turn towards the EU for funding. Legitimising EU activity in this way leads to the creation of directives and project initiatives such as ROAD and the LNG Masterplan. The EU component is engrained in these projects — and therefore developments as a whole — by virtue of its participation in formulation and funding phases, bringing peripheral actors in direct contact with EU officials.

National governments, while still quite autonomous with respect to their energy policies, place themselves in the situation where they seem to accept EU harmonisation attempts in return for the funding of projects carried out domestically. In the Dutch case, these projects feed into the formulation of national policy but the government does not seem to formulate a strong vision of its own. For example, the Dutch CCS vision hinges on the completion of the ROAD project, which is a relatively meagre policy vision. When the EU is not able to further developments through soft coordination and member states block far-reaching coordination, peripheral actors quickly lose their potential efficiency. The next three sections discuss the results for both CCS and LNG per theoretical expectation.

7.3.1. Policy Coordination Across Multiple Levels of Government?

Whereas both cases are developments that started within The Netherlands prior to being adopted by the EU, now it is clear that the EU acts as the main regulator in an effort to harmonise policy across the EU-28. Sustainable development is more than technology alone; the element of how it is organised is extremely important[307]. Since both small-scale LNG

306 Blurring of state and society is, according to Piattoni (2010), a situation in which private parties assume public responsibilities and public parties act like private groups.

307 The *orgware* versus *techware* discussion as discussed in chapter 1 (section 1.3.2).

and CCS are intertwined with other policy fields it is easier for the European Commission to grasp these developments due to established competence in, for example, climate policy. For transport (and thus small-scale LNG) Commission activity is more logical than for CCS due to the cross-border nature of transport. The small-scale LNG case has shown on multiple occasions that international coordination is necessary and that national governments have no choice but to aggregate at a higher level of governance. Even the global level of governance is involved due to regulations surrounding the transport and trade of waste products (fe. CO_2), or the carriage of dangerous goods on ships (LNG). The CCS Directive was smartly incorporated into the larger Climate and Energy 2020 package by the European Commission, allowing for its relatively easy adoption in 2009. National authorities were most likely perfectly capable of legislating CCS-related issues on their own, so making the directive part of a package everyone wanted allowed for an expansion of competences for the Commission. The opinion DG CLIMA is now allowed to give on storage permits is one such example, though it has not been used much due to the unforeseen lack of CCS projects. The same goes for the *Clean Power for Transport* Directive, which allows for the Commission to dabble in its member states' national energy mix by virtue of its attempt to make transport more sustainable. The EU's harmonisation efforts in both cases have hinged on soft coordination by getting directives adopted and providing funding for projects; the first bastions the Commission turns to when formal competences are lacking. The LNG case again shows that such an approach makes more sense there than for CCS; investing in infrastructure to better connect parts of Europe provides a more convincing story than investing in highly contested CCS demonstration projects, where local support is paramount. Still, the Commission and Dutch government were able to find interested partners to provide additional funding for ROAD, which could be seen as a step towards harmonisation of goals[308].

The domestic level supports policy and regulation made internationally by incorporating both developments in domestic energy policy, most notably the *Energieakkoord*. However, no real CCS or LNG targets are set in the *Energieakkoord*, which leads to the conclusion that the government is supporting the developments but not actively steering towards their completion. The ROAD case may be the exception because it could play a prominent role in Dutch national CO_2 reduction ambitions up to 2020. Using LNG as fuel fits within the Dutch aspirations of continuing to be a gas hub, which was initially enabled by Slochteren gas and has been a source of revenue for many years. However, a measure of enforcement is lacking, even in the CCS case where the coal fired power plants initially were built with the private sector promising to capture and store CO_2. The municipal government was most avid in attempting to force the companies to make good on their promise, but was not supported

308 Also 'excuses' countries such as Germany from investing into CCS in their own territory, making it a highly political move.

by the province. The city of Rotterdam is also hardly involved in policy-making surrounding LNG and CCS and its efforts to get CCS going in the port area have essentially failed.

While the LNG case does not show great NGO activity, the CCS case does. CCS is seen as a 'game changer' in humanity's combat against climate change, with bodies such as IEA and IPCC advocating serious consideration of CCS in countries with feasible storage sites. Overall, there does not seem to be a spreading out of policy coordination over several governmental tiers, but rather a concentration of policy-making efforts at EU-level, which goes through already established channels, is supported by the national government in the interest of a level playing-field and at the same time slowed down in the interest of national sovereignty. For small-scale LNG it appears EU coordination might work, but for CCS it is clear that European coordination has actually led to a crippling of domestic efforts. The domestic - international shift therefore impacts both cases differently. Currently it looks like more European harmonisation on CCS will be unlikely, unless a convincing argument regarding the level playing-field can be made. While the EU can regulate ship engine emissions through the NRMM — and thereby impact the business case for LNG — it does not seem likely that a CCS requirement will get past the EU's decision-making process.

7.3.2. The Potential of Local Clusters Versus Centralised Authority

Peripheral activity has — so far — not been effective in the CCS case. The municipality of Rotterdam was not empowered enough[309] to carry out its ambitions regarding CCS and CO_2 reduction even though, politically, it was important for the city to succeed. Between the local government and the national government (including the province) there have been tensions regarding political views on whether coal-fired power plants can be forced to employ CCS. These tensions between domestic governmental authorities provide a confusing picture for business, which can be used to further their own interests by, for example, adopting a reactive attitude. However, the national government has also been lobbying other EU member states to help fund the ROAD project through the European Eranet-ACT fund, which is quite unique as a development.

Absent hard targets for CCS deployment (governments want to be technology neutral), centralised steering is visible through EU-wide soft coordination. The EC is trying to get a grip on the situation by offering assistance through Eranet-ACT. However, its attempt to further refine the CCS Directive has not been taken up by national governments. Linking CCS to the carbon price under the ETS curiously makes CCS a market-driven technology that,

309 Note that this conclusion is mostly based on the perception of interviewed experts, as stated in chapter 3.

unless other measures are taken, will only work if the EU changes the pricing mechanism behind the ETS or adjusts its market reserve. In the CCS case the centre has thus spread out towards EU institutions. Domestic actors look at the EU to 'do something', creating a new centre at the supranational level. Still, national governments remain pivotal yet also limited by international agreements. In both cases a domestic push is difficult, yet not impossible, to make without EU-wide activity. Mutual interdependencies create the necessity to govern across multiple hierarchical levels and with non-governmental actors, yet at the same time this is difficult because of differing interests, global pressures, and market mechanisms.

In the LNG case one interesting observation is that once the (European!) centre put in place favourable conditions for small-scale LNG to develop, the periphery could take up activities and govern from there, which supports Piattoni's argument regarding the efficiency of decentralised authorities yet shows that they need a favourable context to be efficient. The port cluster in Rotterdam has a good position to further stimulate LNG due to the availability of both supply and demand. The PoR is able to incentivise the switch to this fuel by providing discounts on port dues. Yet the difficult financial situation the shipping sector currently is in counteracts the ability of the local level to act decisively. Furthermore, the LNG Masterplan project was most successful in the Rotterdam region but failed to deliver in the regions around the Danube river. Local conditions therefore do matter in the process of governance and local authorities definitely have a decisive role to play. In Rotterdam, the central role of the EU did not create blocking tensions with the periphery. However, whereas most of the actual activities are local due to the local nature of projects, local empowerment is only limited. The authority of the centre is often needed to establish rules and provide funding instruments (cf. Smith 2007). In short, the periphery *can* be efficient, but it is dependent on other levels of governance.

7.3.3. Horizontal Public and Private Governance

The many cross-linkages observed between the public and private sector appear to be *crucial* in both the LNG and CO_2 hub. This finding corresponds with authors who claim that, especially in the area of sustainability and the combat against climate change, the state needs society to govern effectively (cf. Piattoni, 2010, but also Tortola's (2017) challenge). Governmental authorities cannot manage the transition towards a more sustainable society on their own because they are hardly the ones emitting polluting gases. The same goes for the PoR which owns the land upon which companies are vested; the actual emitters. It is therefore heavily dependent on those emitters to reach climate goals. This situation places the PoR in a facilitating role with its power mainly centred on its ability to bring parties together. The mutual interdependencies are perhaps clearer in the case of small-scale LNG due to the nature of transport. For CCS, interdependencies appear to be of a more political nature with actors questioning the logic of paying for an expensive technology that lets others free-ride (making it a classic collective action problem). Especially the municipality of Rotterdam, leaning on its agreement with Engie and Uniper to use CCS in their new coal-fired power plants, was unable to pressure the companies to invest more because it lacked support from the province and national government. The financial resources spent on realising municipal CCS goals has made its realisation a political priority, although many negative opinions regarding CCS were also voiced in the Council. Power — and its limitations — is an important factor when looking at the slow progress towards the CO_2 hub.

In terms of the other key concept in this part, the blurring of state and society, very few examples were found. Since both cases exemplify a highly technological development, governments need to be informed by the private sector in their policy-making process. They need to know what is feasible and what is not. The other way around there is quite heavy involvement of the Dutch national government (and the PoR) at European level, lobbying to get favourable conditions to further develop both LNG and CCS. Remember that both cases were already 'going on' in The Netherlands prior to EU involvement, which cannot be said for many other countries. The Netherlands is therefore trying to be a front-runner (or, in Börzel's terms: a 'pace-setter') and exert influence through its experience with developing CCS and small-scale LNG. The cross-linkages between the public and private sectors only partly lead to the blurring of state and society as defined by Piattoni. The mutual interdependencies appear to be key drivers in developing the Energy Port, but the sectors mostly perform their traditional tasks. Interestingly, in the problematic CCS case there may be a breakthrough only because the national government lobbied other governments to close the funding gap of the ROAD project; an example of public actor behaving like a private one. Both cases show clear influences from non-governmental actors and a shift from governing as a state to governing with society, yet for LNG the regulatory part has been so important that its shift is somewhat more limited. The state does need society to govern effectively, if only because governments are not where the practical solution to the climate change problem lies and because they are economically and socially dependent on the private sector. The reverse is also true. Multi-level governance theorists should therefore not ignore this dimension.

7.3.4. Shifts in Multi-level Governance; an Explanation

Based on the above, a conclusion can be drawn regarding the three theoretical expectations formulated earlier (summarised in table 7.5). Very clear is that the analysis has not confirmed the initial expectations entirely. Most notably the second expectation (taking place in the centre - periphery dimension of MLG) was found to be impacted by the domestic - interna-

Table 7.5. Case study conclusions per theoretical expectation

Theoretical expectation	Conclusions
Actors create interdependencies between business, civil society, and government on an international level, which necessitates policy coordination at not only the national level but also the supranational level *-> The PoR is one of many actors active at international level because the policy solutions the PoR needs cannot be provided at national level alone*	Interdependencies are ample but coordination mostly goes through already established channels, and the analyses identified two other factors leading to policy coordination: nation states willingly doing so and global market developments *-> Due to level playing-field concerns and the international nature of transport, the PoR needs not just Dutch policy but also EU policy and is therefore active at international level*
Regional coordination in territorial matters is more efficient than national coordination, which leads to the strengthening of local policy actors *-> PoR is empowered due to being able to employ its resources effectively when stimulating activities in Rotterdam*	Regional coordination is potentially efficient yet impacted by the conditions laid down by higher levels of government, so it is partially dependent on the impact of the domestic - international shift *-> PoR is a powerful local actor but heavily dependent on others to make change happen, can function as catalyst for the region*
Cross-linkages between private and public actors lead to private parties assuming public responsibilities and public parties acting like private groups *-> PoR develops economic activity in cooperation with the private sector and advocates its interests at EU level alongside Dutch governmental actors to obtain favourable policy conditions*	Partly (no far-reaching blurring), but the connection between the public and private sector is *crucial* *-> PoR is heavily linked to both governmental and private sector actors and is active at EU level as well to obtain funding for projects and influence EU policies. However, it is mainly heard on port-specific topics (and not energy topics)*

Source: author's own composition.

tional dimension in such a way that the periphery could only use its potential effectiveness with the right domestic and international context in place. However, the EU context had a different impact across both cases. Whereas in the CCS case EU coordination crippled the effectiveness of the PoR and the city of Rotterdam, in the small-scale LNG case it empowered them. A regional project such as the LNG Masterplan benefited greatly from the support of local authorities. In that sense Piattoni's claim that regional authorities potentially are more efficient than national authorities holds merit but needs to be analysed in the wider context of MLG; the three dimensions influence one another. The first expectation found additional factors that stimulate international interdependencies: nation states willingly maintaining and creating the need for supranational coordination and global market developments. Especially in the area of energy, where markets are of a global nature, the market developments are of paramount importance on the political possibilities at domestic and EU level. Lastly, the third theoretical expectation did not resonate strongly due to Piattoni's very far-reaching definition of blurring of state and society, however the cross-linkages between public and private actors were found to be crucial elements of the governance of CCS and LNG due to resource interdependencies. These cross-linkages are not necessarily caused by MLG: they are an intrinsic part of it.

Actors are present in multiple — if not all — dimensions of MLG. It therefore makes sense to look at the interplay between the dimensions to see whether agency in one dimension impacts another. In Piattoni's (2010:85) terms, three mechanisms that could be observed are:

1) Mobilisation of civil society at the international level (interplay of domestic - international and state - society);
2) Mobilisation of subnational authorities at the international level (interplay of domestic - international and centre - periphery);
3) Mobilisation of civil society at the subnational level (interplay of state - society and centre - periphery).

The empirical chapters have discussed mobilisation of subnational authorities and civil society as part of the theoretical framework. Based on the findings, a conclusion (see table 7.6) can be drawn regarding how the intersections between the three dimensions can either be mutually reinforcing, neutral, or counterproductive.

Multi-level governance enlarges each actor's arena stretching it from the local level to the supranational level. In doing so, it creates both opportunities for goal-attainment and tensions. These tensions between the multiple dimensions of governance are intrinsic to MLG. Agendas do not always line up across the EU-28, between the EC and national governments, within nation states, and between private actors and the public sector. For example, the EU is pushing member states (domestic - international) to reach the Europe 2020 climate goals and trying to get domestic governments to consider the role of CCS and alternative fuels as means to reach these goals. The Dutch government sees opportunities to continue its position as gas-exporting country and acknowledges the Dutch potential for underground CO_2 storage. Yet public opinion (state - society) is not on its side regarding CCS, which politicians are keen to take into account. Stimulating CCS through extensive financing may therefore not be politically viable at national or local level, so a European lobby is set up (invisible to the regular citizen) to generate more funding (centre - periphery). In short, governance is organised at specific levels in order to deal with the tensions between governance levels most effectively, yet its results are not necessarily effective. The mechanism that can be observed here is that actors are present in more than one dimension of governance, and therefore their agency impacts what happens across the governance spectrum. This interdependency between levels of governance lies at the core of MLG.

Table 7.6. Dimensions of MLG can reinforce or block developments

Interplay between intersection MLG dimensions	CCS	LNG
Mobilisation of civil society at international level (domestic - international & state - society)	*Neutral* - Mobilisation mostly in research and discussion platforms (fe., ZEP) - Diverse civil society advocacy (both positive and negative) - EU funding for demonstration attracts private sector and subnational authorities - PoR can partially influence processes (good support for projects)	*Neutral* - Low focus on IWT within civil society, but their overall mobilisation benefits the case - MS sovereign to choose fuel mix, so national level remains an important focus - EU funding for cross-border projects attracts private sector and subnational authorities - PoR can partially influence processes (good for projects)
Mobilisation of subnational authorities at the international level (domestic - international & centre - periphery)	*Counterproductive* - EU ETS disables decentralised governments and peripheral activity - Solution seen as a matter for national governments & EU - PoR no influence on processes (cannot change EU ETS)	*Mutually reinforcing* - Complementary competencies between EU and regional level - Periphery can be efficient, foster regional projects down the Rhine with EU support - PoR good influence on processes (good for projects)
Mobilisation of civil society at subnational level (state - society & centre - periphery)	*Counterproductive* - Regional cooperation started off well but suffered from infighting later (uncertainty!) - Low financial means at city level, so private sector also negotiates with other authorities - PoR can partially influence processes (infrastructure development)	*Mutually reinforcing* - Good cooperation in Rotterdam region - Rotterdam as small-scale LNG showcase - Temporary exemptions stimulate first adopters - PoR good influence on processes (infrastructure adjustments)

Source: author's own composition based on empirical cases (chapters 5 and 6).

Figure 7.1 shows the difference between the observed shifts in governance in the CCS and LNG case. Implicitly the figure also shows the tensions engrained in multi-level governance. Most significant are the differences between the domestic - international and centre - periphery dimensions. LNG was concluded to be Europeanised by virtue of its transnational nature. CCS, on the other hand, merely shows a symbolic shift with the relatively inconsequential CCS Directive. Whereas small-scale LNG benefits greatly from the Rotterdam region mobilising to adopt the fuel, mobilisation for CCS was crippled by international agreements and other external factors. Apparently the centre - periphery shift strongly influences governance outcomes, though as discussed earlier, it is influenced heavily by its supranational context. The state - society dimension has similar results for both cases, however in the CCS case a negative public opinion counteracts the mobilisation efforts of other parts of civil society.

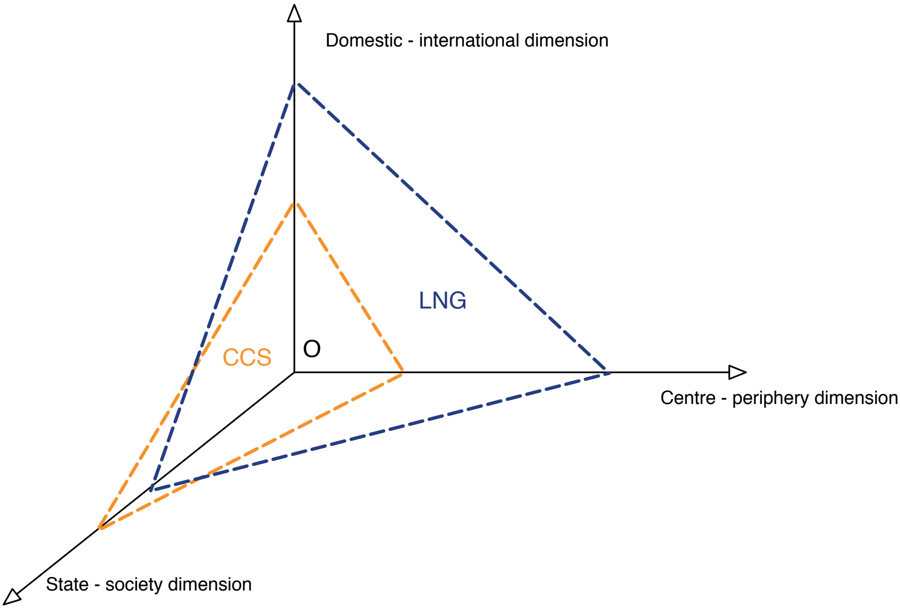

Figure 7.1. Governance shifts in the CCS and LNG cases along dimensions of MLG
Source: author's own composition based on empirical work (chapters 5 and 6).

The exact way in which the dimensions of MLG would be expressed in both cases could not be predicted using the MLG framework[310]. The predictive value of MLG appears to be limited to predicting *that* shifts in governance happen through participation of supranational institutions, but their exact size, strength and consequences can vary. MLG can identify differences between outcomes of governance and provide tentative explanations, especially since CCS is an example of failed governance and LNG is not (or not yet). In-depth case studies are therefore very valuable in uncovering what truly happens, and *why* it happens, in EU governance. The theoretical expectations have been useful searchlights for empirical analysis, though they work differently in both cases. The logic of retroductive research begs for a reflection on their ability to find what the 'real' mechanisms driving a case are. To do so, the secondary findings regarding power and uncertainty need to be reviewed in light of MLG since they provide the means to understand multi-level governance.

310 I did not expect it to be, since it is my belief that theories within social sciences cannot predict human behaviour.

7.4. POWER AND UNCERTAINTY IN MULTI-LEVEL GOVERNANCE

Piattoni's treatise on MLG is infused with power, though much of it is implicit. The importance of power and uncertainty for the explanation given in this dissertation begs for a review of the role of these concepts within the theoretical framework. For CCS, which has already gone through a policy-making process, the implementation phase showed unsuccessful peripheral governance, effectively undercutting one of MLG's claims. Furthermore, the impact of the domestic - international shift is different for both analysed cases. For LNG supranational coordination is needed, whereas CCS does not necessarily benefit from it. The multi-level governance of small-scale LNG has shown that, when the supranational level provides enabling incentives, local conditions matter for policy implementation. The private sector is both waiting for supranational governments to provide a long-term vision upon which investment decisions can be based and simultaneously thwarted *or* enabled by the results of this very same supranational coordination. The explanatory value of the role of uncertainty and power in these processes is discussed next. Both concepts warrant special attention due to their importance for the explanation given in this dissertation whilst not having been explicitly included in the theoretical framework established in chapter two.

7.4.1. Uncertainty Guides Decision-making in a Volatile Energy and Climate Context

Climate change is often mentioned as the prime example of a (super) wicked problem (cf. Lazarus, 2009; Levin et al., 2012; Maréchal & Lazaric, 2010; Webster, 2008). Lacking an easy test for a potential solution and a way of knowing precisely how our society will be affected by climate change, decision-makers are constrained by the choice they have to make between short-term gain (for example, economic gain) and the long-term gain of preventing climate change (Levin et al., 2012:126-128). In other words, affordable and secure energy (two of the pillars of European energy policy) currently are more rewarding than the uncertain benefits of sustainable energy and therefore easier to reach on the short term. Since it is uncertain how (quickly) sustainable technologies will develop, governments are hard-pressed to make policies for a future they cannot predict. Both the CCS and LNG cases have seen policy-makers reluctant to make a choice, fearing that these transition technologies will lock in future developments and thereby thwart more sustainable technologies. Various authors have written about regulatory risk, uncertain climate policies and technological uncertainty. Important findings are that regulatory risk is taken into account by the private sector when making decisions (cf. Barbose et al., 2008), that unproven technologies, such as CCS, substantially increase the price tags of CO_2 mitigation, making it an issue for governments to consider (cf. Hoffman & Szklo, 2011), and that a price floor in the EU ETS would spur low-carbon investments (cf. Brauneis et al., 2013). These findings show how society, in a broad sense, needs to be incorporated into state activities.

Rather than accepting that technological progress is inherently uncertain and that policy-makers can therefore not make good long-term choices, Levin et al. (2012:128) actually make a plea for policy-makers to lock-in future *preferences* promoting sustainability which can steer subsequent action as society tries to reach them. For example, developing LNG-powered ships is beneficial on the short term and could be made more sustainable in the future through the use of bio-LNG. Likewise, CCS could develop into CCU (using the carbon instead of storing it) in the future, which contributes to a greener chemistry sector. Having sustainability as one of three pillars of EU energy policy is not necessarily enough to lock in future preferences. Agreements based on emission limits linked to target time periods, such as the EU's 2050 Roadmap and COP-21, fit within such an approach but the main challenge is how to plot the path that will help reach those targets in time.

The analysis of CCS and LNG shows that both cases are embedded in a context of high uncertainty, though these uncertainties seem to be addressed much more (effectively) in the LNG case than in the CCS case. Policies are unclear, the financial aspects are worrying at best, and technological development is unpredictable. Without arguing that 'everything is governance', the uncertainties that were identified in both cases[311] are issues for and of governance (at multiple levels) (cf. Moser, 2009:31) but also *because of* governance (Levin et al., 2012). Actors expect something of each other and are also uncertain about outcomes. Mutual gain can lead to breakthroughs and cooperation, such as what happened with the LNG trucks of Albert Heijn. Yet uncertainty also blocks major changes by virtue of being unpredictable; governance is bounded by previous paths chosen by policy-makers and private parties alike. Path dependency is an interesting and much debated concept in political science and public administration literature (cf. Kay, 2005; Levin *et al.*, 2012; Lipset & Rokkan, 1967; Pierson, 2000). Its narrow conception of the effect of increasing returns argues that the benefits of an intervention, once introduced, can increase over time (Levin *et al.*, 2012:135). Policy-makers have a tendency to choose the pathway that provides the most apparent benefits on the short term, which potentially undermines future efforts to devise clean energy policies and benefit from increasing returns. However, as the previous paragraph argued, this argument can be turned around by locking in future preferences[312]. Current obstacles for desirable developments can be used as input for policy. As chapters five and six show, these obstacles often exist in conditions of high uncertainty.

311 Tables 5.6 and 6.7.

312 One would need to know what the 'no regret' options are; options that do not lock in undesirable technologies in the future *or* that appear in multiple desirable scenarios.

Table 7.7 discusses the relationship between uncertainty and governance for both cases and is based on desk research and how interviewed experts responded to the question what CCS and LNG, respectively, need to develop further. In effect, it extends tables 5.6 and 6.7 by formulating requirements to solve each hurdle mentioned in the empirical chapters and discussing the origin of each potential solution. The conclusion that can be drawn from this table is that uncertainty impacts all levels of governance. Especially in the CCS case uncertainty is not being taken away by those in power. Delayed activity in one dimension of MLG can thwart activity in the other two dimensions as well. In other words, the EU's harmonisation efforts can be stalled when other actors in multi-level governance do not act in the interest of removing uncertainties.

Both cases show that underlying uncertainties have to be solved in close cooperation between public and private actors at multiple hierarchical levels. Especially the horizontal dimension of MLG — the network-based interactions between state and society — benefits from a closer look at the influence of uncertainty. However, the concept of (policy) uncertainty itself is not part of the traditional MLG framework. This chapter has discussed how the lack of a long-term vision causes private parties to delay investment, preferring to wait for clear signs from governments. Taking away such uncertainties is extremely important when considering the longevity of the investments involved in CCS and small-scale LNG; they are not technologies to be installed for 2-3 years. The PoR's vision of a CO_2 hub implies the creation of appropriate infrastructure to facilitate CO_2 flows, and even though pipelines can often be repurposed, the PoR likely will not invest in the infrastructure if projects are lacking. However, both CCS and LNG projects are also lacking due to the absence of infrastructure, creating a chicken-egg problem. For example, linking the installation of carbon capture systems to the building of infrastructure is what the demonstration phase is about (besides showing that the technology works and improving its cost-effectiveness), and companies expect public (financial) support for demonstration projects. That, in turn, requires a long-term vision with regards to a country's future energy mix. Careful deliberation between the public and private sector can go a long way to remove uncertainties and, in turn, lock in desirable preferences for the future.

Multi-level governance, in practical terms, can be a good answer to uncertainty due to its inclusiveness; the hybridity observed in European governance has the potential to include relevant actors at the right time and for the right reasons (the path dependent logic of increasing returns). It can ensure initial support for developments upon which other initiatives can build. In this sense, the European Commission's focus on harmonising preferred policy options is a step towards ensuring that domestic developments occur according to a predefined logic. Assuming that governmental decision-making regarding energy and climate policy is not of a radical nature, the EU can theoretically build the foundation of a

Table 7.7. Solving CCS and LNG problems requires multiple governance levels

CCS		
Requirement	**Origin of solution**	**Uncertainty solved**
(Long-term) vision on climate and energy and its implementation, with consideration of CCS	National and supranational level	Lack of political will, lack of long-term vision, fossil fuel lock-in fears, funding problems
Higher carbon price and ETS reform	Supranational level (backed by national level)	Low carbon price, cost of CCS, funding problems
CCS demonstration	All levels (private + public sector)	Unclear benefits due to underdeveloped technology, safety concerns
Global agreements and a level playing field	Supranational and global level	Level playing field lacking, CCS cost
Deliberation between public and private sector	All levels (private + public sector)	Lack of long-term vision, lobby against CCS
Government acting as coordinator and mediator	Local and national level	Lack of long-term vision, lobby against CCS
CCS in the industry	All levels (private + public sector)	Unclear benefits
LNG		
Requirement	**Origin of solution**	**Uncertainty solved**
(Long-term) vision on climate and energy and its implementation, with clear emission norms	Supranational and national level	Mindsets, intra-governmental competition, unclear long-term policy priorities
Re-evaluation of financial mechanisms facilitating small-scale LNG uptake, subsidies	Local, national supranational level (and banks)	LNG is expensive, problems in inland shipping sector, long lifespan of ships, meeting market needs
More R&D for LNG engines (standardisation*)	All levels (private + public sector)	Methane slip, actual emissions, LNG is expensive
Deliberation between public and private sector	All levels (private + public sector)	Infrastructure lacking, meeting needs of market, unclear long-term policy priorities
Facilitation of small-scale LNG development through law	Supranational and national level	Unclear long-term policy priorities
International small-scale LNG uptake	All levels (private + public sector)	Infrastructure lacking, LNG is expensive, mindsets, price development and geopolitics
Private sector needs to be willing to pay	Private sector	LNG is expensive, mindsets

Source: interviews, each requirement has been mentioned by at least five people interviewed for both cases, also found in consulted documents. *Currently, every LNG installation is uniquely tailor-made to fit the LNG ship. Standardisation of LNG systems could help reduce costs associated with retrofitting ships, although it is difficult to achieve. Standardisation of newly built LNG ships is probably easier and will be available in the (near) future.

European sustainable energy policy which will incrementally harmonise the policies of its members (path dependency) and reduce uncertainty. The link with power is discussed next.

7.4.2. EU Governance: Zero Sum Versus Non-zero Sum

Chapter two discussed scholarly critique on multi-level governance, one argument being that MLG lacks an adequate conceptualisation of power. Piattoni claims MLG has attention for the contested nature of power by virtue of being sensitive to power shifts between actors engaging in governance (ie., actors do not necessarily pool their resources to work towards a shared goal), and due to its focus on the importance of non-governmental actors rebalancing the power of the state due to their inclusion in the formulation of solutions to societal problems. Curry also states that power and multi-level governance are "inextricably linked" (Curry, 2015). This section looks at the role of power within MLG more closely and uses the empirical cases and policy context as input for a review of how power fits within Piattoni's MLG framework. Does Piattoni adequately take it on board — and does power indeed fit intrinsically within MLG — or is further conceptualisation necessary?

Weber's notion of A having power over B if A can make B do something they otherwise would not have done is one of the most classic conceptualisations of power. Such power is relative and presents a zero sum game where one actor's power gain means another actor's power has decreased (Fuchs et al., 2016:4). However, the EU's celebration of multi-level governance (cf. the White Paper on European Governance[313]) exemplifies its belief that collaborative action leads to win-win situations (a non-zero sum game). Applying this thought to energy and climate policies, one could argue that the Commission believes that harmonising energy and climate policy by ensuring affordable, competitive and sustainable energy, will benefit *all* member states. Aside from remarking that these three goals are mutually conflicting at times, why are member states so protective of their own energy policies? And why is local empowerment not more prominent, as expected by MLG? The European Commission can only do so much until it hits the wall of national interests and political pressures. These national interests are two-faced: national governments have a national EU interest, but also a domestic interest guided by domestic opinion and the election cycle. These two types of national interest are not necessarily the same. What works well to say in the EU (fe., Dutch pace-setting in climate talks) does not always work well at home (The Netherlands as gas country has economic dynamics preventing dogged investment into renewables). The ever-changing willingness of national governments to harmonise policies across the EU and the differing impact of EU-level agreements on potential local efficiency is not sufficiently

313 COM(2001) 428 final. Mentioned in bibliography as 2001b.

covered by non-zero sum logic. We have to consider power in a zero sum way to understand the full picture of the effects of EU climate and energy policies on governance in the Port of Rotterdam.

7.4.3. Power as an Intrinsic Part of Multi-level Governance

Both the LNG and CO_2 hub have shown that, unsurprisingly, power matters. The CCS case has been severely impacted by the polarisation of the debate surrounding not just the technology, but the status of coal-fired power plants in general. It is therefore not viewed as a neutral technology but often described as the last straw available to coal-fired power plant owners to keep their plants open. On the other side of the debate there are proponents who argue for the urgency of CCS for both the energy and industry sectors. Its corresponding directive was part of trade-offs at the EU level, with funding for CCS projects only being an option through NER 300 and EEPR with the addition of funding for renewables as well. The EC reasoned that collaborative action throughout the EU would net multiple CCS projects and decrease overall EU CO_2 emissions. Eventually, renewable projects were funded and carried out whereas CCS has not happened. Considering the consensus needed to change EU mechanisms already in place, CCS is now stuck in a European level system (ETS) that is difficult to change. Furthermore, CCS is not in the political interest of every EU member. A consideration of how power works in governance is therefore even more important when comparing countries.

There is one argument often mentioned by national governments which could spur a new round of EU coordination in the CCS case: the level playing-field. Especially now that CCS is being considered for industrial purposes rather than as a hot prospect for the power sector, the private sector and governments alike are worried about potential carbon leakage[314]. This dissertation will not delve into actual carbon leakage risks, but the level playing-field argument does discourage national governments from being overly strict with their climate demands. An argument is therefore often made to at least coordinate such issues at the EU level, or preferably even at the global level through international conferences such as COP-21. A legal CCS requirement at the EU level is not unthinkable. Yet any move into the direction of energy policy harmonisation touches upon MS competency, so the EU would need a politically favourable situation like the one it enjoyed during the negotiations of the 2020 package. Back then the EU was supported by organisations such as IPCC and IEA, who painted dark

314 If countries or the EU increase production prices for heavy industries by requiring CCS or increasing the carbon price, these industries might pack their bags and go elsewhere where climate policies are lax and they can produce more cheaply.

pictures of the world's future and giving EU coordination momentum. Furthermore, the EU can frame decarbonisation strategies, such as CCS, under the environmental banner where it has a more established competence. It is quite likely that such an initiative would only be viable through extensive cooperation and coordination in a multi-level governance setting, but power relations will play a major role in the deliberations.

Intra-EC tensions regarding the importance of clean power for transport, such as LNG, show that sustainability is not necessarily seen as a non-zero sum game, hindering the EC's win-win approach based on collaboration. Tensions also arise when national governments feel that the EU is encroaching on their right to decide on their energy mix for themselves. Their quest for autonomy often leads to level playing-field arguments. Having a regulation such as NRMM (non-road mobile machinery) in place makes it clear to all engine manufacturers what the acceptable parameters for their engines are. Still, the LNG case showed how the Dutch government used its position to advocate for a more stringent norm, which hurt its relationship with the PoR and ultimately was defeated when other member states would not go along with the Dutch proposal. This example shows how Dutch agency has led to domestic *and* supranational tensions, which could be viewed as a logical occurrence in multi-level governance. Inherent to multi-level systems are tensions caused by the contested nature of power and responsibility (cf. Piattoni, 2010). Tensions arise at the supranational level — even within one and the same institution such as the European Commission —, between the domestic and supranational level, and within (decentralised) national systems.

These tensions that are inherent in EU governance are based on power, which is not only relative but temporal as well. Recall that climate change is a wicked problem, which essentially means that finding potential solutions for it happens under high uncertainty. Decision-making is therefore often guided by conflicts between short-term gain and long-term gain. The national government is an interesting actor to consider in this regard. At EU level its 'responsibility' in climate issues may be perceived as having to be supportive of climate measures and gaining much, also for its citizens, in the longer term. Otherwise, the Dutch would politically be seen as anti-climate. However, the responsibility of the government at domestic level includes ensuring societal legitimacy as well. When the domestic responsibility is counter to its EU standpoint, the government is likely to pursue domestic goals to ensure (short-term) re-election. The fact that the government's power is contested by the electorate influences the multi-level governance of CCS and LNG, most notably vis-à-vis the private sector and the EC. While the private sector appears to share the government's opinion that CCS should happen, it uses its power to *not* invest knowing that the Dutch government is not likely to impose it. Again, short-term gain trumps the longer term.

The domestic - international dimension was found to be a high impact dimension for centre - periphery relations. As this shift covers regime building at EU level, power is an inherent part of this shift as the EU polity takes shape as a reflection on and outcome of power relations (Piattoni, 2010:56-64). The concept of power is woven into Piattoni's multi-level governance by virtue of identifying shifts in governance and accepting that tensions exist between the domestic and the international, centre and periphery, and between state and society. Power is not explicitly conceptualised, but is that a problem given that power could be reinterpreted as governance when considering its institutional (as opposed to human) side (Guzzini, 1993:475)? Following the multi-level governance framework through in-depth case study research has enabled finding and analysing how power works within both cases, so an explicit identification of the importance of power appears to be sufficient to make Piattoni's theoretical framework carry explanatory weight. In addition, uncertainty is a feature of climate change governance, which is a problem requiring solutions with long time horizons characterised by slow system change[315]. Uncertainty causes decision-making tensions and therefore also tensions between the public and private sector, as both nested cases have shown. Identifying these tensions allows three conclusions to be drawn:

1) Multi-level governance of climate and energy happens under high economic, technological and regulatory uncertainty;
2) Multi-level governance of climate and energy is highly dependent on many (varied) interests of many (varied) key players, therefore power matters;
3) Due to the nature of the EU system, the role of power and of uncertainty, the multi-level governance of climate and energy is constrained by pressures that make change difficult as power and uncertainty can block progress in one level of governance, thereby impacting all other levels as well[316].

Effectively governing climate issues may be difficult exactly because of the interdependent nature of EU governance and the fact that member states have different interests, hence the attractiveness of the argument made by Levin et al. (2012:128) to lock-in future *preferences* promoting sustainability. The next chapter will reflect on this argument further.

315 It is not a coincidence that everyone now speaks of the 'energy transition', in acknowledgment of its long timeframe.

316 Interesting venues of research to uncover these dynamics further involve Schmitter's (2004) 'great events' or Baumgartner and Jones' (1993) punctuated equilibrium.

7.5. CONCLUSIONS

This chapter set out to compare both the CCS and LNG case and answer the question which (multi-level) governance mechanisms are present in the implementation of EU climate and energy policies. The CCS and LNG cases were compared to one another across the three dimensions of MLG. This analysis was complemented by the secondary findings: the importance of power and uncertainty. Since probing for these two concepts was not part of my operationalisation of MLG, this chapter discussed whether power and uncertainty have been adequately accounted for in Piattoni's MLG framework. The main conclusions will be discussed now.

The governance of Rotterdam Energy Port[317], which I have linked to the governance of the EU's energy and climate policies, is indeed an excellent example of MLG in practice. Relationships are perhaps not so much reconfigured as reaffirmed; the private sector calls upon governmental authorities to do what they are supposed to do, and governmental authorities lean on their traditional creation of frameworks within which the private sector is to operate. It is difficult because consensus on the *right way* is lacking. The hybrid form of governance shows itself both in the reaffirmation of relationships and the need for inclusion of non-governmental actors in the process of governing for it to be effective. The EU is increasingly able to influence member states' energy mix by linking climate targets to energy policy. European energy policy therefore becomes an area in which the EU cooperates with national governments on a hierarchical basis, whilst cooperation between governmental authorities and the private sector is also necessary due to resource interdependencies and the fact that emissions primarily stem from the private sector. Governments are expecting more and more that businesses will act in the interest of the climate, yet the high degree of uncertainty involved in carrying out expensive projects — such as CCS and small-scale LNG — needs to be met by adequate government policy, at the right level, to assure the private sector that investments are not wasted.

The engines that drive multi-level governance can be derived from the policy analysis done in chapter four and the empirical chapters and the MLG analysis carried out in the empirical chapters, continued in this chapter. EU coordination attempts begin with EU member states being open towards coordination attempts by the European Commission because they are unable to solve a problem on their own. In the CCS case the reasoning behind this support was the wish to show the world that the EU is a global climate leader, and the knowledge that global effort is required to solve the climate change problem. The Commission deftly

317 Not all aspects of Rotterdam Energy Port (see chapter 3) have decidedly supranational components, so the generalisation of the CO_2 and LNG hubs to Energy Port as a whole has its limitations.

added the CCS Directive to the climate goals for 2020. In the small-scale LNG case the reasoning was the need for supranational coordination of a cross-border phenomenon: inland waterway transport. The next step consists of efforts by the EC to coordinate legislation, be it through hard coordination (by means of regulations) or soft coordination (by means of directives). Contentious issues become directives to ensure enough freedom for national governments to implement measures as they please. Both the CCS and LNG case have directives governing their most important aspects. In order to incentivise movement in the private sector, the Commission then sets financial resources aside to finance demonstration projects. Member states do not want to miss out on this opportunity because it is their own money that flows back to their peers, giving them an incentive to want to reap the benefits of EU funding. The purpose of demonstration projects is to learn from them for further rollout of technologies, adjust needed legislation and get the proper infrastructure in place for large-scale adoption. One would expect successful demonstration projects to support, and be supported by, the domestic transposition of EU directives. Lessons learned from demonstration can then be used by the EC to revise earlier directives and formulate next steps forward, thus continuing the cycle of policy-making, funding, implementation and revision (see figure 7.2).

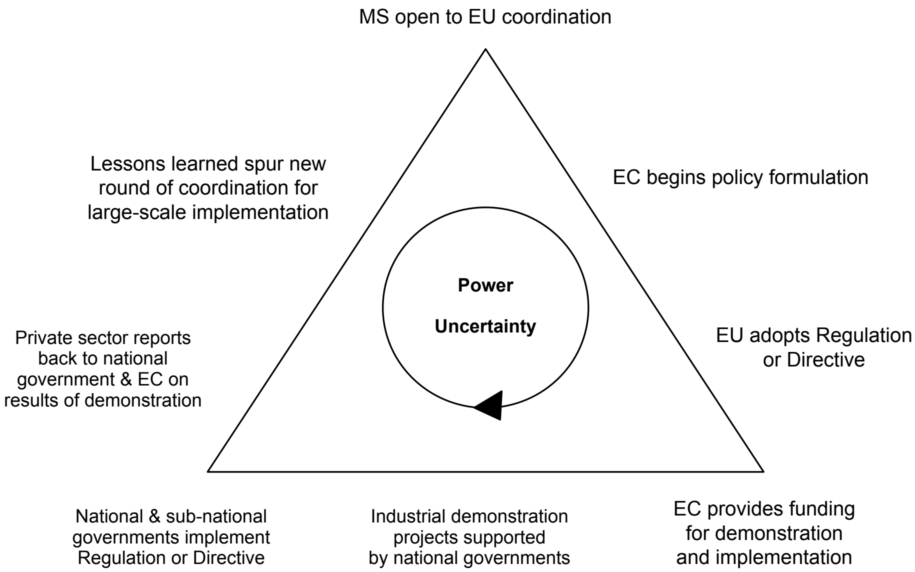

Figure 7.2. Elements of CCS and LNG policy coordination
Source: author's own composition based on this dissertation.

Where does this cycle go wrong? Power and uncertainty circulate through this cycle and can either keep the gears spinning or block them. Cooperation of all levels of governance is necessary to keep the engine running, which strengthens Piattoni's reasons for including the private sector and subnational authorities. Lack of participation from any of the stakeholders will negatively impact all three dimensions of governance, effectively freezing the process in a certain phase or pushing it backward. When industry does not want to cooperate and hard coordination is politically unacceptable, the engine grinds to a halt. If a national government decides to implement a directive in such a way as to de-incentivise a specific development, sub-national authorities and other peripheral actors lose their influence. Aside from the agency of actors, the consequences of policy choices can also put a spoke in the wheel. The EU ETS has cast a long shadow on low carbon investments through its continuously low carbon price which makes investing in cleaner technologies less attractive. The Commission's egalitarian nature counteracts the Dutch tendency to specifically support its so-called mainports. In fact, much of the EC's effort goes to regions that are less well-off than The Netherlands, sluicing funding to those regions instead of to the Port of Rotterdam. Geopolitical factors have an effect as well. The declining oil price hurts the small-scale LNG business case and delays deployment across the EU. A global push for more stringent climate norms might reverse some trends.

All the examples above point towards the existence of trade-offs which hamper investment decisions and determine how actors ultimately behave. The EU's system of multi-level governance works well in theory, but there can be reasons for an actor to support EU coordination efforts while at the same time trying to keep things as they are at national level. In the small-scale LNG case there are many promising developments, though for shipping companies there is a significant trade-off between owning a cleaner ship and the costs associated with it. Wider scale adoption of LNG as fuel is slowed down by this trade-off. In the CCS case there is a showstopper: the EU ETS and the general unwillingness of the private sector to invest in a technology with highly concentrated costs, but very diffuse benefits (cf. Wilson, 1980:367-370). Small-scale LNG could soon suffer from the same cost-benefit distribution unless owners of 'dirtier' engines will be made to pay for the societal costs of their emissions.

Multi-level governance allows the researcher to dive deeply into cases and explore the mechanisms that drive governance processes. The three dimensions (domestic - international, centre - periphery, state - society) outlined by Piattoni were applied in this dissertation to test their practical applicability. These dimensions are mutually interdependent: they must work in tandem to keep the gears in figure 7.2 running. Both the CCS and LNG — which in hindsight can be termed contrasting cases (see also table 7.1) — case showed different impacts of EU governance on Rotterdam and it became very clear that the three dimensions of governance are interconnected. The dynamic, yet difficult to change, nature of governance was also captured well by the theoretical framework, shedding light on how uncertainty and power influence governance outcomes. The three theoretical expectations formulated in chapter two were further fleshed out by the case studies, showing that they can serve as theoretical searchlights for retroductive research and therefore have explanatory value. In the case of the domestic - international shift, the cases added nuancing to the MLG framework by showing that international interdependencies are not just created by sub-national authorities, civil society and business, but also by nation states themselves (cf. Majone, 1996:68) and through the operation of (global) market mechanisms. For the centre - periphery shift a nuance was added acknowledging that regions are potentially effective, yet that this effectiveness depends on contextual factors (such as (un)wanted outcomes of EU-level agreements) beyond their direct control. In the state - society shift we have seen a clear need for governance *with* society, though no 'Piattonian' far-reaching blurring of state and society.

The strength of MLG as a theoretical framework lies in uncovering the challenges of complex governance processes such as climate and energy governance. Its weakness lies in its extremely general and overarching nature which makes it difficult to speak in terms of causality: extensive qualitative research is needed to untangle the dynamics underlying the three dimensions of governance. The next chapter suggests ways to move forward with this type of research.

8

Conclusions — Bounded Multi-level Governance

8.1. INTRODUCTION

The time has come to look ahead. What do we now know about EU governance based on the experiences described in this dissertation? How can the EU move forward with energy and climate policy and which recommendations can be given to the Port of Rotterdam Authority? This dissertation started with outlining the 'problem' at hand: the EU's quest to mitigate climate change by substantially reforming energy policies with attention for greenhouse gas emission reduction targets. The largest port in Europe, the Port of Rotterdam, was shown to contribute to a large amount of emissions through its transport and industrial operations. Rotterdam Energy Port was introduced as the Port Authority's vision on the future role of energy in the port along the lines of LNG, coal and biomass, CO_2, energy efficiency, and (sustainable) electricity. The LNG and CO_2 hubs were chosen in chapter three as illustrative cases within Energy Port. The main research question this chapter will answer is as follows: *How do the European Union's efforts to address climate and energy issues affect the Rotterdam port community, and what role can the Port of Rotterdam Authority play in its governance in order to reach climate and energy policy goals?*

Chapter two outlines the onset of research on EU governance and discusses the core elements of multi-level governance as a theory, contrasting it to network governance and dealing with earlier criticisms directed at MLG. Theoretical expectations are drawn from Piattoni's MLG framework based on three shifts in governance, which are further operationalised in chapter three. The third chapter also discusses the retroductive approach followed in this dissertation and introduces the in-depth case study performed in chapters five and six.

Chapter four explores the EU's policies and initiatives in the field of energy and climate governance and discusses how these policies feed back into member states. The EU's policy-making efforts up to 2020 are shown to be guided by the overarching Climate and Energy Package adopted in 2009. The CCS Directive is a direct part of this package, whereas legislation on small-scale LNG flows from one of the flagship programs under the package. Both are mainly governed through EU efforts at soft coordination, particularly because of member state sensitivity regarding their sovereign right to govern their own territory and energy mix choices. The chapter also shows that the EU and Dutch goals regarding energy and climate change, at face value, seem to be aligned. One would not expect coordination issues to arise based on these goals. Yet they do.

Chapters five and six, and to some extent chapter seven, dive into the empirical part of the dissertation, each opening the black box of the governance of CCS and small-scale LNG respectively. Both chapters discuss the key elements of MLG: the necessity of supranational governance which cannot be ignored by national governments (the domestic - international shift), the quest for empowerment of local actors (the centre - periphery shift), and governance through and with non-governmental actors (the state - society shift). The PoR is found to be active at all levels of governance, bringing actors together making use of its position as regionally bound intermediary between the public and private sector. The empirical chapters also discuss secondary findings, paying much attention to the role of power and uncertainty. Chapter seven discusses the aggregated results of both cases in an effort to review the theoretical expectations formulated in chapter three and reflects on their consequences for the governance of Rotterdam Energy Port. Whereas the state - society shift in a broad sense is concluded to be instrumental to EU governance, chapter seven argues that the domestic - international shift has the highest impact on the cases. The development of CCS is locked into a EU-level system (ETS) that is hard to change, making it dependent on national efforts to stimulate carbon capture and storage, which are absent. This shift also has implications for the empowerment of local actors, which are able to have significant agency in the implementation of small-scale LNG but are left largely powerless in CCS. Reflecting on the secondary findings of the nested case studies, chapter seven also discusses how power and uncertainty fit in MLG and argues that they are an intrinsic part of the framework. In other words, power and uncertainty are an important part of the explanation of shifts in multi-level governance.

This final chapter will summarise the answers to the sub questions formulated in chapter one, culminating in the answer to the main research question. The chapter starts (§8.2) with a reflection on the empirical applicability of Piattoni's conceptualisation of multi-level governance, arguing that employing MLG showed how important governmental decision-making is in the area of climate and energy policies. Section §8.3 moves on with the introduction of a bounded notion of MLG to improve how Energy Port is governed. The chapter concludes (§8.4) with recommendations for the Port of Rotterdam Authority and governments, a methodological reflection, and suggestions for future research.

8.2. BRIDGING THE GAP BETWEEN THEORY AND PRACTICE

Piattoni's conceptualisation of multi-level governance provided the theoretical framework applied in this dissertation. The purpose was to see how Piattoni's framework behaves in practice and try to build on it further. The analyses of small-scale LNG and CCS have shed light on how EU governance works in the context of climate and energy policies. Power and uncertainty came up as crucial parts of the explanation of how governance works in these cases. In essence, they are part of the agency of actors, which complements the structural part of MLG. This finding leads to a further nuancing of figure 3.1 from chapter three.

As shown in figure 8.1, the base of Piattoni's model provides a useful tool with which to investigate EU governance. The interaction between the EU-level, the domestic level and third parties leads to identifiable shifts in governance along three dimensions: the domestic - international dimension, the state - society dimension, and the centre - periphery dimension. Zooming in on each dimension shows the most important elements of the shift. Multi-level governance is very helpful in identifying governance mechanisms and outcomes, as shown in this dissertation for the unsuccessful governance of CCS and the more successful governance of small-scale LNG. Both these cases, and climate and energy policies more generally, are nested in a context characterised by high uncertainty. Knowledge on the extent to which acting leads to benefits (financial, political, climate-related, and so on) is constrained by uncertainty. Power ultimately dictates whether actors move ('act') or remain where they are, and what the effects of their decisions are on the whole. Power, and thus agency, moves along the dimensions of MLG and impacts all aspects of governance. Conflicting interests and values are at the heart of the governance of climate and energy policies. Trade-offs are abundant and inform any actor's (also the PoR's) choices. It is therefore important to consider these factors when studying the governance of climate change. I recommend incorporating these factors more explicitly in Piattoni's multi-level governance framework as I have attempted to do in this dissertation and summarised in figure 8.1. Chapter seven has discussed how these concepts are interrelated and explained the differences found between both nested cases. Especially the need for a long-term vision on cleaner energy appears to clash with the short term effects of power and politics. The next sections discuss these effects in more detail while answering the sub questions posed in this dissertation.

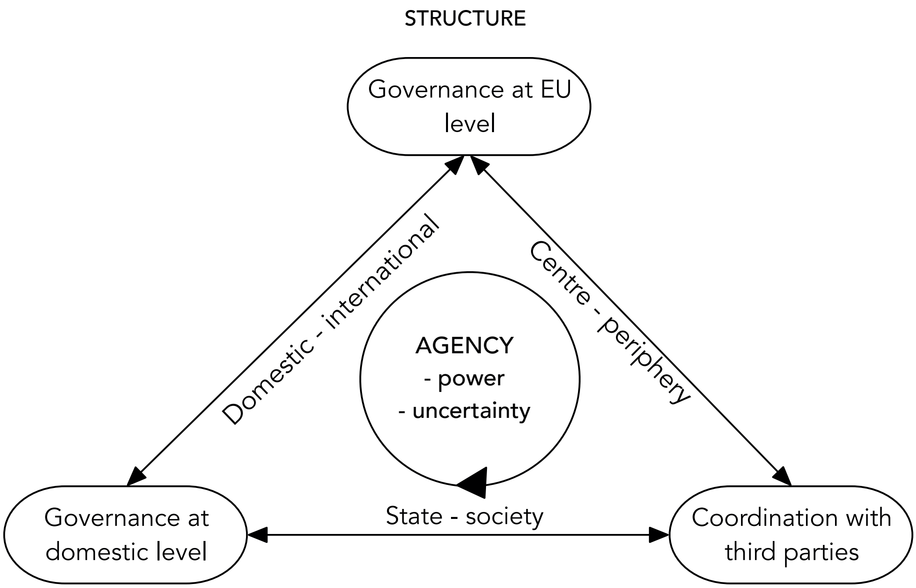

Figure 8.1. Agency and structure in multi-level governance
Source: author's own composition. Structure is based on Piattoni, 2010.

8.2.1. Tackling Uncertainty: the Importance of Clear Policy Decisions

The first sub question asked in this dissertation is: w*hich EU climate and energy policies are relevant for Rotterdam Energy Port?* Furthermore, it is imperative to know how these policies affect the domestic level and whether national and supranational goals are aligned (the underlying two questions). For a full overview of relevant policies I refer to chapter four, which introduced the pillared structure of the EU's Europe 2020 strategy for smart, sustainable and innovative growth, partly summarised in figure 4.1. Most of the identified policies are Directives requiring the domestic level to translate them to their own national policies within a certain timeframe. At face value, EU and Dutch goals are aligned. The next part of this section provides more nuance to the answer to the first sub question.

The 2009 Climate & Energy package, including the CCS Directive, is part of the Europe 2020 strategy. The *Clean Power for Transport* Directive flows from the Flagship program 'A resource-efficient Europe' formulated under Europe 2020. The EU has identified several coordination goals within these initiatives[318]. Domestic and EU coordination goals are quite aligned (see table 8.1), especially as both the Commission and the Dutch government want CCS to happen (CCS could play a large role in Dutch CO_2-reduction efforts) and are in favour of a modal split towards inland waterway transport including the greening of the fleet. A misfit between these grand targets therefore cannot provide an explanation why CCS has not lifted off in The Netherlands and small-scale LNG has. As discussed in chapter seven, applying the multi-level governance framework to both cases does provide a plausible explanation. Still, a reflection from the policy analysis is in order.

Table 8.1. Alignment of EU and domestic coordination goals for CCS and LNG-related policies

Level	Climate and Energy package	A resource efficient Europe
EU-level	- Ensure safety of CCS (for public and environment) - Drop of total emissions (43% in 2030) of ETS sectors - 20% CO_2 reduction (80% by 2050) - 20% energy efficiency - 20% renewable energy - revise ETS	- -1% yearly reduction (average) of transport-related GHG emissions beginning in 2012 - Development of alternative fuels for (commercial) transport - Use potential of water transport to reduce emissions and reduce pollution from water transport - Revise TEN-T
EU + domestic level	- CCS permits given by national authorities but EC can give its opinion first - Fully integrate the European energy market	- Integration of resource efficiency into European Semester - Definition of right indicators and targets with stakeholders
Domestic level	- 20% CO_2 reduction (80-95% by 2050) - 16% renewable energy in 2023 - CCS demonstration - Only use CCS if no other options are available	- Periodically report on resource efficiency - 60% GHG emissions reduction from transport by 2050 - Level playing field for ports and supporting sustainable initiatives

External sources: COM(2011) 571 final (2011d in bibliography) and COM(2010) 2020 final.

The three pillars of European energy policy — security of supply, competitiveness, sustainability — are mutually conflicting and lead to trade-offs[319]. Sustainability often loses to the more immediately pressing goals of actually having energy and being able to pay for it. If it is the role of governments to guide proper policy implementation, they will need to be clear about what they want in terms of sustainability and provide pathways for society to reach those goals. In practice, that amounts to funding R&D and pilots so that initially expensive technologies can be further developed and become less costly, which explains why the ROAD CCS demonstration project is so important to the Dutch government and

318 See chapter 4 for a full overview.

319 See also section 4.2.5.

the European Commission. However, their commitment should go even further. The IEA estimates that global coal supply will last another 3050 years at current rates (Schubert, Pollak & Kreutler, 2016:4). Lacking clear decisions on the future of coal usage, it is likely that coal will continue to be burnt unabated. Governments should therefore either decide to phase out coal entirely, or develop CCS to mitigate carbon emissions. They have to realise that in the current situation technology neutrality implicitly means they have chosen not to develop CCS. As discussed in the previous chapter, climate change is often seen as a (super) wicked problem (Levin *et al.*, 2012) and as a classic collective action problem requiring "carefully managed policy coordination and multi-level governance" (Esty & Moffa, 2012:777). A strong role for governmental authorities could be what is needed to solve this problem. Especially the expert interviews revealed that both governmental authorities and the private sector want a long-term policy vision with clear goals. Technology neutrality does not work, and is even illogical, when a clear vision is lacking and just one part of the energy sector (renewables) is subsidised heavily. The trade-off, as shown in chapter five, is a dysfunctional ETS. Furthermore, business risks to fundamentally change the energy system are too high when long-term policy is lacking. The Dutch Energieagenda 2016 seems to contain steps in the right direction, but its effect is yet to be seen. The question we need to ask ourselves is whether we, as a society, consider it part of our national government's duties to provide a clear climate and energy vision.

Here is also when power comes up as an issue; some member states have different conceptions of the climate change problem, making it unlikely that an EU-level approach with sanctions could follow. For Eastern European countries that are heavily dependent on coal or Russian gas, it may be difficult to phase out coal, mitigate emissions from coal-fired power plants, or diversify their gas supply. Their short term interests are to secure their energy supply and make it affordable for their citizens. Large-scale LNG can suit their interests whereas CCS may not. Yet some countries hardly have an inland waterway transport sector, making investments into LNG as fuel unlikely unless it is used in road transport. The Netherlands, however, has a relatively high contribution of inland shipping to its overall transport and could potentially market CCS technology if CCS pilots can be used as a learning vehicle to make the technology (especially the capture process) cheaper. The Dutch have something to gain whereas other member states may not. EU coordination efforts in both these cases therefore appear to have a higher chance of success in The Netherlands than in most other member states, effectively making the Dutch a test case. Yet the Dutch government has chosen not to specifically incentivise CCS or small-scale LNG deployment, instead referring to agreements made at EU level. It appears that the Dutch government does not want to seek solutions at the national level. How can the 2020 targets be reached if national governments choose to hide behind only partially effective supranational agreements?

8.2.2. Successful Governance or Government?

The second sub-question asked in this dissertation was: *which (multi-level) governance mechanisms are present in the implementation of these policies?* Underlying questions dealt with the role and position of the Port of Rotterdam Authority, how non-governmental actors are involved in the process and to what extent governance is successful. The first three mechanisms that were analysed were the three theoretical expectations. First, civil society is active at international level, though the cases found more supranational coordination due to global market developments and nation states willingly creating international interdependencies. Especially around COP negotiations it seems that EU members are more likely to join the EU's climate policy harmonisation efforts. Second, subnational authorities and other local actors were active at EU level — especially the PoR — but not necessarily efficient, as Piattoni expects. This mechanism seems heavily influenced by the context created in the domestic - international dimension. Third, non-state actors were found to be very active at national level, especially since their expertise appears to be crucial for national governments to devise fitting climate and energy policies. Furthermore, national governments depend on private sector activity to meet the goals of the policies, strengthening mutual interdependencies. However, contrary to Piattoni's expectation of a far-reaching blurring of state and society, the public and private sector mostly remain in their traditional roles furthering their own traditional interests. These three mechanisms will be further elaborated on below, ending with an additional mechanism that was found.

One of MLG's most common criticisms is its assumption that the inclusion of decentralised governments in the EU governance process is abundant and effective. The cases studied in this dissertation show that subnational authorities are hardly involved in the policy-making phase, but definitely have a role to play in the implementation phase. That last phase is also where the Port of Rotterdam Authority is able to add to the success of governance; as a semi-public authority it is a natural partner for both governmental authorities and the private sector. The PoR can function as a spider-in-the-web and bring actors together, which was seen in the small-scale LNG case. The municipality of Rotterdam has a similar function but, in the CCS case, is hampered by internal disagreements on the usefulness of CCS and by national political debates regarding the status of coal-fired power plants. The municipality has been largely powerless in the story of CCS, which is a painful conclusion considering the fact that it was mainly the city that counted on CCS deployment to reach its highly ambitious CO_2 reduction targets formulated under RCI auspices. Yet as soon as the centre — now basically polycentric with the EU at the head and leaving a dual role for the national government —establishes workable frameworks, peripheral actors can take strides in the implementation of policies. Decentralised coordination of efforts should therefore not be discounted, but it needs conditions set by the other governance layers in order to be a driving force behind successful governance. An inductive theoretical expectation following from this dissertation therefore is that local actors lack empowerment when supranational coordination works differently than intended. The criticism of MLG is therefore partly founded.

Both cases have shown quite extensive involvement of non-governmental actors: from businesses at multiple scales and in multiple sectors, to NGOs, and to academia. Still, the CCS case was shown to be an example of failed multi-level governance, mostly because of choices made by governmental authorities. It has become difficult to incentivise CCS with policy tools because of its 'lock-in' the ETS system that is now hard to change. That being said, this does not mean CCS has now become impossible. Financial participation of a few member states now seems sufficient to start ROAD, after which other CCS projects might follow in the EU. Extensive advocacy from the Dutch government and the European Commission was needed to get this far. Public authorities can therefore block progress but also enable it. When exogenous factors (such as COP-15) are at play, national authorities sometimes willingly spur supranational coordination. A second inductive theoretical expectation flowing from this dissertation therefore is that supranational coordination can be necessitated by nation states willingly creating or maintaining international interdependencies. As such, MLG does not always provide the strongest explanation.

At the same time it is important to note that technological development moves at a higher pace than governmental regulation. While clear policy goals and frameworks are needed, it is difficult for governments to keep up with their regulatory processes. Here is where non-hierarchical governance — including non-state actors — shows its strength. Flexible governance arrangements such as the Green Deals have enabled small-scale LNG deployment in The Netherlands, even while proper regulation was still lacking. This area is also where decentralised governments become crucial; much of the success of small-scale LNG deployment hinged on the willingness of municipalities to let it happen on their territory, for example by ensuring safety through proper instruction of their fire departments. The commitment of the Dutch government was also instrumental in speeding market development along. For such practical purposes singular governmental action can be successful when collective action in European context is not. The binding factor in this mechanism appears to be connected to (global) market developments, as investments (and EU policy coordination!) follow the ebb and flow of prices. The third inductive theoretical expectation is that global market developments can create international interdependencies which necessitates supranational coordination.

Aside from the theoretical framework, another mechanism was found. The CCS case shows that a governance mechanism at EU level is to answer unsuccessful attempts at harmonisation (where the engine of figure 7.2 grinds to a halt) with subsequent attempts to harmonise to restart the engine. For the Commission as an actor, such a strategy makes sense to increase influence. When regulations are out of the question, a directive will be proposed. The CCS Directive was even accompanied by the goal to have twelve CCS demonstration projects and supported by two funding mechanisms at EU level. If the directive fails to deliver, the Commission will try to revise it. When there is no interest to do that, and earlier funding attempts have borne no fruit, the Commission will propose different funding options and, a novelty for CCS, stimulate intergovernmental funding efforts so that the CCS Directive will not be a complete failure. In the small-scale LNG case the Commission could rely on past experiences with attempts to harmonise the composition of fuels, which were problematic. However, the *Clean Power for Transport* Directive could benefit from its infrastructural component, especially coupled with TEN-T funding and the harmonisation goal geared at TEN-T core ports. Member states that build the LNG infrastructure are likely to want to use LNG as fuel. The international component of transport has also made policy harmonisation for small-scale LNG easier at EU level.

8.3. BOUNDED MULTI-LEVEL GOVERNANCE

The third sub-question asked in this dissertation was: *how can the governance of climate and energy in the Rotterdam port area be improved?* As figure 8.1 shows, the governance of Rotterdam Energy Port can neatly be placed into the MLG framework identified earlier in this dissertation, with the addition of serious consideration of the importance of concepts such as power and uncertainty. Uncertainty was translated in chapter seven to be comprised of the continuous tension between short term interests and long term interests. In the longer term, political power loses its power in democracies due to the very nature of the electoral process. Presenting society with very concrete long term visions, especially including budgetary frameworks, can therefore be challenging for governmental authorities. I pose that these concepts are an intrinsic part of the MLG framework, though its bounded nature should be recognised explicitly: current EU governance is characterised by the inability to radically change direction due to previous governance arrangements resonating through all layers of governance (which are mutually interdependent), creating a type of path dependency and making change difficult.

Path dependency is an interesting and much debated concept in political science and public administration literature (cf. Kay, 2005; Levin *et al.*, 2012; Lipset & Rokkan, 1967; Pierson, 2000). Its narrow conception of the effect of increasing returns was discussed in chapter seven and linked to the aspect of uncertainty that was identified in the empirical part of this dissertation: policy-makers have a tendency to choose the pathway that provides the most apparent benefits on the short term, which potentially undermines future efforts to devise clean energy policies. The increasing returns can lock-in policy options and technology choices by virtue of having high start up costs but subsequent learning and coordination effects. However, this is not necessarily a cause for great concern. As Levin *et al.* argue, path dependency can also be turned around to lock-in *desirable* options for the future so that they are more likely to be achieved. In that respect, governance can be improved by creating an even deeper link between climate and energy policies: sustainability should be a core assumption, not a goal. CCS has been unsuccessful because not implementing it only endangers the sustainability aspect in energy policy goals. In contrast, large-scale LNG is in the interest of the EU's and Dutch diversification strategies, so small-scale LNG can ride on that success. Treating sustainability as a core assumption could 'lock-in' policy choices that will positively affect climate change governance. In effect, the EU and its member states could bind themselves to a policy pathway that will aid in climate change mitigation. Needless to say, doing so at EU level ensures further harmonisation of policies in a creeping fashion, but it remains to be seen whether member states will allow this to happen. Within the European Commission this thinking is already visible with the merger of DG ENER and DG CLIMA under one Commissioner in the most recent Juncker Commission. Perhaps the departments will fully merge into one in the next iteration. In essence, the bureaucratic (or, non-political) nature of the Commission appears to be perfectly suitable for the initial proposal of long-term goals, which can then feed into domestic governance.

8.3.1. The Port of Rotterdam Authority as Policy Actor

If governance entails "the various institutionalized modes of social coordination to produce and implement collectively binding rules, or to provide collective goods" (Börzel & Risse, 2010:114), making solutions work makes governance effective. Drawing on table 7.7, the solutions it contains to deal with the uncertainties hampering CCS and small-scale LNG development are all geared towards making governance work better. In fact, these solutions have a decidedly multi-level nature: long-term climate and energy policies, demonstration projects, global agreements, new financial mechanisms, regulatory changes, standardisation; all these options require collaboration between governmental authorities at multiple levels and often also with the private sector. They potentially reduce regulatory and economic uncertainty, allowing solving technological uncertainties in cooperative fashion. What role does the Port of Rotterdam Authority play in this multi-layered governance?

The PoR is a publicly owned landlord with a system overview of the port area, extensive connections with companies vested in the port, a deep understanding of global logistics and innovative developments and of the effects of contiguous markets. This position makes the PoR an excellent candidate to act as a spider-in-the-web bringing actors together and helping them build coalitions. The PoR has the capacity to understand companies, provide infrastructure, and liaise with governments. Its status as the largest port of Europe makes it an interesting partner for the European Commission as well: a true Port of Europe. That said, the PoR is heavily dependent on all these actors to implement sustainable changes. In and of itself, it is not a large emitter nor is it a provider of overarching policy. The CCS and LNG case show that the PoR needs to take into account that the EU is becoming a more and more important provider of policies relevant to the port area. Likewise, the funding instruments provided at EU level make it imperative for the PoR to keep its EU knowledge up to date *and* remain close to the national government to secure support for EU projects. The cases also show that the PoR can help companies legitimise their projects by throwing in their own support and forge coalitions. In that sense, the PoR is not so much a policy actor but could rather be a catalyst. The PoR therefore has the potential to be a strong actor in the multi-level governance of climate and energy in Rotterdam. It can improve current governance processes by ensuring that the right actors work on the right things at the right time. To give two practical examples: in the case of small-scale LNG the PoR can improve the regulatory process by providing responsible governmental authorities with technical expertise gathered from within its own ranks and those of its private partners. In the CCS case the PoR can support adoption of the technology in the port's industry and electricity sectors by providing adequate CO_2 infrastructure in cooperation with the Dutch government. In short, the PoR can potentially glue together the various actors involved in the multi-level governance of climate and energy. This insight is especially important in light of how interdependent actors in multi-level governance are; every blockade in one dimension can potentially block other processes as well. In the area of policy-making, the PoR can lobby for a lock-in of preferences that will make use of the port's strengths (good infrastructure, good logistics, interwoven industrial cluster), thereby enabling the private sector to adopt sustainable solutions that also improve our energy security and competitiveness.

8.3.2. The Importance of Strategy: Shared Vision

Systemic changes, such as the energy transition, take a lot of time and are very difficult to accomplish. Governments and the private sector cannot realistically be expected to solve the climate change problem in the next few years. With the addition of the notion of bounded multi-level governance, we can ultimately answer the main research question: *How do the European Union's efforts to address climate and energy issues affect the Rotterdam port community, and what role can the Port of Rotterdam Authority play in its governance in order to reach climate and energy policy goals?* I conclude that the multi-level governance of the EU's efforts to address climate change is:

1) inevitably supranational and polycentric but, precisely because of that, leading to interdependencies across levels of governance which can facilitate coordination but block it as well;
2) of necessity a public - private affair because of resource interdependencies and the required systemic changes;
3) impacted by global economic, (geo)political and technological developments which further complicate decision making processes by virtue of adding more uncertainty to already highly uncertain visions of the future;
4) limited by short term considerations of those in power, often favouring economic benefit over the more long term benefits of sustainability;
5) bounded, so we cannot and should not expect radical changes to happen, but it does stress the importance of a *clear framework* of policies and goals with *clear pathways* to reach them.

The port community needs to be included in climate and energy governance by virtue of having the expertise policy-makers need, but is also dependent on governmental authorities for the provision of enabling policies. The Port of Rotterdam Authority should try to be a catalyst for sustainable development in the port area, bringing together actors across multiple levels of government and making sure that the aggregated interest of the port is heard by governmental authorities. The PoR also needs to be aware of its tenuous dependence on all these actors to achieve its own goals.

The above also means that, if governments are to realistically expect the actors present in the Port of Rotterdam to make investments based on profit *and* sustainability, it does not suffice to simply stress the importance of sustainability in policy documents and to add strict CO_2 reduction goals. Steering mechanisms, based on realistic pathways to reach the goals that ensure widespread support of these frameworks, are necessary. The necessity to govern with societal actors does not excuse governments from their traditional task as policy-makers. In addition, even though local governments have a limited role in the policy-making process, they are able to provide crucial practical conditions to implement policies. Decentralised governments are important for EU governance as implementers and facilitators, and can gain traction with the Commission through their experience with policy implementation and technology deployment. However, the CCS case explicitly shows that a subnational authority can be left powerless when agreements at EU level do not work as intended. This insight adds nuance to Piattoni's claim that local governments exist because of the benefits territorialised governance brings with it. It also shows that the influence of sub-national authorities should indeed not be over-exaggerated (cf. Jordan, 2001). For a port authority this conclusion implies continued dependence on the national government and the necessity of an additionally strong focus on the EU as a source of fundamental policies and guidelines. If the governance of EU climate and energy policies is to run smoothly, all levels of governance (including the private sector) need to cooperate. Such cooperation will only work if actors know what they can reasonable expect from one another. In short, a strong, broadly shared vision on climate and energy is needed. The Port of Rotterdam Authority can contribute to this vision.

8.4. LOOKING FORWARD

8.4.1. Recommendations for the Port of Rotterdam Authority

The time has come to answer the last, very practical, sub-question: *what are lessons the Port of Rotterdam Authority can learn for its public affairs management of future rounds of climate and energy policy-making?* Or, to put it differently, what can the PoR learn from these cases for its management of the energy transition?

First, a reflection on the concept of Energy Port is in order. While Rotterdam Energy Port provides an interesting and marketable catchphrase, its components — the various hubs and the PoR's energy efficiency goals — are advocated loosely. Energy Port is therefore not a 'whole'. It does, however, serve as a way for the PoR to show that there is more to a port than logistics. The emissions associated with port activities are not merely comprised of logistical activities, especially not in a landlord port such as Rotterdam. The large (petro-) chemical cluster is a source of considerable emissions as a consequence of considerable energy use. Any policies geared towards making energy cleaner thus impact the day-to-day operations within the port. Raising awareness for this fact with policy-makers can help the PoR in their access to EU institutions. Their status as a semi-public authority should work to their benefit in this case. Furthermore, the PoR could use the Energy Port as a visionary instrument towards the companies in the port, giving them insight in the direction in which the port authority wants to go in the future. Such insight is given in the *Havenvisie 2030* document, which also provides a clear overview of which authorities are in the lead for which action. The same exercise could be performed with Energy Port-specific topics, by, for example, adding visionary targets for small-scale LNG and actively steering towards their completion in the PoR's business development activities. Keeping in mind how a lock-in of preferential sustainable developments could help the area edge towards lessening their emissions, the PoR could adopt sustainability as a core assumption of their operations rather than as a separate goal, and advocate doing the same at national and European level.

Second, the PoR also needs to have a clear strategy and vision on its role in the future. Currently it seems to be struggling with *who* it will be in 2050 and *what* it will do. It is not unthinkable that the PoR will take up activities not traditionally associated with it, such as stimulating energy efficiency by acting like a broker on the electricity market. The energy transition team the PoR set up in 2016 is tackling questions pertaining to its future role and visionary development. In parallel the PoR should discuss these issues with the city of Rotterdam, the Dutch government, and perhaps even the European Commission. It should be clear for all parties what the PoR's core business is and will be in the future. In the absence of clear guidance from governmental authorities, the PoR can provide some of the necessary leadership. In the end, however, it is also entrenched in the national context. Many companies will look at governments or at their international headquarters for guidance and vision. The Port of Rotterdam Authority can be a catalyst and should maintain its position as a good partner for both governments and businesses. It should capitalise on its ability to be a facilitating party leading coalitions of the willing. To do so effectively, the PoR's antennas need to be honed in all possible directions.

Third, stimulating a CCS project is not really part of the PoR's core business because it is a purely energetic business case. Stimulating small-scale LNG makes more sense because it makes port operations cleaner, especially if LNG is also used to power cold ironing facilities until they can be reliably powered by renewables. Yet, from a strategic point of view, an argument can be made for PoR involvement in CCS. The potential for the Port of Rotterdam lies in large-scale application of CCS, in which case Rotterdam could become the CO_2 hub it aspires to be. While supporting a single project such as ROAD is risky, stimulating (or even laying down) CO_2 *infrastructure* could help get CCS going for the whole area. It could end up providing a unique selling point for the Port of Rotterdam, enabling heavy industry to settle in the port and plug into a CO_2 pipeline. Providing the necessary infrastructure for companies to be able to settle into the port while meeting sustainable goals is considered part of the PoR's core business, so this approach would fit[320]. One important hurdle for the international hub function is the ban on CO_2 trade for purposes of storage under the London Protocol. As the amendment to this ban has not yet been ratified by the required number of parties, the PoR could urge the Dutch government to lobby other governments for ratification as soon as the outlook for CCS becomes more promising.

Fourth, the PoR needs to be aware of which underlying trade-offs keep actors in place or get them moving, and know how to use these trade-offs to keep desired policy coordination engines running. Recall that figure 7.2 in chapter seven shows that when a stakeholder decides not to participate, *all* dimensions of MLG are impacted. While the PoR cannot

320 This argument also goes for other types of infrastructure, such as steam and hydrogen pipelines.

singlehandedly motivate everyone to take action, it needs to be aware of this mechanism and use its power to either keep the engine running, or, when desirable, block it. The PoR's position in the multi-level governance of climate and energy policies is such that it can bring parties together and facilitate cooperation. Much of the PoR's efforts in this dossier should go towards capitalising on this position. There is no point fighting lost battles, so the PoR needs knowledge on how governance levels interact and what causes blockages. The many uncertainties and interdependencies guiding global climate efforts and business decisions require monitoring and analysis. The PoR's Corporate Strategy department should therefore work closely with the Business Intelligence and External Affairs departments to keep track of trends and actions of other stakeholders. This knowledge is crucial for its management of the energy transition, and that is not even mentioning other pressing challenges such as digitalisation, automation, and the recent silk road developments. Unfortunately, the Corporate Strategy department has been reduced drastically since 2013, though its participation in the recently established energy transition team is promising.

Finally, there seems to be no real strategy the PoR has with respect to Europe. The manpower covering European affairs is small and they focus too much on individual dossiers rather than the larger picture. As such, a comprehensive vision concerning the EU and what to do with it seems to be lacking. There is little coordination between projects in the same domain. An example is the LNG hub, where there were three projects running with EU subsidy in 2014, but there was no uniform communication toward the EC about them. What happened was that multiple people spoke with the Commission about their own project, amounting to delivering bad news three times in a row in September and October 2014. The leaders of one project did not know they were speaking with the Commission around the same time as the leaders of another project. Needless to say, the EC was less inclined to be lenient towards these projects after having been disappointed three times in quick succession. The internal coordination within the PoR could therefore be set up in a better way, perhaps by ensuring participation of the external affairs department in meetings discussing projects funded by the EU. Another solution might be to always include an external affairs employee in the project lead. The disconnect between departments goes even further. For example, people outside of Corporate Strategy often do not know that developing LNG has been identified as 'no regret action' in the PoR's energy scenarios. In short, multiple processes that are more than just tangentially related to one another run parallel in the PoR, whereas they should at least have bridges between them to ensure communication and a more coherent vision and strategy. In that respect, the PoR still very much looks like a public authority rather than a corporation.

8.4.2. Recommendations for Governmental Authorities

If Europe is to achieve the three pillars upon which European energy ambitions rest — competitive, sustainable and secure energy — it will have to look beyond just the energy sector, beyond dependency on Russian gas and oil and towards other options. Hypothetically speaking, if the availability of oil would drastically decline, the whole transport sector (and the chemical sector as well, for that matter) would need to change fundamentally. As long as that does not happen and oil-based fuels remain affordable and within emission norm limits, the incentive to change the transport system is limited. Whichever (geo-)political direction the EU and its members choose with respect to energy policy *will* impact transport. Especially in countries where large-scale LNG infrastructure is lacking, EU emphasis on the importance of LNG for environmental purposes may help in its introduction as a fuel (Arteconi & Polonara, 2013:511). CCS may be revitalised if fossil fuels continue to be the main resource in the electricity and chemical sectors. Guided by a more streamlined EU ETS, investments into CCS may be more fruitful in the future.

Due to the connection between multiple policy areas, changes in, for example, the transport regime will also change European energy policy. Furthermore, exactly because transport is based on energy, more attention for sustainability in transport policy will impact energy policy as well. If proponents of competitive energy policy remain in the lead in the battle between energy ambitions and climate protection, an attention shift from energy to transport policy may prove more fruitful for climate and environment enthusiasts. On the other hand, the largest push is coming from the energy sector, as companies such as Shell try to cement their market share in the LNG business. They find themselves in a safer position than shipping companies due to the other potential uses for LNG besides as fuel for shipping. For transport companies, investing into LNG propulsion remains risky. Likewise, should a cluster of companies find a business case for shared CCS infrastructure to smooth their path toward fewer emissions, they might not need stricter climate norms to move green investments forward. Yet an incentive to look for such business cases is probably necessary. The heavy reliance on public funding in the initial phases does indicate that governmental steering is effective; however, it is a result of a cooperation between the EU and *national governments*. The EU's coordination attempts will yet have to prove their effectiveness.

The EU has not become an all-powerful agent of policy harmonisation and national governments do still matter. Especially in the area of climate policies these power (im)balances can lead to ineffective governance because of the EU's tendency to rely on compromises. The natural environment, however, does not compromise (Levin et al., 2012:127). The urgency to act effectively will only become more pressing. A proactive attitude at the national level is vital. Even more vital is the reshaping of long-term goals into short-term targets and providing clear frameworks at the appropriate level of governance to reach those targets. Involving society in governance does not excuse governments from their job as policy-maker. According to the majority of people interviewed, this adequate policy is lacking in both CCS and small-scale LNG. With hard targets lacking altogether, a patchwork of loosely coupled policies and soft coordination is what governs Rotterdam Energy Port. Governmental authorities seem to want to ensure societal transition towards more environmentally friendly energy, but at the same time they seem incapable (or unwilling) of governing this transition. The strongest recommendation this dissertation can give to governmental authorities is to work together on a comprehensive climate and energy vision, including realistic pathways and appropriate policy tools to reach it. In doing so, governments should consult actors such as the Port of Rotterdam Authorities, the private sector, knowledge institutes and NGOs for the needed knowledge regarding feasible decarbonisation options and which institutional frameworks need to be in place to develop them. In a situation where everyone is vying for vision, governmental authorities need to aggregate interests and formulate this vision on a sustainable future.

8.4.3. Methodological Reflection

This dissertation started with a comprehensive discussion of multi-level governance, identifying its theoretical premises and deriving tentative theoretical expectations from it whilst acknowledging that there is much academic debate surrounding whether MLG actually constitutes a theory. A retroductive approach was chosen in an effort not to ignore the criticism directed at MLG while testing its practical applicability, which led to a strengthening of Piattoni's structural MLG model with very explicit attention for agency driven by uncertainty and power. The three theoretical expectations proved to provide useful conceptual lenses through which data was collected in an in-depth nested case study. This approach had several limitations. First, it drew heavily on expert interviews which provided a richness of data yet made looking for patterns difficult. Each expert was questioned according to a general list of questions and a tailor-made list of questions, so some questions were only answered once. This limitation was handled as much as possible through extensive coding using a coding mechanism. A second limitation is that the results of this dissertation are highly specific to the CCS and small-scale LNG developments — even though they are contrasting cases — in the Port of Rotterdam. Generalising them is difficult due to how far the nested cases have zoomed in and the relatively low amount of studied cases. However, for these two developments the findings seem able to describe and explain the real mechanisms guiding them. For the Port of Rotterdam Authority the findings provide an opportunity to learn from past outcomes. It is likely that the results of this dissertation can be used for future cases as well, for example when the hydrogen economy will be developed and the first ships sailing on hydrogen are planned. Many of the challenges in the small-scale LNG case will be applicable for that situation as well. Likewise, future CCS (and perhaps CCU) projects will likely encounter the same problems as ROAD did thus far, underlining the importance of what we can learn from this case. A third limitation was the choice for cases that are still ongoing, making it difficult to draw conclusions in a continuously changing landscape. The benefit of this choice is that this dissertation remains very close to current issues relevant for the PoR, hopefully increasing its practical value. A strong benefit of the chosen methodological approach was its richness of detail and ability to flesh out how governance has affected the Rotterdam area. It is my hope that this dissertation was able to tell a compelling story because of its thick descriptions.

8.4.4. Reflection on Recent Developments

Data collection for the empirical cases ended in 2016, one year after the adoption of COP-21. Since then, much has happened. The adoption of LNG engines for inland shipping slowed down, and the ROAD CCS project was cancelled. In its place, the Port of Rotterdam and its public and private partners are developing Porthos: a CO_2 pipeline to facilitate CCS in the port area. The pipeline will only be useful if industrial partners capture their CO_2, but the mere existence of a pipeline increases the value proposition of settling in Rotterdam in an era where climate issues are being taken more and more seriously. In MLG terms this pipeline could provide an impetus to restart the CCS engine by virtue of removing a blockade at the local level.

The Dutch government has begun its own climate talks in spring 2018, which should lead to an agreement and action plans to reduce CO_2 emissions by 49% in 2030. This agreement could also lead to removing blockades to further CCS and small-scale LNG deployment. The Dutch ambition goes beyond EU ambition, and it remains to be seen what the effects will be. Thus far, the Dutch track record is not great in this respect. In response to citizen protest caused by earthquakes, the Dutch government decided to turn down Slochteren gas production, increasing the prospects of LNG import. If governments double down on the emissions of shipping, LNG ships may become more interesting again, although without the transition to bio-LNG their emissions will be too substantial to reach the climate goals formulated in the EU's roadmap to 2050. The Port of Rotterdam can stimulate regional action through the active climate and energy vision it has been formulating since 2017, supported by a strong energy transition team. Still, the PoR remains dependent on all its partners to achieve its goals, and that is not likely to change in the future.

Dutch efforts to mitigate climate change have picked up rather than slowed down, adding much potential new data ripe for analysis. While I would have gladly included all these recent developments in my analysis, my data collection had to stop at some point. Yet there is still much to do, and this dissertation can help shed light on when coordination works (and at what level) and when it does not. The last section of this chapter focuses on suggestions for future research.

8.4.5. Suggestions for Future Research

This dissertation attempted to apply Piattoni's MLG framework to empirical cases to understand how governance works. The framework lends itself well to such an application, however, in itself it does not provide explicit ways to look at the role of power and uncertainty, which came up organically during the research process. In hindsight it can be argued that power and uncertainty are an intrinsic part of MLG by virtue of adding agency to structure and explaining how the various layers of governance are mutually interdependent. It became very clear that power and uncertainty affect how the three dimensions of governance play out on a case by case basis. In wicked problems such as climate change, oftentimes short-term considerations (mostly economical, more certainty) win against long-term considerations (mostly sustainable, more uncertainty). Power and uncertainty are therefore crucial for the governance of climate and energy policies and should be considered integrally when approaching a problem from a multi-level governance point of view. I have argued that, acknowledging that EU governance has a bounded nature, sustainability should be made a core assumption of energy policy instead of a goal. Future research could explore the effect of doing so in more detail, following the research started by Levin et al., with special concern for how governments will act and whether the private sector will be able to bear the burdens that will inevitably be placed on it. In short, the structural analysis MLG is known for can be further improved on through specific recognition of the interplay between structure and agency, especially since the analysed contrasting cases both found these concepts to be crucial for their explanation.

A second issue for future research is concerned with generalisation based on my case work. Whilst the conclusions are not easily generalised, theoretical generalisation has potential. Drawing back to the theoretical expectations that were found inductively — the role of nation states willingly creating or maintaining international interdependencies necessitating supranational coordination, the role of global market developments necessitating supranational coordination, and the lack of empowerment of local actors when supranational coordination works differently than intended — it would be interesting to study these mechanisms in other cases to test their validity and applicability. These mechanisms can potentially strengthen the MLG framework and are therefore academically interesting to explore further.

A third potentially fruitful research endeavour considers further exploring the slow to change nature of climate and energy policy-making and compare it with the theory of punctuated equilibrium (cf. Benson & Russel, 2015) to gain more insight in how climate and energy policies have evolved over time and which strings can be pulled (and by whom) to increase the chances of further preferential evolution. Since many conflicts surround the climate change debate, framing theory could help understand why change happens. Framing theory highlights the variety of attributes present in each and every policy issue. Based on their own perception of the issue and on their preferences, actors engage in framing; they select and emphasise certain attributes over others (Daviter, 2009:1118; Scholten & Timmermans, 2010:529). Frames, then, are not necessarily the same as preferences: "interests are shaped by frames, and frames may be used to promote interests (Schön & Rein, 1994:29). Such frames, when they clash with one another, can lead to conflict (Schön & Rein, 1994; Daviter, 2009:1120; Dewulf et al., 2009:156; Scholten & Timmermans, 2010:529). Change is slow, and certainly difficult in (super) wicked problems — such as climate change — where a multitude of actors and a multitude of competing frames exists (Post, Raile & Raile, 2010:663). New ideas can be perceived as threats, unless "they emanate from the community itself or can be adapted to suit the existing needs of the community" (Richardson, 2000:1018). Frame analysis is useful in uncovering frames, their meanings, and effects, and can help explain (mis)matches between actors in governance processes. This dissertation has discussed two often-mentioned frames in practice: the green growth (win-win) frame and the economic trade-off frame. Supplementing this analysis with a more extensive frame analysis could lead to interesting insights that would help public and private actors alike formulate their public affairs strategies better.

My last, very personal, recommendation for future research concerns ways to plot pathways to reach a goal that is still far away. How do we, as a national and European society, plan our road towards a sustainable future given high technological, political and economic uncertainty? This dissertation shows the importance of clear long-term goals upon which private actors can base their investment decisions. Especially in the energy and industry sectors such goals are important given the long lifespan of investments. We know that we can engineer the needed technology to make industry, energy and transport cleaner, but we need the right institutional framework to get developments going. Social sciences can add tremendous value to these developments through furthering our understanding of how legislation and governance can ensure that technological progress is made in an economically sustainable way. Without the right institutional framework in place — without vision — it will be very difficult to pull our society through the energy transition. More research has to be done into finding ways to make (multi-level) governance act as a catalyst for reaching climate and energy goals.

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Summary

INTRODUCTION

One of humanity's gravest problems in the 21st century is climate change and the threat it poses to the state of our planet and humankind. Governments, businesses, NGOs and experts across the globe are considering the problem and trying to find solutions to limit the earth's temperature rise by finding and implementing ways to reduce greenhouse gas (GHG) emissions (most notably CO_2). The limited progress that has been made has been subject of much scholarly study. The severity of the problem and the difficulty of reaching a solution make it a prime example of a (super) wicked problem. Lacking an easy test for a potential solution and a way of knowing precisely how our society will be affected by climate change, decision-makers are constrained by the choice they have to make between short-term gain (for example, economic gain) and the long-term gain of preventing climate change. The search for a logical solution begins with addressing emission sources: most notably the energy sector, industry, transport, and housing. The energy sector alone was responsible for more than two-thirds of GHG emissions in 2010. It makes sense to seek concerted action by addressing climate change and energy (production and use) as two sides of the same coin. Yet in practice it appears not to be so easy to coordinate climate and energy policies. This dissertation applies multi-level governance (MLG) theory to gain insight in how the EU's efforts to address climate and energy policies affect all layers of governance, including societal and private sector actors. One expectation is that non-state actors create interdependencies on an international level, necessitating coordination above the state level because solutions cannot be provided by the national level alone. Another expectation is that local actors are strengthened in their position due to their efficiency relative to national coordination. The third expectation is that cross-linkages between private and public actors lead to a far-reaching blurring of state and society.

CASE

The Port of Rotterdam Authority is one among many actors seeking to mitigate climate change. The EU and its member state governments need ports and industry to realise their energy and climate objectives. Possibilities for GHG reductions in the Rotterdam port area are vast and, due to the region’s large contribution to Dutch emissions, efforts to decarbonise in the port play an important role in overall Dutch climate change mitigation efforts. Rotterdam Energy Port was chosen as the main case study, within which two nested cases were identified: CCS and small-scale LNG. This dissertation follows a retroductive approach, taking the theoretical expectations as guiding lights and refining them using empirical data. The research approach is characterised by an in-depth qualitative analysis of governance mechanisms using thick descriptions, drawing heavily on expert interviews.

RESEARCH QUESTION AND FOCUS

This dissertation asks the following question:

> *How do the European Union’s efforts to address climate and energy issues affect the Rotterdam port community, and what role can the Port of Rotterdam Authority play in its governance in order to reach climate and energy policy goals?*

The aim of this dissertation is to explain how decisions made at EU level can impact the port area in Rotterdam, and how actors in the port can organise their public affairs to influence future policies to their benefit. Understanding the impact of EU policies can help improve governance in order to deal with policies more effectively. Governance is a game of stakes and priorities, and developing an understanding of which buttons to press, or which tools to use, to get certain outcomes is of great value for public affairs. The dissertation is divided into a section that includes a policy analysis (chapter four), a section with the two nested cases (chapters five and six), and a section with a comparison between the cases (chapter seven) and conclusions (chapter eight).

FINDINGS

The CCS case shows a situation in which supranational coordination has provided a catch-22: it is deemed necessary by all parties involved, but it creates problems which persist because the necessary level of agreement to solve them is now absent. Initially effective regional coordination can be nullified by unforeseen effects of international coordination. The EU has succeeded in delivering a CCS Directive, though its implementation and exploitation lies squarely in the hands of national governments. An important finding was that national governments themselves spurred supranational coordination rather than other actors. While public-private cooperation is necessary, the predicted far-reaching blurring of state and society has not occurred. However, increasing (soft-)coordination attempts by the European Commission do enable more public-private cooperation at domestic level in order to get favourable arrangements at EU level. The Port of Rotterdam Authority acted as a facilitator in an attempt to stitch actors across layers of governance together, which befits its role. A secondary finding was the importance of power and uncertainty, which show how a technology such as CCS can become deeply political (and thus not 'neutral') and give insight into how multi-level governance helps tackle uncertainties surrounding the role of CCS in European climate and energy policy.

The small-scale LNG case shows that the nation state remains at the heart of governance, although its position is not one of an autonomous, directive authority. The cross-border nature of IWT and required system changes for LNG implementation necessitate EU-wide coordination and provide powerful incentives for regional authorities to step into the arena. This case also showed that market developments can spur supranational coordination and that peripheral actors can be empowered provided the right institutional context is in place. The complex dynamics between the actors in multi-level governance therefore strengthen mutual dependencies, further underlining the shift from state to society though without a far-reaching blurring of boundaries. This case had similar secondary findings to the CCS case, showing multiple examples of power relations impacting the outcomes of governance. Added uncertainty surrounding regulatory risk, economic benefits and technological progress lead to difficult decision-making.

CONCLUSIONS

This dissertation concludes that the multi-level governance of the EU's efforts to address climate change is supranational, polycentric, bounded and characterised by interdependencies across all levels of governance. It is of necessity a public - private affair and impacted by global economic, (geo)political and technological developments which further complicate decision making processes by virtue of adding more uncertainty to already highly uncertain visions of the future. Governance is also limited by short term considerations of those in power, often favouring economic benefit over the more long term benefits of sustainability. The conclusions stress the importance of a *clear framework* of policies and goals with *clear pathways* to reach them. Power and uncertainty circulate through MLG and can either keep the gears spinning or block them. Cooperation of all levels of governance is necessary to keep the engine running. Lack of participation from any of the stakeholders will negatively impact all layers of governance. The port community needs to be included in climate and energy governance by virtue of having the expertise policy-makers need, but is also dependent on governmental authorities for the provision of enabling policies. The Port of Rotterdam Authority should try to be a catalyst for sustainable development in the port area.

The value of MLG as a theory lies in showing that the authority of a national government can be stretched across multiple levels, yet paradoxically remain intact as well. The strength of MLG as a theoretical framework lies in uncovering the challenges of complex governance processes such as climate and energy governance. Its weakness lies in its extremely general and overarching nature which makes it difficult to speak in terms of causality.

RELEVANCE

This dissertation shows that MLG is well-applicable to practical cases. In wicked problems such as climate change, oftentimes short-term considerations win from long-term considerations. Power and uncertainty are therefore crucial for the governance of climate and energy policies. The structural analysis MLG is known for can be further improved on through specific recognition of the interplay between structure and agency. I have argued that, acknowledging that EU governance has a bounded nature, sustainability should be made a core assumption of energy policy instead of a goal.

The cases paint a clear picture of what EU governance means for the port authority's position vis-à-vis other actors, most notably governmental authorities. The Port of Rotterdam Authority has also been provided with recommendations based on the case study analysis. These recommendations will hopefully contribute to the *orgware* of the port — and not so much to the *techware* — and will seek to advance the Port of Rotterdam Authority's efforts to achieve its goals at the EU level.

Samenvatting

INTRODUCTIE

Een van de ernstigste problemen van de mensheid in de 21ste eeuw is de klimaatverandering en de bedreiging die deze vormt voor de toestand van onze planeet en de mensheid. Overheden, bedrijven, NGO's en experts over de hele wereld proberen oplossingen te vinden om de temperatuurstijging op aarde te beperken door manieren te vinden en te implementeren om broeikasgasemissies (met name CO_2) te verminderen. De beperkte vooruitgang die is geboekt is onderwerp van veel wetenschappelijk onderzoek. De ernst van het probleem en de complexiteit maken het tot een schoolvoorbeeld van een (super) *wicked problem*. Bij gebrek aan een eenvoudig te testen oplossing en kennis over hoe onze samenleving door klimaatverandering zal worden beïnvloed, worden beleidsmakers beperkt door de keuze die ze moeten maken tussen kortetermijnwinst (bijvoorbeeld economisch gewin) en de langetermijnwinst om klimaatverandering te voorkomen. De zoektocht naar een logische oplossing begint met het aanpakken van emissiebronnen: met name de energiesector, industrie, transport en huisvesting. De energiesector alleen al was verantwoordelijk voor meer dan tweederde van de broeikasgasemissies in 2010. Het is logisch om gecoördineerde actie te zoeken door klimaatverandering en energie (productie en gebruik) als twee zijden van dezelfde medaille aan te pakken. Maar in de praktijk blijkt het niet zo eenvoudig om het klimaat- en energiebeleid te coördineren. Dit proefschrift past de multi-level governance (MLG) theorie toe om inzicht te krijgen in hoe de inspanningen van de EU om het klimaat- en energiebeleid aan te pakken van invloed zijn op alle lagen van bestuur, inclusief maatschappelijke actoren en de private sector. De verwachting is dat actoren buiten de staat om afhankelijkheden op internationaal niveau creëren, waardoor coördinatie boven het niveau van de staat noodzakelijk is omdat oplossingen niet alleen op nationaal niveau geboden kunnen worden. Een andere verwachting is dat lokale actoren worden versterkt in hun positie vanwege hun efficiëntie ten opzichte van nationale coördinatie. De derde verwachting is dat connecties tussen private en publieke actoren leiden tot een vergaande vervaging van de grenzen tussen staat en samenleving.

CASUS

Het Havenbedrijf Rotterdam is een van de vele actoren die klimaatverandering tegen willen gaan. De EU en haar lidstaten hebben havens en industrie nodig om hun energie- en klimaatdoelstellingen te realiseren. De mogelijkheden voor broeikasgasreducties in het Rotterdamse havengebied zijn enorm en vanwege de grote bijdrage van de regio aan de Nederlandse uitstoot, spelen inspanningen om CO_2-reductie te behalen in de haven een belangrijke rol in het algehele Nederlandse klimaatbeleid. Rotterdam Energy Port werd gekozen als de te onderzoeken casus, waarin twee subcasussen werden geïdentificeerd: CCS en small-scale LNG. Dit proefschrift volgt een retroductieve aanpak, waarbij de theoretische verwachtingen als leidraad gelden en worden verfijnd met behulp van de empirische analyse. De onderzoeksbenadering wordt gekenmerkt door een diepgaande kwalitatieve analyse van de governance mechanismen met behulp van *thick descriptions*, die zwaar leunen op interviews met experts.

ONDERZOEKSVRAAG EN FOCUS

Dit proefschrift stelt de volgende vraag:

> *Hoe beïnvloeden de inspanningen van de Europese Unie om klimaat- en energievraagstukken aan te pakken de Rotterdamse havengemeenschap en welke rol kan Havenbedrijf Rotterdam spelen in haar governance om de doelstellingen van klimaat- en energiebeleid te bereiken?*

Het doel van dit proefschrift is om te verklaren hoe beslissingen die op EU-niveau zijn genomen van invloed kunnen zijn op het havengebied in Rotterdam en hoe actoren in de haven hun public affairs management kunnen organiseren om het toekomstige beleid in hun voordeel te beïnvloeden. Governance is een spel van belangen en prioriteiten en goed begrip van de knoppen waaraan gedraaid kan worden om bepaalde resultaten te bereiken is van grote waarde voor public affairs. Het proefschrift is onderverdeeld in een gedeelte met een beleidsanalyse (hoofdstuk vier), een gedeelte met de twee subcasussen (hoofdstukken vijf en zes) en een gedeelte met de vergelijking tussen de cases (hoofdstuk zeven) en conclusies (hoofdstuk acht).

BEVINDINGEN

De CCS-casus toont een situatie waarin supranationale coördinatie een catch-22 heeft opgeleverd: CCS wordt noodzakelijk geacht door alle betrokken partijen, maar het creëert problemen die blijven bestaan omdat het noodzakelijke niveau van overeenstemming om ze op te lossen reeds afwezig is. Aanvankelijk effectieve regionale coördinatie is teniet gedaan door onvoorziene effecten van internationale coördinatie. De EU is erin geslaagd een CCS-richtlijn te leveren, hoewel de uitvoering en exploitatie ervan volledig in handen is van nationale overheden. Een belangrijke vondst was dat nationale regeringen zelf supranationale coördinatie aanspoorden in plaats van andere actoren. Hoewel publiek-private samenwerking noodzakelijk is, is de voorspelde vergaande vervaging van de grenzen tussen staat en samenleving niet opgetreden. Door de toenemende (soft-)coördinatiepogingen van de Europese Commissie wel publiek-private samenwerking op binnenlands niveau opgetreden om gunstige regelingen op EU-niveau te ontsluiten. Het Havenbedrijf Rotterdam, passend bij haar rol, fungeerde als een facilitator in een poging om actoren in verschillende bestuurslagen samen te brengen. Een secundaire vondst was het belang van macht en onzekerheid, die aantonen hoe een technologie zoals CCS zeer politiek (en dus niet 'neutraal') kan worden en inzicht geven in hoe multi-level governance helpt onzekerheden rond de rol van CCS in Europees klimaat- en energiebeleid aan te pakken.

De small-scale LNG-casus laat zien dat de nationale overheid de kern blijft van governance, hoewel haar positie niet een van een volledig autonome, gezaghebbende autoriteit is. Het grensoverschrijdende karakter van de binnenvaart en de vereiste systeemwijzigingen voor LNG-implementatie vereisen coördinatie op EU-niveau en bieden krachtige stimulansen voor regionale autoriteiten om de arena in te stappen. Deze casus toonde ook aan dat marktontwikkelingen supranationale coördinatie kunnen stimuleren en dat actoren in de periferie effectief kunnen opereren, mits de juiste institutionele context aanwezig is. De complexe dynamiek tussen de actoren in multi-level governance versterkt de onderlinge afhankelijkheden, waardoor de verschuiving van staat naar samenleving verder wordt onderstreept, echter zonder een vergaande vervaging van grenzen. Deze casus had vergelijkbare secundaire vondsten als de CCS-casus, en liet meerdere voorbeelden zien van machtsverhoudingen die van invloed zijn op de resultaten van governance. Onzekerheid over beleidsrisico's, economische voordelen en technologische vooruitgang leidt tot moeilijke besluitvorming.

CONCLUSIES

Dit proefschrift concludeert dat de multi-level governance van de inspanningen van de EU om klimaatverandering aan te pakken supranationaal, polycentrisch en beperkt (*bounded*) is en gekarakteriseerd wordt door onderlinge afhankelijkheden op alle bestuursniveaus. Het is bij noodzaak een publiek-private aangelegenheid die wordt beïnvloed door mondiale economische, (geo)politieke en technologische ontwikkelingen die besluitvormings-processen verder bemoeilijken door meer onzekerheid toe te voegen aan reeds zeer onzekere toekomstvisies. Governance wordt ook beperkt door kortetermijnoverwegingen van degenen die aan de macht zijn, waarbij vaak de economie wint van de langetermijnvoordelen van duurzaamheid. De conclusies benadrukken het belang van een duidelijke beleidsvisie en doelstellingen met heldere paden om ze te bereiken. Macht en onzekerheid circuleren door MLG en kunnen de motor laten draaien of blokkeren. Samenwerking van alle bestuursniveaus is noodzakelijk om de motor draaiende te houden. Gebrek aan participatie van een van de belanghebbenden zal een negatief effect hebben op alle lagen van het bestuur. De havengemeenschap moet worden opgenomen in klimaat- en energiegovernance op grond van de daar beschikbare expertise die beleidsmakers nodig hebben, maar de haven is ook afhankelijk van overheden voor het bieden van beleid. Het Havenbedrijf Rotterdam moet proberen een katalysator te zijn voor duurzame ontwikkelingen in het havengebied.

De waarde van MLG als theorie ligt in het aantonen dat de autoriteit van een nationale overheid over meerdere niveaus kan worden uitgerekt, maar paradoxaal genoeg ook intact blijft. De kracht van MLG als theoretisch kader ligt in het blootleggen van de uitdagingen van complexe bestuursprocessen zoals klimaat- en energiegovernance. Haar zwakte ligt in de buitengewoon algemene en overkoepelende aard ervan, die het moeilijk maakt om te spreken in termen van causaliteit.

RELEVANTIE

Dit proefschrift laat zien dat MLG goed toepasbaar is in de praktijk. Bij *wicked problems* zoals klimaatverandering wint de korte termijn het vaak van langetermijnoverwegingen. Macht en onzekerheid zijn daarom cruciaal voor de governance van klimaat- en energiebeleid. De structurele analyse waarom MLG bekend staat, kan verder worden verbeterd door specifieke (h)erkenning van het samenspel tussen structuur en *agency*. Ik heb betoogd dat, gezien EU-governance *bounded* is, duurzaamheid een centrale aanname moet zijn van energiebeleid in plaats van een doel.

De casussen geven een duidelijk beeld van wat EU-governance betekent voor de positie van de havenautoriteit tegenover andere actoren, met name overheden. Het Havenbedrijf Rotterdam heeft ook aanbevelingen ontvangen op basis van de case study-analyse. Deze aanbevelingen zullen hopelijk bijdragen aan de *orgware* van de haven - en niet zozeer aan de *techware* - om de inspanningen van het Havenbedrijf Rotterdam om haar doelen op EU-niveau te bereiken bevorderen.

Podsumowanie

WPROWADZENIE

Jednym z najpoważniejszych problemów ludzkości w XXI wieku jest zmiana klimatu i zagrożenie, jakie stanowi ona dla stanu naszej planety i całej ludzkości. Rządy, przedsiębiorstwa, organizacje pozarządowe i eksperci na całym świecie rozważają problem i próbują znaleźć rozwiązania, które ograniczą wzrost temperatury Ziemi poprzez znalezienie i wdrożenie sposobów ograniczenia emisji gazów cieplarnianych (przede wszystkim CO_2). Ograniczony do tej pory postęp był przedmiotem wielu badań naukowych. Nasilenie problemu i trudność w znalezieniu rozwiązania sprawiają, że jest to doskonały przykład problemów o dużej skali skomplikowania, tak zwany (super) *wicked problem*. Brak łatwego testu na potencjalne rozwiązanie i sposób dokładnego poznania wpływu zmian klimatu na społeczeństwo sprawia, że decydenci są ograniczani wyborem, jakiego muszą dokonać między krótkoterminowym zyskiem (na przykład zyskiem gospodarczym) a długofalowymi korzyściami zapobiegania zmianom klimatycznym (tzw. rozwój 'zielonej ekonomii'). Poszukiwanie logicznego rozwiązania zaczyna się od adresowania źródeł emisji: w szczególności sektora energetycznego, przemysłu, transportu i mieszkalnictwa. Sektor energetyczny był odpowiedzialny za ponad dwie trzecie emisji gazów cieplarnianych w 2010 r. Sensowne jest poszukiwanie wspólnych działań, zajmujących się zmianą klimatu i energią (produkcja i wykorzystanie) jako różnymi obliczami tego samego zagadnienia. W praktyce wydaje się jednak, że koordynacja polityk klimatycznych i energetycznych nie jest tak łatwa. W tej rozprawie wykorzystano teorię zarządzania wielopoziomowego (Multi-level Governance — MLG), aby uzyskać wgląd w to, w jaki sposób starania UE dotyczące polityki klimatycznej i energetycznej wpływają na wszystkie poziomy zarządzania, w tym na podmioty z sektora społecznego i prywatnego. Oczekuje się, że podmioty niepaństwowe tworzą współzależności na poziomie międzynarodowym, co wymaga koordynacji ponad poziomem krajowym. Bo wiadomo, że rozwiązań nie można zapewnić wyłącznie na poziomie krajowym. Innym oczekiwaniem jest wzmocnienie pozycji lokalnych podmiotów ze względu na ich skuteczność w ramach koordynacji krajowej. Trzecie oczekiwanie polega na tym, że wzajemne powiązania między podmiotami prywatnymi i publicznymi prowadzą do daleko idącej niwelacji różnic pomiędzy kompetencjami państwa i społeczeństwa.

STUDIUM PRZYPADKU

Zarząd Portu w Rotterdamie jest jednym z wielu podmiotów, które usiłują złagodzić zmiany klimatyczne. UE i rządy jej państw członkowskich potrzebują portów i przemysłu, aby zrealizować cele energetyczne i klimatyczne. Możliwości redukcji gazów cieplarnianych na obszarze portu w Rotterdamie są ogromne, a ze względu na duży udział tego regionu w całości holenderskiej emisji, wysiłki zmierzające właśnie do obniżenia emisji gazów w porcie odgrywają ważną rolę w holenderskich usiłowaniach łagodzenia zmiany klimatu. Jako główne studium zagadnienia wybrano Rotterdam Energy Port, w ramach którego zidentyfikowano dwie niezależne od siebie, choć uzupełniające się, przypadki: CCS (wychwytywanie i składowanie dwutlenku węgla) i LNG (ciekły gaz ziemny na małą skalę). Zastosowane w tym doktoracie rozważania opierają się na retrodukcyjnym podejściu, przyjmując teoretyczne założenia badawcze i udoskonalając je za pomocą danych empirycznych. Podejście badawcze charakteryzuje się głęboką analizą jakościową mechanizmów zarządzania z wykorzystaniem szczegółowych opisów, w dużej mierze opartych na wywiadach eksperckich.

PYTANIE BADAWCZE

Doktorat ten stawia następujące pytanie:

> *W jaki sposób starania Unii Europejskiej dotyczące kwestii klimatycznych i energetycznych wpływają na autonomię społeczności portowej w Rotterdamie i jaką rolę władze portowe odgrywają w zarządzaniu tą społecznością, w celu osiągnięcia pożądanej przez siebie polityki klimatycznej i energetycznej?*

Celem niniejszego doktoratu jest wyjaśnienie, w jaki sposób decyzje podejmowane na poziomie UE mogą wpłynąć na politykę wewnętrzną portu w Rotterdamie a zatem w jaki sposób podmioty funkcjonujące w porcie mogłyby zorganizować swój ‘lobbying’ mający zapewnić im pożądane działania polityczne na ich korzyść. Zrozumienie wpływu realnej polityki UE może pomóc w usprawnieniu zarządzania i ułatwić efektywność wyborów strategicznych. Ponieważ zarządzanie jest grą interesów i priorytetów, to właśnie użycie odpowiednich narzędzi perswazji może mieć ogromny wpływ na stworzenie właściwego wizerunku pomagającego w realizacji tychże wyborów. Rozprawa podzielona jest na osiem rozdziałów, z których najważniejsze to: rozdział czwarty zawierający analizę polityki zarządzania klimatem i energią w Unii i w Holandii, rozdział piąty i szósty skupiający się na analizie wybranych przykładów CCS i LNG, rozdział siódmy dokonuje ich porównania, a rozdział ósmy jest podsumowaniem całości rozprawy.

EFEKTY BADAŃ

Sprawa CCS pokazuje sytuację, w której koordynacja na poziomie UE ujawniła jasność problemu wszystkim zainteresowanym stronom. Mianowicie, niezależnie od faktu że strony zgadzają się co do niezbędności CCS, okazuje się że niezbędny poziom porozumienia w celu rozwiązania związanego z CCS problemem jest niewystarczający. Początkowo skutecznej koordynacji regionalnej grozi jednak unieważnienie przez nieprzewidziane skutki koordynacji międzynarodowej. UE udało się wprowadzić dyrektywę w sprawie CCS, chociaż jej wdrożenie leży w rękach rządów krajowych. Ważnym odkryciem było to, że same rządy krajowe pobudzały koordynację ponadnarodową, w przeciwieństwie do innych podmiotów. Podczas gdy współpraca publiczno-prywatna jest konieczna, to jednak nie nastąpiła przewidywana daleko idąca niwelacja kompetencji publicznych i prywatnych. Jednak zwiększenie przez Komisję Europejską delikatnych prób koordynacji CCS pozwala na większą publiczno-prywatną współpracę na poziomie krajowym po to, aby podnieść skuteczność korzystnych rozwiązań na poziomie europejskim. Zarząd Portu w Rotterdamie zadziałał jako pośrednik według sobie przynależnej roli, próbując zjednoczyć podmioty na różnych poziomach zarządzania. Drugim odkryciem było jak bardzo dążenie do władzy i jednoczesne zagubienie pozbawiają to zagadnienie niezbędnej neutralności, poprzez jej upolitycznienie. To prowadzi do wniosku, że wielopoziomowe sprawowanie rządów pomaga rozwiązywać problemy związane z rolą CCS w europejskiej polityce klimatycznej i energetycznej.

Sprawa LNG pokazuje, w sposób jeszcze bardziej jednoznaczny, że państwo narodowe pozostaje w centrum sprawowania rządów, chociaż jego pozycja nie jest autonomicznym organem decyzyjnym. Transgraniczny charakter transportu śródlądowego i wymagane zmiany systemowe w zakresie wdrażania LNG wymagają koordynacji na szczeblu UE. To jest gwarantem zapewnienia potężnej zachęty dla władz regionalnych do podjęcia wyzwania. Sprawa ta pokazała również, że mechanizmy rynkowe ukierunkowane na rozwój stymulują koordynację ponadnarodową, a podmioty peryferyjne zostaną przez to wzmocnione, pod warunkiem że zaistnieję odpowiedni kontekst instytucjonalny. Kompleksowa dynamika dotycząca podmiotów wielopoziomowego sprawowania rządów wzmacnia wzajemne zależności, dodatkowo podkreślając płynność granic między państwem a społeczeństwem. Przy czym nie konstatuję się niwelacji różnic pomiędzy ich kompetencjami. Ten przypadek wykazał podobne wtórne ustalenia w sprawie CCS, i pokazał wpływ jaki władza w znaczeniu obiektywnym może mieć na wyniki zarządzania. Niepewność związana z ryzykiem regulacyjnym, korzyściami ekonomicznymi i postępem technicznym utrudnia dodatkowo proces podejmowania decyzji.

KONKLUZJE

W mojej pracy doktorskiej próbowałam udowodnić, że wielopoziomowe sprawowanie rządów UE w zakresie przeciwdziałania zmianom klimatycznym ma charakter ponadnarodowy, policentryczny, ograniczony (*bounded*) i charakteryzuje się współzależnością na wszystkich szczeblach zarządzania. Zachodzi zatem konieczność aby traktować to zagadnienie jako sprawę publiczno-prywatną. Chociaż wpływ globalnego rozwoju ekonomicznego, (geo) politycznego i technologicznego, poprzez swoją złożoność, dodatkowo komplikuje procesy decyzyjne i nie prowadzi w linii prostej do jednoznacznej wizji przyszłości. Zarządzanie tym aspektem jest silnie ograniczone krótkoterminowymi planami sprawującymi władzę, często wybierającymi korzyści ekonomiczne w przeciwieństwie do długoterminowych korzyści płynących z rozwoju 'zielonej ekonomii'. W konkluzjach podkreślono duże znaczenie jednoznaczności wizji rozwojowej, w tym jednoznaczności celów i metod osiągania założonych zamierzeń. Wspomniana już władza, w sensie obiektywnym, i związana z nią niepewność wyborów na różnych poziomach mają zatem największy wpływ na zarządzanie. Współpraca na wszystkich poziomach jest niezbędna dla utrzymania pożądanego rozwoju 'zielonej ekonomii'. Brak uczestnictwa ze strony któregokolwiek z filarów rozwoju wpływa niewątpliwie negatywnie na wszystkie poziomy zarządzania. Społeczność portowa musi być systematycznie włączana do zarządzania klimatem i energią ze względu na posiadaną wiedzę specjalistyczną, której brakuje często decydentom politycznym. Strategia portu pozostaje jednak mimo wszystko w dużej mierze zależna od polityki krajowej i międzynarodowej. Zarząd portu w Rotterdamie powinien starać się być katalizatorem rozwoju 'zielonej ekonomii' na terenie portu.

Wartość teorii MLG polega na wykazaniu, że autorytet rządu narodowego operuje na wielu poziomach, pozostając paradoksalnie koncentryczny. Siła MLG jako teorii polega na odkryciu wyzwań złożonych procesów zarządzania, takich jak zarządzanie klimatem i energią. Słabość natomiast jest niezwykle ogólnej naturze tejże teorii, co sprawia, że trudno jest w niej operować kategorią przyczynowości.

ZASTOSOWANIE

W moim doktoracie wykazałam, że teoria MLG ma wysokie zastosowanie do analizy praktycznych przypadków. W problemach o dużej skali skomplikowania (*wicked problems*), takich jak zmiany klimatyczne, często zwyciężają względy krótkoterminowe. Dążenie do władzy i jednoczesne zagubienie mają zatem kluczowe znaczenie dla zarządzania polityką klimatyczną i energetyczną. MLG, sprzyjająco się analizą *struktury* zarządzania, może być ulepszona dzięki specyficznemu rozpoznaniu wzajemnej zależności pomiędzy własną strukturą a sposobem zarządzania nią (*agency*). Przekonywałam, iż uznając, że zarządzanie UE ma charakter ograniczony, rozwój 'zielonej ekonomii' powinien stać się podstawowym aksjomatem strategii polityki energetycznej, a nie jej celem.

Przytoczone przeze mnie w studium przypadku zagadnienia, dają jasny obraz konsekwencji wpływu jakie zarządzanie w ramach UE ma na pozycję portu w Rotterdamie i jego stosunku do innych podmiotów. Moje studium zagadnienia zawiera wiele praktycznych porad dla portu w Rotterdamie. Pozostaje mi zatem mieć nadzieję, że porady te przyczynią się do stworzenia lepszej strategii organizacji portu w celu zwiększenia efektywności wysiłków zmierzających do zadawalającego dialogu w ramach Unii Europejskiej.

About the author

Natalie (Natalya) Alexandra Maria Rijk (1988) studied Public Administration at the Erasmus University in Rotterdam (BSc. 2009). In 2010 she obtained her Master's Degree in International Public Management and Policy, writing a thesis on the role of national parliaments in issues of subsidiarity and legitimacy at EU level. After graduation she worked as a tutor in the public administration bachelor programme and as a junior researcher. Her interests focused on energy policies and the EU's efforts to speak with one voice in international negotiations.

In 2013, Natalya started her PhD research at the department of Public Administration of Erasmus University Rotterdam. Her research was partly funded by Erasmus SmartPort and the Port of Rotterdam Authority. She was also stationed at the Port of Rotterdam Authority for two days a week for the duration of the research activities in order to be able to carry out participatory observation. During her time at the port authority she worked on the LNG Masterplan, providing stakeholder analyses and working on deliverables for the project. She also attended the Clingendael Energy Training days as a port authority representative in 2013. During her time as a PhD student, Natalya completed the training programme at the Netherlands Institute of Government (NIG). She also attended a summer school on Interest Group Politics organised by the European Consortium for Political Research (ECPR). Natalya was invited to present her research at several conferences, including the International Conference on Public Policy (ICPP) and the European Union in International Affairs (EUIA) Conference. She is also a member of the NIG Research Colloquium on Energy and Climate Governance.

As of August 2016, Natalya works as project developer Smart Energy & Industry at SmartPort, where she tries to bridge the gap between business and academia, focusing on delivering academic knowledge upon which companies can base their strategic decisions.

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