



**Knowledge network for System Innovations
and transitions (www.ksinetwork.nl)**

Transformative Change towards sustainability

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Context



Persistent problems

- our society faces a number of persistent problems
- unsustainability is the symptom of the persistence of these problems
- many examples: climate change, energy supply, water problem, mobility problem, agriculture, health care
- persistence is due to system failures and requires a system break and system shift: transition



Transition

fundamental change of structure, culture and practices in societal (sub)system

- **structure:** physical infrastructure, economic infrastructure (market, consumption, production), institutions (rules, regulations, collective actors)
- **culture:** collective set of values, norms, perspective (shared orientation), paradigm (defining problems and solutions)
- **practices:** routines, behaviour, ways of handling, implementation at the individual level

incumbent structure, culture and practices are broken down, which requires time to overcome resistance



Why do transitions often fail?

game, rules and players

transition requires a new structure, culture and practices

transition requires new rules, new players and new game

dominant players have too many interests to defend and don't want to change the rules drastically

only new players can 'break open' the game and change the rules

more, different, better



Examples of transitions

- from coal energy supply to gas energy supply
- from extensive to intensive agriculture
- from an industrial - to service - to knowledge economy
- from fossil fuel based energy supply to renewable energy supply

(see: www.energietransitie.nl)



Sustainability as orientation

sustainability serves as guiding orientation for transition

sustainable development is a socially and scientifically
contested notion: *no unique definition and approach*

approach

organize reflexive search and learning process with
stakeholders [frontrunners] to assess what sustainability
is in a particular context



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Dynamics of transitions



Transformative Change

sweeping change

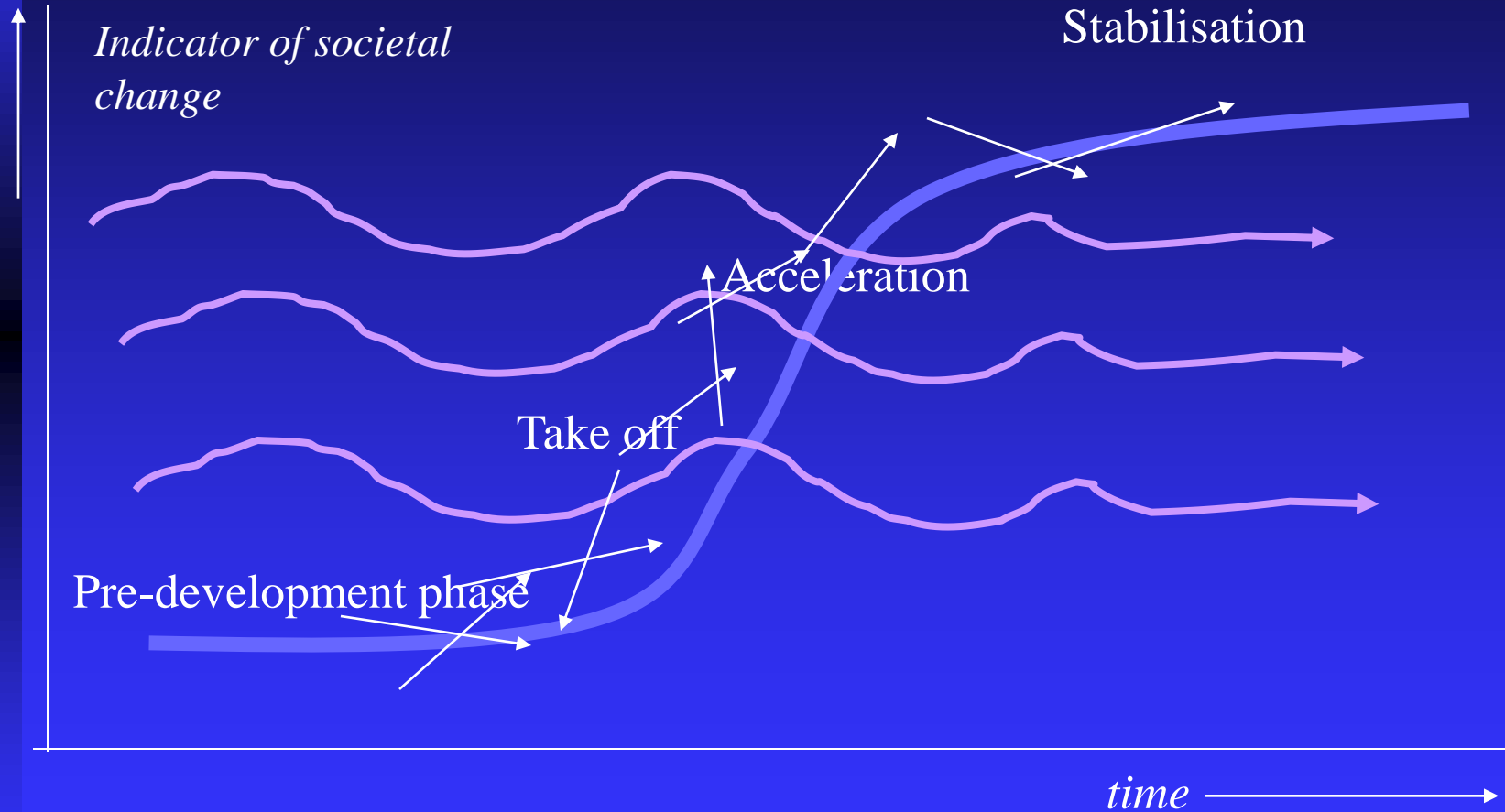
describes the dynamics of transitions in time as a sequence of *alternating* phases of relatively *fast* and *slow* dynamics, which together forms a strongly non-linear pattern, with a shift from one dynamic state of *equilibrium* to the other

creeping change

Multiple Phases

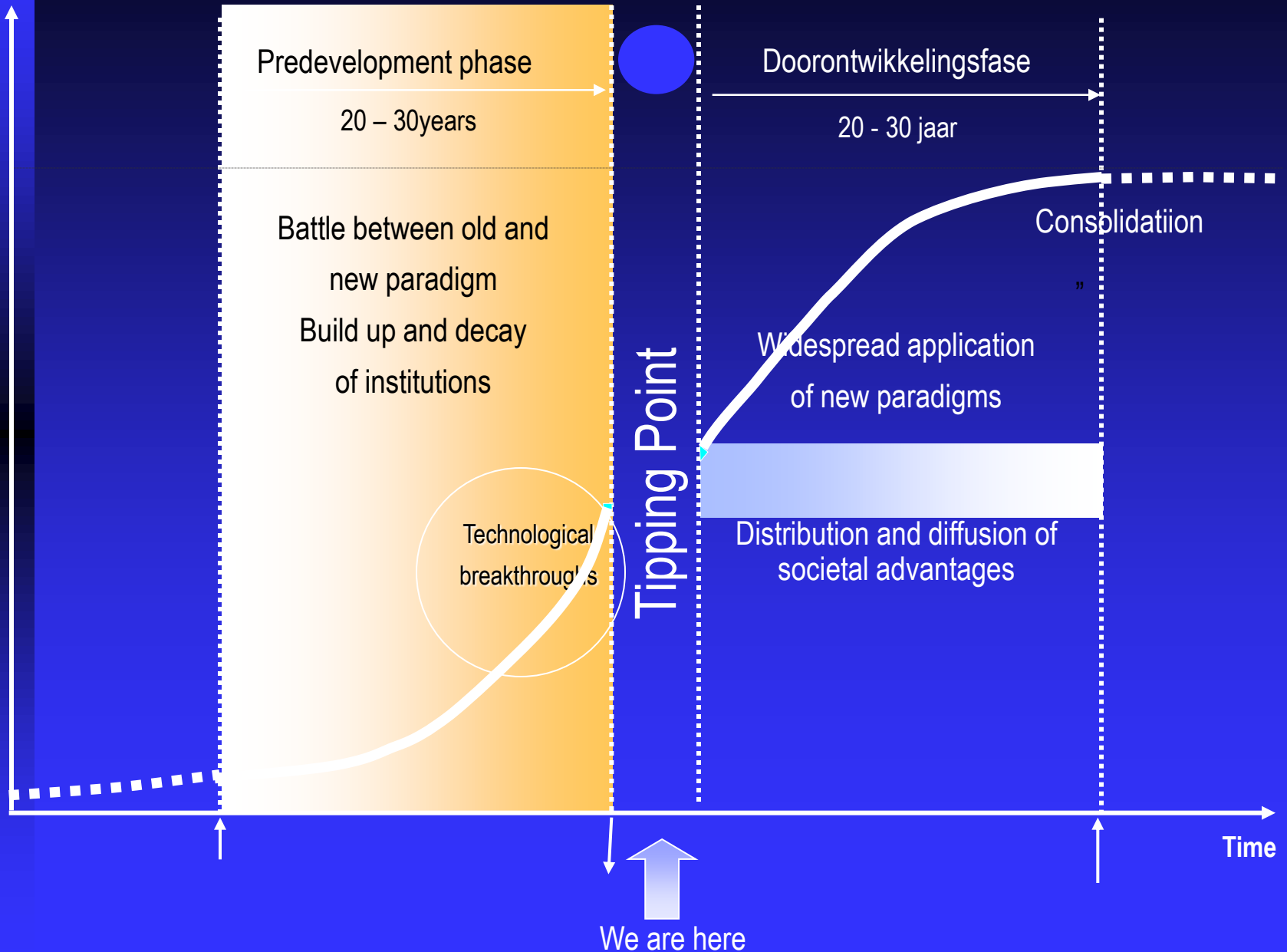


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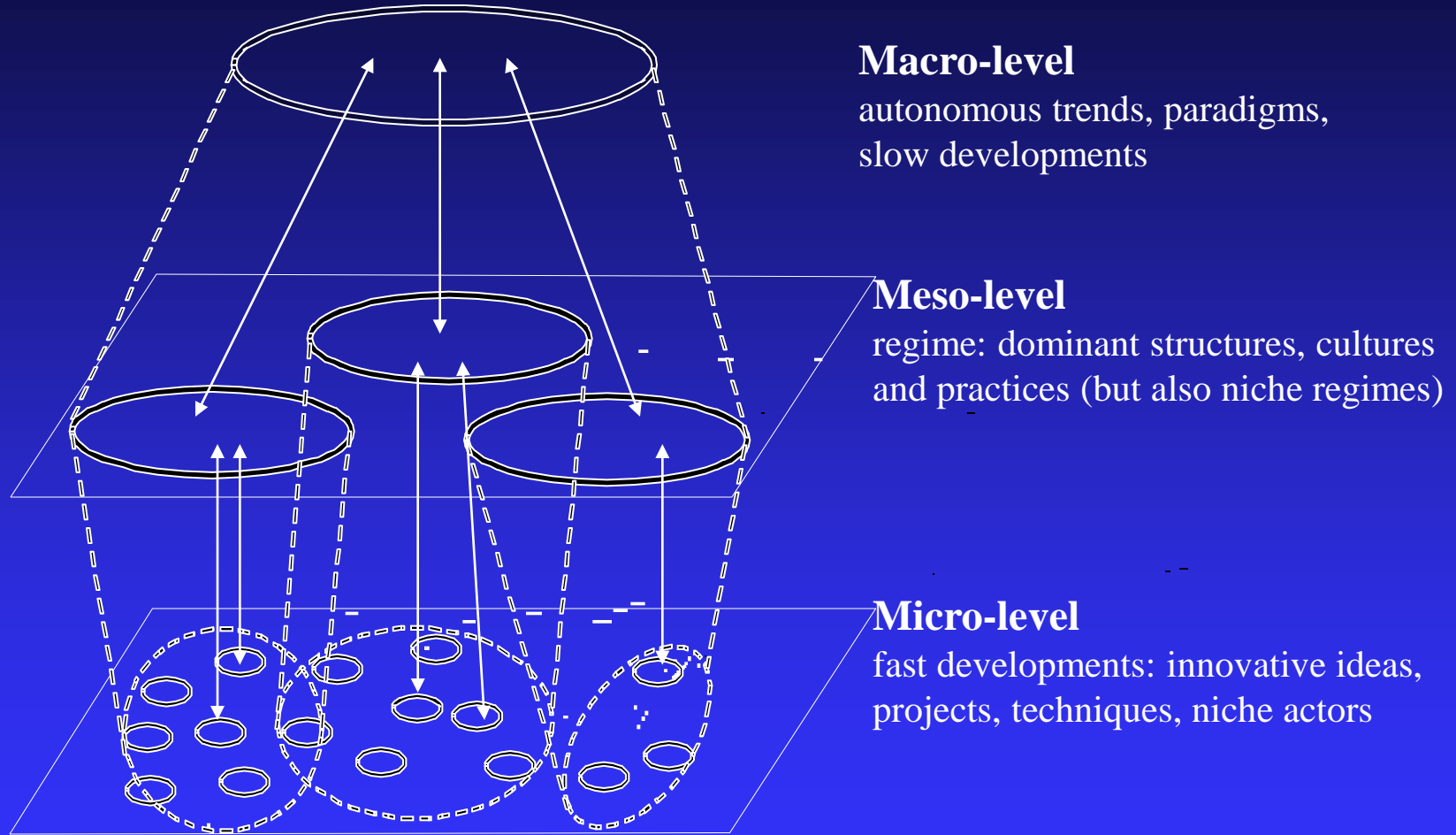




Breakthrough to sustainable economy & society



Multiple Levels



Multiple Patterns

Transformative Change arises from

small, emerging changes at the micro-level

bottom-up Creeping

induced changes at the meso-level

in between

a massive, fast change at the macro-level

top-down Big Bang





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Transition Governance



Transition management concept

rooted in

complex systems thinking

new forms of governance



Managing complex systems

insights

- command and control management is useless
forced steering is counterproductive
- longer term goals need to be flexible and adjustable
- a combination of top-down & bottom-up might work
- creating space for entrepreneurs is crucial

adaptive and anticipatory management



New forms of governance

insights

- interactive network approach
- pluralistic approach
 - value- and perspective based*
- multi-level approach
- learning is important
 - uncertainty and complexity*

no central actor in charge, multiple actors steering



Transition governance

rules of thumb

- long-term thinking as the basis for short term policy
- think in terms of multiple domains (multi-domain), different actors (multi-actor), different levels (multi-level)
- learning as an important aim for policy ('learning-by-doing' and 'doing-by-learning')
- orient policy towards system innovation besides system improvement
- keeping options open (wide playing field)



Can we manage transitions?

No

we cannot command and control transitions
too many uncertainties and surprises

Yes

we can influence transitions
direction and pace of transitions



Transition approach

core

- acknowledge that there is a persistent problem
shared problem perception
- the solution does not exist
large-scale definitive choice is too risky
- transform problem into visionary challenge
multiple futures with multiple pathways and options
- start portfolio of experimenting into the same direction
postpone choices till enough has been learned

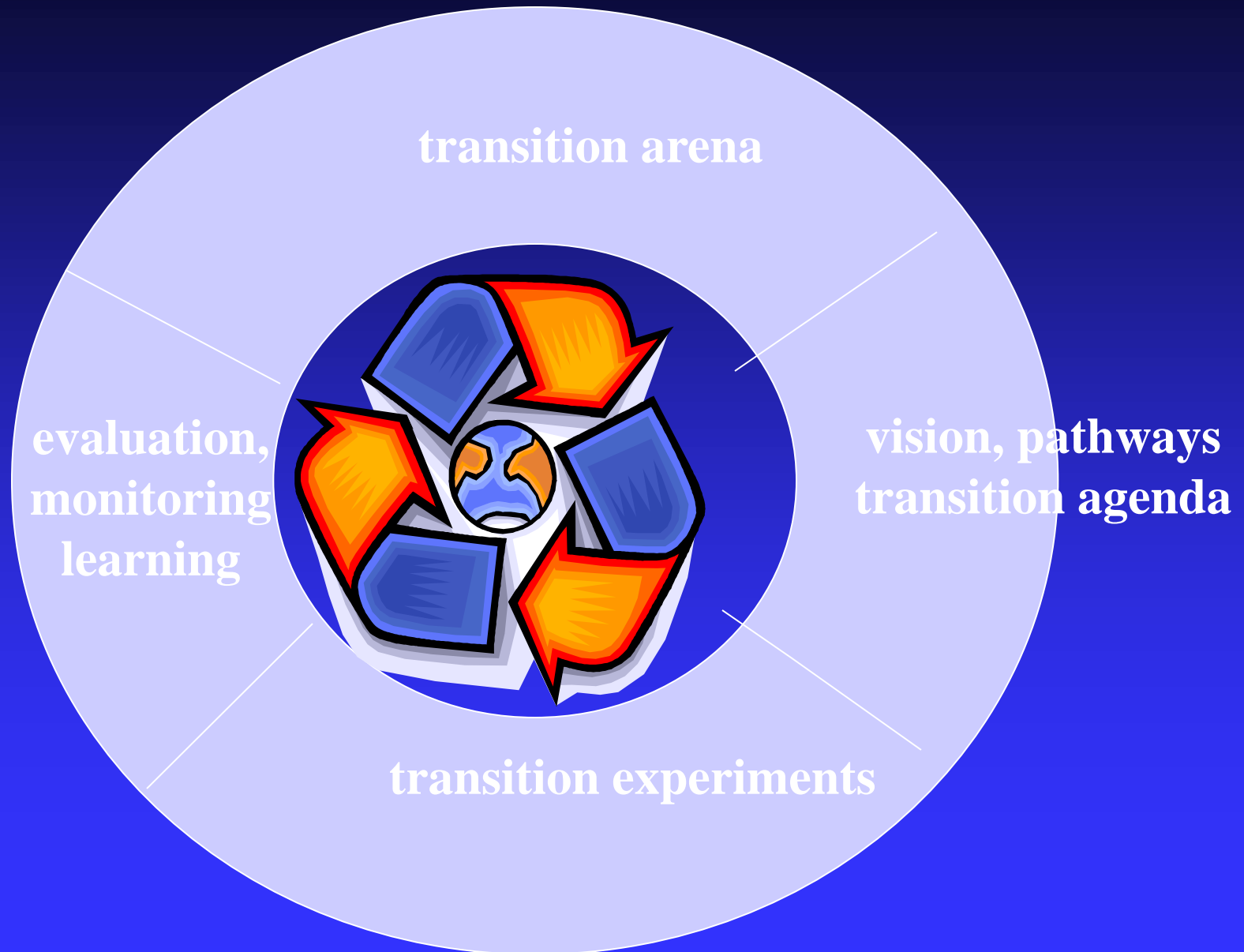


Transition approach

principles

- put energy in frontrunners and not in peloton
- bring frontrunners together in protected spaces
- develop a long-term sustainability vision + pathways
- start with portfolio of transition experiments
- create new coalitions around pathways & experiments

Transition approach cycle





Transition approach

- identifying frontrunners [movers and shakers]
- establishing transition arenas [protected spaces]
- formulating a joint, long-term strategic agenda
- designing small-scale transition experiments
- scaling up most successful experiments
- forming new coalitions/networks around experiments

searching, learning and experimenting



Transition experiment

	<i>Innovation experiment</i>	<i>Transition experiment</i>
Starting point	making innovation market ripe	societal challenge
Characteristic of problem	certain and a priori determined	uncertain and complex
Perspective	short- and medium term	long-term
Goal	innovation	sustainable system innovation
Method	testing, demonstrating	exploring, searching, learning
Learning	1 ^e orde, technical learning	2 ^e orde, social learning
Actors	researchers / engineers	societal complete alliance
Management context	innovation project management	transition management



Transition experiments

societal experiments with high risks (chance of failure)
and a high potential to contribute to a transition process

how to manage portfolio of transition experiments?

- *deepening* [learn as much as possible from an experiment]
- *broadening* [repeating an experiment in a different context]
- *scaling up* [anchoring of an experiment in the regime]



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Examples



Transition Experiments

- energy delivering greenhouse
- rush hour avoidance
- floating pavilion
- CCS close to residential area
- sustainable roofs
- people movers



Transition Experiments

- agro-industry parks
- electric cars
- local energy cooperations
- climate-neutral districts / streets
- climate-deltatechology campus
- neighbourhood care

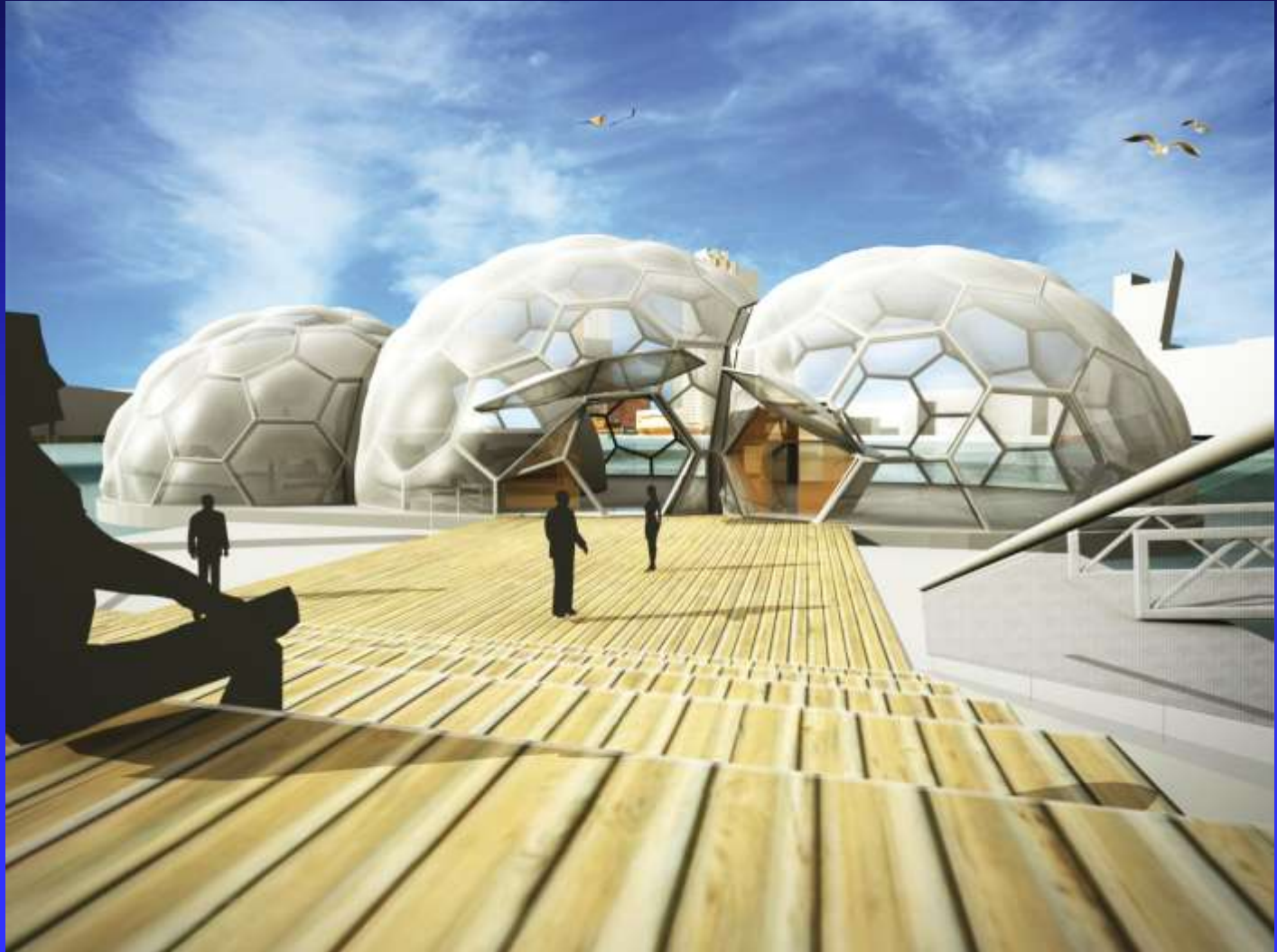


Transition Experiments

a transition experiment is a success if:

- it is scaled up at a higher level
- it is replicated and claimed by many stakeholders
- new coalitions arise around an experiment
- much can be learned from its failure

Floating Pavilion

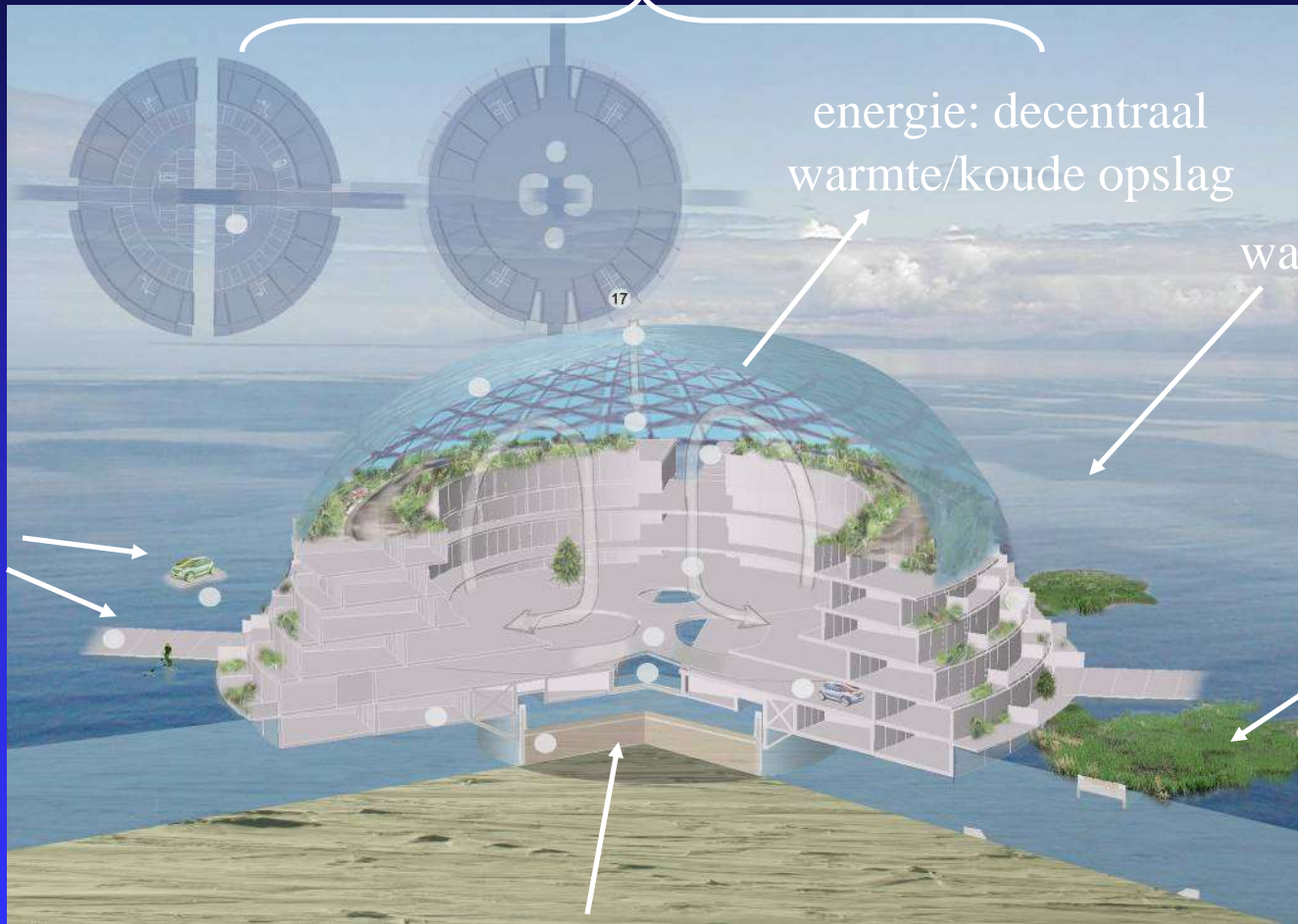


Floating City



Floating City

Woon/werk-units



energie: decentraal
warmte/koude opslag

waterrecreatie

ecologie:
wetlands

technologie: drijvende fundering

Dutch Research Institute For Transitions



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mobilititeit:
drijvende
sneeuw,
water, taxi

Ontwikkeland Denken naar Transitie

Dak Transitie

zwart
gras

Weg Transitie

groen
asfalt



Ongoing transition processes

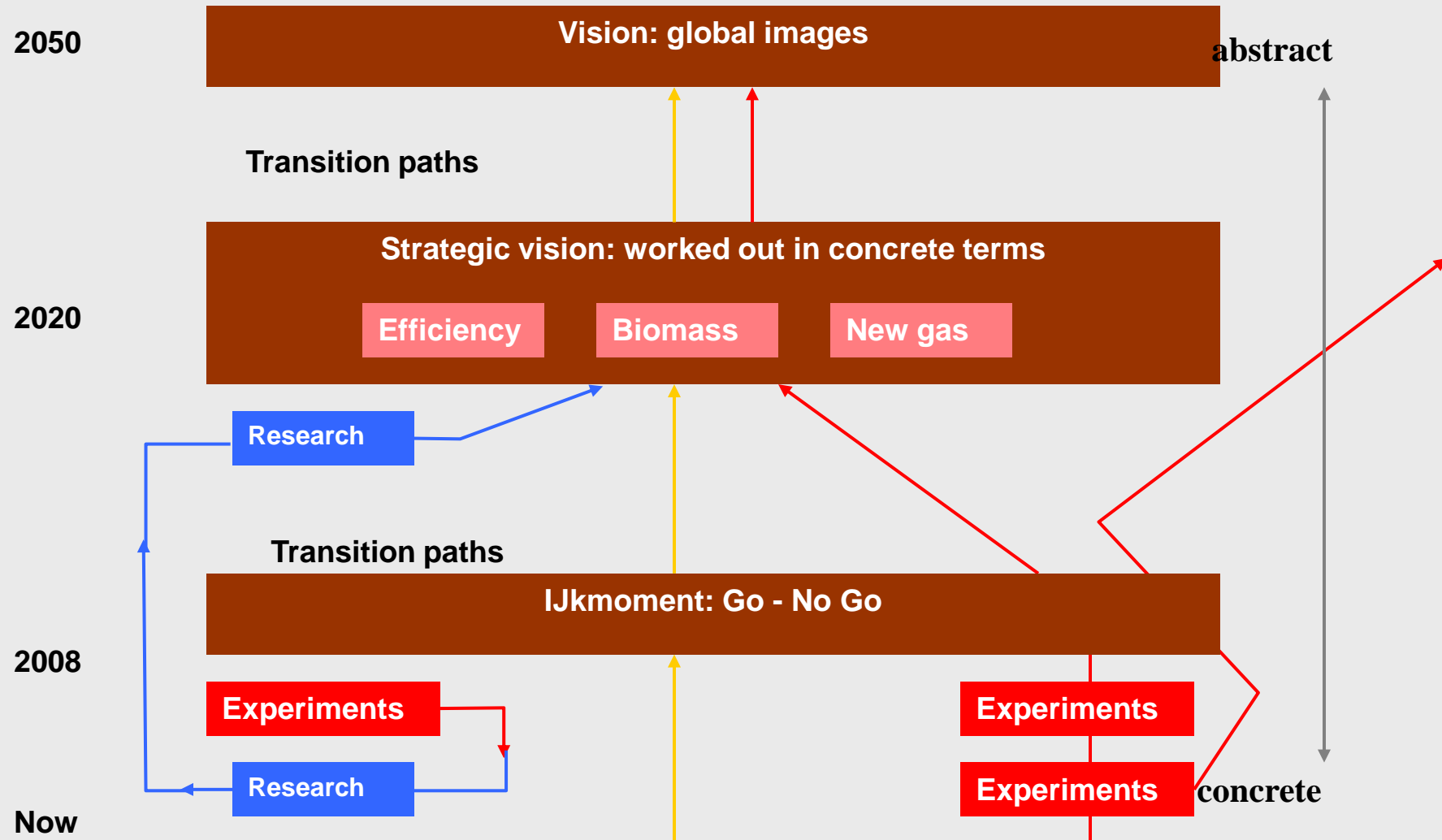
- six Dutch ministries have official transition policy
 - Water transition
 - Energy transition
 - Construction sector transition
 - Mobility transition
 - Biodiversity transition
 - Health care transition
- regional governments experiment with transition policy
 - Provinces Zeeland, Flevoland, North-Holland
 - Regions such as Zuidvleugel, Texel, Haarlemmermeer, Twente
 - Cities such as Almere, Rotterdam



Energy transition

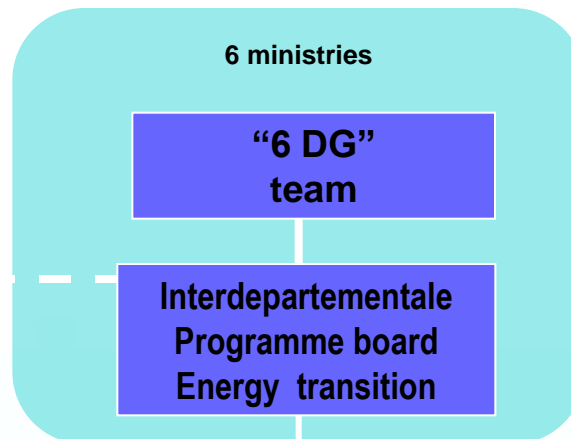
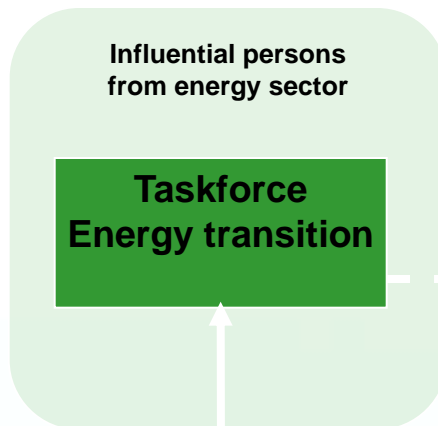
- in 2001 initiated by the ministry of Economic Affairs (EZ)
- started with a niche (small group of frontrunners within EZ)
evolved into a movement with companies, NGOs, knowledge institutions and individuals
- vision has been developed [‘where do we want to go?’]
- 7 main themes chosen [platforms or arenas]
- 23 transition paths formulated [‘how to go there from here?’]
- 100 transition experiments set up [‘how to implement paths?’]

Energy transition approach



Energy transition

1
Long-term
vision



(Ministerie van EZ)



7
Transition
themes

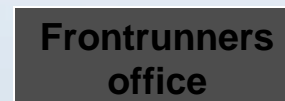
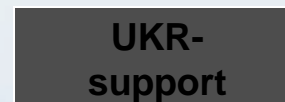


SENER NOVEM

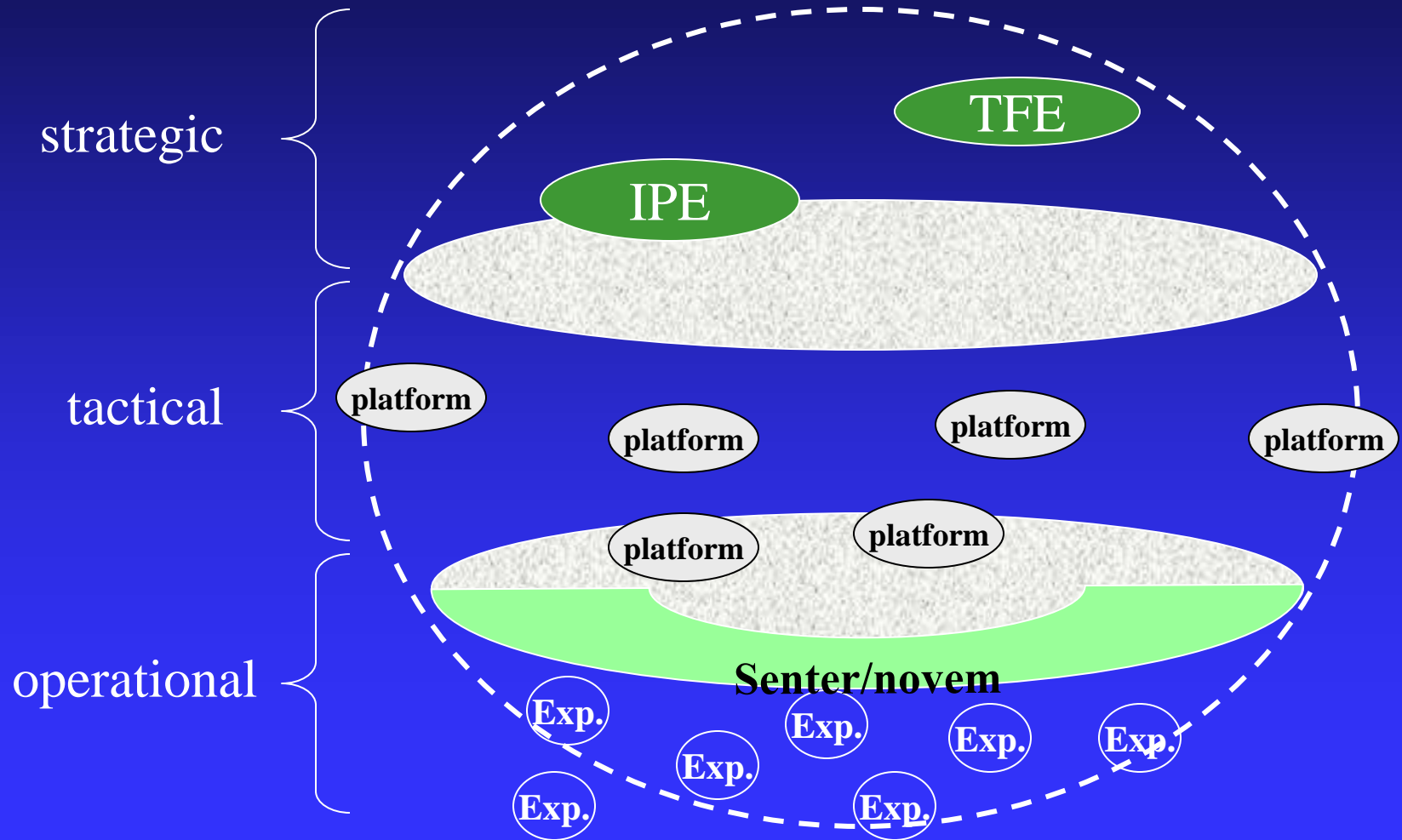


23
Transition
-pathways

100-en
Transition
experiments



Structure energy transition





What has been achieved?

- sense of urgency, high ambition level
- new discourses, agenda of reform, breakthrough projects
- broad movement with 1000 people involved
- high amount of time, manpower, energy put into process



Shadow side

- process under threat of being institutionalized
- still more regime players involved than niche players
[Shell, Nuon, VW, Eneco]
- evolves into a practical execution process rather than searching, learning and experimenting



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Roles of actors



Role of government

nót in a directing role

but

- a facilitating, enabling, stimulating role
- still an active but different role
 - formulating vision and high ambition level
 - creating space for frontrunners
 - stimulating and enabling transition experiments
 - removing barriers for sustainable innovation



Role of intermediaries

- co-designing role
 - co-develop transition instruments
 - initiating transition experiments
- monitoring role
 - monitoring progress of transition process
 - evaluating transition experiments



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Lessons Learned



Successes and Failures

Successes

energy transition

health care transition

real breakthrough still to be realized

Failures

mobility transition

biodiversity transition



Lessons

- the regime always strikes back
- the first period is relatively easy, thereafter arise winners and losers
- natural tendency of the government to fall back in the command-and-control mode
- space for frontrunners is of crucial importance [financial, organizational, juridical, mental space]



International Context

- in Belgium two transition processes are running
 - sustainable housing, sustainable energy & materials
- in Finland transition programme for health care
- in other European countries growing interest
- in Australia city transition programme
 - Melbourne, Sydney, Brisbane, Cairns
- in Japan experiments with transition policy



Insights, no Answers

- transition approach is promising new governance mode
- principles underlying transition approach are universal but the application is context-specific
- no evidence yet that it works but the results so far are promising and stimulating
- traditional governance approaches do not seem appropriate for transitions required