Chapter 8 Cross case analysis

8.1 Design of the cross case analysis

A relatively simple theoretical framework was presented in Chapter 1: the *network* of organizations induced certain *perceptions* in the companies about sustainability, which in turn influenced the company's *strategy* (repeated in Figure 8.1). Based on these sensitizing concepts, a massive amount of data was collected: about 900 pages of interviews plus half a cubic metre of additional documents, such as year reports, trade magazines and secondary analyses. The data were condensed into a chapter on the history of the sector (Chapter 3), and four separate case descriptions (Chapters 4 to 7). In Chapter 8, these outcomes will be used to check the hypothesized relations in the theoretical framework, and to expand the model.

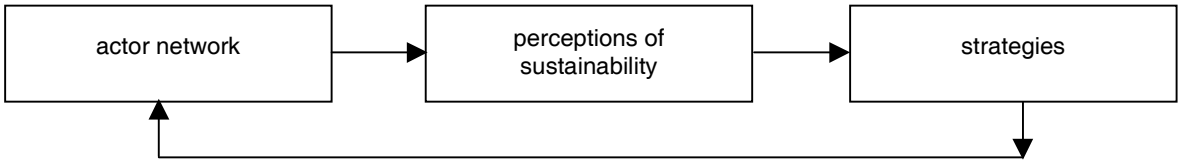
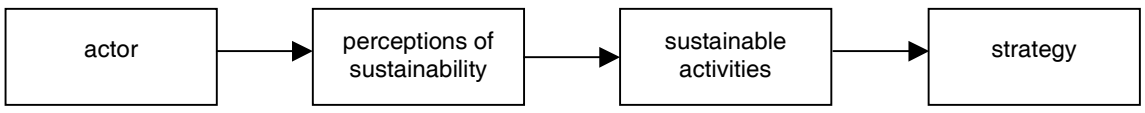


Figure 8.1: Conceptual model of data collection.

In the following sections we'll work through the model from left to right, based on four questions. Three of these questions are straightforward:

- Does the network of actors around water companies influence their perceptions of sustainability? (Section 8.2)
- Do the perceptions of sustainability influence the strategies of these companies? (Section 8.3)
- Do the strategies lead to adaptation of the networks around the companies? (Section 8.4)

In the conceptual model the operational outcomes were assumed to be part of the strategy, as strategy was defined as a 'theory in use' (see Section 1.5). In the data, however, the strategy and the operations were clearly separate domains, and they were analysed separately in the case descriptions. If operations had been mentioned in the conceptual model in Chapter 1, it would have looked like this:



Therefore, our fourth research question is:

- Do strategies lead to sustainable operations? (Section 8.5)

Based on the findings a new theoretical model will be built. It is presented and explained in Section 8.6.

8.2 Does the network influence perceptions of sustainability?

If a network influences the perceptions of sustainability, we'd expect different types of networks to lead to different views at the companies. The respondents from the water companies should confirm that they are indeed influenced by these actors in the domain of sustainability. Furthermore, the pattern of views of a network should match the views at a water company.

8.2.1 Which societal actors are involved in the networks?

The case descriptions made clear that the four water companies have quite different views of sustainability. If the networks explain this, the networks would have to be quite different as well. What do the networks of these companies look like, and do they influence the companies at all? An overview of external actors is shown in Table 8.1. In this table, the actors are put in order of importance for the company's strategy. The position of several external actors is rather constant across all cases, such as the strong position of provincial governments, EU and two Dutch Ministries. Most interesting for the research question are the actors who have different positions for each company.

PWN's network is characterized by very influential nature organizations, and the fact that large customers are not influential at all. At WMO, water boards and farmers have more influence than at other companies. At Nuon, the EU and the Ministry of Economic Affairs have the highest position, and the provincial influence is low compared to the other companies. At Delta, the high position of industrial customers stands out, and unexpectedly for such a commercially oriented company, nature organizations do have some influence.

This means that the water companies have different sets of networks. If these differences are related to having different views on sustainability, the first relation in the conceptual model is confirmed. This will be investigated in the next sections.

*Table 8.1: Network of actors for the four companies (in **bold**: salient differences between the companies)*

	PWN	WMO	Nuon	Delta
Strong influence	Provincial government **Nature organizations** Ministry of the Environment EU and Ministry of Economic Affairs	Provincial government Ministry of the Environment EU and Ministry of Economic Affairs	**EU and Ministry of Economic Affairs** Ministry of the Environment Provincial governments	Provincial government **Large customers** EU and Ministry of Economic Affairs Ministry of the Environment
Moderate influence	Vewin / other water companies Consumers	**Water boards** Consumers Large customers **Farmers**	Vewin, Kiwa Large customers Water board (?) (Friesland)	**Nature organizations**
Little or no influence	Municipalities Water boards **Large customers** Farmers	Nature organizations Municipalities Vewin / other water companies	Municipalities Water boards (Gelderland) Consumers Nature organizations Farmers	Municipalities Consumers Water boards Vewin / other water companies Farmers

8.2.2 What is said about external influences?

One way to confirm the influence of external actors on company views would be, if respondents said there is such an influence. This is indeed the case, as is shown in Table 8.2. The type of influence is shortly stated, followed by scoring if it has been picked up by the water company or not. If there is no story about an actor, this is automatically scored as “no influence”. A process of negotiation can be recognized in this table: sometimes water companies have come to an agreement, and sometimes actors know each others position and are still involved in a hot debate (WMO and the water board). In some instances a water company decided to turn its back on an actor (Delta and the Ministry of Environment).

The table shows that each company has its own pattern of dealing with external actors. PWN has relatively few external influences, which is probably not intentional. With a few network partners PWN is very close, and they do not discuss the concept sustainability as such. WMO on the other hand has many external influences. A debate is intentionally organized and is characterized by several differences in opinion. Nuon has few external influences, it is not clear why. It seems to discuss sustainability mostly within the water sector itself. Delta also has few external influences, but this time, it is based on deliberate choices. The actors, who do have influence, also have a significant influence.

Table 8.2: Reported influence of external actors on perceptions of sustainability (+ = influence, - = no influence, ? = unclear)

	PWN		WMO		Nuon		Delta	
EU and Ministry of Economic Affairs		-		-	sustainable energy	+	sustainable energy	+
Ministry of the Environment	surface water is sustainable	+	monopoly improves sustainability	+	monopoly improves sustainability?	-	sustainability plans are not to be trusted	-
Provincial government	not discussed as such	?	mutual influence	+	sustainability is important	+	nature recovery, recharge rate	+
Municipalities		-	household water rejected	-	household water rejected	-	household water rejected	-
Large customers		-	innovation opportunities	+	innovation opportunities	+	innovation opportunities	+
Consumers	opposed views, no influence	-	not interested in sustainability	-		-		-
Farmers		-	discussion on pollution and desiccation	+		-		-
Nature organizations	not discussed as such	?	synergy?	?		-	learned to appreciate nature	+
Water boards		-	hot debate on water system	+	plan for water compensation?	?	competition	-
Vewin, Kiwa, other water companies	mutual influence	+		-	solutions for grey environment	+	left Vewin	-

Do the most influential actors from Table 8.1 also have the most influence on perceptions of sustainability in Table 8.2? This is certainly true for the Ministries and the provincial governments. Large customers and Vewin seem more important for sustainability issues than they were for strategy. Less influential actors sometimes find ways to influence a water company, especially the nature organizations and the water boards.

The information in this table confirms that external actors have an influence on perceptions of sustainability, at least in the eyes of the people involved. The table also confirms that the network relationships are highly diverse among these companies.

8.2.3 Does it show in their language?

If the companies are influenced by some network partners, maybe they also use the same terminology. The case descriptions already showed, for example, that PWN does not use the term 'strategy', and, in general, uses more 'governmental' language. The other three companies use more 'business' language. Furthermore, it seems that people in favour of liberalization/privatization use the term 'liberalization' (Delta and Nuon) and the people against use the term 'privatization' (PWN and WMO)[6]. We'll do no thorough language analysis here; we will only take a closer look at the use of the term 'sustainability'.

In all interviews the question was asked if the term sustainability was used in the respondent's organization. Table 8.3 compares the answers of the different companies and their network partners. Again, the table shows a lot of diversity among the actors. The answers are less simple than just a yes or no. There is a whole range of possible uses: sceptical, almost involuntary use, strategic use for specific occasions, using it wholeheartedly in decision making processes, using it more often than can be truthful, and hardly using it because it is thought more than obvious that activities are sustainable.

Table 8.3: Comparison of the use of the term 'sustainability' at the four case companies and at their network partners

	Used yes/no	*Opinions, feelings at water companies*	*Opinions, feelings at network partners*	*Used yes/no*	
Delta	yes, but not often	in itself a valuable concept, but it's abused for political reasons	used often, but hard to operationalise	yes	**Province of Zeeland**
			to evaluate alternatives	yes	**Industry 1**
			a fashionable word, only used in marketing	no	**Industry 2**
Nuon	corporate unit: yes	a broad and inspiring concept	it's simply very important	yes	**Province of Gelderland**
	water unit: no	a vague concept	often used to choose between alternatives	yes	**Kiwa**
			not really used, but many projects have something to do with it	no	**Vewin**
WMO	yes!	fits with the company culture, gives direction in strategic decisions	used often, maybe even too often	yes	**Province of Overijssel**
			used frequently in project design	yes	**Water board**
			challenge is in economic sectors, nature takes care of itself	no	**Nature organization**
PWN	no	the concept is good, but we don't need it	not when we talk to PWN, only for new policies	yes	**Province of Noord-Holland**
			our activities deserve the term, but we don't use it internally	no	**Nature organizations**
			used too freely	yes	**DZH**

If we look at the match between water companies and their network partners, the table clearly shows similarities. Each water company agrees with one or more network partners on the value of the term. For Delta this is Industry 2, for WMO the province as well as the water

[6] In hindsight, I gave myself away by talking about 'privatization' during the interviews. In this dissertation I chose to use 'liberalization' in the main text, because that is what the legal discussion technically is about. Quotations still contain the terms as used by the respondents. Liberalization means lifting the monopoly regime so newcomers can enter the market. Liberalization can lead to privatization: selling of publicly owned shares to private parties, but this is up to the shareholders.

board and for PWN the province and the nature organizations. For Nuon it is more complicated, because Nuon is internally divided. The corporate level matches with the provincial government, and the water unit level matches with the use at Vewin.

The actual use of the term 'sustainability' in the interviews was calculated. The word count included related terms such as 'unsustainable'. Figure 8.2 shows the frequency with which the term was used during the interviews within the companies. WMO has the highest frequency compared to the other companies. It has become a natural way of speaking, which confirms their enthusiasm for the concept. The high score of Delta is surprising because they are sceptical about the term. It may be caused by the sustainable energy debate that pervades Delta as a multi-utility company. Nuon is third among the case companies (although the difference with Delta is small). This corresponds with the remarks from the water business unit, that they do not use it very often. Maybe the corporate view is still on its way into the rest of the company, or maybe divisions operate rather independently, translating it to technological solutions without much debate. Word counts support what PWN respondents said: the word 'sustainability' is not used much at this company.

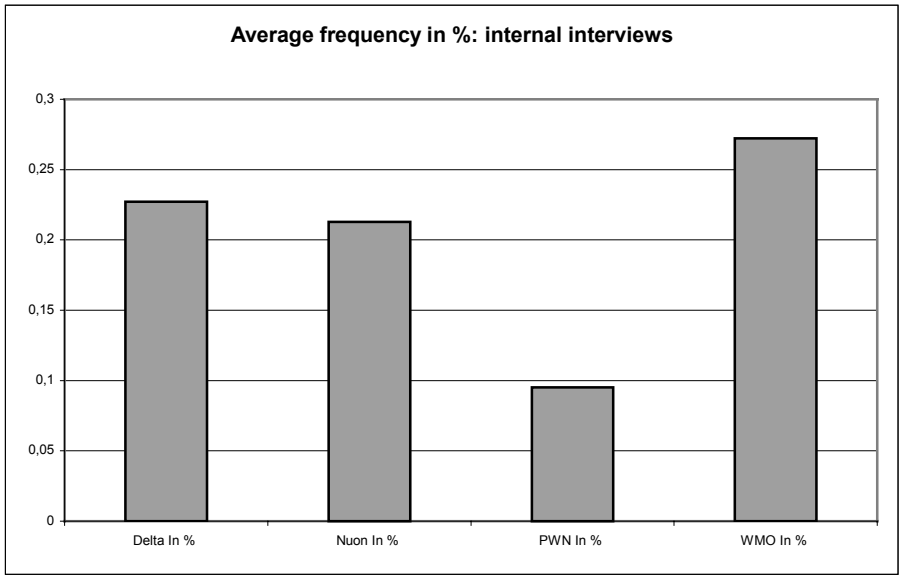


Figure 8.2: Relative frequency of the term 'sustainability', including derivatives of that term, during interviews within the case companies.

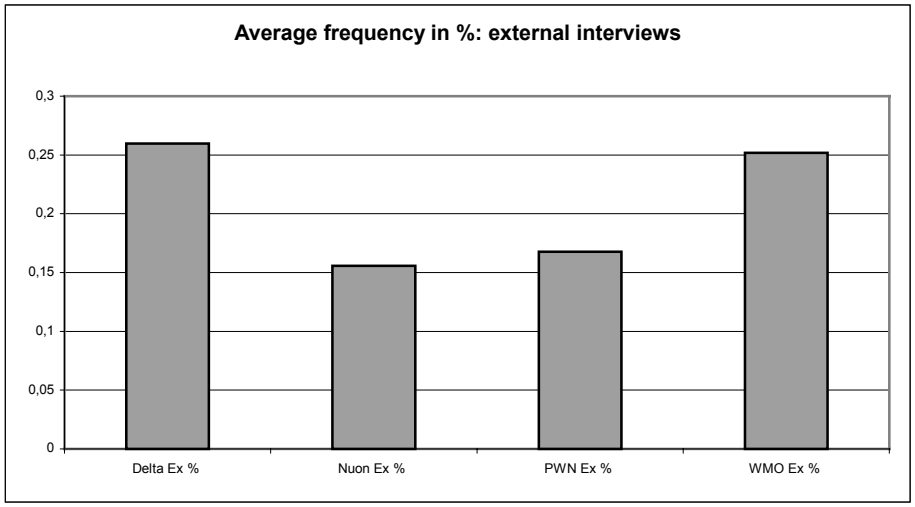


Figure 8.3: Use of the term in the networks of the four water companies.

The use of the term by the network partners was also measured (Figure 8.3). The internal and external frequencies show a similar pattern (WMO and Delta the two highest, Nuon in between and PWN low) so this reflects dialogue between the network partners. Delta's network has the highest score. This frequent use may have influenced Delta respondents to use it more often. The use within WMO is somewhat higher than in their network. This is probably due to a conscious adoption of the term by WMO, instead of an unconscious reflection of dialogue with network partners. Nuon's network has a relatively low score, so Nuon respondents use it a lot more. This indicates a positive choice to use the term, corresponding to the corporate answers. PWN's network uses the term less often than the other networks, and a little more often than PWN itself. This confirms what was said about its use by the respondents.

We conclude that there clearly are similarities in the patterns of using the term sustainability between water companies and their network partners. This is recognizable in the actual, measured use of the term, the reported use, and the explanations why the term is used or not used. This confirms that there is a dialogue going on between these organizations, and that this dialogue influences the perceptions.

8.2.4 Is it visible in their perceptions of sustainability?

A final confirmation of influence on perceptions is if company views on sustainability are similar to those of its network partners. Table 8.4 presents the internal and external perceptions of sustainability. The external views are incomplete because the data were not saturated, but they are sufficient to find out if the internal and external patterns match or not. A match does not necessarily mean that a water company agrees with a network partner: it can also consist of knowing each others position ('agree to disagree').

For PWN there is a very good match. Disagreements are absent, and the ideas added by PWN are mainly technical operationalizations. The explanation for this is that the external interviews were held at organizations with which PWN has long, close, and friendly relationships, for example, with nature organizations since 1985. PWN even has an explicit strategy to please these network partners. Maybe there is opposition against PWN, but in that case, there is little contact.

For WMO many matches are found, but these include disagreements. As we saw in Section 8.2.2, WMO talks to a wider range of external actors, which automatically makes it more difficult to come to an agreement with each one of them. Furthermore, the debates seem younger (since 1997 or less). WMO did not hesitate to suggest an interview at a water board with whom they disagreed. The items in WMO's network that do not match are about nature management. The overview shows that WMO is in the middle of a debate with network partners, providing us with a view right at the heart of this process.

The column of Nuon shows a good match with what we know of external partners (as was already stated in Chapter 2, the interviews with external respondents for Nuon were not optimal). The energy business unit of Nuon can be seen as an external partner, influencing the ideas on renewable energy rather strongly. The match is especially good for the 'grey' aspects such as waste and energy. The mismatch with external partners is in the area of 'green' aspects: nature management and desiccation.

*Table 8.4: Comparison of internal and external perceptions of sustainability (with matching interpretations in **bold**)*

PWN	*PWN's network*
balance production & nature	PROV:
long term investments	**work with natural systems, not against**
future-oriented technology	use renewable resources
prevent surface water pollution	**use sustainable energy**
reduce environmental damage	NAT:
raw materials & waste management	**reserve space for nature**
integrated quantitative approach	minimize human influence on nature
sustainable energy use	**save energy**
choice of materials	DZH:
	long term management of dunes
	save energy
	clean rivers
WMO	*WMO's network*
protect groundwater	PROV:
reduce environmental impact	Intrinsic value of nature
values of water	**societally acceptable solutions**
water system functioning	**good quality water**
quality of resources	WAT:
achievable technology and costs	**water system health**
stakeholder discussion	**values of water**
balance company and society interests	**nature oriented**
broaden concept	NAT:
can be human or nature oriented	synergy nature and economy
	sustainability is societal concept
	nature is early warning system
Nuon	*Nuon's network*
caring for environment	PROV:
minimize damage	green landscape
long term infrastructure	**groundwater is sustainable**
reuse waste	EZ:
save energy	**green energy**
decide with LCA	VEWIN:
nature is relative, sustainability is local	**Water business is fine**
use renewables	KIWA:
water is a renewable	**LCA**
use renewable energy	**Sustainability is locally defined**
groundwater uses less energy	act upon desiccation
stimulate groundwater infiltration	
Delta	*Delta's network*
society defines sustainability	PROV:
future, long term	**integrated approach**
reduce environmental damage	**stay within recharge rate**
whole system approach	**reduce burden on environment**
rational, objective approach	self-sustaining, non-technical solutions
pragmatic action	water saving
use renewables	IND:
stay within carrying capacity	**fashionable term**
	efficiency
	long term security of technical systems

At Delta we see many matches with the network partners. Like Nuon, Delta seems influenced by the debate in the energy sector about renewables. This argument is absent in both mono-water companies. An important difference between Delta and its network is the preference of Delta for pragmatic, technical approaches and the preference of the provincial

government for ‘non-technical’ solutions. In this respect there is a parallel with the Province of Noord-Holland and PWN, and possibly also WMO and the water board. Apparently, the idea of ‘working with nature’ has spread across the Dutch governments, and this does not always appeal to the technically oriented water sector.

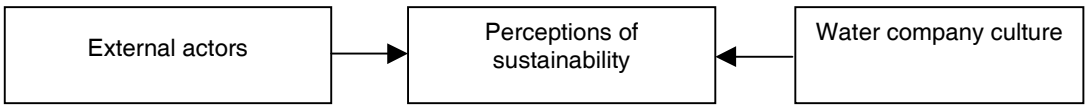
In all of these cases, there is evidence of matching ideas. Sometimes the resemblance is striking, for example, the focus on ‘renewables’ at the multi-utility companies, the ‘values of water’ terminology at WMO and the water board, and the ‘we don’t need that term’-attitude at PWN and the nature organizations. This means that the dialogue with network partners is an important explanation of water company perceptions of sustainability. The cases also show that the water companies themselves add ideas to the debate, for example, the idea of long term infrastructure, the idea of clean resources, and ideas about technical solutions.

8.2.5 Conclusion: the network does influence perceptions, but it’s a dialogue

Each of the former sections provides a piece of evidence that the network does influence perceptions of sustainability at the water companies:

- Respondents confirm that they are influenced by network partners;
- The use of the term shows similar patterns at companies and networks;
- The perceptions of the companies match with those of their networks.

The analysis also provides information about the complexity of this influencing process. In essence, it’s an ongoing dialogue, to which water companies actively add views from their own cultural perspective. This means that the culture of the water company is at least one other factor explaining the perceptions of sustainability. Therefore, one relation in the model is confirmed, and a new relation is added:



8.3 Do perceptions of sustainability influence strategies?

The original model implies that perceptions of sustainability influence strategy. We’ll firstly explore what the strategies of these companies are and what role sustainability has in these strategies. The next question is: why did they develop this strategy? How do the respondents explain it, and which factors seem to play a role in this process? And finally, are perceptions of sustainability part of the factors which influence the formulation of strategies?

8.3.1 What are their strategies and what position has sustainability?

As the case descriptions have shown, the four companies developed distinct, unique strategies. In Table 8.5 the strategies are compared, including the position of sustainability in each of them. The content of the columns will be described below, checking the coherence of each strategy story. We’ll also speculate if the strategy can be placed in one of Porters generic strategies (Porter, 1980):

- Cost strategy: trying to offer the lowest price on the market;
- Differentiation strategy: developing a unique product or brand name;

- Focus: concentrating on a region, a product or customer niche and optimizing cost and quality for this group of customers.

Table 8.5: Comparing company strategies (with an estimate of priority levels)

	PWN		**WMO**		**Nuon**		**Delta**	
Opinion on liberalization (total ++++++++)	pro-monopoly	++	pro-monopoly	++	pro-liberalization	++	pro-liberalization	++
Secure supply & high product quality (total +++++++)	highest priority: use of surface water is demanding, dunes needed to achieve high quality	++	high priority: customers demand better quality, while pollution increases	++	high priority: reason to defend groundwater resources	++	medium to high priority: depending on customer wishes	+
Growth opportunities (total ++++++)	WATER ONLY: - water demand still grows with population & industry - merger with neighbours GWA and DZH - foreign second opinion	0	WATER ONLY: - merger with neighbour WG - develop market activities - vertical integration in water chain	++	MULTI-UTILITY: - compete for concessions in Third World & Eastern Europe - mergers with Dutch water companies - acquisition of technology suppliers - joint ventures in UK, US - win new customers for green energy	++	MULTI-UTILITY: - regional diversification (other utilities) - market for industry water still grows - win projects for industries outside region - acquire projects for municipalities in Eastern Europe & Third World	++
Innovation opportunities (total ++++++)	large scale membrane technology frees dunes of further human pressure and delivers high quality	++	small scale membrane technology for industries, waste water technologies	+	small scale membrane technology for municipalities	++	integrated solutions for industries: cascading, recycling, tailor made membrane technology	+
Efficiency (total ++++)	cost reduction because of benchmark (quality more important)	++	minimize investments in new infrastructure	0	moderate cost reduction	0	continuous efforts to reduce costs, investment in cost saving technology for industrial customers	++
Service (total +++)	- nature education - account manager for industrial customers	0	customer survey, resulting in product quality improvement	+	not improving, says benchmark	0	internal change towards better service	++
Position of sustainability in strategy	balancing production and nature is at the centre stage, this is also what sustainability is about, but the term itself is not needed	+	appreciated concept for balancing internal and external goals	++	appreciated concept because strategy is based on sustainability image	++	sometimes convenient for subsidies and tax regulations, too political to fit into a commercial strategy	0

PWN gives product quality and security of supply high priority. Its resource is surface water and requires a great deal of attention. PWN wants to continue the public monopoly structure and consistently chooses for growth within the water sector. It would like to merge with GWA (Amsterdam) and maybe also with DZH. Demand is still growing, so the merger is not very urgent. Cost reduction is forced on PWN by the benchmark, but efficiency is considered a minor goal compared to innovation and product quality. Not much is happening regarding customer service. PWN does not have a commercial profile, so it has not chosen any of Porters competitive strategies. If PWN would have to pick one, it would probably be the differentiation strategy, because of its interest in quality and innovation.

WMO is troubled by pollution of resources, so product quality and security of supply need continuous attention. WMO prefers the public monopoly, and chooses to stay within the water sector. Because the societal environment is experienced as insecure and unpredictable, WMO prepares for two different scenarios. It anticipates on liberalization by developing market activities and on a public monopoly scenario by cooperating closely with water boards. WMO has experienced a reduction of demand, which limited its investments. Growth opportunities are important to compensate for the reduced demand. The liberalization debate made this company more aware of service issues. Because consumers do not have power yet, WMO invited comments through a survey. In the midst of all these pressures, WMO needs a guiding principle for making decisions, and found it in the concept of sustainability. Again, choosing from Porters strategies is difficult, but the focus strategy probably fits best: developing optimal relations within a geographical region.

Nuons water businesses are proud of their product quality, and defend their groundwater resources for this reason. For the corporate level, growth is all that counts. Liberalization offers Nuon the opportunity to become a global player in energy and water supply. Cost reduction and service improvement are mentioned, but have no high priority. Nuon's high solvability enables them to acquire new businesses. This company aims for a differentiation strategy through leadership in sustainability. Its leadership is expressed in green energy production and active marketing strategies.

Delta is pro-liberalization. It wants to develop into a more cost-efficient and customer-friendly company. Governmental steering sometimes hinders this development. Delta is open to any growth opportunity, as long as it does not have to merge with other energy companies. In Porter terms, it has a focus strategy: concentration on a geographical region, and serving the customers in that region as well as possible. This includes reduced costs, better service and a broader variety in utilities, depending on customer wishes. Delta treats its provincial shareholder well, as if it is one of its customers, and this sometimes induces it to pick up non-commercial activities. Delta also has aspirations abroad, which does not really fit in the focus strategy.

Secure supply and product quality are important goals in each company. These goals have played a role since the beginning of the water companies, as was explained in Chapter 3. They have become important cultural values for the whole sector. One could even say that the Dutch water sector *as a whole* has a differentiation strategy. For decades, the water companies shared innovative ideas and developed technologies, until their performance is now seen by national politicians as very good (for example, former Minister of Environment Nijpels in 'Waterspiegel', March 2003, p.4). An important feature of the quality they provide is the absence of chlorine in the final product. With each visit abroad, Dutch citizens are reminded of this. Because of the unique quality of Dutch drinking water, the national government allowed the Dutch companies to be the exclusive suppliers to the Dutch public, in other words, the government decided not to liberalize the water sector.

The cases make clear that perceptions of sustainability are no input to the strategies, but more a kind of output. The strategy is constructed (or emerges), and then the value of the

concept of sustainability for achieving the strategic goals is estimated. At two companies, the conclusion is negative: PWN and Delta estimate that they do not need the concept, except maybe when someone specifically asks for it. At Nuon and WMO the concept does play a role in the strategy.

This raises the question: what factors influence the construction of water company strategies, and what is the position of perceptions of sustainability in this process? This will be explored in the next section.

8.3.2 How and why are strategies constructed?

If we go back to the case descriptions, it becomes clear which factors have influenced each company's strategy. For example, PWN's story in short is that due to fast population growth its dune resources got exhausted, so it started to use surface water, which caused the company to become interested in technological innovation, but this also made the company expensive, and now the benchmark forces it to reduce costs. The factors in this story can be put under the following headings:
- The regional function of the company,
- Its history and culture,
- The present influence of external actors on its strategy.

The *regional function* of the water companies implies that they have to operate under specific physical and societal circumstances. In some regions groundwater is available, in others only surface water. Surface water companies suffer the most from pollution, but made themselves independent with sophisticated purification technology. This is directly related to a much higher tariff compared to groundwater companies, which can use clean resources. This simple difference has a profound effect on the companies: surface water companies are more oriented towards new, expensive, large scale solutions, while groundwater companies are more conservative, aiming to keep what they have. Nuon Gelderland has a safe position in this respect, because it gets its water from a large nature reserve. WMO has to deal with vulnerable groundwater resources, polluted by agricultural activity. This made WMO negotiate with farmers and eventually led to an active attitude towards external actors in general.

The fact that groundwater companies have a lower cost price does not lead to a competitive advantage, as it would on a commercial market. Groundwater companies sell their product at cost price, so the advantage is entirely for the customer. The market position of groundwater companies is even worse than that of surface water companies: WMO and Nuon Friesland lost customers since the groundwater tax was introduced in 1994, because medium users such as farmers started their own groundwater wells. This made WMO very cost-sensitive. Maybe it also triggered Water Company Friesland's decision to merger with Nuon in 1998. Stabilized demand allows no investment in new infrastructure, and raising the price may drive away even more customers. Surface water companies have no 'competition' from customers who operate their own well, because the groundwater in their area is brackish. This means that Delta and PWN have a real monopoly, and have not experienced a loss in demand.

All water companies have a clear, physical relation to nature. The restriction on other human activities in nature has a positive effect on the quality of their resources. At the same time, their extraction activities damage nature. Whether companies experience damage to nature as a problem, and whether they see this as being their responsibility, is a complicated and indirect relation, mainly existing of social variables. In the dunes, the water companies were the only actors damaging nature. This made it easy for a nature organization to find the guilty-one. Because the provincial governments were sensitive to this argument, water

companies along the coast (in this research, Nuon-Friesland, PWN, DZH and Delta) were forced to develop nature-friendly behavior. In more inland areas, the groundwater is affected by a range of actors: farmers, water boards, municipalities, industries and water companies. In such a setting it is much harder to find solutions, and water companies can more or less continue their extractions.

A specific region also implies a specific economic environment. In principle, all companies intend to grow and to reduce costs. The priority of these goals is independent of their attitude towards liberalization, and depends more on the existence of competition in a specific region. WMO competes with the substitute of free groundwater, and fears to lose more customers if its price would rise. Delta uses surface water, but it experiences competition on the market of large industrial customers. Having a healthy business is a main priority for Delta, and from that cost reduction follows. Delta and WMO both intend to grow, and both developed a focus strategy, so their competitive advantage is an optimal understanding of their customers. Small customers are likely to profit from the cultural change within Delta and WMO. For example, the standard opening sentence of Deltas receptionists is an inviting: 'How can I help you?' WMO and Delta have quite similar strategies, even though one of them is against and the other in favour of liberalization, because of specific regional circumstances.

PWN's relatively quiet approach to growth is rational, because they are a surface water company serving mainly consumers. It has a true monopoly, even in a liberalized situation. PWN only competes for a better score in the benchmark. Nuon deals mostly with small scale demand (households), and therefore, it has mostly captive customers. This makes service a lower priority.

Summarizing, the regional function of the companies includes the factors:
- Type of resource (surface water or groundwater),
- Intensity of pollution,
- Single or shared impact on nature,
- Relative importance of small and large customers.

These factors are concrete circumstances a company has to deal with. They have an ongoing influence on company strategy, but the company also learns how to deal with these circumstances and develops a distinct culture. Company *history and culture* then become a factor in themselves, colouring the strategy as well as the perceptions of sustainability. For example, the culture at PWN can be characterized as innovative. This culture is probably shaped by the problems with the dune water resources, forcing PWN to try new approaches. This cultural framework led PWN to strategic choices such as building a large membrane filtration factory. Since the establishment of Wavin in 1955, WMO has a history of starting up commercial daughters. This experience influences its reaction to the liberalization debate, because starting up new businesses is formulated as part of its newest strategy. For Nuon, its history of mergers guides its choices: growth is sought through further mergers with Dutch and foreign companies.

Company culture may also influence positions in the liberalization debate. PWN openly chooses to be a monopolist, and Delta is openly commercial. WMO and Nuon are less clear in their choices. They both have a hybrid character. WMO seems a commercial company in a monopoly disguise, and Nuon a monopoly company in a commercial disguise. Table 8.5 shows that the concept of sustainability is most appreciated by the hybrid or 'disguised' companies Nuon and WMO. Apparently, the concept can both guide and legitimate choices in a period of uncertainty.

All companies are interested in innovation, especially in membrane technology, but not all in the same way. More interest in market growth leads to more interest in small scale solutions. The companies showing the most interest in an innovative image, PWN and Nuon, are also the ones with the least competitive pressure on the water market. They also are less interested in service

improvement, compared to WMO and Delta. It looks like the traditional 'technological culture' underwent less change in PWN and Nuon. WMO and Delta were forced to develop more external contacts. As a consequence, they found out that it's not necessarily the newest technology that makes customers happy.

The history of a company also leads to structural differences, which lead in turn to different strategic positions. As was shown above, WMO and Delta have many aspects in common: strong regional ties, a focus strategy, and maybe even similar cultures. However, a main difference is that Delta is a multi-utility company and WMO is a mono-water company. This apparently defines their position towards liberalization. In general, the historical inheritance of being a multi-utility seems to have a profound effect on Delta and Nuon, leading to a schism in the water sector.

Another example of a structural difference: in 1934, the Province of Noord-Holland delegated the management of a nature reserve to PWN, which gave the company a structural relation with nature. This led to a strategic choice to make water production and nature management equally important goals.

Summarizing, under the heading culture and history the following factors influence strategy:
- Product quality and security of supply as most important cultural values,
- Innovativeness and 'technological' culture,
- Governmental or commercial attitude,
- Customer-orientedness,
- Multi-utility or mono-water structure,
- Having formal responsibility for nature or not.

The factors under the heading *present influence of external actors* on strategy are related to the networks of the water companies. As we saw in Section 8.2, all companies function within the same national framework. At the time of the interviews, the most important strategic question for each company was: do we want to keep the public monopoly, or do we prefer liberalization? As was explained above, the multi-utility companies say yes to liberalization, and the mono-water companies say no. The data suggest that this can be generalized more or less to the whole Dutch water sector.

Liberalization of the energy sector has a profound impact on Delta and Nuon. Because they are public utility companies, their tariff is already close to cost price. Some inefficiency may exist, but they surely do not have a high profit margin. If they have to operate commercially, they do have to make a profit. Because the present cost price is considered too high by politicians (who still steer the companies), raising the price is not possible, even with a differentiation strategy (green energy is sold at the same tariff as other energy). Then cost reduction and market growth are the only options to gain more profit every year. Because energy is a saturated market in the Netherlands, mergers and foreign concessions are the only real possibilities for growth. The energy divisions of the multi-utility companies want to take the water divisions with them on the road towards liberalization, because offering both utilities is a strategic advantage on the market.

Next to this basic choice between monopoly and liberalization, more nuanced processes take place, induced by regional actors. This becomes clear when the companies with the same starting positions are compared: PWN with WMO, and Nuon with Delta.

An important difference between PWN and WMO lies in their relationships with the provincial governments. The relationship of PWN with the Province of Noord-Holland is as close as can be: 100% shareholdership, full support of PWN's strategy by the provincial government, and a complete overlap in ideas about sustainability. This makes PWN feel secure within the monopoly structure. Investment in an expensive, new, large scale facility is a logical step.

PWN is also steered towards a nature-oriented strategy by the provincial government. WMO, on the other hand, has a slightly troubled relationship with the provincial government, and this government seems less nature-oriented. WMO also has municipal shareholders, who may be more interested in selling their shares. Therefore, WMO feels insecure about the liberalization debate, and partly prepares for a liberalized future. From that viewpoint, building large scale infrastructure for a switch to surface water is a dangerous decision, and WMO's strategy focuses on flexible, small scale solutions.

Delta and Nuon also have very different relationships with provincial and national governments. Because Nuon has merged to a size above the provincial level, provincial influence on the strategy has become rather small. Nuon has the Ministry of Economic Affairs as its most important reference. The Ministry stimulates it to compete in an international context, which makes growth a number one priority. The Ministry of Economic Affairs adheres to the theoretical idea that liberalization will improve cost-efficiency and customer-friendliness. The obligation to grow in order to survive on a global market seems to override these goals in the case of Nuon, though this may be a temporary effect.

For Delta, the provincial government of Zeeland still is its most important contact. This means that serving Zeeland remains the most important goal, and growth is sought in diversification within this region. The provincial influence induces Delta to invest in nature management, even though this is not interesting from a commercial viewpoint.

Finally, in the sets of regional actors who influence water companies, unique opinion leaders can have an influence. For PWN this was a specific nature organization that has targeted PWN and other dune water companies since 1977. This led to a higher interest of PWN in nature management. For WMO the most salient actor is the water board Regge and Dinkel. It started a sharp debate on moving all water extractions to 'the end of the water system'. For Delta, a large industry was important because it started an open competition for water delivery that Delta had taken care of since the nineteen sixties. This induced Delta to develop a more commercial culture. These three external actors have in common that they choose a provocative rhetoric position, and mobilize enough power to make the water company listen. The nature organization did this by forming a coalition with the provincial government, the water board already had a close working relationship with WMO, and the industry was one of Delta's most important customers.

Summarizing, under the heading *present influence of external actors* on strategy the following factors are found:
- Economic frame of reference (provincial, national or European);
- Strength of shareholder relationships, especially with provincial governments;
- Specific demands of provincial governments (nature management);
- Existence of other strong opinion leaders in the regional context.

The analysis in this section makes clear that strategy is influenced by a long list of factors, which are all related to the direct survival of a company. Perceptions of sustainability are not on this list. It confirms the impression of the former section, that the strategy of these companies is hardly influenced by their perceptions of sustainability.

8.3.3 Conclusion: perceptions of sustainability hardly influence strategy

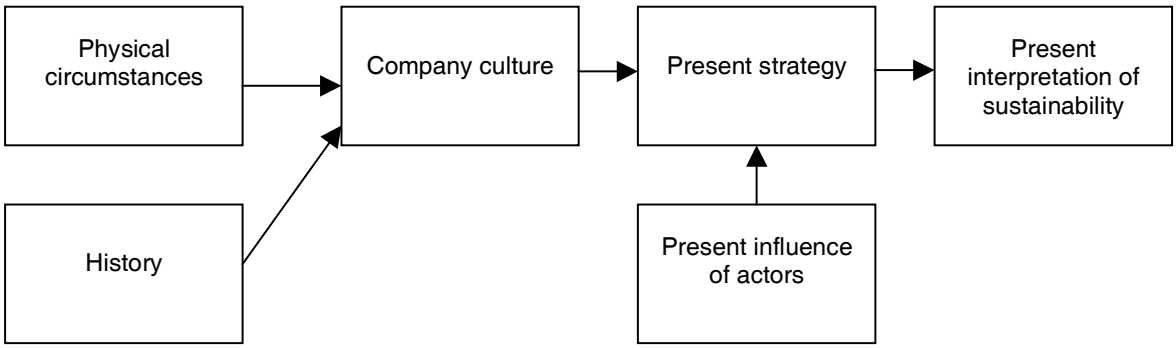
The conclusion is that perceptions of sustainability have hardly influenced the construction of the strategies of these water companies. The process worked the other way round; the concept of sustainability is interpreted from the framework of a specific strategy: is it a useful means to further our strategy, or not?

The four water companies perceive the principles behind the concept of sustainability as being in their self-interest and as compatible with their goals: long term thinking, clean resources. Therefore, it becomes integrated in all four strategies; however, in different, layered ways:

PWN did not adopt the term in a conscious way;	hardly uses the term in practice;	but still sees the concept as the essence of their strategy
WMO consciously adopted the term;	uses it very often in practice;	and organizes a structural debate about the content of the concept
NUON consciously adopted the term;	uses it very often in practice;	and implemented it quickly without much debate
Delta rejects the term;	uses it in practice anyway;	and claims their operations are sustainable

WMO's way of dealing with the concept is the only route that may eventually lead to a traceable impact of perceptions of sustainability on the company strategy. The way in which sustainability is integrated into different company strategies clarifies how much the interpretation of the concept is influenced by the specific situations of these companies. In the conclusions, we will discuss the consequences of this context-specificity for sustainability.

This leads to the following adaptations in the model:



8.4 Do strategies lead to adaptation of networks?

In the original model, a feedback loop was added, to signal that the formulation of a new strategy may lead to adaptation of the network. To find out if such a process is happening in practice, the stories of the four companies will be checked. Do these companies change their networks and why?

The clearest changes took place at WMO. Its network involved more and more actors over time and, at first, the sustainability debate was the driver of this process. Later on, the EFQM quality model that WMO implemented helped to guide stakeholder contacts. Eventually, the debate with stakeholders became characteristic for how WMO deals with sustainability. The development of company strategy seems to be a parallel process, with an occasional cross over of ideas. The strategy itself implies a focus on three types of actors: the water board, industries and colleague companies. It may also imply a move away from the provincial government.

Delta's network became smaller because of its new strategy. Delta used to have more roots in the Zeeland society, for example, relationships with non-profit organizations and water boards. The commercial strategy prescribes efficiency; therefore, Delta is economic in its external contacts. It focuses on its most important shareholder, the Province of Zeeland, and

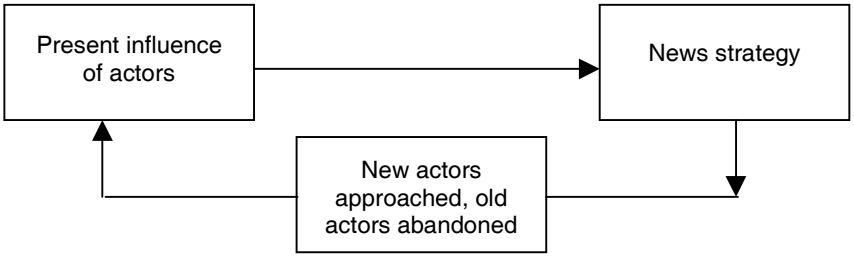
on industrial customers. So here we find a clear relationship between the strategy and adaptation of the network. Sustainability does not play a role in choosing the network. At Delta, it works the other way round: if an important stakeholder finds sustainability important, then Delta will do something about it.

The dynamic impression we have of Nuon is also visible in how it deals with its network. Soccer team Vitesse was sponsored, but the relationship went wrong and has been ended. The aim was to merge with other Dutch water companies but they didn't want to merge, therefore, Nuon decided to buy technology suppliers instead. Municipalities are sponsored to improve groundwater infiltration in their areas, but if this does not impress the provincial government the sponsoring will stop. It is difficult to get an overview of Nuon's network relationships, but one thing is clear: the focus is shifting from the provincial to the national and international level. This is directly related to Nuon's strategy. It wants to become an international player, and from that viewpoint, regional players are less relevant. At the business unit level, there are more regional contacts. The water business unit in Gelderland uses the EFQM model to monitor its stakeholder relations, and both water units have contacts with water boards.

PWN is the only company that is not really changing its network. There is some exploration of industries, and slowly developing contacts with water boards. The strongest contacts still are with the provincial government, nature organizations, and colleague companies. Light contacts have always been there with Ministries, municipalities and consumers. This corresponds with the impression that PWN's strategy is not really changing either. The most important difference is cost reduction, and this will only lead to less external contacts.

The conclusion is that a change in the strategy nearly always leads to a change in the network. The feedback loop in the original model is confirmed. A cost efficiency strategy leads to a more selective approach of the network. Sustainability issues, on the contrary, lead to a broader network.

This leads to the following adaptations in the model:



8.5 Do the strategies lead to sustainable operations?

As was announced in Section 8.1, the position of operational activities in the theoretical model is not so straightforward. To find the position of operational activities in an expanded theoretical model, we use an open question in this cross case analysis: Why do these companies develop 'sustainable' operational activities?

8.5.1 Why do companies develop sustainable activities?

The case descriptions show that strategy not always leads to matching activities and that many operations are just there without being mentioned in the strategy. We'll start with the

sustainable activities and trace back why companies do these things. Table 8.6 shows the activities each company choose to do (or not to do). The activities mentioned here are all in the environmental domain, because that is how the majority of respondents described it. A small minority links other issues to sustainability, such as human resources management, but these views are excluded from the overview. The table includes the reasons as they were expressed in the quotations. In an interpretation step by the researcher the reasons were categorized as shown in italics.

The table suggests the existence of a pattern for each company in the sense that a specific company has its own profile of using certain arguments. This hypothesis is tested in Table 8.7. A pattern seems also present for each type of activity: a specific activity is often done for the same reasons. This is explored further in Table 8.8.

Table 8.6: Sustainable activities and underlying motivation in italics

Sustainable activities	**PWN**	**WMO**	**Nuon**	**Delta**
Groundwater or surface water	7% groundwater: dunes available for calamities 93% surface water: no other option, relieving dunes of pressure	95% groundwater: better quality and existing infrastructure 5% surface water: technology development, experience	100% groundwater: best quality, cheap resource	50% groundwater: wants to keep it because of quality 50% surface water: no other option in this region
	permanent supply *nature-oriented*	*product quality* *financial reasons* *technology oriented*	*product quality* *financial reasons*	*product quality* *permanent supply*
Protect groundwater	Strict rules in groundwater protection areas	Negotiates with farmers to reduce pollution, soil decontamination, influences spatial planning	Resources already are well protected by nature park and layers of clay	?
	product quality	*product quality*	*product quality*	
Prevent desiccation	Extraction of natural groundwater in dunes reduced to below carrying capacity; reduction imposed in het Gooi	Negotiates about inexpensive solutions to reduce desiccation; unsustainable pumping stations closed; three production units built at end of system in cooperation with water board	Municipalities and nature organizations sponsored to improve natural infiltration compensation water project on Veluwe	Extractions in dunes reduced; compensation water proposed but no solution for Brabantse Wal yet
	network pressure	*financial reasons* *network pressure* *technology oriented*	*network pressure*	*network pressure*
Nature management	Nature as equally important goal, improvement of infiltration areas for higher biodiversity, high investment in membrane facility to spare dunes	Nature management is not a primary task but can be necessary to keep an extraction license	Sponsoring of nature organizations	Willing to do nature project after long pressure and subsidy of provincial government
	nature-oriented *technology oriented*	*network pressure*	*product quality*	*network pressure*
Promote water saving	Water saving still promoted	Optimization of individual customers on request; collective actions are bad for business	Water saving promoted in the past	?
	network pressure	*customer-oriented*	*network pressure*	

Sustainable activities	PWN	WMO	Nuon	Delta
Develop household water	There is no environmental gain when surface water is the resource	No projects with financial and environmental benefits discovered yet	No environmental gain expected, too expensive, one project realized to silence municipal pressure	Often too expensive, one project realized
	technology oriented	*technology oriented*	*network pressure*	*network pressure*
Develop industrial water	WRK* water going to steel industry since 1958	New business unit develops industrial water on request	Several projects for large users	Represents one third of water sales, most important growth market
	network pressure	*customer-oriented*	*customer-oriented*	*market growth*
Develop integrated solutions for industry	New helpdesk to serve industry better	New business unit develops sustainable solutions for industry	Several requests for integrated solutions	Look at the all-in water system and find more efficient solutions
	network pressure	*customer-oriented*	*customer-oriented*	*customer-oriented*
Green energy and energy saving	Wish to buy green energy but barriers: shareholders, price, cooperation with other water companies, 10 to 15% in 2000** Energy saving has no priority	Programme to reduce energy use	Production and sales of green energy has high priority. 100% green energy for business unit in Gelderland and 50% for Friesland	Production and sales of green energy, scepsis about governmental tax construction. Not used for water production; energy saving promoted
	perceptions of sustainability	*perceptions of sustainability financial reasons*	*perceptions of sustainability market growth*	*network pressure*
Reduce waste and emissions	Solve problems in cooperation with other water companies	All waste is reused	Sludges reused via Reststoffenunie	Combine sustainability and financial efficiency; waste recycling, less resource use
	perceptions of sustainability	*perceptions of sustainability*	*perceptions of sustainability*	*perceptions of sustainability financial reasons*
Choose materials	LCA pipe material showed that environmental impacts are the same	Uses PVC and hopes it will be recycled by Wavin	?	Sometimes sustainability of materials evaluated eg when building infrastructure
	technology oriented	*permanent supply*		*perceptions of sustainability*
Cooperate in water chain	Interesting option for the future, PWN awaits outcome of national debate	Established cooperation in Waterpact and Aqualink, important for strategy but develops too slowly	Water chain company established in Friesland, develops too slowly	Tried to cooperate with water boards but failed; also competes with them for waste water projects
	network pressure perceptions of sustainability	*market growth*	*market growth*	*market growth*

*: WRK is is a daughter company for pre-purification and transport of Rhine water to the dunes, shared by PWN and GWA

**: 75% in 2003 and plans for 100%

Which reasons are the most important for these companies to take action in the domain of sustainability, and what does this add to the model of Chapter 1? In Table 8.7, the reasons to undertake certain activities are counted for each company and for the four companies as a whole. The categories of motivations of Table 8.6 were further clustered into: old strategy, culture, perceptions of sustainability, new strategy, and network pressure. These labels can be disputed, for example:

- Why are the perceptions of sustainability not part of the culture? Maybe they are, but the purpose of this research was to isolate them as a factor and investigate *if* they has become part of the culture and if yes, what impact it has on strategy.

- Why isn't nature part of the perceptions of sustainability? The data suggest that nature has a domain of perceptions of its own, that overlaps with the perceptions of sustainability only occasionally.

Maybe future research can answer these questions more thoroughly.

About the sector as a whole: new strategy appears to be the largest driver to undertake activities in the domain of sustainability. Old strategy is important as well and these two together are clearly dominant. This means that the connection between strategy and practice, that is simple in theory, also works well in these companies. They do what they say. Two explanations can be given. Firstly, the managers of these companies are technology-oriented, traditionally educated at Delft University, and truly interested in the inner workings of their own companies. Managers talk about company operations as if they do it with their own hands. According to Mintzberg, this type of engaged, competent management is what makes a company healthy and successful on its market (Mintzberg, 1989). Secondly, the companies are in a stable market, and thirdly, they are rooted firmly in their region. They have a long history of rather consistent steering by governmental owners, who also founded them.

It must be said that these two characteristics of the sector are both subject to change, as a consequence of the liberalization debate. The trend is to hire top managers without a technological education, to merge above the provincial level, and to work towards an international outlook. The consequences are most visible in the Nuon case: a management that is hardly interested in operations anymore and that steers mostly with financial instruments. The link between what the top management says and what happens at the shop floor then also becomes precarious.

Table 8.7: Reasons for undertaking activities in the domain of sustainability

Reasons		**PWN**	**WMO**	**Nuon**	**Delta**	**Total**	
old strategy	product quality	1	2	3	1	7	10
	permanent supply	1	1		1	3	
culture	technology-oriented	3	2			6	8
	nature-oriented	2				2	
perceptions of sustainability		3	2	2	2	9	9
new strategy	customer-oriented		3	2	1	6	16
	financial reasons		3	1	1	5	
	market growth		1	2	2	5	
network	network pressure	5	2	3	4	14	14

Table 8.7 shows that apart from strategy, several other factors lead to activities. Especially network pressure has a large direct impact of on sustainable activities. No company is excluded from this influence. If we go back to Table 8.6, we see that some activities always require network pressure: prevention of desiccation, household water, and water saving. From the case descriptions we know that the companies do not believe in these solutions. Therefore, they only do something if a powerful external actor forces them to do something, and then they'll do just that and nothing more. Table 8.6 also shows that companies are different in where they 'need' network pressure: without it PWN would not develop solutions for industry, and WMO, Nuon and Delta would not pick up nature management.

Perceptions of sustainability can also lead to activities. These activities are all in the 'grey' area: waste, energy, and material use. Apparently, there is consensus how to deal with these issues. The solutions have become part of the cultural beliefs of the sector. This is also visible in the even distribution of the reason 'perceptions of sustainability' over the companies in Table 8.7.

Cultural reasons are only found in the monopoly companies. There are three possible explanations: 1) WMO and PWN have explicit policies for cultural change, and so the data gave more insight in their cultures. 2) Maybe companies tend to have either old, cultural reasons for activities (PWN and WMO), or commercial, new strategy reasons for activities (WMO, Nuon and Delta). This would mean that the old cultural and the new commercial activities exclude each other, except at a hybrid company like WMO. 3) The technology-oriented reasons may get replaced over time by more market-oriented reasons. Then the categories of reasons represent a process in the social construction of sustainable activities.

Table 8.8: Different reasons for doing or not doing different activities (one bullet is put in this table for each time a reason is attached to an activity in Table 8.6)

	old strategy		*culture*		*perceptions of sustainability*	*new strategy*			*network pressure*
	permanent supply	*product quality*	*nature-oriented*	*techno-logy-oriented*		*financial reasons*	*market growth*	*customer-oriented*	
Groundwater or surface water	ϕϕ	ϕϕϕ	ϕ	ϕ		ϕϕ			
Protect groundwater	1)	ϕϕϕ							
Green energy and energy saving					ϕϕϕ	ϕ	ϕ		ϕ
Reduce waste and emissions					ϕϕϕϕ	ϕ			
Choose materials	ϕ			ϕ	ϕ 2)				
Develop industrial water							ϕ	ϕϕ	ϕ
Develop integrated solutions for industry							3)	ϕϕϕ	ϕ
Cooperate in water chain					ϕ		ϕϕϕ		ϕ
Prevent desiccation				ϕ		ϕ			ϕϕϕϕ
Nature management		ϕ	ϕ	ϕ					ϕϕ
Promote water saving								ϕ	ϕϕ
Develop household water				ϕϕ					ϕϕ 4)

The process hypothesized in the third explanation goes like this. About 100 years ago, the old goals of product quality and permanent supply were imposed on the water sector by Dutch governments. These goals have become internalized completely and now represent the highest cultural values in the sector. The cultural reasons are almost as old but they are not the same for all companies. The perceptions of sustainability (concerning the grey issues) are only ten to fifteen years old but are already well internalized. The new strategy was imposed by the liberalization debate only five years ago, and is not internalized yet.

Therefore, it has to be part of an explicit strategy. Strategy is then an instrument to guide the development of cultural beliefs. Finally, there are things that are not internalized at all but societal actors think that they should be. If the external partners are powerful enough, they force the water companies to implement solutions, even when the water companies do not believe in the problem. In some cases, the activity itself leads to an adapted belief. After doing a few nature projects, Delta became proud of what it had achieved. In other cases, the water companies win the debate. An example is household water, about which many companies were sceptical, and is now generally seen as a dead end.

Table 8.8 focuses on the reasons for each sustainable activity, cutting through the data of Table 8.6 in the other direction. One bullet is put in this table for each time a reason is attached to an activity in Table 8.6. Table 8.8 shows some clusters of reasons for the different activities (numbered 1-4).

Cluster 1: The choice between groundwater and surface water is mainly guided by the old goals of product quality and permanent supply. This choice probably is the most basic issue for the water companies: it defines their identity. The resource is also the most important input for most of the outputs in the benchmark: product quality, price, and environmental performance. Table 8.9 shows that clean groundwater leads to the best results. WMO and Nuon Friesland suffer from agricultural pollution of groundwater so they have a slightly worse score than surface water user PWN. The relation between resource and price is simple: clean groundwater leads to a low price. The relations between resource, price and quality make it understandable why it is hard for water companies to switch from groundwater to surface water: who wants a more expensive product with a lower quality? The last column in Table 8.9 makes this switch even less probable: according to the benchmark, groundwater is better or at least not worse for the environment than surface water. Therefore, it will not be easy for any Dutch government to convince a company to switch from groundwater to surface water.

Cluster 2 was already addressed above: the grey environmental issues which are firmly connected to the perceptions of sustainability. It is likely that these perceptions were part of a former strategy (setting an example to convince other actors not to pollute) and were then put to action.

Cluster 3 shows a market-oriented block of activities. For activities in the direction of industries this seems logical, but the table also shows that the activities in the direction of water boards are part of this cluster. In other words, sustainability is not the main reason to explore the possibilities of the water chain.

Cluster 4 contains the activities that require the most persistent network pressure. Network pressure may be necessary because some of these goals go against company interests (desiccation prevention and water saving). Household water may simply not be a good idea from a more informed point of view. Nature management, may become internalized in the future, because this already led to good results in one company.

Table 8.9: Resources in relation to price, quality and environmental performance as described in the water company benchmark of 1998 (Delta did not participate in the benchmark)

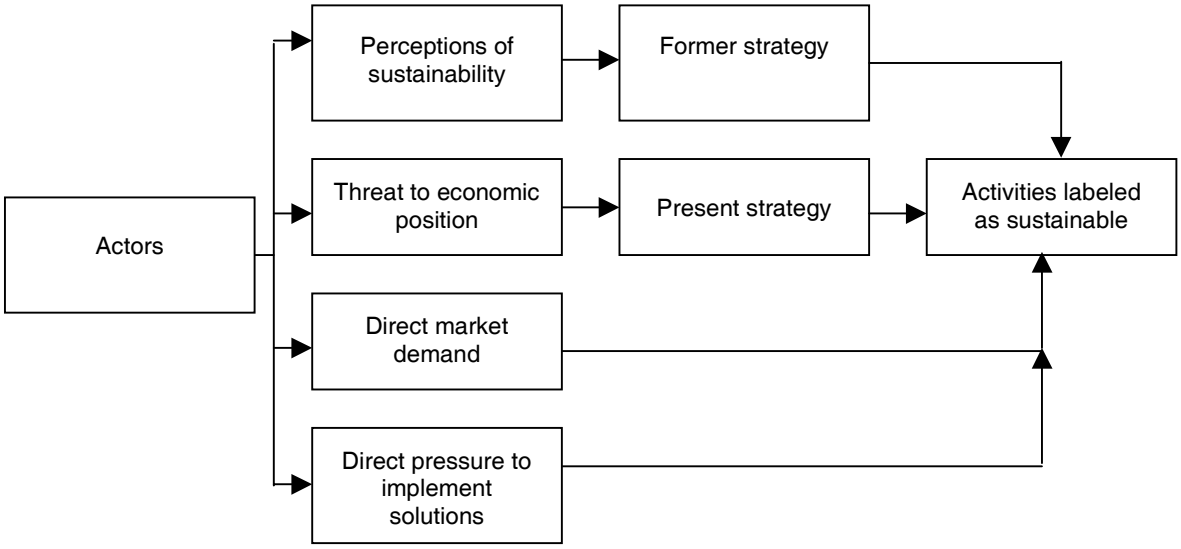
Evaluation of resources	**Main resource**	**Product quality (water quality index)**	**Price (Dutch guilders per m^3)**	**Environment (environmental burden index)**
		bench-mark 1998	*bench-mark '98*	*bench-mark '98*
Nuon (Gld)	groundwater	99,4	1,95	5
Nuon (Fr)	groundwater	94,7	2,58	52
WMO	groundwater	94,9	2,46	38
PWN	surface water	95,7	3,17	41

8.5.2 Conclusion: many factors explain activities

It turns out that there is a number of factors to explain the existence of sustainable activities:

- Activities as a result of former company strategies, some of which are influenced by perceptions of sustainability;
- Activities as a result of deliberate operationalization of present company strategy;
- Activities as a result of direct market demand, that happened to be sustainable;
- Activities forced upon the company by external actors.

This leads to the following adaptations in the model:



8.6 Expanded model of sustainability in water companies

The findings of the research can be represented in a visual model (see Figure 8.4). The model starts with the physical environment of a water company, of which the water system is an important part. Working in a regional physical environment leads to region-specific experiences which influence the cultural beliefs of the water company. The physical environment still has direct influence on the company today, for example, when pollution increases or the climate changes.

The physical environment also influences the beliefs of other regional actors such as the provincial government, the water boards and nature organizations. Especially the governmental actors translate their knowledge of the regional environment (for example, in reports on desiccation and salinization) to the concept of sustainability, and use the concept in their communications with the water company. The water company internalizes the concept by translating it to its own cultural framework, which results in company-specific perceptions of sustainability. This means that the first connection of our first model, in which external actors cause a water company to adopt or adapt perceptions of sustainability, is confirmed.

The second assumption of the original model, that perceptions of sustainability lead to the development of a specific strategy, was not confirmed. When the researched companies first heard of the concept, they viewed most of their existing (water) activities as sustainable, so it did not induce new strategies. The cases show that the effect is the other way round: a strategy influences the story about sustainability.

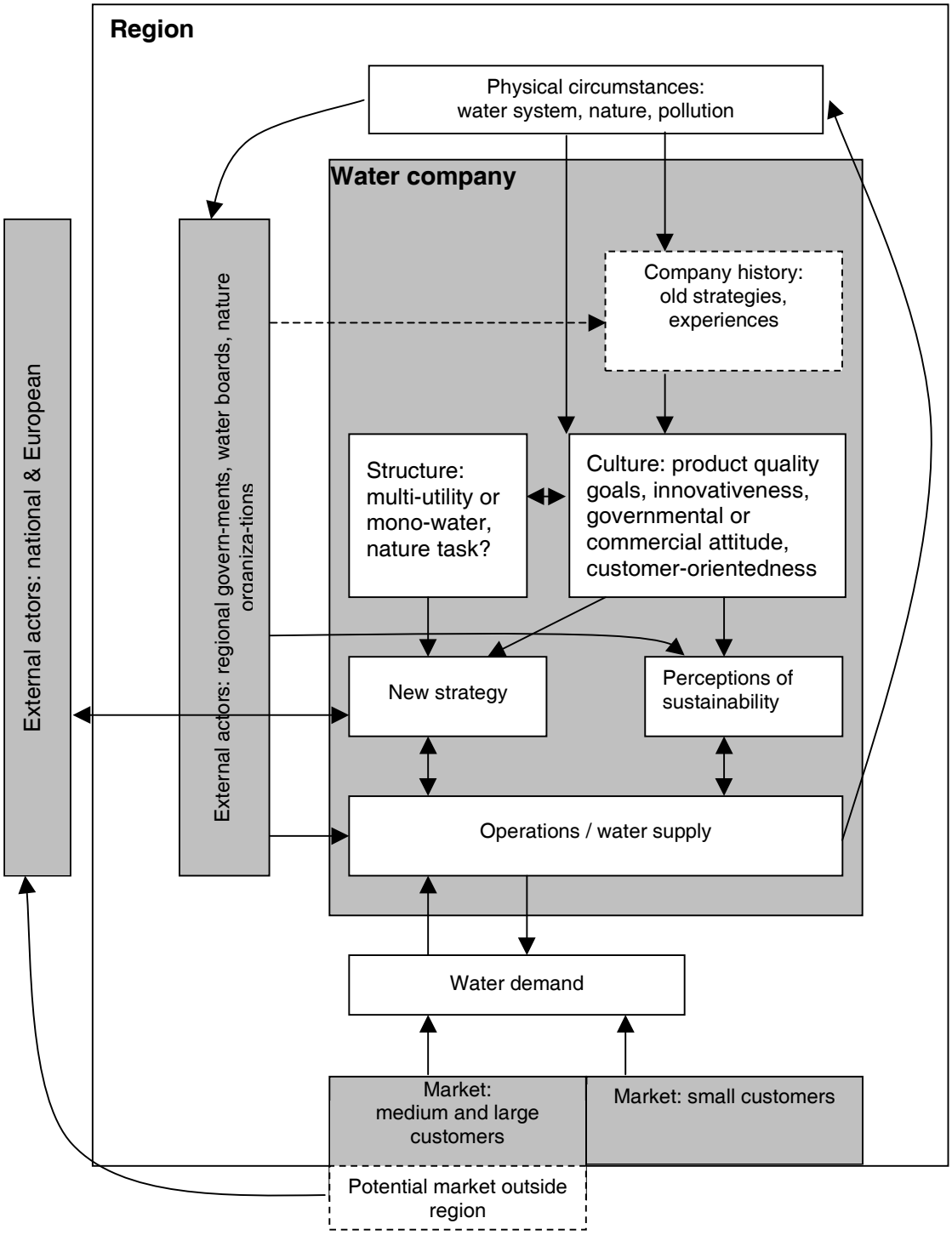


Figure 8.4: Model of the social construction of sustainability in water companies (most factors in the present, and factors in past and future in dotted lines)

A lot of other factors were found to influence company strategy. Because of all these relations, strategy has become the most central element in the model. Company structure and culture have an important influence on strategy. Water companies are mature organizations with a strong position in society. They develop their own strategies and often succeed in convincing other parties of the usefulness and integrity of their choices. Other factors that influence strategy are the external network and water demand.

Further down, we see that strategy influences operations. Traditionally, there is a strong relation between strategy and operations in these companies. Top managers often are civil engineers who are genuinely interested in everything that goes on in their organizations, and especially in the technology. Therefore, the companies generally do what their strategy says. This includes the operations that are labeled as sustainable. The long arrow on the right side of the model indicates that operational activities lead to a change in the physical environment, for example, desiccation or nature development.

Water supply is the most important operational output of the companies. Operations are directly influenced by the water demand, which in turn is defined by market actors, consisting of consumers and industries. Demand also influences company strategy: an increase in demand leads to faith of shareholders and banks in new investments. Stabilization or decrease has fundamentally different repercussions for a company. This explains why companies stop water saving promotion as soon as demand stabilizes.

The market actors have no direct relation with the physical water system, contrary to the water company itself. Customers simply demand the water, and the water company is legally obliged to supply it at all times, whether there is a drought or not. The relation is sometimes made explicit by the water company. Especially dune companies such as PWN make the consumers aware of their double interests: an interest in good drinking water and an interest in a beautiful and healthy space for recreation. Such a line of reasoning of course only works if all actors live in the same region. As soon as the water company gets its water from further away, the interest of the customers in the physical environment of the water company weakens, as seems to be the case in the water company of Amsterdam.

The model shows that external actors influence water companies in several significant ways, next to influencing the perceptions of sustainability. Firstly, regional governments have had a direct influence on the strategy of the companies for many decades, and they still do today because of their shareholdership. It must be said that this influence goes both ways: water companies also make sure they get their points across, as was already stated above. Governments also have a direct influence at the operational level. A provincial government with a large amount of shares has enough power to force a water company to undertake certain activities, even when the water company is not convinced of their usefulness. This influencing power takes the form of laws (groundwater licenses), money (subsidies and tax measures), or long-lasting ‘societal pressure’. The companies accept the governmental influences, as long as the power structure is in place. The actual realization of the forced activities leads to new experiences of success or failure, and this in turn influences the companies’ perceptions of sustainability (expressed by the arrow going both ways).

Formally, provincial and municipal governments represent the regional customers, but there seems to be no triangular relationship. For example, the province asks of the water company to induce water saving behaviour, and the water company tells the provincial government what its customers want (for example, less calcium in the drinking water).

The model shows that most physical and social processes take place at the regional level. Next to this, the EU and two Ministries have a crucial impact on the strategies of the researched companies, because they decide on the structure of the water market: should it be a public monopoly or a private market? The data even indicate that ‘strategy’ is business language that entered the sector because it anticipated on a possible liberalization. In the past, operations may have had a more central position. The arrow in the lower corner on the left signals that the national and European actors who started the liberalization debate possibly reacted on signals of large industries, who wanted more freedom in choosing their water supplier.

The data also indicate that liberalization would lead to more upscaling, and to hiring more top-managers with a non-technical background. This would pull the water companies out of their regional context. Many relations in the model would weaken: managers become less interested in operations, so the strategy would drift away from the operational level; regional governments would have less influence; and eventually the relation of the company with its physical environment would move out of focus.

The model is the outcome of the research in these four water companies. It is likely that it can be generalized to the whole Dutch water sector, but things may be different at other sectors. For example, the strategies of businesses who are under 'environmental attack' may be influenced more strongly by perceptions of sustainability.