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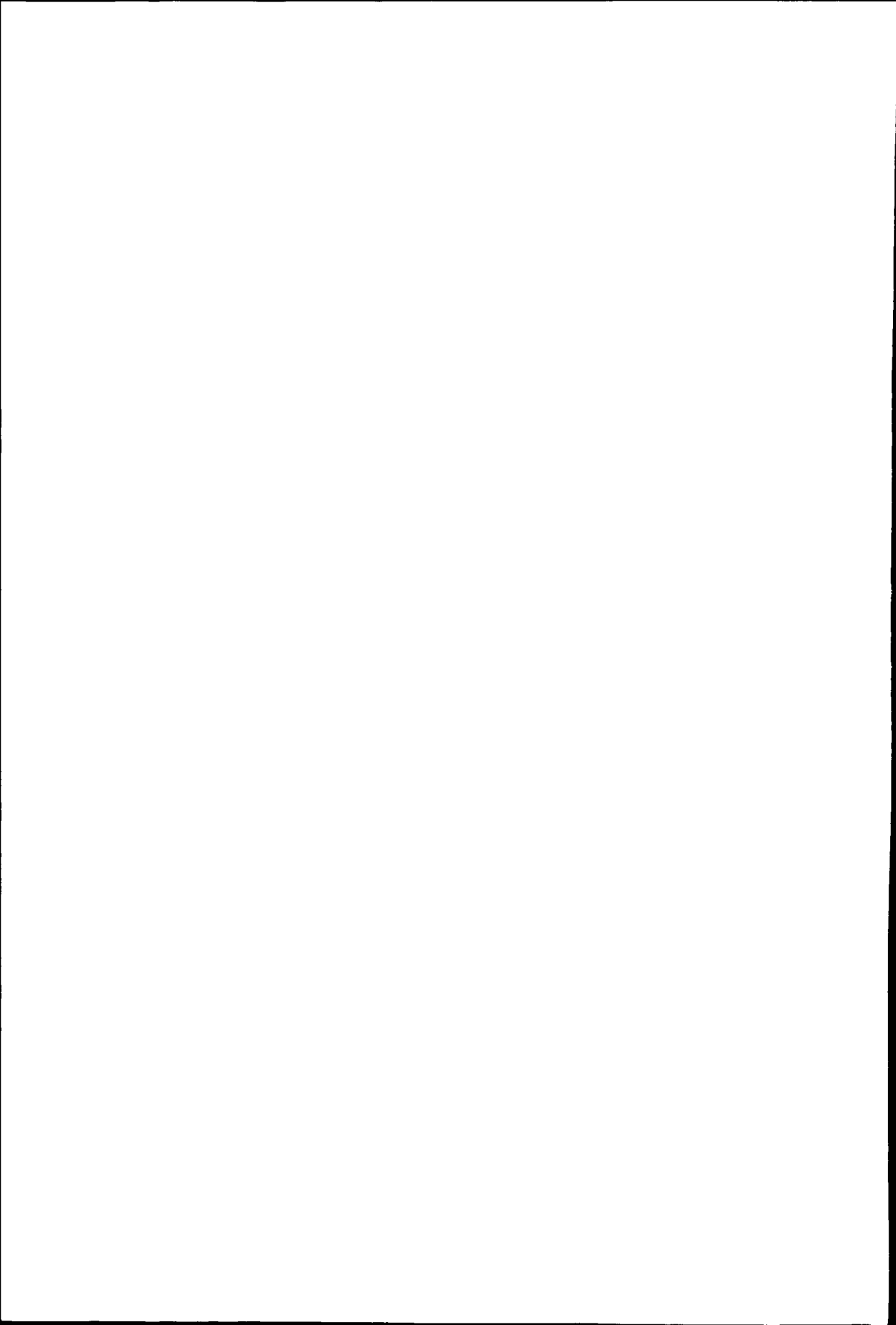
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**Domestic environmental policy
& transnational communication**

**The cases of contaminated land
and noise around airports**

Sietske Veenman



DOMESTIC ENVIRONMENTAL POLICY & TRANSNATIONAL COMMUNICATION

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*THE CASES OF CONTAMINATED LAND
AND NOISE AROUND AIRPORTS*

Een wetenschappelijke proeve op het gebied van de
Managementwetenschappen

Proefschrift

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aan de Radboud Universiteit Nijmegen
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CHAPTER 1

INTRODUCTION

1.1 International developments influencing national environmental policies

Over the last four or five years a discussion has been going on concerning to what extent Dutch environmental policies have been influenced by European legislation. Research by an advisory council to the government estimates that the formal influence of such legislation lies around 60% (Vromraad, 2008; Liefferink, 2008). An often mentioned example in this context is the influence of the Habitats Directive on the Dutch national policy. This directive aims at the protection of biodiversity in Europe, focusing on habitats and species (EC, 1992). One of the key instruments to realise this protection is the establishment of a European network of protected conservation areas. To this end, EU member states were required to draw up a list of natural areas to be protected. The list was to be finalised in 1995. Although Dutch conservation policy was familiar with the creation of a network of natural areas, the establishment of this list resulted in a turbulent national process. Only when, in 1998, the European Commission threatened to take legal action against the Netherlands for not implementing EU policies, did the Dutch government grudgingly begin work on the selection and designation of conservation areas (Van der Top and Van der Zouwen, 2000; Arnouts and Arts, forthcoming).

In addition to providing percentages of the extent to which Dutch environmental policy was influenced by EU legislation, the advisory council argues that EU environmental Directives have a larger effect on the Dutch economic situation than in other countries (Vromraad, 2008). Whether or not this claim proves to be accurate, it shows that countries in general react differently to EU directives. The role of the EU in domestic environmental policy seems to differ for each European member state (Jordan and Liefferink, 2004). Taking the example of the Habitats Directive, this directive is implemented according to the various legislative structures in member states. In France and the UK, for instance, species and habitats protection fall under the same law, while the Netherlands has separate laws for species protection and habitat protection. These legislative differences have led to differences in the implementation of the Habitats Directive (Backes *et al.*, 2006).

Besides EU legislation, there are other, more informal international processes that influence domestic environmental policies in EU member states. These processes

concern visits of, for example, ministers and civil servants to conferences and meetings. Information gathered in such meetings may also influence national policies. For example, in the early 1990s, the Dutch system that was used to deal with contaminated land was famous all over the world, as a result of informal communication processes (Veenman, 2006). Without any legal obligation, the Dutch values were used in countries such as Hungary and England. Also, in such informal processes, countries reacted differently to the gathered information. While some of them did use the Dutch values, others decided not to, for example because they argued that the Dutch values were not suited to the soil in their country.

A third example of how international processes may influence domestic environmental policies is the so called California Effect. In 1970, the American state of California introduced strict emission standards for air pollution by cars. After California had introduced the cleaner standards, more and more states followed suit. No formal obligation to do so existed for those states; it was the car manufacturers who initiated the spread of the Californian emission standards. They began to design cars with lower emissions in order to keep their footing in the wealthy Californian market. Consequently, cleaner cars were gradually introduced not only in California, but in more and more Northern American states, which adjusted their legislation accordingly. Yet again, however, not all of them did. Those states with other preferences on which policy measures to use to influence behaviour, or other socio-politico-economic structures did not import the California quality standards (Lee, 2007).

A final example of an international development that influences national environmental policies applies not so much to Europe but occurs more in developing countries. For example, in 2006, the Board of the International Finance Corporation, the World Bank's investment agency, approved a \$75 million loan to a gold mine, Newmont Mining in Ghana (www.minesandcommunities.org, accessed March 2008). The loan, however, was approved on the condition that the company meet stringent social and environmental standards. In other words, certain environmental issues must be addressed in such policies in order to receive funding from international institutions or government.

The examples give a taste of how different international processes may influence domestic environmental policies. Not only have they shown that countries react differently to international processes as a result of different national characteristics such as socio-economic structures, ecological structures, legislative context, etc. The examples have also underlined the different ways in which international developments may change national environmental policies. The EU Habitats Directive, including among other things a list of conservation areas, was mandatory for member states. The changes as a result of the California Effect would stimulate economic benefits for US

states, and in Ghana, environmental criteria had to be met in order to receive the required financial aid.

But what about the example of the spread of the Dutch system to deal with soil contamination, which has shown that national policies may change solely on the basis of communication? How do such international processes initiate change in national environmental policies? Or, more specifically: where does this international communication take place, who introduces the information to the national agenda, and why would national actors agree to change the national policy? How do different countries decide how to organise the influence of the international communication? Which domestic factors are important in this context?

This study aims to provide insight into those questions, in order to improve our understanding of the international process that is based upon communication, and how countries react to it. Recent studies addressing this international mechanism, such as global governance or policy convergence, suggest that this mechanism is increasingly important (Reinicke, 1999; Holzinger *et al.*, 2008). Such studies have demonstrated the impact of international communication on domestic environmental policies, and have sought to identify the mechanisms of policy change (Jørgens, 2004; Lazer, 2005; Meseguer, 2006; Simmons *et al.*, 2006). Nevertheless, during earlier research carried out as part of the project called Environmental Policy Converge (ENVIPOLCON), in which this international driving force was studied in depth (see section 4.3 for more details), it became increasingly apparent that there has so far not been a thorough empirical and conceptual examination of how this international process influences domestic environmental policies and how it differs among countries (Coleman and Perl, 1999; Orenstein, 2003). In order to increase familiarity with this still incoherent and unorganised understanding of this process, the next section contrasts the international process based upon communication with other international processes that have been more comprehensively studied. Also, it examines the origin of different reactions of countries. From this elaboration, a more specific research goal and research questions derive, which are formulated in section 1.3. Finally, 1.4 gives an outline of the study.

1.2 Voluntary Transnational Communication and its influence on domestic environmental policies

In order to provide insight into how the international process based upon communication influences domestic environmental policies, section 1.2.1 places the international process under consideration in its broader analytical framework of international

driving forces for domestic policy change. By contrasting the process with three other international driving forces, the characteristics of communication and its influence on national policies, particularly through policy-oriented learning, become apparent. Section 1.2.2 outlines how the domestic institutional context of countries determines the difference in reactions to the international process based upon communication.

1.2.1 International driving forces and mechanisms for policy change

Literature dealing with international influences on domestic environmental policies essentially identifies four driving forces that influence national environmental policies (e.g. Liefferink and Jordan, 2004; Busch and Jörgens, 2005; Holzinger and Knill, 2005; Dobbin *et al.*, 2007). Generally, these are called: regulatory competition, imposition, harmonisation, and one that is based on transnational communication (Table 1.1). Each of these four international processes coincides with one of the examples mentioned in section 1.1.

International driving force	Harmonisation	Regulatory competition	Imposition	Variety of labels
Characteristic	Legal obligation, interdependent cooperation	Economic inter-linkage	Power imbalance	Communication

Table 1.1: International driving forces that influence national environmental policies

The first example in section 1.1 was the Habitats Directive, requiring countries to introduce a list of natural habitats to be protected. This international driving force is in theoretical terms called *harmonisation*. It refers to those international processes in which countries are legally obliged by an international institution to introduce a certain policy or policy aspects (Knill, 2001; Börzel, 2002). An important characteristic is that these international legal obligations are established in interdependent cooperation between countries. The EU, for instance, legally obliges its member states to introduce certain policy aspects in their national environmental policies, but before these obligations come into force, the member states have the opportunity to discuss and vote on them. Taking the example of section 1.1, the Netherlands played an important role in pushing the Habitats Directive, especially to introduce the idea of a European network of protected natural areas, having a similar approach nationally. Once the Directive had been formally established, it obliged member states to, among other things, submit a

list of natural habitats by 1995. For various reasons (Van der Top and Van der Zouwen, 2000; Arnouts and Arts, forthcoming), however, the Netherlands then had difficulties establishing the list it had lobbied for in the first place.

The example of the spread of the higher Californian standards for car emissions across the US is an example of what is theoretically called *regulatory competition*. This international driving force is essentially based on economic processes. Because countries are economically interlinked, governments may alter a policy in view of economic competitiveness (Vogel, 1995; 1997; Drezner, 2001; Holzinger and Knill, 2005). In such a fashion, the Californian standard spread across Northern American states. After California had stipulated the production of cleaner cars, nearly all car manufacturers in the US began to design cars with lower emissions, because they wanted to sell cars in California. Consequently, in other states too, cleaner cars were sold, and eventually more and more North American states adopted the Californian standards. Thus, because US states were economically integrated, stringent or greener policies spread from one state to another (Vogel, 1995; 1997).

The third international process in Table 1.1 is theoretically called *imposition*. Imposition reflects asymmetry in power, and occurs when a certain actor is forced by another, more powerful actor to adopt a certain policy or certain policy aspects (DiMaggio and Powel, 1991, Radaelli, 2000). This mechanism is illustrated by the example of the mining project in Ghana. In Ghana, certain environmental issues had to be addressed in order to receive funding from an international institution. In other words, the World Bank imposed sustainability criteria on the project before it provided the financial aid. In this example, the funding recipient had no choice but to comply with the criteria of the World Bank.

Finally, the main characteristic of the fourth international driving force in Table 1.1, *transnational communication*, is that it is “purely based on communication among countries” (Holzinger and Knill, 2005, 728-9). This was shown by the example of the spread of the Dutch values for contaminated land across different countries: the Dutch values were communicated through research institutes and governmental employees of different countries, and discussed in international networks. In this international process, economic processes played no, or at least a minor role, there was no legal obligation, and there was no perceived power imbalance: policies were influenced by voluntary interaction only.

As pointed out in section 1.1, international processes based upon communication are more or less treated as a rest category in the literature. This process has been variously labelled elite networking (Bennett, 1992), voluntary transfer (Dolowitz and Marsh, 1996), diffusion (Busch and Jörgens, 2005), and transnational communication (Holzinger and Knill, 2005). The underlying principle of each of these categories is

that the international processes at work here are purely based upon communication among countries on a voluntary basis, but in their details they deal with slightly different aspects (see section 2.3.2 for more details).

In this study, this final international driving force is the one under consideration. Here it is called Voluntary Transnational Communication (VTC), as an overarching term for the different existing labels. The term Transnational in VTC emphasises the multi-actor perspective: governmental as well as non-governmental representatives are considered to participate in supranational voluntary processes of information exchange. As illustrated by the empirical examples above, non-governmental actors such as research institutes have been important players. In literature on intergovernmental connections, the focus is only on the interaction of government representatives, while in studies of transgovernmental connections, the relations between sub-units of national governments are studied as well (Keohane and Nye, 1977). The term Transnational, however, emphasises the inclusion of a broader range of different types of actors.

The choice for Communication will be obvious: different actors communicate about problems or policy issues, providing and creating knowledge and information and exchanging experiences. To define the concept, the definition in the Merriam-Webster is “exchange of information” (www.merriam-webster.com, accessed May 2008).

The term Voluntary is included as it emphasises that national actors do not have to take part in the international discussion. National actors participate voluntarily, because they wish to or they see the need, but not because there is an obligation, a power imbalance or significant economic benefits. Furthermore, by explicitly referring to the voluntary characteristic, a link is created with the process of policy change at the national level. As is examined in more detail below, in contrast to policy change deriving from the other three international driving forces, it becomes clear that with VTC as a driver for changes in national environmental policies, there are no or at least no relevant legal obligations, no or little power imbalance, and no or no significant economic processes involved.

Each of the four international driving forces differs with regard to the dominant mechanism for policy change at the national level. Table 1.2 complements Table 1.1, by adding the dominant mechanism for domestic policy change to the international driving force. Thus, Table 1.2 provides the motivation for the dominant mechanisms for policy change and highlights the necessary condition for the international driving force to occur. This makes it an analytical tool to establish and investigate the influence of VTC on national environmental policies by policy-oriented learning.

International driving force	Regulatory competition	Imposition	Harmonisation	VTC
Characteristic	Economic inter-linkage	Power imbalance	Legal obligation, interdependent cooperation	Communication
Dominant means of domestic policy change	Response to market forces	Enforcement	Implementation	Policy-oriented learning

Table 1.2: International processes and the dominant mechanisms for national policy change

Apart from regulatory competition, which is based on economic processes, the other three international driving forces provide different levels of flexibility for countries to influence domestic policy change. As a consequence, the extent to which countries influence the international driving force and the decision to adopt it differs (Busch and Jörgens, 2005).

First, policy change resulting from imposition derives from the fact that a country is forced to adopt (an aspect of) a certain policy. This process, which is based on power imbalances between countries or actors, leaves little room for an individual country or actor to influence the process of policy change. The Ghana example demonstrated that in order to carry out the mining project, there was no choice but to comply with the requirements of the World Bank because it was a prerequisite to receiving the financial aid. Because the powerful actor in this example operates internationally, other countries or projects are likely to have to comply with similar environmental requirements as well, meaning more domestic environmental policies will be affected to a similar extent by this international process.

Second, in harmonisation processes, member states are obliged to implement international legislation, such as EU directives. Nevertheless, individual countries can to a certain extent exert influence on the process of national policy change by influencing the international regulation during the negotiation process. As was stressed earlier, before an EU or international regulation is created, countries negotiate on the content of this directive. For example, the example of the Habitats Directive showed that the Netherlands introduced the idea of a European network of protected nature areas into the EU directive, having a similar approach in its national policies.

Finally, in policy changes that are stimulated by VTC, countries have a large amount of influence, because the change takes place on a voluntary basis (Stone, 2004; Busch and Jörgens, 2005; Braun and Gilardi, 2006). The example in section 1.1 dem-

onstrated that there was room for manoeuvre in this international driving force: countries can decide for themselves whether or not to gather foreign experiences and use it in the national policy. For example, France did not use the Dutch values for soil contamination, while the Hungarians did. This international process only works if actors consider the knowledge they have heard internationally as useful for the national policy. In other words, they must feel they have learnt from the knowledge sharing process in VTC. Therefore, for this international driving force, policy-oriented learning is considered the prerequisite for national policy change (Rose, 1991; Evans and Davies, 1999; Stone, 2004). Such policy-oriented learning processes, initiated by VTC, are henceforth referred to as policy-oriented learning from VTC. In summary, for this study, the relationship between VTC and policy-oriented learning is a key aspect, in order to gain insight into how processes based on international communication lead to changes in national environmental policies.

Before turning to the reaction of different countries, two nuances have to be made with regard to Table 1.2: one referring to the relationship between international driving forces (horizontal linkages of Table 1.2), and one concerning the interaction between the national and the international level (vertical linkages in Table 1.2). Vertically, the influence of international driving forces on national policies is not a one-way process. National policies can be influenced by international processes, but in turn, the former may influence international developments. This interaction is nicely illustrated by the example of the Habitats Directive. It showed that the Netherlands had introduced some of its national policy into the Directive. As such, national points of view influenced the regulation before it became mandatory EU-wide. This two-way process implies a Multi-Level Governance perspective (MLG): the influence goes both ways. The international as well as the national, and in some cases also the regional levels, are involved and interlinked and should be taken into account. The same two-way process applies to the other international driving forces, including VTC, as is examined in detail in section 2.4.

Second, referring to the horizontal linkages, the table deliberately refers to a dominant mechanism for policy change: the influence of international developments is not necessarily limited to one international driving force, or one mechanism for policy change. It is possible, or even likely, that two or more international processes are at work simultaneously. For example, when actors discuss a directive in harmonisation processes, they communicate (VTC), as a result of which actors may learn and voluntarily introduce a policy aspect in the domestic environmental policy. As such, the national policy may not only be influenced by the implementation of the EU directive, but may also contain changes as a result of policy-oriented learning processes deriving from VTC (Pape *et al.*, forthcoming). The different international driving forces, then,

do not occur in isolation, but rather in interaction. VTC in particular takes place in interaction with the other international driving forces, because in all other three international driving forces, actors communicate and may therefore learn.

1.2.2 *Domestic institutional factors*

So far, the relationship between VTC and policy-oriented learning has been introduced, yet the second half of the empirical puzzle still needs to be addressed: why do countries react differently to the international driving forces? It is widely recognised that such different reactions derive from differences in the domestic context (Knill, 1997; Borzel and Risse, 2000; Kern *et al.*, 2001, Lenschow *et al.*, 2005) The examples in section 1.1 showed that the reaction of countries depend upon different ecological policy structures, different national laws, different socio-politico-economic characteristics, etc.

In terms of research into how international driving forces influence domestic policy change, harmonisation literature in particular has focussed on how domestic institutional factors have affected national policy change. Implementation literature, in turn, (the implementation deriving from harmonisation processes) refers to domestic institutional factors as well and investigates how these factors affect the influence of harmonisation on national policies.

In policy-oriented learning processes from VTC, the institutional context is of particular importance, because the international driving force is voluntary, and national environmental policy will only change if actors consider the newly gained information to fit into the policy and into the national (institutional) context (Risse-Kappen, 1991; 1994). So, just as a seed needs the right type of soil to grow, domestic institutional factors create conditions for the influence of VTC.

Although the importance of the national institutional context is emphasised in national and international learning theories, such as the demand by governments for scientific input and the position of actors in the policy-making process (Nye, 1987, Adler, 1989; Haas, 1990; Hall, 1996), these theories do not generally provide a structured approach to examine how domestic institutional characteristics determine policy-oriented learning processes. Chapter 3 goes into further detail regarding different identified domestic institutional factors; so far, however, no systematic in-depth research has been carried out into how domestic institutional factors have affected policy-oriented learning from VTC.

1.3 Research goal and research questions

This study is interested in how international communication processes, here called VTC, influence national environmental policies, and how different countries affect the influence of this international process differently. The previous section showed that, to analyse such processes, the relationship between VTC and policy-oriented learning is of major importance, as well as the role domestic institutional factors play in these processes. However, it was also argued that the relationship between VTC and policy-oriented learning has been under-researched, as is the influence of domestic institutional factors on domestic policy-oriented learning from VTC.

Before formulating the specific research goal and research questions, two remarks are in order at this point. Firstly, it was argued when presenting Table 1.2 that a multi-level perspective should be taken into account. This means that, in addition to VTC influencing national environmental policies through policy-oriented learning, national policies in turn influence what is communicated in VTC. Secondly, it was stated that the four international driving forces tend to take place in combination rather than in isolation, especially in the case of VTC because communication takes place in each international driving force. Nevertheless, with reference to the first remark, the focus here is on how domestic institutional factors affect policy-oriented learning from VTC, and not the other way around. Furthermore, referring to the second remark, this study focuses on how VTC influences policy-oriented learning as such instead of taking the interaction of different international driving forces into account.

The influence of VTC on domestic environmental policies was isolated from related processes because the relationship between VTC and policy-oriented learning has so far only been marginally and incoherently addressed. Before VTC and policy-oriented learning can be examined in combination with other international driving forces, or before the interaction between policy-oriented learning and domestic institutional factors in VTC can be analysed, it is necessary to familiarise ourselves with the relationship between VTC and policy-oriented learning, and with the role of domestic institutional factors *per se*. Therefore, these processes have to be studied in isolation first in order to obtain a firm grip on them, to take the interaction and the MLG processes into account in possible follow-up research.

The overall aim of this study, then, is *to explore how domestic institutional factors affect policy-oriented learning from VTC*. This objective contains two sub-goals:

- 1) *To elaborate the relationship between VTC and policy-oriented learning;*
- 2) *To analyse how domestic institutional factors affect these learning processes.*

In order to address this research objective, it is necessary to conceptually establish the relationship between VTC and policy-oriented learning. Subsequently, the domestic institutional factors that are expected to affect this process are discussed. Following these analytical elements, eight case studies investigate the empirical relationship between the analytical aspects of VTC and policy-oriented learning, and aim to demonstrate how domestic institutional factors affect the link between VTC and policy-oriented learning.

The following research questions are formulated to provide structural guidance for this study and bring it further into focus. The first two questions coincide with the two sub-goals formulated above, and deal with the conceptual part of this research in order to provide the tools to tackle the case studies:

- *Which analytical characteristics of VTC and policy-oriented learning establish the relationship between the two concepts?*
- *Which domestic institutional factors affect these learning processes?*

The second two questions trigger the empirical data to explore the link between VTC and policy-oriented learning, and aim to analyse in detail how domestic institutional factors affect policy-oriented learning from VTC. Again coinciding with the two sub-goals formulated above, they have been formulated to provide a clear focus for the analysis of the case studies:

- *How do characteristics of VTC and policy-oriented learning relate from an empirical point of view?*
- *What impact do domestic institutional factors have in these learning processes?*

With the knowledge gathered through answering these research questions in the course of this study, the final research question can then be answered:

- *How do VTC and policy-oriented learning relate, and how do domestic institutional factors affect these learning processes?*

1.4 Research outline

The previous section has specified the aim of the study and formulated research questions. In order to systematically examine the relationship between VTC and policy-oriented learning, and to analyse how different institutional settings affect policy-oriented learning from VTC, a conceptual framework is necessary. Because such a

framework does not currently exist, Chapter 2 gives a structured overview of different policy fields that touch upon VTC and policy-oriented learning to explore the conceptual relationship between the two. The conceptual framework has to allow, or even trigger, further elaboration of this conceptual relationship. In addition, to compare how domestic institutional factors affect policy-oriented learning from VTC, the conceptual framework needs to provide analytical tools that allow comparison. Therefore, Chapter 3 builds on the insights gained in Chapter 2, and introduces two typologies of domestic institutional factors that are expected to be of influence.

Chapter 4 outlines and explains the research strategy, the choices with respect to policy fields and countries, how data were gathered, etc. As such, it creates a link between the conceptual Chapters 2 and 3 and the empirical Chapters 5 and 6. Subsequently, Chapters 5 and 6 present the case studies on contaminated land and noise around airports respectively. In both policy issues, four countries are selected to examine different domestic institutional factors: The Netherlands, England, France and Hungary. For the noise abatement policy, the focus is on Schiphol, Heathrow, Charles de Gaulle and Ferihegy airports. The two empirical chapters show how domestic institutional factors affect policy-oriented learning from VTC, and demonstrate the empirical relationship between VTC and policy-oriented learning. Finally, Chapter 7 summarises the analyses of Chapters 5 and 6, and presents new concepts deriving from the empirical cases by focussing on unexplained patterns and findings. Finally, some recommendations for further research are outlined.

CHAPTER 2

VTC AND POLICY-ORIENTED LEARNING

Although the relationship between VTC and policy-oriented learning is recognised (Busch and Jorgens, 2005, Braun and Gilardi, 2006, Simmons *et al.*, 2006), it has yet to be examined in detail (Meseguer, 2005). Until now, research on this topic has aimed to identify different motivations for policy-oriented learning from VTC, rather than to explore the relationship between the two concepts (Meseguer, 2005, Elkins and Simmons, 2005; Levi-Faur, 2005).

This chapter provides a structured overview of different analytical aspects of the concepts of VTC and policy-oriented learning, and brings together these aspects in a systematic way in order to analyse processes in which policy-oriented learning from VTC takes place. It thus provides an answer to the first research question: *Which analytical characteristics of VTC and policy-oriented learning establish the relationship between the two concepts?* The answer to this question will put forward that the relationship between VTC at the international level and policy-oriented learning at the domestic level is shaped by two elements. The first of these is what specifically is being transferred, here called the object of VTC. Second, the performing actor, i.e. who participates in both VTC and national policy-oriented learning processes.

Section 2.1 starts with an outline of VTC by compiling relevant aspects from different research areas. Section 2.2 deals in more detail with the object of VTC: knowledge. Once different types of knowledge have been identified, section 2.3 creates insight into policy-oriented learning from VTC by integrating different learning theories. After these conceptual considerations, section 2.4, finally, briefly summarises the previous sections, thus reiterating the structured analytical relationship between VTC and policy-oriented learning.

2.1 Voluntary Transnational Communication

This section reviews the literature on VTC in order to create an overview of its relevant key aspects. However, *the* literature on VTC does not exist. Rather, information on VTC is scattered across different research fields, predominantly convergence literature, diffusion studies and literature on policy transfer. There are more research areas that discuss elements linked to VTC, such as international learning theories, but they

have a different focus than this study. International learning theories, for example, (Haas, 1980; Nye, 1987; Haas 1990; Adler, 1991) deal with how individual states can create VTC. Although this touches upon the topic, and could be interesting for further research, the focus here is the other way around: how VTC might influence national policy.

Each of the three fields discussed here, convergence, diffusion and transfer, covers different analytical aspects of VTC. This section pulls together the information that is needed to conceptualise VTC from the different research fields. As we have seen, the literature on policy convergence provides the broader framework of international driving forces in which VTC belongs, and comparing VTC to the other international driving forces allows the formulation of a definition. This is done in section 2.1.1. Diffusion literature, outlined in section 2.1.2, emphasises the communication aspect and distinguishes particular situations or settings in which VTC may take place. In section 2.1.3, policy transfer highlights the actors involved in VTC and touches upon the object of VTC. Finally, section 2.1.4 gives an overview of VTC: what it is, in which settings it might take place, who might be involved and what is communicated.

2.1.1 Convergence literature: analytical framework and definition

Convergence studies analyse if, and if so, to what extent the outcome of different international driving forces leads to convergence of national policies. Policy convergence means that national policies grow more alike over time. As Chapter 1 showed, for this study, convergence literature provides the broader framework of international driving forces in which VTC belongs, which enables a clear *definition* of VTC. The international driving forces are briefly repeated here, in order to come to additional characteristics of VTC.

Different studies on policy convergence show considerable overlap and similarity in the classification of the international driving forces. Generally, three (Busch and Jörgens, 2005) or four (Bennett, 1991b; Holzinger and Knill, 2005) international driving forces are identified. Although they might differ slightly, the basic three are harmonisation, imposition, and VTC. Sometimes regulatory competition is mentioned additionally. First, harmonisation refers to international processes in which countries are legally obliged by an international institution to introduce a certain policy or policy aspects (Knill, 2001; Börzel, 2002). These international legal obligations are established in interdependent cooperation between countries. Second, imposition, sometimes called penetration (Bennett, 1991b) or domination (Howlett, 2000), means that a government is forced by another, more powerful actor to adopt a certain policy or certain policy aspects. Third, in regulatory competition, countries are economically interlinked, and governments change their national policy as a result of their competi-

tive positions (Vogel, 1995; 1997; Drezner, 2001; Holzinger and Knill, 2005). Fourth and final, the main characteristic of VTC is communication. Contrasting this final process with the three other international driving forces, VTC is defined as including all processes of transnational communication that do not involve significant economic processes, in which there is no perceived legal obligation, and power imbalance plays no, or at least a minor role.

Two aspects of VTC should be considered at this point. First, as said, a broad range of concepts comes under the umbrella of VTC. Authors of convergence literature have different labels for the voluntary driving forces; these show great overlap, with differences only marginal. Bennett (1991b) speaks about elite networking or emulation; Holzinger and Knill (2005) name the voluntary driving force transnational communication; Jörgens (2004) calls voluntary processes diffusion and Dimaggio and Powel (1983) see mimetic and normative voluntary processes. The different labels are indicative of differences in emphasis in the domestic means of policy change. The details of these processes are not considered here, because the differences between them are not relevant at this point. Section 2.3.2 deals with the different concepts in more detail. What is important now is that VTC covers all possible processes in which knowledge is exchanged voluntarily, which is done by the definition of VTC just given.

The second aspect to be taken into consideration concerns the main characteristic of VTC, the voluntary basis, which is not undisputed. There are international processes that are neither completely voluntary nor completely compulsory. An example is whether soft regulation of an international organisation such as the OECD is voluntary or not: on the one hand it leans towards harmonisation, while on the other there is no legal obligation. In this study, everything that is not legally compulsory is seen as voluntary. This means that soft law, introduced by an international organisation, is also considered voluntary. Non-binding laws, such as recommendations, are equally considered to be VTC.

2.1.2 Diffusion literature: communication in three settings

The relevance of diffusion literature for this study is twofold: it not only explicitly emphasises communication, but also identifies three *settings* in which VTC might take place. This section first introduces the concept of diffusion, and then outlines its two important aspects for VTC.

The concept of diffusion was developed in the USA, originally concentrating on diffusion among American states (Walker, 1969; Gray, 1973; Bery and Bery, 1990). Over time, two different interpretations of diffusion emerged, with different research foci: one broad and one narrow. The broad view interprets diffusion as the process of

a policy that spreads. The spread of policy is analysed, encompassing the effect of all four international driving forces. The narrow interpretation coincides with VTC, and therefore this interpretation will be further elaborated in this section. In this definition, diffusion is seen as driven primarily by information flows.

This narrow interpretation focusses on the spread of policies through communication. Tews *et al.* (2003, 572) argue that “communication has to be seen as the fundamental mechanism of diffusion” and identify patterns of voluntary policy adoption, mainly at the global level. Although primarily looking at innovation, they identify national policy changes based upon communication processes and acknowledge the relationship with national policy-oriented learning processes (Busch *et al.*, 2005; Elkins and Simmons, 2005; Braun and Gilardi, 2006). In exceptional cases, within the research field of diffusion, the relationship with policy-oriented learning is specifically investigated, however with a different focus compared to this study (Meseguer, 2005; 2006).

Furthermore, diffusion literature identifies many different categories of diffusion processes, but they are inconsistently used. Common categories are horizontal and vertical diffusion, which are based upon the inclusion (horizontal) or absence (vertical) of an international organisation, but the specific definitions of the two categories differs. (Kern, 1998; Tews *et al.*, 2003; Elkins and Simmons, 2005; Levi-Faur, 2005; Tews, 2005). Taking the different views and approaches into account, three *settings* in which VTC might take place are introduced here: one type of vertical VTC and two types of horizontal VTC, i.e. organised and unorganised (Table 2.1). The three settings are described below.

Vertical VTC	Including the presence of (the power of) an international institution
Organised horizontal VTC	Transnational networks without involvement of an international institution
Unorganised horizontal VTC	Bilateral (or multilateral) communication between national actors individually

Table 2.1: Settings in which VTC takes place

Firstly, the main characteristic of vertical VTC is the presence of an international (including European) institution (Elkins and Simmons, 2005). Although this could be confused with processes of harmonisation or imposition (see 2.1.1), it is entirely pos-

sible that information exchange is voluntary. Not only do some international institutions have weak international agreements without enforcement mechanisms (Botcheva and Martin, 2001), most international institutions have meetings in which information is exchanged. For example, meetings of international institutions such as the UN create channels for VTC.

Second, organised horizontal communication takes place in international networks which are organised formally but have no significant involvement by an international institution. For example, the European Union funds so-called concerted actions the aim of which is to stimulate information exchange between member states. The European Union itself, or rather its power, is not present in such networks.

It is worth mentioning that there is a grey area between these two categories of vertical VTC and organised horizontal VTC. An international network that is established under the umbrella of an international organisation might be construed as either vertical VTC or organised horizontal VTC – which one it is depends on the role the international organisation plays. In these unspecific cases, whether an international network belongs to horizontal or vertical VTC is an empirical question.

The third category is unorganised horizontal VTC, which means there is communication between national actors individually. This setting for VTC appears in different shapes and forms in the literature. Often only ad hoc examples are identified; for example, Wolman (1992) emphasises that the private sector plays an important role, and that individuals and neighbourhoods can be important participants. This category is discussed in more detail in section 2.1.3.

Apart from the three settings in which VTC may take place, another distinction is commonly made in the diffusion literature. This distinction is mainly based on the type of actors involved in the different types of networks. Epistemic Communities are networks in which experts participate (Haas, 1992), a Transnational Advocacy Network has a broader range of actors, including churches and NGOs (Keck and Sikkink, 1998), and a Global Public Policy Network, also includes a broader range of actors (Reinicke, 1999). However, these networks partly overlap, and for the purpose of this study are of no additional value to the distinction above.

Recently, diffusion studies have begun to identify a wide range of actors (Busch *et al.*, 2005; Radaelli, 2005; Tews, 2005), i.e. who is involved in the diffusion of policies, as well as the object of diffusion. However, these topics are to a larger extent covered by transfer studies and are therefore discussed below.

2.1.3 Transfer literature: *who* and *what* in VTC

This section outlines those aspects of policy transfer literature that are relevant for VTC. Policy transfer is described by Dolowitz and Marsh (1996, 344) as “a process in which knowledge about policies, administrative factors, institutions etc. in one time and/or place is used in the development of policies, administrative factors and institutions in another time and/or place”. This definition can be narrowed down in different ways, depending on the focus of the study. In line with other authors (Bennett, 1991a; Wolman, 1992; Stone, 2000, 2004), this study only considers the voluntary international policy transfers to add relevant elements to the concept of VTC.

The national focus of policy transfer literature fleshes out the patterns and categories identified in the diffusion studies. As such, it complements the analytical aspects of VTC by providing insight into *who* might be involved in VTC and *what* is communicated. First, transfer studies explicitly identify the actor. In these studies, the multi-actor perspective is common, which examines the role of state and non-state actors (Dolowitz and Marsh, 1996; Dolowitz, 1997; Risse, 2002; Evans, 2004; Stone, 2005). For example, Robertson (1992) describes how political actors use policy aspects from other countries in policy-making processes. Wolman (1992) has empirically demonstrated that private actors play an important role, and that individuals and neighbourhoods can be important participants. Dolowitz and Marsh (1996) list a broad range of actors such as elected officials, political parties, bureaucrats/civil servants, pressure groups, scientists and policy entrepreneurs. Besides the identification of national actors, McAdam and Rucht (1993) examine relational and non-relational channels for diffusion. In relational channels, information about ideas is spread by interpersonal contact, while in non-relational processes it is not the person who is responsible for diffusion, but for example the media, such as television and newspapers, may stimulate diffusion.

The second important aspect pointed out by policy transfer studies is the object of VTC. Although this has recently been taken into account in diffusion literature (Busch and Jörgens, 2005), transfer studies address *what* is communicated more elaborately. In 1996, Dolowitz and Marsh identified eight different categories: “policy goals, policy content, policy instruments, policy programs, institutions, ideologies, ideas, attitudes and negative lessons” (pp. 349–50). More recently (2000), they have argued that knowledge about a broad range of possible objects can be transferred from ideas to administrative arrangements, and from goals to institutions. Indeed, different studies show the great variety in objects (Hoberg, 1991; Majone, 1991; Robertson, 1991; Wolman, 1992; Stone 2000; 2004; Wolman and Page, 2002; De Jong and Edelenbos, 2007).

The object of transfer raises two important points. The first is that the ‘negative lesson’, in other words, transferring knowledge about how *not* to go about something, is also included in this study (Rose, 1991, 19). Second, although the literature reviewed touches upon the object of VTC, it does not provide a satisfying approach to the study of it. Different authors mention that knowledge about a broad range of objects is transferred, but they mostly examine packages of knowledge, such as programmes, or content, that often overlap, such as policy goals and policy content, or ideas and policy goals, rather than knowledge as such. Only a few authors (Evans and Davies, 1999; Stone, 1999; Tews, 2005) have made an attempt to categorise the objects of transfer rather than to add to the list. They categorise the different objects identified by Dolowitz and Marsh (1996) into hard and soft transfer, where soft transfers comprise ideas, concepts and attitudes, and hard transfers consist of programmes and implementation. In order to be able to analyse the object of VTC in more detail, an alternative but complementary approach is introduced in 2.2 below.

2.1.4 VTC: *summary*

This section has described VTC by pulling together a variety of analytical aspects previously scattered across different research fields. A definition of VTC has been given, as well as an outline in which settings it may take place, who might be involved in VTC, and what is communicated.

Besides harmonisation, imposition and international competitiveness, VTC is one of the four commonly identified international driving forces that may change domestic policies. As Chapter 1 showed, based on a comparison with the other international driving forces, VTC is here defined as including all processes of transnational communication that do not involve legal obligation, power imbalances or the dominant influence of competitiveness. This means that soft law is also taken into account, as long as there is no legal obligation to comply with it.

Three different settings are proposed in which VTC can take place: vertical VTC, organised horizontal VTC and unorganised horizontal VTC. Vertical VTC refers to international networks in which an international organisation is present. Organised horizontal VTC refers to international networks without the presence of an international organisation. Unorganised VTC refers to contacts between national actors individually and encompasses a variety of unorganised processes.

VTC has a multi-actor perspective, meaning that all national actors may be involved. A broad range of actors was identified as being able to take part in VTC: from media to ministers; from interest organisations to private organisations; and from entrepreneurs to political parties.

Finally, the reviewed literature touched upon the object of VTC. Although it identified knowledge as the object of VTC, it did not introduce a systematic categorisation to examine the object of VTC. Therefore, the next section goes into further detail regarding knowledge as the object of VTC.

2.2 The object of VTC: types of knowledge

Transfer studies have recognised knowledge as the object of VTC, but they were not the first to offer this observation: as early as the 1980s, studies on international relationships acknowledged the important role played by knowledge in cooperative policy-making (Haas, 1980; Nye, 1987; Haas, 1990; Adler, 1991). However, these studies did not categorise knowledge systematically either in order to analyse it as the object of policy-oriented learning from VTC. In this section, an alternative but complementary approach is therefore developed, aimed at gaining insight into the object of VTC that might lead to policy-oriented learning.

In order to study knowledge as the object of VTC, it must first be clarified what knowledge is. Knowledge is a broad and many-faceted concept, and it would go beyond the scope of this study to discuss all its interpretations and the reasoning behind them. Instead, out of the vast literature, two different interpretations have been selected that illustrate the differences between definitions. Lindblom (1990, 123), argues that knowledge is a “well-probed belief, whether empirical or evaluative”. Knott and Wildavsky make a clear distinction between knowledge and information: “By information we understand data arrayed to make a difference as to whether a decision is made and what shape it takes. Knowledge specifies the relationship between variables and consequences; information relates variable to effects but the relationship remains hypothetical, untested by the results of actual decision. Knowledge is, therefore, a definitive statement of what will happen; information is an educated guess” (Knott and Wildavsky, 1980, 548, in: Radaelli, 1995, 161).

Which of the two definitions is the more suitable depends on the focus of the research. In environmental issues, generally, knowledge is often uncertain. For example in the climate change debate, it is difficult to make a definitive statement of what will happen as a result of climate change; rather it is an educated guess. Although it would be interesting to examine the role played by the educated guess in environmental politics in relation to knowledge, this would be outside the scope of this study. As knowledge in environmental politics may sometimes be labelled an educated guess, a lot of knowledge would be left unexamined if we opted for the definition of Knott and Wildavsky. The broad definition by Lindblom (1990) is therefore taken as guidance.

Because knowledge is seen as the object of VTC and policy-oriented learning, literature on knowledge utilisation was scanned to find a common categorisation. Weiss (1991) and Rich (1997) distinguish three categories: 1) instrumental knowledge use, 2) conceptual knowledge use and 3) strategic knowledge use. As will be shown below, two of the three categories boil down to different *kinds* of knowledge, namely hard and soft. Taking the hard and soft distinction of Evans and Davies (1999) one step further, these two categories are used in this study.

Instrumental knowledge use refers to straightforward knowledge that clarifies an issue. It can range from technical knowledge to solutions to problems. This kind of knowledge has few normative implications and is usually instructive and action-oriented. This is called hard knowledge in this study, because it indicates straightforward facts and findings.

Conceptual knowledge use reflects less concrete knowledge. Instead of offering straightforward facts, this type of knowledge will influence and shape the perception or discourse of the receivers or users (Hoppe, 2005). It can be a framework for a policy, the policy objective or discourse, ideas about the policy, etc. This study refers to this kind of knowledge as soft knowledge.

The third category, strategic research, reflects the use of knowledge, e.g. “the situation where a policy-maker receives a note (knowledge) from a researcher or policy analyst in which research results have already been interpreted for the specific decision at hand” (Weiss, 1991, in: Souren, 2006, 44). In this category, both hard and soft knowledge can be ‘a note from a policy analyst’. This third category reflects a strategy and therefore does not add a different third category of knowledge.

This little detour into knowledge use literature has highlighted the abstract distinction between soft and hard knowledge that is used in this study to examine the object of VTC. Hard knowledge reflects technical knowledge with few normative implications; soft knowledge deals with the framing of policy areas with certain ideas, concepts, discourses, etc.

Two final remarks are in order at this junction. The distinction between hard and soft knowledge is not an absolute one, but contains a grey area, or gliding scale. Furthermore, the distinction does not mean they are not linked or do not influence one another. A certain policy objective (soft knowledge) will imply specific kinds of data or instruments (hard knowledge). For example, a country that aims to integrate conservation into its planning policies will have different measures in place to manage nature than a country that considers conservation a policy objective in its own right.

2.3 Learning

Having outlined the object of VTC, i.e. the knowledge shared in VTC, we now turn to the conceptualisation of policy-oriented learning from VTC. This section introduces two types of learning and focusses on who is involved in policy-oriented learning from VTC, and how knowledge gained through VTC might influence a national policy. Section 2.3.1 demonstrates that, in spite of the existence of many different learning theories, the different theories correspond at an abstract level; section 2.3.2 aims to enhance the understanding of how knowledge gained through VTC may lead to policy-oriented learning from VTC.

2.3.1 *Learning in general*

A great variety of learning theories has emerged since the late 1980s, several of which have become seminal (for an overview see Bennett and Howlett, 1992). These different perspectives reflect that the learning concept was derived from, and fleshed out with the help of different research fields, such as organisational studies (Huber, 1991), psychology (Etheredge 1979; 1981), political science (Rose, 1993; Sabatier, 1988; 1993), sociology (Axelrod, 1997) etc. Each definition has different research foci and emphasises different aspects of learning. For example, learning inspired by organisational studies seeks to answer questions such as: how does learning take place within organisations?, and: how could these processes improve? (Argyris and Schön, 1978; Verbeeten, 1999). In this study, the focus is on how national environmental policies might change as a result of VTC. As such, the focus is on ‘policy-oriented learning’, which is further discussed in 2.3.2.

Despite the apparent variety in learning theories, at an abstract level they put forward similar views. Most learning theories distinguish two learning processes, first called simple and complex learning (Deutsch, 1966; Nye, 1987), but now more commonly known as single and double loop learning (Argyris and Schön, 1978). Simple learning reflects learning about programmes and settings; the underlying preferences and goals are not altered. Policy makers will look for different settings or instruments to improve the existing policy, but do not question the general framework. Complex learning, in contrast, deals with how ideas, concepts and paradigms change. Here, it is not the programmes or the settings that are questioned, but rather the framing of the policy. Most studies follow this distinction but name it differently. For example, May (1992) analyses instrumental and social learning, while Eberg (1997) examines instrumental and conceptual learning. Glasbergen (1996) also identifies ‘conceptual’ learning, but places this opposite technical learning, and Haas (1990) talks about simple and

sophisticated ways of learning. In spite of all the different labels, all categorisations reflect the classic single and double loop learning of Argyris and Schön (1978).

In line with most theories on learning, this study acknowledges the two types of learning, in addition to the earlier identified negative learning (Section 2.1.3). Here the two learning types are called corrective and fundamental learning, following Van der Knaap (1997), as it is believed that this terminology best reflects what happens in the two processes. Corrective learning refers to policy-oriented learning that is meant to adjust a policy; it illustrates that the policy itself is not substantially changed, but merely corrected. Fundamental learning refers to changes in the policy objective, or discourses. If a policy objective or framework is changed, the policy changes fundamentally.

The introduction of corrective and fundamental learning raises questions concerning the relationship with hard and soft knowledge. Corrective learning seems to correspond with hard knowledge, and fundamental learning with soft knowledge. Although there is indeed a match, there is no strict one-to-one relationship: soft knowledge may lead to corrective learning and hard knowledge to fundamental learning. For example, the objective of the contaminated-land policy in the Netherlands was changed as a result of continuous improvements in technical aspects within the policy objective and changes in the instrumentation (Souren, 2006; Veenman, 2006). Below, a more detailed overview is given of how hard and soft knowledge gained through VTC lead to corrective and fundamental policy-oriented learning from VTC.

2.3.2 Policy-oriented learning from VTC

Now that corrective and fundamental learning in different learning theories have been identified, we can work towards establishing policy-oriented learning from VTC. In order to outline such processes, this section first aims to establish a clear understanding of what is considered to be policy-oriented learning and who is/are involved in these processes. Then, it outlines how knowledge gained through VTC leads to policy-oriented learning, using Sabatier and Jenkins-Smith's (1993) Advocacy Coalition Framework as point of departure (see below), complemented with learning theories by Rose (1991) and Hall (1993).

Policy-oriented learning focusses on how and under which circumstances aspects of a policy are changed (Rose, 1993; Sabatier and Jenkins-Smith, 1993). The concept derived from two research fields that are relevant in this context: science and policy, and political sciences. In the area of science and policy, the learning concept derived from the debate between rationality on the one hand and 'muddling through' on the other. Traditionally, policy decisions were approached rationally: applying the most suitable means to achieving desired ends (Albaek, 1995). In reaction to this rational

way of knowledge use, the ‘muddling through approach’ emerged, arguing that decision makers do not work with means-end analyses, since the means and ends are not distinct (Lindblom, 1959). In this view, the trial and error approach is more likely. From this debate, another view was composed that combined the two views, and that is the learning concept. From the perspective of political sciences, the policy-oriented learning concept marked a shift from a traditional focus on interests, and policy as output as the result of power, to a focus on policy processes. In 1974, Hecló stated that the concept of power had to be complemented by the concept of knowledge, because it was highly important in the process. To use Hecló’s words: “politics is not only about powering, also about puzzling” (1974, 306). As a result, over time the concept of learning became increasingly important in the political sciences in general (Radaelli, 1995).

It is against this background that diffusion literature and transfer literature recognise the importance of policy-oriented learning in VTC. However, within these two fields, there are different perspectives on what exactly is policy-oriented learning, which derive from the general question that is put forward in these studies: why there is policy-oriented learning. As a result, different motivations are identified for the national adoption of internationally diffused policy aspects. These different perspectives are often mirrored in the different labels for VTC, as outlined in 2.1.1.

Although beyond the focus of this study, the jungle of concepts on motivations for learning is briefly touched upon below to highlight the position adopted in this study. Most common (Bennet, 1991; Meseguer, 2005, Elkins and Simmons, 2005) is the distinction between emulation and learning. The former refers to the situation where a country copies a policy without carefully considering the content, but merely out of a ‘desire to conform’. The latter reflects a situation in which a policy is changed because this is considered to be an improvement rather than simply to conform. There are several other concepts that emphasise slightly different motivations, introducing yet other concepts (Schneider and Ingram, 1988; Ikenberry, 1990, Elkins and Simmons, 2005). As said, these distinctions and different concepts are not adopted in this study; rather it views them all collectively as policy-oriented learning. After all, all actions are carried out voluntarily and are knowledge-based. As such, whether knowledge gained through VTC is introduced in the national policy because ‘others do it as well’, or because ‘it will improve the national policy’, does not matter in this study: it is all considered to be policy-oriented learning from VTC.

Who undertakes the policy-oriented learning is often linked to the kind of learning under investigation. More specifically, learning regarding political actions is linked to a middle man (Hecló, 1974), and learning from ideas is seen in relationship with NGOs (Finnemore and Sikkink, 1998; Stone, 1999). For the purpose of this study, the

criterion is that actors have to participate in VTC to be able to learn. In other words, all actors who participate in VTC are able to learn from knowledge gained through VTC. In line with the multi-actor perspective of VTC, policy-oriented learning from VTC too has a multi-actor perspective.

How knowledge gained through VTC, whether hard or soft, leads to corrective or fundamental policy-oriented learning is illustrated nicely by using aspects of the Advocacy Coalition Framework (ACF) by Sabatier and Jenkins-Smith (1993), explaining these aspects in terms of knowledge. The ACF takes belief systems as the basis for a policy and discriminates three hierarchically ordered layers in a belief system. First, the core of a beliefs system is the deep core belief, which one could compare to a religion. Then, there is the policy core belief, referring to values, paradigms, concepts, etc. Finally, there are secondary core beliefs, the instrumental decisions and knowledge which are necessary to implement policy core beliefs. In terms of this study, knowledge that deals with the two inner layers, the core of a belief system and the policy core belief, is soft knowledge. Learning with regard to these issues are here called fundamental learning. The secondary aspects, then, refer to hard knowledge, and learning concerning the secondary core beliefs is called corrective learning. Following this layered approach to a policy, it can be explored how different types of knowledge gained through VTC can lead to different types of policy-oriented learning. How this layered approach can be further employed is detailed in 4.2.1.

Although Sabatier and Jenkins-Smith set out a useful framework for policy-oriented learning from VTC, they only consider corrective learning from hard knowledge, as they claim that the secondary aspects are susceptible to change but that inner layers are not. The inner layers of the belief system only change as a result of “perturbations in noncognitive factors external to the subsystem” (pp. 19–20). By this they mean that only dramatic external factors can provoke a change in the core belief, not knowledge alone. Furthermore, they argue that “members of the various coalitions seek to better understand the world in order to further their policy objectives” and that “actors resist information that suggests that their basic belief is invalid” (p. 19). The ACF therefore only considers learning from hard knowledge; according to this theory, policy makers do not gather new concepts or ideas (soft knowledge).

In addition to corrective learning from hard knowledge, however, not only does this study also consider fundamental learning and soft knowledge (Keck and Sikkink, 1998; Risse, 2000), it also aims to explore the possibility that hard knowledge may lead to fundamental learning and soft knowledge to corrective learning. This view is shared by other authors – according to Hall (1993), for example, fundamental learning from both hard and soft knowledge is possible. Although Hall does not explicitly discuss how knowledge might influence learning processes, in his analysis he shows how fun-

damental learning processes develop. Hall distinguishes three orders of learning: the first two, reflecting changes in settings and instruments, represent corrective learning. More interesting, however, is the third order, which is about changes in paradigms, ideas or concepts: here called fundamental learning. In his study, Hall discusses the shift to a monetarist economic theory. He concludes that British policy makers were seeking for ideas to find a solution to Britain's economic problems (soft knowledge), which resulted from a series of economic developments, such as inflation, different income policies, employment policies (hard knowledge), etc. (1993), thus stressing the possibility of fundamental change as a result of the implementation of both hard and soft knowledge.

To specify the extent to which knowledge generated in one country is used in another, the categorisation by Rose (1991) is followed here. Rose distinguishes five degrees of learning: copying, emulation, hybridisation, synthesis and inspiration. Copying means that a country adopts a programme in use elsewhere without any changes. Emulation appears when a country takes over passages of the programme, but reformulates them in order to adjust them to the national context. Hybridisation indicates that the country combines elements of the programme, but no element is copied. Synthesis means that three or more elements are combined. Inspiration, finally, speaks for itself: no actual data are used, but rather the knowledge sharing process acts as a source of inspiration.

2.4 VTC and policy-oriented learning: summary

In this chapter, the relationship between VTC and policy-oriented learning has been considered conceptually by looking at important analytical aspects of VTC, knowledge use and policy-oriented learning. Thus a systematic overview has been created of how knowledge gained through VTC leads to policy-oriented learning. This section presents a summary of this overview, emphasising the two analytical aspects that create the relationship between VTC and learning: knowledge (the object) and actors (who is involved) (Fig. 2.1).

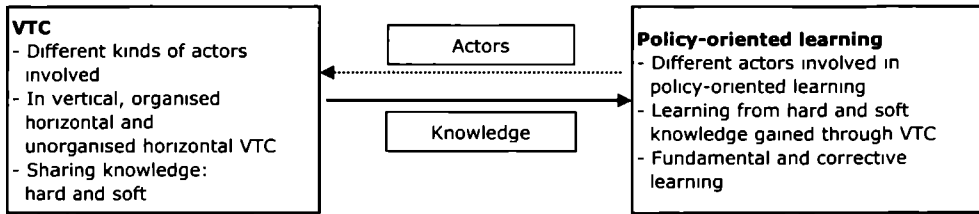


Figure 2.1: The relationship between VTC and policy-oriented learning

VTC is one of the four commonly identified international driving forces that can change domestic policies. Its main characteristic is that it is based on transnational communication, meaning that there is no perceived power imbalance and there are no legal obligations or economic competitiveness involved. Furthermore, there are three settings in which VTC might take place: vertical VTC means that there is an international organisation involved in the transnational networks, such as in OECD meetings. Organised horizontal VTC refers to transnational networks that are not under supervision of an international organisation, for example when researchers from different countries pull a network together to discuss results. Finally, there is unorganised horizontal VTC, which represents contacts between representatives from countries individually.

Regarding who is involved in VTC and policy-oriented learning, the multi-actor perspective was stressed. Not only government representatives attend international meetings, but interest organisations also discuss strategies internationally, and researchers interact with counterparts overseas. These actors also learn at the national level. All those who have gained knowledge through VTC are able to incorporate this knowledge into their policy. Exactly who undergoes learning through VTC is addressed in more detail in the next chapter.

Knowledge has been put forward as the object of VTC; it is first shared at the international level and subsequently introduced at the national level. To gain insight into the object of VTC, this research distinguishes two types of knowledge: hard and soft knowledge. Hard knowledge refers to technical, straightforward knowledge such as programmes; soft knowledge refers to ideas, policy frameworks and attitudes.

Finally, two types of learning were identified: corrective and fundamental learning. It was outlined that the layered character of a policy allows for an analysis of how knowledge gained through VTC leads to policy-oriented learning: the policy core and its 'secondary aspects', i.e. instruments and settings. Fundamental learning means changes in the policy objective or framework, whereas corrective learning refers to learning about instruments and settings. Although soft and hard knowledge and cor-

rective and fundamental learning appear to have one-to-one relationships, soft knowledge may lead to corrective learning and hard knowledge to fundamental learning.

Figure 2.1 is a schematic representation of the relationship between VTC and policy-oriented learning, and reiterates those aspects that are important to the analysis of this connection. A brief remark is in order at this point regarding the interaction between policy-oriented learning and VTC, although this point has also been made before. The dashed arrow shows that policy-oriented learning may influence VTC as well. For example, what is learnt nationally will influence the knowledge that is shared in VTC. This is an interesting process, not least because it will eventually have an impact on how VTC influences national policies. Nevertheless, this study limits the analysis to one aspect of VTC and policy-oriented learning. The focus is on gaining insight into how VTC may influence policy-oriented learning and not the other way around, because the link between VTC and policy-oriented learning is an area which has so far not been thoroughly investigated.

In describing how VTC may lead to policy-oriented learning, the importance of actors and knowledge has become apparent. This chapter outlined how knowledge gained through VTC may influence a national policy. Who specifically introduces the knowledge depends on different domestic institutional factors, such as who is involved in policy-making processes and the national utilisation of knowledge. The next chapter considers institutional factors that affect policy-oriented learning through VTC.

CHAPTER 3

DOMESTIC INSTITUTIONAL FACTORS

Having created a structured overview of the links between VTC and policy-oriented learning in the previous chapter, it is now time to focus on domestic institutional factors. In Chapter 2 it was pointed out that actors and knowledge form the links between VTC and learning; this chapter introduces domestic institutional factors in relation to these two aspects in order to shed light on how domestic factors affect policy-oriented learning from VTC, focussing on who is involved in policy-oriented learning from VTC and what is learnt. Thus it provides the tools to answer the research question: *Which domestic institutional factors affect policy-oriented learning from VTC?*

Before specifying the domestic institutional factors, first it has to be clarified what is meant by institutions; section 3.1 briefly outlines what is understood by institutions in this study. Section 3.2 introduces and puts into practice two categories of domestic institutional factors that allow comparison of how different institutional factors affect policy-oriented learning from VTC. Then, section 3.3 summarises the newly added concepts in relation to VTC and learning, on the basis of which more refined research questions are formulated in section 3.4.

3.1 Institutionalism

Institutionalism refers to the role that institutions play. According to different views on institutionalism, institutions may shape the behaviour of actors, are shaped as the result of behaviour, or both (Giddens, 1984). In this study, the concept is interpreted as outlined below.

Commonly, three different interpretations of institutionalism are distinguished (for an elaborated discussion of institutionalism, see Hall and Taylor, 1996; Peters, 2005). The earliest one is rational choice institutionalism which, as the name indicates, is based on the rational choice theory, derived from economics. It sees institutions as the context in which actors define their strategies to maximise their interests or power. Institutions provide the rules with which an actor has to comply; actors' interests, in turn, are treated as assumptions, meaning that they are unchangeable.

For sociological institutionalists, the cultural aspect is key: institutions and culture shade into each other (Dimaggio and Powel, 1983; 1991). They include "not just for-

mal rules, procedures and norms (...) but also the symbols, systems, cognitive scripts, and moral templates that provide the ‘frames of meaning’ guiding human action” (Hall and Taylor, 1996, 947). This means that institutions shape and constitute actions and preferences: actors form their preferences through interaction with the ‘ethos’ of certain institutions. Here, institutions are seen as changeable, responding to changing norms, and accordingly, actors’ interests and identities may change.

Finally, there is historical institutionalism. Although the exact definition of institutions and their level of influence depends on the author, Hall and Taylor’s (1996) definition is relatively undisputed: “the formal or informal procedures, routines, norms and conventions embedded in the organisational structure of the polity and the political economy” (p. 438). It provides a framework for analysing how institutions shape, and in turn are shaped by the decision-making process, because in the view of historical institutionalists, institutions not only provide the rules for strategic interest maximisation, but also shape actors’ preferences. Using Checkel’s (1999a) words: “institutions can have deeper effects on actors’ strategies, initially adopted for self-interested reasons, get locked into and institutionalized in politics” (p. 546). From a short-term perspective, this places institutions in line with the rational choice perspective: they provide useful information and structure the game of politics. However, historical institutionalism does not stop there, but moves beyond the mere explanation of strategic interaction and (Thelen and Steinmo, 1992) by using the concept of path dependency, the basic premise of which is that history matters: what we do today and how we do it results from what we did before and how we did that. This long-term perspective on institutions in historical institutionalism links in with the view of sociological institutionalism: path dependency and the ‘stickiness’ of institutions affect and structure the identities and preferences of actors. For this study, historical institutionalism allows to study policy-oriented learning from VTC by actors to maximise their interests, as well as policy-oriented learning that changes preferences and norms.

3.2 Domestic institutional factors

This study is not the first to acknowledge the importance of domestic institutional factors for policy change from international driving forces (Risse-Kappen, 1995; Checkel, 1999b; Knill, 2001; Lenschow *et al.*, 2005), or for policy-learning learning or transfer (Haas, 1990; Rose, 1991; Adler and Haas, 1992; Wolman, 1992; Hall, 1993). The studies in question have helped to bring this study into focus in order to examine domestic institutional factors.

What is important here is that it is possible to analyse how domestic institutional factors affect policy-oriented learning from VTC. In this context, studies on policy-oriented learning (Sabatier and Jenkins-Smith, 1993), or diffusion studies (Tews *et al.*, 2003; Radaelli, 2005) to some extent, list institutional factors, but these lists are not useful here because they do not facilitate a comparison of how different domestic institutional factors affect policy-oriented learning from VTC. These studies contain lists of eight or ten inarticulate domestic institutional factors. For the purpose of this study, a more coherent set of such factors is required, providing a more systematic categorisation than a disparate list with many individual domestic institutional factors. Sets of grouped and interrelated domestic institutional factors will allow a systematic comparison of how the different domestic institutional factors affect policy processes, and more specifically, policy-oriented learning. Implementation literature provides examples of how to deal with the issue of comparison, when dealing with the role of institutional adaption and institutional change (Knill, 2001). These studies demonstrate that the strength of using typologies lies in the fact that they enable comparison among the different domestic institutional factors, and that they address transformations between these categories. Furthermore, they enable a structural analysis of how the different institutional factors manage learning from VTC.

In addition, the previous chapter demonstrated that actors and knowledge form the link between VTC and policy-oriented learning: knowledge is the object of VTC and learning and actors carry out the transfer of knowledge. The crucial role of these two aspects is underlined by several authors. For example, Hall (1993) emphasises the importance of actors in specific policy networks for policy-oriented learning. More specifically, Pemberton (2000) analyses decision-making processes with regard to policy-oriented learning, in which he “highlighted the importance both of institutional relationships and the impact of context and structure of policy making” on policy-oriented learning (p. 789). Regarding knowledge, Haas for example (1990) remarks that in policy-making processes, governments require or request scientific knowledge in different ways and to different extents.

At this junction, it is worthwhile looking at two domestic institutional factors: policy-making processes and the way that knowledge is used. Section 3.2.1 discusses the different roles played by actors in different policy-making processes. Section 3.2.2 provides a framework for identifying models of knowledge use, and for analysing how these models affect policy-oriented learning from VTC. As said, for both domestic institutional factors, typologies are used. These typologies are described in considerable detail to enhance the understanding of how different ways of knowledge use and different policy-making processes manage policy-oriented learning from VTC.

3.2.1 Typology: etatism, liberal-pluralism and corporatism

In order to analyse how policy-making processes affect policy-oriented learning from VTC, this study uses the typology of etatism, liberal-pluralism and corporatism. This has proven its value to many scholars who have used this trichotomy to compare different national institutional contexts and policy styles (Van Waarden, 1995a; 1995b; Harvey, 1996; Falkner, 2001; Jordana *et al.*, 2005; Liefferink, 2006). For example, research by Risse-Kappen (1995) and Checkel (1999b) has demonstrated the relevance of this three-pronged typology for this study in particular by using it to analyse the influence of transnational relationships or diffusion processes and how domestic processes might affect these relationships and processes. In addition, this typology allows researchers to examine the position of actors in different policy-making processes (Mintrom, 1997; Mintrom and Vergari, 1998). Actors have different roles in different policy-making processes, and as a result of these different roles, learning through VTC is structured in different ways.

Below, the three ideal types of the typology are outlined in terms of regulatory structure and policy style. Regulatory structure refers to the number of institutions that have access to the policy-making process, the so called inner circle, and to the dominance of key resources. These key resources are commonly considered to be expertise, finance and legitimacy (Van der Zouwen, 2006). Furthermore, the regulatory structure is specified by addressing the actors involved and identifying whether the policy-making process takes place in an open or closed network. Policy style refers to the relationship between government and other (societal) actors in the policy-making process, complemented with the style of communication between actors (Table 3.1).

The definition of corporatism is not uniform (Vogel, 1986; for an extended overview, see Lehbruch and Schmitter, 1982), but this study uses two relevant characteristics of macro-level corporatism, on which there is common agreement (Lehbruch and Schmitter, 1982). First, with regard to the regulatory structure, the commonly held view is that a limited number of actors from the market, the state and civil society is directly involved in the policy-making process. This group is called the inner circle (Table 3.1). The inner circle is well embedded, ensuring a high level of continuity (Van Waarden, 1992, 48). Furthermore, resources are shared amongst the limited number of actors. The second aspect is the policy-making style: there will be a search for consensus and compromise through deliberating and bargaining between those representing the interests involved (Lehbruch and Schmitter, 1982, 5 – 6).

Corporatist policy-making processes are characterised by a closed network and there is a limited group of actors who have access to the policy-making process. This means that actors are either in or out; those who fall outside the policy-making struc-

ture are not actively heard. The actors in the inner circle represent society in a highly organised form, such as labour unions, business associations, interest organisations, etc. (Van Waarden, 1995a; Lehmkuhl, 2001). Each of these has a certain function in the policy-making process, which is linked to resources: each of these actors specialises in the use of specific resources. For example research institutes – mostly partly state-owned – dominate expertise, while private companies predominantly provide the financial means to carry out the policy. Of course, functionality and resources are not strictly limited to specific actors, but may partly overlap. Regarding the policy-making style, actors aim to reach consensus by focussing on each other's interests and trying to find common ground. This process takes place in an organised setting, and the use of committees in case of a dispute in the inner circle is common.

In etatist policy-making processes, Van Waarden (1995b) and Liefferink (2006) point out that the central state is dominant. The inner circle is predominantly formed by the central state, which controls most resources: commonly, the state formulates the policy, has the expertise and arranges the financing. Other actors, such as business and interest organisations only have limited access to the policy-making process and therefore play a minor role. Etatist structures are attributed an authoritative, top-down policy-making style, deriving from the fact that regulation is dominated by the state.

Etatist policy-making processes can be identified by the small number of actors who formulate the policy. This group, as we have seen, is mostly state-dominated, although sometimes important industries are included. Importantly, those involved in the policy-making process control the major resources. As such, those actors who have access to the policy-making process form a closed network. As a consequence, actors outside the inner circle have no or very limited access to the policy-making process. The policy-making style reflects the same trend: the government imposes policies on actors outside central government and not much consultation takes place with groups within the wider society. For example, regional and local authorities have to do what the central state prescribes.

Finally, there is liberal-pluralism. In this ideal type, no single actor dominates. The state leaves room for the market and civil society, which implies that resources are spread among actors, both public and private (Wachter, 2007). In this ideal type, the regulatory structure usually has many different participants in the inner circle, with overlapping memberships. For example, local authorities can participate in the policy process individually, and can also be represented in an umbrella institution. Because there are many actors who may all be included in the policy-making process, the policy-making style is adversarial, i.e. based on competition (Van Waarden, 1995b; Liefferink, 2006).

A liberal-pluralist policy-making process can be identified by the many different actors involved – over 50 is not uncommon. Furthermore, there is an open network: individual interest organisations, industries and consultancies can all exert influence on the policy-making process. Policy resources are spread among participants. For example, the government employs experts on a contract basis for a certain period of time when addressing a certain issue, and consultancies and universities can all tender for this advisory role. Who ultimately advises the government will vary according to the policy area as well as over time. Because of the open and unstructured nature of the network, actors compete to influence the policy and to gain access to resources, making for a competitive policy-making process. Consultation to inform and consult public opinion is common.

Aspects of the policy-making process	Corporatism	Etatism	Liberal-pluralism
Regulatory structure			
Actors	Organised groups	Mainly central government, sometimes industry	Involvement by individual organisations
Access	Limited	Low	High
Network	Closed (actors outside not heard)	Closed (actors outside not heard)	Open (all actors heard)
Control over major resources	Resources belong to specific groups	State owns most, if not all, resources	Spread; resource ownership is not fixed
Policy style			
Relationship between actors	Consensus, mediating	Authoritative, intervening	Adversarial, Competitive
Communication style	Deliberation	Imposition	Consultation processes

Table 3.1: Characteristics of policy-making processes (adapted from Lieffennk, 2006, 62)

This outline of etatism, liberal-pluralism and corporatism, their characteristics and how they operate, will enable the identification of different policy-making processes in

the case studies. The cases studies, in turn, will provide information on how policy-making processes affect policy-oriented learning from VTC.

In line with the findings of Risse-Kappen (1995) and Checkel (1999b), namely that access to the policy-making process is important to influence a policy outcome, this section ends with formulating suggestions on how different policy-making processes might affect policy-oriented learning from VTC. For example, in etatist policy-making processes, such learning processes are likely to occur through the handful of people who are in charge of formulating the policy because they have access to the policy-making process, control most resources and impose the policy on others. Learning in liberal-pluralist policy-making processes may occur through any of the many different actors in the inner circle, thanks to the high number of participants who have access to the process and the spread of resources. In addition, the competitive policy-making style and consultation processes may give participants the opportunity to introduce knowledge from VTC. For corporatist policy-making processes, with their limited numbers of participants, structured deliberation processes and functionally divided resources, it is harder to say how learning through VTC may occur. On the one hand, the limited number of actors in the inner circle may hamper learning from VTC; on the other hand, in the policy-making style that aims for consensus, knowledge gained through VTC is likely to be discussed.

3.2.2 Institutionalisation of knowledge use in a matrix

As indicated before, knowledge is the second key element in the connection between VTC and policy-oriented learning besides actors. Therefore, it is relevant to analyse how knowledge use affects the way knowledge is incorporated in policy-making. Four ideal types are discussed here in considerable detail (Fig. 3.1) in order to examine how knowledge use affects learning from VTC in the case studies.

Before going into the details of the typology, this section briefly recalls those aspects of the development of this research area that provide insight into concepts that are relevant later on this section. The debate between science (knowledge) and politics (policy-making) originally focussed on science and policy as two different communities, barely speaking to or understanding each other (Caplan, 1979). When over time it became clear that science was actively used in policy-making processes, different models and ways of utilising science were developed (Weiss, 1979; 1988; 1991). Eventually, the view went beyond the use of science in politics to interaction between the two communities (Gieryn, 1995; Jasanof, 1995).

Since the beginning of the 1990s, the relationship of politics and science with institutional settings has been the focus of attention (Halffmann 2003; Hoppe, 2005). In 1991, Wittrock introduced a matrix which placed science and policy-making against a

historic-institutional background. The matrix consists of two continuums, one concerning the relationship between politicians and scientists, and one dealing with the logistics of this relationship; in other words: it investigates whether scientists and policy makers understand each other or whether they are in two different communities (Fig. 3.1). With regard to the relationship between politics and science in an institutional context, Wittrock makes a distinction between the “primacy of the domain of research”, and the “primacy of the domain of policy making and administration” (p. 341). This distinction coincides with what Hoppe (2005) labelled as “politics on top, experts on tap”, or “technocratic primacy” and “decisionistic primacy” (p. 199). In other words, in policy processes where the relationship between politics and science is dominated by science (truth speaks to power), policy makers are dependent on scientific input, such as techniques, data etc. In policy processes where public policy makers are dominant, scientists may provide input for policy-processes, but the former decide whether they use this knowledge or not. Furthermore, Wittrock (1991), points to the importance of diverse and unitary logistics, or convergence and divergence (Hoppe, 2003) in how science and politics interact. The idea of divergent logistics recalls the two communities’ discussion by Caplan, which argued that scientists and policy makers use different terminologies and have difficulty understanding each other. The two worlds operate in different modes, which are incompatible. In contrast, according to the idea of convergent logistics, science and politics fit and feed into each other’s worlds.

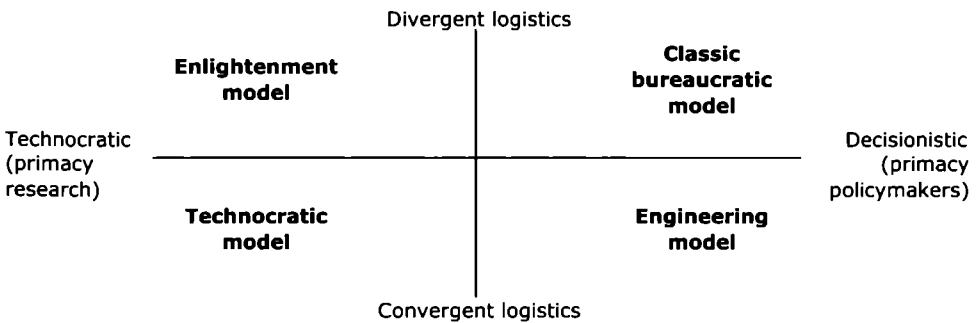


Figure 3.1: Knowledge use in policy-making processes (adapted from Wittrock, 1991, 341 and Hoppe, 2005, 208)

The two continuums in Figure 3.1 together create a matrix, which provides four ideal types, distinguishing different ways of knowledge use. These abstract categories enable

a comparison of how different domestic institutional factors affect learning through VTC. The four different ideal types are described and outlined below, to enable the examination of how they affect policy-oriented learning from VTC (Table 3.2).

In this study, scientists are considered to be those people who deliver technical scientific input. When keeping in mind the previous section, it is important to note that the question of who is considered to be a policy maker depends on who participates in the inner circle of the policy-making process. This differs in the three discerned types of policy-making processes. This study takes differences between policy-making processes into account when looking at the role of policy makers.

In the enlightenment model (Weiss, 1979), policy makers depend on scientists, and science and policy have divergent logistics (Fig. 3.1). Scientists are dominant and enlighten policy makers with the knowledge they provide. Because science and politics work with different logistics, information rarely goes straight into the policy but operates indirectly, by influencing the ideas and ways of thinking of policy makers. An enlightened knowledge use can be identified by the different views of policy makers and scientists on the policy. Also, policy makers will not have a comprehensive view of (the technical aspects of) the policy. Policy makers often consider the policy to be too technical and complex, because the formulation is dominated by the input by scientists.

In a technocratic type of policy-making process, as in the enlightenment model, scientists rather than policy makers are the dominant actors (Fig. 3.1). The difference between the two models lies in the fact that in the technocratic model, scientists and policy makers do understand each other's terminology, and research will be successfully adapted to policy development. A technocratic type of knowledge use can be identified by the fact that policy makers have a full understanding of the policy, including the more technical aspects. The policy itself has various quite complex, technical or scientific aspects, but policy makers as well as scientists understand and agree upon the technical elements. There can be overlap in who formulates the policy and who delivers scientific input.

The opposite of the technocratic model is the bureaucratic model (Fig. 3.1). This model reflects the primacy of policy makers over scientists, and divergence between the two. Scientists may provide input to policy makers, but the latter have the final word in the development of the policy. Because there is divergence in the logistics between science and policy making, the communication between the two will be limited, and policy makers will not have a comprehensive view of the scientific aspects of the policy. As such, they are more inclined to base a policy on societal feedback, such as opinion polls, than on scientific input. A bureaucratic knowledge use can be identified by the fact that scientists and policy makers have different views on the policy

(aspects). The policy itself does not contain many technical aspects and discussions on these are dominated by policy makers.

Finally, in the engineering model (Fig. 3.1), a policy process is dominated by policy makers, and there is convergence in the communication with scientists. This setting results in policy makers telling researchers what their tasks are. Furthermore, research carried out by scientists is understandable for both, thanks to the convergent logistics. An engineering type of knowledge use can be identified by the fact that societal developments or experiences play an important part in the policy, rather than technical elements. Policy makers and scientists have a similar understanding of the policy. Because science is used to underpin the policy, policy makers have a comprehensive view of it, and overlap between scientists and policy makers in the policy-making process is likely.

Aspects of the knowledge use process	Enlightenment	Technocratic	Bureaucratic	Engineering
Primacy	Scientists	Scientists	Policy makers	Policy makers
View policy makers and scientists on the policy	Different	Similar	Different	Similar
Technical aspects in the policy	Many	Many	As few as possible	Few
Logistics	Divergence	Convergence	Divergence	Convergence
Comprehensive view of policy makers	Mainly no	Predominantly yes	No	Mainly yes
Personal overlap scientists and policy makers	Not likely	Yes	Unlikely	Likely

Table 3.2: Characteristics of models of knowledge use

Similar to section 3.2.1, this section too concludes with suggestions on how knowledge use may affect policy-oriented learning from VTC. Policy-making processes with

an enlightened type of knowledge use are likely to display minimal influence of policy-oriented learning from VTC due to the divergence in communication between policy makers and scientists. However, scientists may be expected to initiate learning from VTC, because they dominate the policy-making process in this type of knowledge use. In a technocratic model, both scientists and policy makers are likely to introduce the knowledge gained through VTC. Although scientists may dominate the policy-making process, policy makers have a comprehensive view of the policy and are able to introduce knowledge gained through VTC as well in this type of knowledge use. In a bureaucratic model, knowledge gained through VTC is likely to be introduced by policy makers, because they are dominant in the policy-making process. As there is limited communication between policy makers and scientists, the knowledge that scientists may bring into the policy is not expected to carry much weight. Finally, in policy-making processes with an engineering type of knowledge use, policy makers, being the dominant players, are likely to initiate policy-oriented learning from VTC. Because policy makers and scientists speak the same language, knowledge from VTC and generated by scientists may also be introduced into the policy.

3.3 Summary

This chapter has introduced domestic institutional factors in order to shed light on how domestic factors affect policy-oriented learning from VTC (Fig. 3.2). Two abstract categories of domestic institutional factors were introduced, to enable comparison among the different typologies, and to highlight transformations. The typology of etatism, liberal-pluralism and corporatism was selected to focus on the role of the actors, and we have seen how knowledge can be used in an enlightened, bureaucratic, technocratic and engineering manner. The two domestic institutional factors, i.e. policy-making processes and knowledge use, correspond with the two aspects, actors and knowledge, outlined in the previous chapter to establish the connection between VTC and policy-oriented learning.

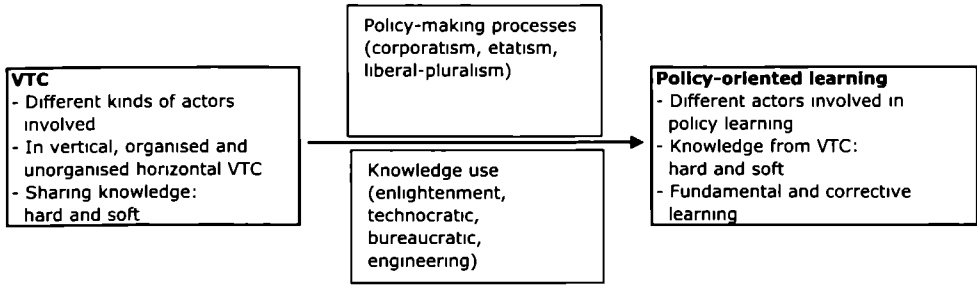


Figure 3.2: Domestic institutional factors and the relationship between VTC and policy-oriented learning

3.4 Refined research questions

Chapter 1 formulated preliminary research questions. The first two of these, which were: *which analytical characteristics of VTC and policy-oriented learning establish the relationship between the two concepts?* and *which domestic institutional factors affect these learning processes?* constituted a challenge to develop a conceptual framework, which was done in Chapters 2 and 3.

By describing and outlining important aspects of VTC, policy-oriented learning and domestic institutional factors, the central concepts have been introduced. For the relationship between VTC and policy-oriented learning, the central concepts are the following. For VTC, a distinction is made between vertical, organised and organised horizontal VTC. Furthermore, the object of VTC, knowledge, is divided into hard and soft knowledge. Policy-oriented learning from VTC is divided into corrective and fundamental learning. With regard to the domestic institutional factors, we have just seen that the focus is on the typology of policy-making processes and of types of knowledge use, with four and three ideal types respectively. Now, we can reformulate the preliminary research questions, using the additional central concepts to put the questions into sharper focus:

- *How do the three settings of VTC, the two different kinds of knowledge and fundamental and corrective learning relate empirically?*
- *What influence do different domestic policy-making processes and knowledge use have on these learning processes?*

The final question remains unchanged:

- *How do VTC and policy-oriented learning relate, and how do domestic institutional factors affect these learning processes?*

Obviously, this study addresses a considerable number of concepts. In order not to get lost during the case studies and to maintain our focus on the central concepts, a question has been formulated that is put forward at the beginning of every case study. By answering this question, the case studies provide the necessary information to answer the research questions. Strictly speaking, this question should be:

- *Which aspects of the policy showed evidence for corrective or fundamental policy-oriented learning from hard or soft knowledge that was gained in vertical, horizontal organised or horizontal unorganised settings of VTC and what role did policy-making processes and knowledge use play in policy-oriented learning from VTC?*

This, however, is quite a complex question. The intention of this question is that it steers us through the case studies, on the one hand helping to gather information to examine those policy aspects that changed as a result of policy-oriented learning from VTC, and on the other hand to focus on how domestic institutional factors affect this process. While still taking the intention of the question and the different concepts into account, the guiding question can usefully be reduced to:

- *Which aspects of the policy showed evidence for policy-oriented learning from VTC and how do domestic institutional factors play a role in these processes?*

To describe and analyse the case studies in Chapters 5 and 6, the following chapter outlines the research strategy, introduces two methods to enable comparison of the concepts introduced here, and justifies the choices of the case studies and the countries.

CHAPTER 4

METHODOLOGY

This chapter outlines the research design, explains specific choices and describes the data collection process. By clarifying these methodological aspects, it links the conceptual framework in Chapters 2 and 3 with the empirical Chapters 5 and 6 and eventually the conclusions in Chapter 7. First, section 4.1 explains the research strategy. Then, section 4.2 outlines how different policy fields are compared and how policy-oriented learning from VTC is tackled, section 4.3 explains the case and country selections. Section 4.4, finally, describes the data collection.

4.1 Research strategy: the case study

The choice for the case study as research strategy derives from the aim of the research: *to explore how domestic institutional factors affect policy-oriented learning from VTC*. Firstly, Chapter 3 showed that in order to achieve this goal, ‘how questions’ have to be answered. The in-depth analysis of processes, which is characteristic of case studies, enables the researcher to address such questions (Yin, 1994, 1; Denzin and Lincoln, 2003). Secondly, it is widely recognised that case studies are suitable for the study of complex phenomena in their natural context; In Yin’s words (1994, 13), case studies are well suited to study processes in which “the boundaries between phenomenon and context are not clear”. Here, the focus is explicitly on how domestic institutional contexts, i.e the policy-making process and the knowledge use, influence policy-oriented learning from VTC. Thirdly, as Hutjes and Van Buren point out (1992, 15), a case study strategy pays special attention to the interrelatedness of factors. Here, the focus on the relationship between VTC and policy-oriented learning and how domestic institutional factors play a role in these processes, is a typical example of analysing the interrelatedness between concepts.

The two sub-goals of the study, namely 1) *to elaborate the relationship between VTC and policy-oriented learning*, and 2) *to analyse how domestic institutional factors affect these learning processes*, further specify the research strategy as an “embedded case design” (Yin, 1994, 41-43). This means that within one case study there are more units of analysis.

In this research, a total of eight cases is investigated: two policy areas, and four countries within these policy areas. The policy field are based upon similarity, and four

countries are selected upon differences. This structure is determined by the two sub-goals: the need of sufficiently similar cases derives from the first research sub-goal, which implies generalisation. The second sub-goal focusses upon differences, and therefore different cases are necessary. Each of these eight case studies fills a space in the overall conceptual framework (Ragin, 1987; Wester, 1995). George and Bennett (2005, 78) call this research strategy “‘building block’ studies of particular types or sub-types of a phenomenon to identify common patterns or serve a particular kind of heuristic purpose”. How the two goals determine this research strategy is outlined in further detail below.

The first sub-goal aims to outline and further specify the relationship between VTC and policy-oriented learning – in George and Bennett’s words, it aims to identify “common patterns or serve a particular kind of heuristic purpose” (2005, 78). Here we touch upon the subject of generalisation. Generalisation of case studies is discussed extensively in the literature. Yin (1994, 31) makes a crucial point in this discussion when he states that the case study should not aim for “statistical generalisation”, which implies that inference is made for a population, because such a claim should be made based on sampled data. So, generalisations in the sense of ‘statistical generalisation’ are not made here. Rather, the aim is to achieve “analytic generalisation”, which means that a “previously developed theory is used as a template with which to compare the empirical results of the case study” (Yin, 1994, 30-31). Because a case study does not work with a large quantity of sampled data, some authors refer to transferability rather than to generalisation, which means the reader has to decide whether to apply it to other situations. Other authors have their own views on how generalisation could be achieved. For example, Flyvberg (2001, 66) emphasises the importance of a narrative approach and the “power of example” to identify patterns in policy processes, and argues that in this way, generalisations can be made to a certain extent. Others (e.g. King *et al.*, 1994; Korsten *et al.*, 1995; George and Bennett, 2005) argue that common patterns can be detected and theoretical contributions can be made by case studies, if methodological choices are made for that purpose.

In such a context, a combination of within-case analysis and cross-case comparison is increasingly acknowledged to be the strongest way of identifying patterns, making suggestions for heuristic concepts and providing additional theoretical insights (George and Bennett, 2005, 18). Therefore, in order to reach the first sub-goal, two similar policy issues were selected in order to identify common patterns by cross-case comparison. After all, based upon one case study, it is difficult to identify common patterns in the processes of policy-oriented learning from VTC and how domestic institutional factors affect policy learning processes. The probability that the analytical conclusions might be useful for identifying patterns in other empirical cases increases

when cases show similar results. For practical reasons, two similar cases were examined. Three similar case studies, each including four sub-cases, would mean that 12 case studies had to be conducted, which would be too labour-intensive.

Before moving on to the explanation of how the second sub-goal, which was to *analyse how different domestic institutional factors affect the learning processes*, determines the different sub-cases, we first turn to external validity and related concepts. Generalisation refers to the external validity of case-study research, i.e. the extent to which the results can be generalised to other situations. Within the acknowledged limited external validity of case studies in general, the multi-case study approach and the replication logic optimise external validity, as shown above. Two other concepts are commonly mentioned in this context: internal validity and reliability (Yin, 1994; Swanborn, 1996). Although section 4.4 describes in detail how these aspects are taken into account, it is useful to touch upon them briefly at this point. Internal validity refers to the interpretation of the data by the researcher. By using source triangulation, among other methods, the internal validity is enhanced. Apart from applying source triangulation, in this research the study reports, which were a description of the policy process (section 4.2.2), were sent to the respondents and their remarks were taken into account. Reliability means that if someone else were to replicate this research, it would have to produce the same results. Reliability is increased here by a transparent outline of choices, research methods, a description how exactly the research is carried out (see sections 4.3 and 4.4), and by sending the case study reports to respondents.

To reach the second research sub-goal, four different countries were selected. In methodological terms, the second research goal predicts “contrasting results for predictable reasons” (Yin, 1994, 46). To explore how different domestic institutional factors affect policy-oriented learning from VTC, case studies with different domestic institutional factors have been selected. With that in mind, countries with different institutional factors were chosen, and consequently, this research is an international comparative research. The specific choices for the countries are explained in section 4.3.

Although the choices for the countries in question are based upon differences between them, the differences must be comparable, meaning that other contextual factors should be similar (*ceteris paribus*). Therefore, the focus is on the EU and its member states. Because all these countries are in principle exposed to more or less similar institutional influences, the variation in domestic institutional contexts is within EU limits, and there is a certain extent of homogeneity in VTC. Furthermore, the EU creates several occasions for VTC, which is an important prerequisite to study VTC. Finally, it can be expected from EU countries that they have environmental policies. In order to detect policy-oriented learning from VTC in the different countries, there

must be a certain level of environmental policy, or at least there must be the ambition to introduce environmental policy.

4.2 Methods for comparing policy areas and approaching policy-oriented learning from VTC

This section describes how different policy fields are compared and how policy-oriented learning from VTC is detected. Section 4.2.1 introduces so called core issues to compare policy-oriented learning from VTC within different national policies. Section 4.2.1 introduces the method of process-tracing in order to identify policy-oriented learning from VTC (George and Bennett, 2005).

4.2.1 Core issues

To compare different instances of policy-oriented learning in the two policy fields and across the four countries, so called core issues are introduced: the policy goal, the management framework, the system of management and the policy measures (see below and Table 4.1). The core issues are specific aspects within the policy fields, creating a sharp focus on the policy aspect under consideration. Together, they give a broad overview of a policy area. The use of core issues is inspired by a widely used method of comparing national policies in comparative politics, namely analysing three different policy aspects: the policy goal, the instruments and the settings (Hall, 1993; Liefferink and Jordan, 2004; Holzinger *et al.*, 2008). Furthermore, knowledge, fulfilling an important role in this research, is taken into account in the core issues. Chapter 3 distinguished hard knowledge, referring to straightforward knowledge that clarifies an issue, and soft knowledge, referring to knowledge with a more diffuse content, influencing the perception of the receivers or users. The core issues reflect the two different types of knowledge, and find a balance between them.

First, the policy goal reflects the social problem definition and describes the broader idea of what target is to be reached. It is an abstract concept of the aim of the policy. The policy goal is soft knowledge: it reflects the perception of an ideal that influences and shapes the policy framework. It can be identified by looking at documents, but tracing the origin of changes in the policy goal is more difficult. To establish this, it is crucial to ask participants about the different reasons underlying any changes in the policy goal.

Policy goal	Management framework	System of management	Measures
The broader idea of what target is to be reached (soft knowledge)	The technical framework for how the goal should be reached (soft knowledge)	Technical aspects of the policy specify how the policy should be applied (hard knowledge)	Solution to the environmental problem (hard knowledge)

Table 4.1: The core issues

The abstract policy goal must be specified into concrete, practical actions before it can be implemented. This practical elaboration may require one or two steps. Sometimes the policy goal can be directly translated into technical, concrete actions, the so-called system of management. At other times, it first has to be translated into a technical framework, the so-called management framework, before it can be specified in the system of management. Thus, whereas the management framework provides the technical concept (soft knowledge), the system of management gives the straightforward aspects (hard knowledge).

The management framework provides the technical concepts for how the goal should be reached (Table 4.1) A clear example of a management framework is how the noise problem at Amsterdam Airport Schiphol was dealt with: a complex and highly technical framework was developed that translated the policy goal (noise reduction) into a technical concept (the noise contour cap). Since the creation of the technical concept, the noise has been handled by staying below the limits defined by the management framework. As such, the management framework shapes the perception of the receivers or users regarding how this goal should be reached. Therefore, it is here considered soft knowledge. It differs from the policy goal in that the management framework is expressed in technical terms. While the management framework can often be identified by looking at documents, the origin of or the changes in such a framework were mostly established by asking for the opinions of the technical experts who participated in its formulation, on how the concept was created or changed.

The policy goal, and if relevant the management framework, both soft knowledge, have to be specified into hard, concrete actions, the system of management, in which technical aspects of the policy specify how the policy should be applied. The system of management can be identified by looking at simple and straightforward knowledge. An example is whether noise is measured or calculated, or both. It can be found by analysing primary sources in policy documents, either by looking at the

content of the document, the bibliography or by asking policy makers what scientific sources they used. Changes in the system of management can be traced the same way.

Fourth and finally, there are the policy measures, which provide the solution to the problem. These too are linked to the goal, and if relevant to the management framework. They are not so much an elaboration of the goal, but the instruments for how to achieve it. The measures represent hard knowledge: they are the ‘tools’ used to reach the policy goal. They too can be found by analysing primary sources in policy documents, or by asking policy makers what sources they used when the measures were established or changed.

The core issues are interlinked: the system of management and/or the management framework technically elaborate the policy goal, while the measures outline how to reach it. As such, a change in the system of management might influence the development of the policy goal, or a change in the management framework might influence the measures.

Of course, for each policy area specifically, the core issues have to be defined. After all, every policy area has its own policy goal, its various measures to reach the policy goal, and a different system of management or management framework. Sections 5.1 and 6.1 identify the core issues for the two selected policy areas.

4.2.2 Policy-oriented learning from VTC

Having defined a policy area in terms of comparative units in which policy-oriented learning from VTC can be analysed, the question is: how is such learning identified? Underlying this question is a conceptual discussion, which will now be briefly addressed. Bennett and Howlett (1992) and Levy (1994) point out that some have criticised equalling policy-oriented learning with policy change, while others agree with this mode of dealing with the concept of learning (Bennett and Howlett, 1992). The latter argue that “learning that does not affect behavior is not useful (...)” (Jarosz and Nye, 1993, 180 in: Levy, 1994, 290). The former refer to the fact that there can be policy change without policy-oriented learning, and policy-oriented learning without policy change. Indeed, as we saw in Chapter 1, international processes such as imposition might lead to policy change, but without policy-oriented learning. Conversely, there may be processes such as negative lesson drawing, in which there has been policy-oriented learning but deliberately no policy change (Rose, 1991, 19).

Taking these conceptual considerations into account, in this project, policy-oriented learning from VTC is acknowledged to have taken place when a policy changes as a result of knowledge gained through VTC, or when a discussion about knowledge obtained in this way ensues. First, the focus is on how institutional or political factors affect learning processes from VTC, and therefore it is interesting to

analyse situations in which knowledge from VTC is discussed, but not introduced into the policy. These situations give insight into how domestic institutional factors block or constrain policy-oriented learning from VTC (Levy, 1994). Second, there is a practical reason for equalling learning to change and to a clear debate on whether or not a core issue should be changed. Learning processes without debate or change are difficult, if not impossible, to trace. Third, the risk of identifying policy change without learning is decreased by the focus on policy-oriented learning from VTC. As outlined in Chapter 1, the aim of this study is to examine policy-oriented learning from VTC in isolation from other international driving forces. Therefore, the policy areas were selected based upon the criterion that there would be no significant other international driving force present; consequently any means of domestic policy change other than policy-oriented learning from international driving forces, were excluded.

This brief discussion on which processes are considered learning from VTC leads to the question how policy-oriented learning, i.e. debate and/or change, is traced and demonstrated. It is acknowledged that tracing and demonstrating policy-oriented learning from VTC is difficult (Dolowitz and Marsh, 1996; Evans and Davies, 1999). In order to recognise learning from VTC, the method of process tracing was used (George and Bennett, 2005). Process tracing is suitable for situations in which multiple interpretations are possible and in which it is difficult to explain outcomes. As such, the different events in national policy processes were reconstructed, and changes and broad discussions within the policy development processes were singled out and their origins traced. If one of the reasons for a policy change or broad discussion turned out to be knowledge from VTC, learning from VTC was recognised to have played a role. In this process, the reason for change or discussion, either given by respondents or recorded in documents, was decisive. However, these reasons were then interpreted within the reconstructed policy development and complemented by the international context. At the international level, a parallel and complementary analysis was conducted. Different topics were identified that were discussed in the various settings for VTC. In other words, the instances of policy-oriented learning from VTC not only had to fit within the national policy process, but they also had to coincide with the time this topic was discussed internationally. Process tracing is described in more detail in section 4.4.

Most likely, the analyses of the different policy processes do not provide an exhausting overview of all policy-oriented learning from VTC, for example if it did not lead to a change or a broad discussion, if people could not remember whether a policy change had been initiated by knowledge from VTC, or if the policy-oriented learning fell outside the core issues. However, because this study aims to explore the relationship between VTC and policy-oriented learning, it does not depend on a full overview

of such learning processes in a certain policy field, and the probable non-exhaustive nature of the overview of policy-oriented learning from VTC did not constitute an analytical barrier.

4.3 The case studies: selection of countries and cases

As said, the case studies were selected in such a way that common patterns that serve a heuristic purpose could be identified. To reach the first research sub-goal, *to elaborate the relationship between policy-oriented learning and VTC*, cases had to be found that were sufficiently similar. However, in order to investigate the second sub-goal, *how domestic institutional factors affect these learning processes*, it was necessary to use cases that were sufficiently different. In such a research design, each case fulfils a specific role (Ragin, 1987; Wester, 1995). Section 4.3.1 explains the reasons behind the choices for the two similar policy fields, while section 4.3.2 introduces the four different country studies, against the background of their domestic institutional factors.

4.3.1 The policy fields

The policies for contaminated land and airport noise abatement were investigated. Although on the face of it, the two may appear entirely different (soil as opposed to air), they allow the exploration of the relationship between policy-oriented learning and VTC. The level of similarity was mainly based upon the dependent variable, i.e. policy learning from VTC. This means that policy-oriented learning from VTC should be present, as well as the various settings for VTC. In addition, other international driving forces should be absent, or not relevant.

Before further outlining the criteria for the choice of the policy fields with a certain level of similarity, it should be recalled at this point that the case study on contaminated land was originally conducted as part of a research project called ENVIPOLCON (Holzinger *et al.*, 2008). As the title reveals, this project examined policy convergence, and the case studies carried out for the ENVIPOLCON project were selected because they allowed the researchers to study the four international driving forces separately. As such, for the present study, the issue of contaminated land was selected because it allowed studying VTC in isolation.

The criteria underpinning the choice for contaminated land in order to study VTC in the ENVIPOLCON project largely overlap with those to study policy-oriented learning from VTC in this research, and airport noise abatement was selected on the basis of the same criteria. As Chapter 1 showed, VTC is one of four international driving forces that often occur in combination, and in order to focus on VTC,

there should be no harmonisation, imposition or regulatory competition. Neither issue (contaminated land or airport noise) has been substantially influenced by the other international driving forces. First, both are predominantly the competence of the national government, which rules out EU regulation and avoids policy change resulting from harmonisation. This was not an easy requirement, incidentally, since the EU covers more and more environmental issues. Second, as a result of the focus on EU countries (see section 4.1), the possibility of imposition, which mainly occurs in developing countries, is reduced. However, some scholars, for example Jörgens (2004), argue that during the process of former Eastern European countries to join the EU, imposition has taken place, because these countries were only permitted to join the EU under strict preconditions. This study does not adopt this broader perspective of imposition, as other do (Holzinger *et al.*, 2008), because the former Eastern European countries explicitly asked to join the EU. The influence of international competitiveness, finally, is less because both policy fields are not or only marginally sensitive to trade. Although in the case of airport noise abatement one might expect to be dealing with an issue that is responsive to international competitiveness, noise annoyance is typically a problem that is located in the immediate vicinity of an airport, and it is therefore considered to be essentially a local problem. In addition, both issues have an extensive technical component, which is relevant because clearly knowledge plays an important role.

Nevertheless, in order to meet the above criteria, both policy fields had to be clearly delimited. Although this is done in detail in the two chapters dealing with the policy areas (Chapters 5 and 6), the delimitations required to meet these criteria are briefly mentioned here. In the case of noise abatement around airports, the delimitations were aimed at avoiding international competitiveness and harmonisation. To avoid harmonisation, the focus is on noise reception on the ground and not on noise made at the source (see Chapter 6): the latter is extensively dealt with in international regulation. To reduce the influence of international competitiveness, for example, the focus is on daytime noise only: night-time noise is susceptible to international competitiveness (see Chapter 6). Furthermore, taxes and other economically related aspects that influence noise around airports were not taken into account. The issue of contaminated land was narrowed down to avoid harmonisation effects. Some adjacent policy areas, such as waste policy or mining policies, are dealt with in European directives, and influenced specific aspects of the contaminated-land policy. These aspects could easily be excluded: the focus is on generally defined contaminated land, and not on specific types of contaminated land, such as contamination from mining or waste disposal areas. Furthermore, the focus is on 'stable' and not on 'diffuse' contamina-

tion, which is closely related to water. As said before, the relevant chapters outline the delimitations of both issues in detail.

4.3.2 The countries

Having outlined the policy fields, it is time to turn to the selection of the countries. This was done on the basis of differences in domestic institutional factors. As said in 4.1, different countries have different domestic institutional factors. However, with regard to knowledge use, a robust link with specific countries has not yet been established, although the first steps towards the development of such a link are being made at the moment (Halffmann, 2003; Hoppe and Halffman, 2004). Certain types of policy-making processes have long been acknowledged to be connected with specific countries (Lehmbruch and Schmitter, 1982; Schmidt, 1984); countries are often categorised as corporatist, liberal-pluralist, or etatist (Van Waarden, 1992; Harvey, 1996; Lenschow *et al.*, 2005). Nevertheless, it was increasingly recognised that countries do not have one way of developing policies, but that this varies according to different policy fields and over time (Freeman, 1995). Although it is not claimed here that countries have one stable way of creating policies, the assumption is that countries do tend to have a predominant way of doing so. In this context, countries have been selected based upon the reputation they have for tending towards a predominant way of developing policies. This increases the likelihood that the three different policy-making processes will be visible in the case studies.

The selection of the countries is linked to the aforementioned ENVIPOLCON project, in which the case studies were carried out in four countries: the Netherlands, France, Hungary and Mexico. The case studies of the Netherlands, France and Hungary proved useful to this study. Mexico, however, did not have a developed policy on contaminated land, nor the urge to develop one. Therefore, it was not useful for this study: in order to explore the relationship between VTC and policy-oriented learning in environmental policies, and the role of domestic institutional factors, there has to a policy, or at least the ambition to develop one.

Of the countries categorised by many studies as etatist, pluralist or corporatist, France has been a classic example of a predominantly etatist policy-making process; the Netherlands is commonly identified as predominantly corporatist (Van Waarden, 1995b; Checkel, 1999b; Lehmkuhl, 2001; Liefferink and Jordan, 2004; Lenschow *et al.*, 2005). In order to select countries with different dominant policy-making processes, the UK was additionally opted for. Often said to be the only European country to employ a predominantly liberal-pluralist policy-making process (Van Waarden, 1995b; Lenschow *et al.*, 2005), the UK was an easy choice. In these three different countries, it is likely that different policy-making processes are represented and can be analysed.

In addition, Hungary was investigated because it provided interesting views on policy processes in former Eastern European countries. Prior to joining the EU it came close to an etatist policy-making process, in line with the communist regime, over time shifting to liberal-pluralism or corporatism (Holzinger *et al.*, 2008). Moreover, because Hungary joined the EU in 2003, the institutionalised processes of VTC are expected to be less influential, at least until 2003. As a result, compared to the other three countries, different processes of VTC were expected to be identified, which would provide additional insights into VTC and policy-oriented learning.

For airport noise, the focus is on specific airports, according to the noise abatement policies. Such policies were formulated with specific airports in mind, because every airport is situated in a different location with its own characteristics, and therefore national legislation or policy plans were only broadly formulated with minimal rules and vague measures. In the light of the selection of the countries for their different policy-making processes (corporatist, etatist and liberal-pluralist), these processes were expected to be visible in the airport case studies as well. The largest airport within a country was selected, not only because large airports have the most elaborated noise regulation, but they are also faced with comparable problems and challenges. This was Amsterdam Schiphol Airport in the Netherlands, Charles de Gaulle in France, Heathrow in the UK and Ferihegy in Hungary. The choice of Heathrow resulted in a focus specifically on England within the UK, also for contaminated land, because the different constituent regions within the UK have slightly different policies and different participating actors: for example, the policy on contaminated land in England was implemented in 2000, while Wales followed in 2001.

4.4 Research methods and data collection

General requirements for research methods and data collection in case studies have been outlined in the literature. First, data collection and analysis should take place in parallel and in interaction (King *et al.*, 1994), because this enables the researcher to reflect on conceptual points of departure and refine these concepts accordingly in order to, gather more specific data. In addition, it is argued that in international comparative research, the case studies should be given identical treatment, in terms of how data were collected, in order to provide comparable results (Korsten, 1995). Finally, there is the often emphasised importance of source triangulation, to increase the internal validity (Yin, 1994; Verschuren and Doorewaard, 1995), as first mentioned in section 4.1. The description of the process of data gathering shows that these three general requirements are taken into account.

For both issues, the first steps were to study the available literature to gain a broad overview of the four national policies, the international context, and the participating actors. Whenever possible, original documents were analysed. For documents from the international networks and organisations, as well as those from the Netherlands and England, language was not a problem. The French documents were screened, and important passages were translated. The Hungarian documents could largely be found in official English translations. The documents and the literature gave a first taste of both international developments and national policy processes. This basic knowledge, in other words the quick scans and the actor maps, was complemented with exploratory interviews in the Netherlands. Not only did these enhance the insight into the policy area, additional important documents and literature were also pointed out during the interviews, which were studied simultaneously. Furthermore, the exploratory interviews produced names of overseas counterparts.

The case studies commenced in December 2004. First, much of the issue of contaminated land was addressed. As said, this research derived from the ENVIPOLCON project. In the context of that project, in order to examine the influence of VTC, policy changes that were based upon VTC had to be traced and analysed. As such, the data collected there greatly overlapped with the data needed for this study, and only a few additional interviews were required. The analysis of the policies on contaminated land began in the Netherlands (December 2004 – February 2005), followed by visits to Paris (February 2005) and Budapest (May 2005). Investigations into airport noise abatement policies took off in early 2007. Again, the situation in the Netherlands was analysed first, including the initial exploration of this policy field (January – February 2007). This was followed by a visit to London to conduct interviews for both the contaminated-land issue (April – May 2007) and the airport noise abatement policy (May – June 2007). In Paris and Budapest, noise abatement policies were studied for Charles de Gaulle (October 2007) and Ferihegy (November 2007) airports respectively. The data for the issue of contaminated land, which were needed in addition to those data gathered for the ENVIPOLCON project were collected around the same time as the investigations into the airport noise abatement policies were completed.

Whenever gaps were detected in the data, the additional information was gathered by calling the respondents or e-mail correspondence. Use was also made of conferences (Consoil and *Bodemplus*) and meetings of international networks (ICCL) to ask respondents additional questions. These instances of participatory observation enabled the development of a ‘feel’ for international conferences and international networks and for how knowledge was actually shared. Although the participation only applied to contaminated land, the increased understanding of how international net-

works operate was equally helpful in the case of airport noise abatement. Studying minutes and asking respondents for anecdotes about the international meeting provided complementary information.

The interviews were the most important source of data for the research. As outlined in section 4.2.2, it was mainly the respondents who were able to trace whether a policy change or broad discussion was a result of knowledge from VTC, in addition to some documents that referred to aspects from foreign policies. Therefore, actors in the inner circle of the policy-making process, and those outside the inner circle but still involved in the policy-making process, were interviewed. Those who participated both in the national policy process and in international organisations and networks could confirm that learning from VTC had indeed taken place. In addition, other actors in the policy process confirmed that it was indeed the 'learning actor' who initiated the change or the discussion, or described a policy development that made the policy-oriented learning from VTC under consideration likely (see section 4.2.2). As such, although the emphasis was on speaking with those participants in the policy-making process who also participated in international networks, all interviews added up to a complete process tracing and understanding of policy process. During the final interviews in each case, final details were gathered and confirmed, but there was a decreased added value in the sense that no new insights were given.

The focus on the participants in the policy process meant that for liberal-pluralist policy-making processes (England), more interviews were executed than, for example, for etatist policy-making processes (France). Who were involved in the policy-making process was not only identified through the study of documents and literature, but complemented with the 'snowball effect': asking respondents who else to interview. In total, 90 interviews were conducted (see Appendix 1). For the contaminated-land issue, in the Netherlands, including the exploratory interviews, 12 interviews were held. In France, 9 respondents were interviewed. In England, 12 interviews were conducted on contaminated land, and in Hungary, the number was 9. Two actors working solely in the international context were interviewed, but often, national respondents had worked for international networks for quite a few years.

Regarding the airport noise policies, for the Netherlands (Amsterdam Airport Schiphol), including exploratory interviews, the number was 17. To gain a complete overview of the situation in France (Charles de Gaulle), 11 interviews were required. For England (Heathrow), 13 interviews were conducted and for Hungary (Ferihegy) 6. Three interviews were held with actors working solely in the international context, however, as in the contaminated-land case, there was overlap between national and international actors.

Because of the focus on policy-oriented learning from international networks, most respondents spoke English. This proved to be equally valid for the few interviews with actors not participating in international networks; only once, in Hungary, was a translator used, and the conversations in Magyar were translated afterwards, in order to know what had been discussed between the translator and the respondent.

Finally, all interviews were structured similarly: all interviewees were guaranteed anonymity, and the interviews generally took ca. 1.5 hours. The interviews were all recorded and verbatim transcripts created. The transcription of interviews is of great value when doing case studies: hearing the interview again improves recollection of information, and the process of transcribing includes the beginning of an analysis. Furthermore, the interviews were conducted by semi-structured interview guides. This means that there was a topic list (see Appendix 1), which was structured according to the core issues. A semi-structured interview strikes a balance between on the one hand structuring the interviews similarly so they can be compared, and on the other hand, allowing for the possibility to ask for specific details and additional information when necessary. Finally, all respondents received a preliminary report in which the policy process was described. Any new or additional elements put forward by the respondents were taken into account.

CHAPTER 5

COMPARATIVE CASE STUDIES OF POLICIES ON CONTAMINATED LAND

The policy area under consideration in this chapter is the remediation of contaminated land. Compared to environmental policies in general, policies specifically dealing with remediation of contaminated soil emerged relatively late on the political agenda. Before specific policies were formulated, the issue of remediation was scattered across adjacent policy fields. For example, soil protection and groundwater policies dealt with the prevention of soil contamination; waste policy not only dealt with the prevention of newly contaminated sites, but also contained provisions on how to handle landfills or fly tipping. Although related, none of these policy areas formulated a general regulation for the remediation of contaminated land. A handful of countries developed a national policy during the 1980s, such as the Netherlands, but most countries followed during the early 1990s, including France and England.

Since the seriousness of the problem largely depends on local characteristics and circumstances, contaminated land was a domestic problem rather than an international concern. Only a few cases of contaminated land gained international attention, such as Love Canal in the US and Lekkerkerk in the Netherlands. Contaminated land was considered to be the responsibility of national governments, and therefore no binding international regulation has been established yet. Nevertheless, a European Directive, called Thematic Strategy for Soil Protection (TSSP) (See section 6.2), has been under development since 2006 (CEC, 2006). Furthermore, there were several transnational networks that provided opportunities for VTC, as we will see below.

The absence of international regulation and the presence of international networks provide a good basis to explore the relationship between policy-oriented learning and VTC. In order to avoid interference by other international driving forces, the case studies still requires two delimitations concerning specific aspects within this policy field. The first concerns specific types of contamination, such as contamination from mining, landfills or military sites. Such contaminated sites are not included in the analysis, because they are regulated by existing (inter)national regulations, such as the Council Directive (EC, 1999), which applies to landfills. The focus here is on contaminated land in general. Secondly, there is a distinction between 'stable' and 'diffuse' contamination. The latter refers to contamination that spreads, for example via groundwater. Although in some cases both issues are addressed in one national regula-

tion, for example in Hungary, this study will avoid diffuse contamination as much as possible, because this topic closely relates to groundwater covered by European regulation (EC, 2000).

Taking these two delimitations into account, then, this chapter examines policy-oriented learning from VTC and how domestic institutional factors affect these processes in the Netherlands, England, France and Hungary. In section 5.1, the core issues (See Chapter 4) are applied with regard to the specificities of the policy on contaminated land. Section 5.2 outlines the international context, while policy development, focussing on the instances of policy-oriented learning from VTC in the Netherlands, England, France and Hungary, is outlined in sections 5.3 to 5.6 respectively. The central focus of the four case studies is on the case study research question: *which aspects of the policy showed evidence for policy oriented learning from VTC and how do domestic institutional factors play a role in these learning processes?* Finally, section 5.7 analyses and compares the four policy-making processes in terms of the conceptual framework.

Before embarking on the four case studies, it should be noted that the analyses do not provide an exhaustive overview of the different national policy processes, developments and regulations. The focus is on domestic environmental policy-oriented learning from VTC, so aspects that are not relevant for such learning processes are disregarded, while other aspects are explicitly emphasised.

5.1 Core issues for contaminated land

This section introduces the core issues, the remediation goal, the system of management and the measures, which have been adjusted to the policy area of contaminated land (Table 5.1). As is outlined below, the management framework is not relevant for this case, but the remaining three core issues are discussed in detail.

Remediation goal	System of management: identify pollution and establish the remediation level	Measures: Payment
Multifunctional or Fitness-for-use	Generic values or a site-specific approach	Public investments or market allocation

Table 5.1: Core issues applied to the policy on contaminated land

The remediation goal represents ideas regarding how the problem of contaminated land should be approached (soft knowledge). There are two approaches (Table 5.1): the multifunctional approach and the fitness-for-use approach. Multifunctional remediation means that remediated land should be suited for any function, even for agriculture. The fitness-for-use approach indicates that contaminated land will be managed in such a way that it is fit for its current or intended land use: a site earmarked for industrial use does not have to be as clean as agricultural land.

The policy on contaminated land does not have a management framework. Although contaminated land is a technical issue, which creates the possibility of a management framework, the remediation goal can be directly elaborated into concrete aspects (hard knowledge) in the system of management. For remediation policies specifically, the system of management identifies whether there is actual pollution and, if so, to decide whether remediation is necessary (Table 5.1). For both actions there are two approaches: the generic-values approach, which, as the name indicates, works with fixed, general soil quality values, and the site-specific approach, which has no fixed values but takes site-specific characteristics into account. In the system of generic values, the fixed values apply nationwide. This means that wherever in a country contaminated land is situated (often, by implication, in different types of soil) it is treated the same way. Unacceptable risks are considered to be more or less comparable throughout the country. There may be a distinction according to different land use, but apart from that, no site-specific adjustments are made. A classic example is the well-known Dutch system of ABC values, which was used in the 1980s. Value A is used as a reference value, meaning there is no pollution. B values indicate that there is pollution and that additional investigation should be carried out. C indicates that the soil is contaminated to such an extent that it requires remediation. An advantage of generic values is that they provide easy management: if the levels of contamination on a site are higher than the C values, remediation is necessary. However, a disadvantage is that when applying generic values to the remediation target, it turns out that the target is usually quite strict. To be 'on the safe side', the values tend to be based upon the most vulnerable area in a country, resulting in high remediation costs.

In the case-by-case or site-specific approach, every site is studied individually to assess whether there is an unacceptable risk, and to decide on the remediation level. It is recognised that the risk of contaminated land is not only related to the total contamination concentration in the soil, but also to specific site characteristics, for example human behaviour, the structure of the soil, the vulnerability of the area, etc. Thus, by taking local characteristics into account, this approach treats each contaminated site in the country differently: although they may have the same level of pollution, one site may be labelled as presenting an unacceptable risk, while another site may not. Com-

pared to the generic-values approach, this system is more difficult to apply, because each site requires individual investigation and assessment. With regard to remediation, however, only those sites are remediated that strictly require it, and therefore the remediation costs are manageable. Most countries have a mix of both approaches, for example generic values to identify pollution, and a case-by-case approach to assess whether remediation is necessary.

The measures aim to manage contaminated land according to the remediation goal. This aspect deals with the funding of the remediation (Table 5.1). Payment can be done by the government from a public fund, or be directed at the market by allocating costs related to environmental damage to those who have caused the damage, for example by means of liability schemes. In most cases, however, these two ways are combined: industries or business have to pay for the remediation of a site, but they can apply for funding. Sections 5.3 to 5.5 will look into the details of what these approaches and measures comprise in the countries under consideration here.

5.2 Contaminated sites: the international context

In the introduction it was said that so far, contaminated-land policy has been a national rather than an international concern, and the international context of the policy area consists of transnational networks. In addition, knowledge sharing took place at national conferences, most notably Consoil. This section outlines the different international networks and how they were established, and briefly discusses some non-binding regulation from adjacent policy fields that touches upon specific aspects of contaminated-land policy. For each international network a brief mention is made of which core issues they discussed.

The first international network that addressed aspects of soil remediation was the NATO/CCMS (North Atlantic Treaty Organisation Committee for Challenges to Modern Society) in 1986. This network, which dealt with military contaminated sites only, had a mainly scientific and technical focus on remediation technologies (Bardos *et al.*, 1998). Within the NATO/CCMS, the need for a broader focus for international collaboration became evident, because more countries were in the process of setting up national programmes and outside support was strongly needed to tailor policy principles (Ministry of Environment Austria *pers. com.*, 2006).

Several networks originated from the NATO/CCMS transnational network. The three groups of transnational networks that are most likely to have influenced national policies are outlined below (Table 5.2). In turn, these three groups of networks stimulated the establishment of several other networks, such as the Human health and Eco-

logical Risk Assessment of Contaminated Land (HERACLES), focussing on highly technical aspects of risk assessment, and the Concerted Action on Brownfield and Economic Regeneration Network (CABERNET), dealing specifically with brownfields. These networks are not outlined in any detail here, because firstly their focus is not directly on the general contaminated-land policy. In addition, they were established quite recently, as a result of which they have had little or no influence on the policy process under consideration.

Year	International networks	Abbreviation	Issues
1986	North Atlantic Treaty Organisation Committee for Challenges to Modern Society	NATO/CCMS	Scientific and technical focus on remediation technologies
1993	International Committee on Contaminated Land	ICCL	Legislative and administrative approaches for measures and policy goal
1994	Common Forum	N.A.	Diverse range of issues
1996	Network for Industrially Contaminated Land in Europe	NICOLE	All aspects, mainly remediation techniques
1996-1998	Concerted Action on Risk Assessment for Contaminated Sites in Europe)	CARACAS	Discussion of technical knowledge of the system of management
1998-2001	Contaminated Land Rehabilitation Network for Environmental Technologies	CLARINET	Recommendations for decision-making concerning measures and policy goal

Table 5.2: Key international networks addressing issues regarding contaminated land

At the international level, the International Committee on Contaminated Land (ICCL), at the time called the Ad Hoc Ministerial Commission on Contaminated Land was initiated in 1993. Its participants were representatives from environment ministries and agencies from 20 different countries worldwide. The network covers different aspects of contaminated-land policies, such as legislative and administrative approaches (Ferguson and Kasamas, 1999). In terms of the core issues, it was mainly measures and policy goals that were discussed in this network.

At the European level, the EU Common Forum was established in 1994. This is a platform cooperation between representatives of the EU member states, the Euro-

pean Commission and the European Environment Agency (EEA) on issues concerning contaminated land. However, the Commission and the EEA played a minor role. This network discussed a wide range of issues, including the three core issues. The Common Forum initiated two concerted actions: Concerted Action on Risk Assessment for Contaminated Sites in Europe (CARACAS) and Contaminated Land Rehabilitation Network for Environmental Technologies (CLARINET). In CARACAS, policy specialists and scientists from national environmental authorities and research organisations of 16 European countries participated. It ran from 1996 to 1998, and the objective was to coordinate current research activities in Europe to improve scientific knowledge on contaminated land. This network provided a platform for the discussion of technical issues concerning the system of management. CLARINET started in 1998 for a period of three years (to 2001). This network focussed on policies and policy making – in terms of this study: on the policy goal and the measures. The objective was to develop recommendations for decision-making regarding remediation of contaminated sites.

In 1996, the Network for Industrially Contaminated Land in Europe (NICOLE) was established. This network provides a platform for discussion for industry, service providers and academia to develop and influence the state of affairs in contaminated land management in Europe. Although a range of issues is discussed, the main focus is on remediation techniques. NICOLE was created to bring together stakeholders and researchers from across Europe who were interested in all aspects of contaminated land. It is open to public and private sector organisations (www.nicole.org, accessed December 2007).

To conclude this brief overview of the international context, a few international non-binding laws have to be mentioned that are relevant to some of the core issues. In chronological order, the first two are the World Soil Charter (FAO, 1981) and the European Soil Charter (Council of Europe, 1972). These are both non-binding documents and they deal with soil protection rather than remediation. Then, there is the Convention on Civil Liability for Damage by the Council of Europe (Council of Europe, 1993), which addresses liability issues. This too is soft regulation since the Council of Europe does not formulate binding laws or regulations. In addition, in 1993 the European Commission published the Environmental Damage green paper (CEC, 1993), which referred to the funding of tackling environmental damage. Because it is a green paper, it is not legally binding and falls under the definition of vertical VTC. This green paper resulted in the Environmental Liability Directive which was published in 2004 (EC, 2004). The influence of this liability directive is avoided by not going too deeply into the liability issues, and by focussing on developments concerning liability issues before 2004. Finally, in September 2006, the European Com-

mission communicated the European TSSP (CEC, 2006) to the European Council. The TSSP deals, among other things, with the remediation of contaminated land, but because it is not official yet, in theoretical terms, there is strictly speaking no influence of harmonisation yet. However, it is very likely that such a Directive is imminent, and national policy processes might be influenced. Therefore, from 2006 onwards, only interesting developments that are clearly not influenced by the TSSP are examined.

5.3 The Netherlands

This section discusses in terms of the three core issues the policy-making process on contaminated land in the Netherlands. In 1981, the shock effect produced by the Lekkerkerk case (see below) put the issue of contaminated land on the Dutch political agenda, which led to a temporary law in 1983 and full legislation in 1987. These early policy decisions affected the subsequent development of the policy on contaminated land. Therefore, section 5.3.1 introduces the background of the policy in terms of the core issues. Section 5.3.2 outlines the policy process on contaminated land from 1989, because in that year two documents were published that initiated a change in the policy. In section 5.3.3, policy-oriented learning from VTC is analysed, answering the case study's research question.

5.3.1 Background

Although a soil act had been discussed in the Netherlands since 1971, it took until 1983 before an Interim Soil Remediation Act was introduced (Souren, 2006). The incentive to formulate the Interim Act was the accidental discovery in 1981 that the Dutch village of Lekkerkerk had partly been built on a landfill. The panic this discovery caused mobilised Dutch society and alerted the government to the problem of contaminated land, resulting in the introduction of the Interim Soil Remediation Act in 1983.

In 1983, the policy goal was formulated in terms of a multifunctional approach, i.e. soil should be remediated up to a level that allows every possible use of the site. This goal derived from the perception of soil contamination at the time: "causing (a few) severe incidents with poorly known but possibly disastrous consequences" (Ferguson and Kasamas, 1999, 1). The Netherlands was the first country in Europe that was confronted with contamination on such a scale, and because no practical knowledge was available, the Dutch Ministry of Housing, Planning and the Environment (*Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieu*, VROM) formulated its multifunctional approach in close cooperation with scientists (Souren, 2006). The

multifunctional approach was not only a common term in Dutch environmental policies in general in the 1980s, it was also in line with the European Soil Charter (KVVM, 1997; Interview TCB, 2005). One loophole was built into the multifunctionality target: if it was financially or technically not considered feasible to carry out, the multifunctionality target did not have to be reached (Von Meijenfeldt, 1994).

A system of management was developed to translate the multifunctional approach into concrete, applicable knowledge. VROM's Health Inspection introduced the first set of generic values for soil quality, the aforementioned ABC values (see 5.1). It should be emphasised that although derived from expert judgement, the ABC values were not based on robust scientific research (Interview TNO, 2005; Souren, 2006). Nevertheless, "everyone was walking around with a copy of these values in their back pocket" (Interview IPO, 2006).

Regarding the measures, i.e. funding of remediation, this was considered primarily the responsibility of the central government, since only a few contaminated sites were expected to exist. Therefore, all contaminated land that required remediation had to be approved by central government. However, when the number of identified contaminated sites increased, more responsibility was devolved to local authorities and to industry (Seerden and Van Rossum, 2000). In 1982, municipalities were granted the authority to decide which sites needed remediation, and in 1984, the provinces received an annual remediation budget (Von Meijenfeldt, 1994). Thus, the implementation of the policy was increasingly dealt with at the local and regional level, and local authorities became increasingly important in the policy process (for more details, see Souren, 2006). As early as the early 1980s, the government began to source external funding for remediation costs, preferably from business and industry (Von Meijenfeldt, 1994). Initially, the government tried to enforce additional payment by judicial processes, but this mainly resulted in several long lasting court cases with few outcomes (Von Meijenfeldt, 1994). The next section describes developments that have led to a more fruitful attempt to obtain funding.

Organisation (English name)	Organisation (Dutch name)	Abbreviation	Function	Included in policy- making process
Ministry of Housing, Planning and the Environment	<i>Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieu</i>	VROM	Government department dealing with contaminated land	early 1980s

Organisation (English name)	Organisation (Dutch name)	Abbreviation	Function	Included in policy- making process
National Institute for Public Health and the Envi- ronment	<i>Rijksinstituut voor Volksgezondheid en Milieu</i>	RIVM	Governmental research insti- tute	early 1980s
Netherlands organisation for applied research	<i>Technisch natuurkundig onderzoeks- centrum</i>	TNO	Governmental research insti- tute	early 1980s
Provinces	<i>Provincies</i>	N.A.	Policy implemen- tation	late 1980s
Association of Dutch provinces	<i>Interprovinciaal Overleg</i>	IPO	Policy implemen- tation	late 1980s
Municipality of Amsterdam	<i>Gemeente Haar- lemmermeer en Amsterdam</i>	N.A.	Policy implemen- tation	late 1980s
Association of Dutch Municipal- ities	<i>Vereniging Neder- landse Gemeenten</i>	VNG	Policy implemen- tation	late 1980s
Technical Soil Commission	<i>Technische Com- missie Bodem</i>	TCB	Advisory body for VROM	late 1980s
Several associa- tions of Dutch companies and industries, such as the Confed- eration of Neth- erlands Industry and Employers, etc	<i>Vereniging van Nederlandse On- dernemers en Nederlands Chris- telijk Werkgevers- ver-bond, Midden- Klein Bedrijf.</i>	<i>VNO-NCW, MKB, etc</i>	funding remedia- tion	early 1990s

Table 5.3: Key organisations involved in the contaminated-land policy in the Netherlands

5.3.2 The policy process from 1989 onwards

In 1989, two important reports were published, one affecting the funding of soil remediation, the other affecting the system of management. The Ten-Year Scenario for Soil Protection Steering Group (*stuurgroep Tien Jaren-scenario bodembescherming*) was

established to investigate implementation problems in the Netherlands. In 1989, it concluded that the Polluter Pays Principle (PPP) should become the guiding principle in soil remediation, due to the increasing numbers of identified contaminated sites, and consequently, the soaring costs (Backes *et al.*, 2001). To institutionalise the PPP principle, the foundation for Soil Remediation for Industrial Areas (*Bodem Sanering Bedrijventerreinen*, BSB) was established in 1992, which provided financial and technical support to companies carrying out soil investigations. As a reward for their cooperation, participating companies were given leeway and allowed to perform these investigations themselves (Backes *et al.*, 2001). Not only was the BSB a first step towards more market responsibility for funding remediation, it also incorporated business and industry in the policy-making process (Table 5.3).

The second important document, called premises for risk management (*Omgaan met risico's: de risicobeoordeling in het milieubeleid*), introduced the idea of risk assessment in soil quality assessment and replaced the ABC system (VROM, 1989). In 1989, on the basis of this report, VROM introduced two general concepts: the negligible and the maximum permissible risk levels. These concepts were introduced in the contaminated-land policy, and the National Institute for Public Health and the Environment (*Rijksinstituut voor Volksgezondheid en Milieu*, RIVM) formulated two levels, which were called *target and intervention values* (VROM, 1994). These were used to formulate risk-based soil quality standards for soil contamination. The target values indicated whether the pollution could threaten the multifunctionality of the soil; the intervention value indicated whether there was a potential serious risk for human health or for ecosystems (Denneman, 1999; Swartjes, 1999). In 1994, the new system was formulated. It was still predominantly generic, as the target and intervention values were generic values. Site-specific research had to be carried out to assess whether remediation was necessary. VROM and RIVM established the values in the new system of management in consultation with actors such as the Association of Provinces of the Netherlands (*Interprovinciaal Overleg*, IPO), the Association of Netherlands Municipalities (*Vereniging Nederlandse Gemeenten*, VNG), the Confederation of Netherlands Industry and Employers (*Vereniging van Nederlandse Ondernemers en Nederlands Christelijk Werkgeversverbond*, VNO-NCW), the Ministry of Agriculture, Conservation and Fisheries (*Ministerie van Landbouw, Natuurbeheer en Visserij*), and the Ministry of Transport, Public Works and Water Management (*Ministerie van Verkeer en Waterstaat*) (Interview IPO, 2006; Interview RIVM, 2005).

Despite changes in the system of management and the funding, the remediation goal did not change, although it came under a lot of discussion. The national government was confronted with the alternative (fitness-for-use) approach, both at the national level and through knowledge from VTC. At the national level, some

municipalities, especially Amsterdam, succeeded in incorporating the specific future use of the site in the remediation goal (Interview Municipality of Amsterdam, 2005). Since as early as 1985, it had been using the ‘multifunctional, unless this is not feasible’ loophole creatively and successfully integrated soil remediation into urban renewal. In 1992 the Welschen Commission, established by VROM to investigate the stagnation in the implementation of the contaminated-land policy, concluded that a fitness-for-use approach could solve this implementation problem (Souren, 2006). VNG also advocated the fitness-for-use approach (VGN, 1992; Moet and Peters, 1995), officially suggesting a structural move away from the multifunctionality approach. In addition, VNO-NCW advocated a fitness-for-use-approach (Interview VNO-NCW, 2005), and argued that the multifunctional approach was not in line with the approaches in most other countries. VNO-NCW was aware of this through its business contacts – in theoretical terms: unorganised horizontal VTC (TCB *pers. com.*, 2007; Interview VNO-NCW, 2005).

In addition to these national developments, VROM was aware of a discussion between advocates of the fitness-for-use and the multifunctionality approach through VTC. In 1993, the Technical Soil Commission (*Technische Commissie Bodem*, TCB) produced a benchmark report entitled Contaminated land policies in some industrialized countries (Visser, 1993), which investigated different national approaches to contaminated land. However, this knowledge was not actively taken up by those involved in the national policy process: in the interviews, only one or two Dutch respondents mentioned the TCB report; by comparison, it was mentioned more frequently by interviewees outside the Netherlands (TCB *pers. com.*, 2007). Besides this benchmark, VROM participated in the ICCL and Common Forum where the discussion about the fitness-for-use and the multifunctionality approach was taking place (Interview VROM, 2004; 2007). Thus, knowledge from VTC reached the Dutch policy-making process through a benchmark report and international networks – in theoretical terms: unorganised and organised horizontal VTC respectively.

In spite of the national and international developments, VROM remained an advocate of the multifunctionality approach. It was said that “multifunctionality has been a long tradition in the Dutch policy” (Interviews VROM, 2005; 2007) and that there were still some legal cases running between industry and the government, which made it difficult to change the policy goal (TCB *pers. com.*, 2007).

In 1995, VROM acknowledged that there were a number of problems with the current policy and established three committees to evaluate and renew the policy. Of these three committees, the BEVER committee (soil remediation policy renewal, *BEleidsVERnieuwing Bodemsanering*), in which industries as well as national and local authorities participated, is the most important here. Before outlining the different

developments resulting from BEVER, it should be noted that several of those involved, such as employees of VROM, NVO-NCW, TCB and RIVM, were active in international networks such as NICOLE and ICCL, and in the concerted actions CARACAS and CLARINET at the time of the policy renewal. Most notable is an employee of the TCB, who participated in both BEVER and a CLARINET publication, the Risk-Based Land Management (RBLM) (CLARINET, 2002a; 2002b), which contained principles for contaminated-land policies, formulated at an international level. Some elements of this CLARINET framework coincide with changes in the new Dutch policy, which was then being developed (Interviews TCB, 2005; 2007). Cross-national policy-oriented learning between those involved in both the new Dutch policy and the RBLM, with regard to overlapping issues, has clearly taken place, yet it was difficult to track down exactly what was transferred and how, and from where it originated (Interviews TCB, 2005; 2007). However, the interviews enabled the identification of the following consequences for the Dutch policy from learning through VTC – not only from the RBLM, but also from the other international networks.

The most profound development in the new policy was the change of the remediation goal from the multifunctionality to the fitness-for-use approach (BEVER, 1999; *Stb.* 1997, 531). The long-term reasons for this shift were the increasing number of identified contaminated sites and remediation costs (Backes *et al.*, 2001). Whereas these developments had been ongoing since the end of the 1980s, three additional catalysts eventually led to the belated shift to fitness-for-use. First, it turned out that the ‘state of the art’ of the implementation of the policy was the fitness-for-use approach (Interview TCB, 2005). Second, BEVER proposed to integrate remediation goals into local planning (BEVER, 1999). This integration implied that the soil needed remediation to a level that made the site suitable for its intended future use. Finally, besides these dominant national issues, Dutch policy makers had become aware through VTC that the new Dutch policy was in line with most other national remediation goals (Interviews VROM, 2005; 2007).

The new policy goal carried the funding and the system of management a step further. In 2000 and in 2003, the RIVM introduced remediation values that were in accordance with the intended function and use of the soil. There were four categories: 1) agriculture and nature, 2) the built environment, 3) extensive use of (public) green areas and 4) intensive use of green living areas (e.g. gardens) (Lijzen *et al.*, 2003). For each of these categories, generic values are used to establish to what level the soil should be remediated. These values, called Land-use specific Remediation Values (*Bodemgebruikswaarden*, BGWs) are still generic, although they are differentiated according to intended use.

The BGWs were developed nationally. Similar to the target and intervention values of the beginning of the 1990s, VROM and RIVM formulated the remediation goal in consensus with other national actors, such as VNG, IPO, etc. Although RIVM was informed about foreign values and models, and participated in international networks (VTC), foreign values and models did not influence the Dutch values, nor were they taken up in the national discussion (RIVM, *pers. com.*, 2007; Interview IPO, 2006).

Finally, the funding also changed, in accordance with the switch in the policy goal to the fitness-for-use approach. The BSB supported industries to investigate potentially contaminated land, but did not impose remediation (Interview NVO-NCW, 2005; Interview VROM, 2005). The participating companies did not start to remediate after the BSB, also because multifunctional remediation was expensive. The switch to the fitness-for-use approach changed this, and a new public-private covenant was created to revitalise market integration by giving industries subsidies for remediation activities (Interview VROM, 2005; VNO-NCW, 2005). It was called *Sanering in gebruik zijnde bedrijfsterreinen* (Company Arrangement for the Remediation of currently used business or industrial locations). The decision to use a covenant was not surprising. Not only had the BSB failed, the Dutch government had considerable experience in formulating covenants with industry. In addition, the government referred to experiences of other countries of the positive effects of using ‘the stick’ (regulation) and ‘the carrot’ (subsidies). It had learnt this through working visits to the US, and in the CLARINET network (Interviews VROM, 2005; 2007). However, VROM stressed that it had made use of ‘the carrot’ and ‘the stick’ before, in other environmental policy fields, and only referred to the fact that it was used in other countries as well. The covenant was signed in 2001.

Following these developments, VROM’s ‘Soil Policy Letter’ (*Bodembeleidsbrief*) underlined the continuation of the previously described developments (VROM, 2004; Interview VROM, 2005); in 2006 the new Soil Protection Act consolidated the developments described above. In addition, new negotiations between government and industry have begun, because only a small amount of the subsidy provided for remediation was being used.

Background to the policy	
Remediation goal:	Multifunctional approach (VTC)
System of management:	Generic ABC values
Measures:	Government pays, court cases with market parties
Relevant Documents:	Interim Act, 1983; Soil Protection Act, 1987
	1989 System of management: Introduction of risk assessment
	1992 Measures: Funding BSB
	1994 Measures: Target and intervention values Policy goal: Reaffirm Relevant document: Soil Protection Act
	1997 Remediation goal: Change to the fitness-for-use approach (VTC) Relevant document: <i>Stb.</i> 1997, 156
	1999 System of management: Land-use specific Remediation Values (VTC)
	2001 Measures: Industrial remediation covenant (VTC) Relevant Document: Company Arrangement for the Remediation of currently used business or industrial locations
	2007 Measures: Negotiating new covenant

Figure 5.1: Overview of the policy process on contaminated land in the Netherlands, including legislation mentioned in the text, and policy-oriented learning from VTC

5.3.3 Interpretive analysis

This section analyses the instances of policy-oriented learning from VTC (Fig. 5.1) and the role of domestic institutional factors. It begins by summarising the concrete cases of policy-oriented learning from VTC, followed by some remarks on learning, type of knowledge and VTC. Finally, the identification of domestic patterns behind policy-oriented learning from VTC is discussed (Table 5.4).

During the formulation of the policy goal in the 1980s as well as in 1997, fundamental learning from VTC played a role. The multifunctionality approach of the 1980s was not only common in Dutch environmental policy, it was also in line with the European Soil Charter, in theoretical terms: vertical VTC. As we have seen, in 1997, VROM acknowledged the domestic implementation problems and switched to the fitness-for-use approach. The change was predominantly the result of the domestic problems, but VROM referred to the fact that the fitness-for-use approach was more in line with other countries’ approaches to remediation. This knowledge was gathered by VROM and by the TCB, in international networks, in theoretical terms: organised horizontal VTC, i.e. respectively by benchmarks, unorganized horizontal VTC.

For the system of management and the funding scheme, hard knowledge from VTC played a role ‘in the background’, or, in other words, ‘as a reference’ (corrective learning). The target and intervention values and the BGWs were mainly developed

nationally in negotiation with those involved in the policy-making process. Especially during the development of the land use-specific values, although the RIVM was aware of values and models in other countries, the discussion with national actors was considered more relevant. Also, the way remediation was funded was mainly based on domestic experiences. Furthermore, hard knowledge was gathered by VROM in working visits to the USA and in the international CLARINET network. VROM argued that this knowledge confirmed Dutch national experiences.

Core issue (element)	Type of knowledge	Learning process	VTC	Learning actor	Domestic patterns
Policy goal					
(Multi-functional)	Soft knowledge	Fundamental learning	Vertical VTC	VROM, scientists	Policy formulation by VROM and scientists
(Fitness-for-use)	Soft knowledge	Fundamental learning (reference to VTC)	Organised and unorganised horizontal VTC	VROM and TCB	Discussion with national actors became more important
System of management					
(Models and values)	Hard knowledge	Corrective learning (reference to VTC)	Organised horizontal VTC	RIVM	Discussion with national actors prevailed
Measures					
(Use of 'carrot' and 'stick')	Hard knowledge	Corrective learning (reference to VTC)	Unorganised and organised horizontal VTC	VROM	Policy formulation by VROM and national industries

Table 5.4: Domestic factors and policy-oriented learning from VTC in Dutch contaminated-land policy, in accordance with the core issues

Table 5.4 and the above summary of policy-oriented learning from VTC show that hard knowledge from VTC has led to corrective learning with regard to the system of management and the measures, and that soft knowledge from VTC twice led to fundamental learning concerning the remediation goal.

It is striking that knowledge from VTC was mainly used as 'reference' in the Dutch policy. This applies to the change in the remediation goal in 1997, in theoretical terms fundamental learning, and to corrective learning. When the national policy was similar to international trends, knowledge from VTC was referred to; however, when the national policy proved to be different from international standards, knowledge from VTC was more or less ignored. For example, VROM was aware that the fitness-for-use approach was internationally more supported than the multifunctional approach, but it did not change the policy accordingly. When eventually national circumstances pushed for the fitness-for-use approach, VROM referred to the international trend. For VTC, most knowledge was gathered through both organised and unorganised horizontal VTC; only the formulation of the policy goal in the 1980s derived from vertical VTC.

Two domestic patterns can be identified behind the instances of policy-oriented learning from VTC (Table 5.4). First, at the outset of the policy process on contaminated land, VROM cooperated with scientists to formulate the policy goal, the system of management and the measures. Later on, national actors besides the central government and scientists became more important, and knowledge from VTC was mainly used as a reference. When the remediation goal eventually shifted, the view of other national actors was taken into account. Although employees of VROM, TCB and RIVM were involved in VTC, as well as commercial representatives such as VNO-NCW, knowledge from VTC was not actively discussed among participants. A good example is the benchmark from the TCB concerning policy approaches in different countries, which was not widely discussed. As such, the system of management, the target and intervention values as well as the BGWs were discussed among all those involved in the policy process, but knowledge from VTC was not actively considered. The same process applies to the Industrial Remediation covenant made between VROM and industry.

5.4 England

In the 1960s and 1970s, local authorities in England repeatedly ran into the problem of contaminated land in redevelopment projects. In the late 1970s, the UK government acknowledged that contaminated land was a recurring obstacle in planning policies, and initiated regulation on an 'ad hoc' basis. The issue was regulated under a range of different legislative provisions such as planning policies, building regulations, etc. In 1989, the House of Commons initiated a reaction to this more or less fragmented approach. It saw the need to consider contaminated land an environmental

issue in its own right, instead of only in the context of land redevelopment. During the 1990s, a comprehensive policy was formulated.

The brief introduction showed that from the 1970s, contaminated land had been dealt with in the context of redevelopment. These previous policy decisions affected the policy on contaminated land from 1989 onwards. Therefore, section 5.4.1 introduces how contaminated land was dealt with in redevelopment policies. Section 5.4.2 outlines the policy process on contaminated land from 1989 onwards, focussing on policy-oriented learning from VTC; section 5.4.3, finally, offers an interpretation of policy-oriented learning from VTC, addressing the case study research question.

5.4.1 Background

In 1979, there were over 50 requests for advice to the Department of Housing from local authorities that were faced with contaminated land in redevelopment programmes (Smith, 1993). The Department of Housing proposed to develop guidance on the issue, and it decided that the issue of contaminated land should be taken up by the national government to alleviate the problems of the local authorities (Harris and Denner, 1997). In order to establish guidance on contaminated land in redevelopment programmes, the Interdepartmental Committee for the Redevelopment of Contaminated Land (ICRCL) was set up in 1979.

The most important outcome of the ICRCL was the establishment of the so-called trigger values, providing the system of management. These trigger values, first officially published in 1983, were intended to flag up risks that may be associated with contaminated land. The values were generic and related to the intended land use. Four categories of land use were distinguished: large gardens, small gardens, parkland and industrial areas. For each of these four categories of intended land use, two different values for contaminants were given. If the highest value was exceeded, action was required; if the value of the contaminant in the soil remained below the lowest value, no action was considered necessary. In between these values there was a grey area, in which local authorities had to rely on their own judgement (Smith, 1980; Interview ICRCL, 2007). There was no special guidance on how to deal with remediation or remediation targets.

To understand later developments in the system of management, it is helpful to be aware of some of the criticisms the trigger values came under. First, the list of the ICRCL values did not cover all contaminants, and sometimes the Dutch or American values were used. Second, policy makers considered the values to be opaque: most people who used the trigger values in practice did not look at the explanation behind them, but used the numbers only (Interview ATKINS, 1007; Interview ICRCL, 2007). Third, there was discussion about the level of the values, which were adjusted over

time to be more in line with practical circumstances: “[there are] areas in the country where natural processes (...) are well above the guideline values, and there are many domestic gardens in urban and indeed rural areas where the recommended levels are already exceeded” (Smith, 1980, 10). In 1987, as a result of these criticisms, there was an update in the ICRL values; some of the numbers were dropped, however, without an explanation of the thinking that lay behind the numbers (Interview ICRL, 2007; DEFRA, 2007b).

The trigger values were developed in the context of the redevelopment of land and as such, no specific remediation goal was formulated to deal with contaminated land. However, the different categories for redevelopment were attached to different forms of land use, which implies the fitness-for-use approach.

Also, the measures for the funding of remediation costs were set up in the context of redevelopment; the cost of remediation was covered by both public funds and market funding. Property developers or local authorities had to pay for remediation if they wanted to redevelop sites. For both local authorities and developers, government funding was available to help cover remediation costs. The first fund was established in the 1960s, but this was only accessible when contaminated land was being redeveloped. In 1988, a fund was established for land that was contaminated with land gas. This grant, initiated by the government after a gas explosion seriously injured three people, was originally meant for gassing landfills. In 1992, it was extended to include other contamination risks, and named the Contaminated Land Capital Programme (Interview DEFRA, 2007a; 2007b).

5.4.2 The policy process from 1989 onwards

This section gives an overview of the policy process after 1989, focussing on domestic institutional factors and how they shaped policy-oriented learning from VTC. The shift in the policy from contaminated land being regarded as an issue in the context of redevelopment into an issue in its own right also meant a shift in terms of who was involved in the policy process. Since 1989, the most important players in the policy process have been the Department of Environment, Food and Rural Affairs (DEFRA, formerly the Department of Environment), especially the Contaminated Land Branch that formulated the policy for England. The Environment Agency, set up in 1995, dealt with the technical aspects of the policy. Local authorities were responsible for more specific aspects of the regulation and the implementation. They were not only individually involved in the policy process, but could also be represented by bodies such as the Local Government Association and Local Authorities’ Coordinators of Regulatory Services (LACORS). Furthermore, employees from various industrial companies that carried out remediation were consulted, individually

and in organisations, for example the Environmental Industries Commission Ltd. Finally, several consultancies and universities participated in the policy development, such as R³, Sagta, CIRIA, University of Nottingham, etc, preparing technical guidance on behalf of government bodies and others to support policy implementation and giving advice on how to deal with contaminated land at a site-specific level (Table 5.5).

Organisation	Abbreviation	Function
Department of Food, Rural Affairs and Environment	DEFRA	Governmental department (Environment) dealing with contaminated land
Environment Agency	EA	Technical body, linked to DEFRA
Individual local authorities	N.A.	Policy implementation
Local Government Association	LGA	Governmental body representing the interests of local authorities
Local Authorities' Coordinators of Regulatory Services	LACORS	Body representing the interests of local authorities
Consultancies and experts from universities, such as Sagta, R ³ , CIRIA, University of Nottingham, etc	N.A.	Providing technical guidance and giving advice on particular sites Dealing with the practical aspects of remediation, or causing it
Industries	N.A.	Providing technical guidance and giving advice on particular sites Dealing with the practical aspects of remediation, or causing it

Table 5.5: Key organisations involved in contaminated-land policy in England

In 1989, the House of Commons Select Committee instigated a comprehensive inquiry into UK policy on contaminated land. This Committee produced a report that criticised several aspects of the way the UK government dealt with contaminated land. The comments that are important here concerned the fragmented nature of the policy, the limitations of the ICRCL trigger values, and how liability issues were addressed. To overcome these critical aspects, the House of Commons suggested that a consistent approach should be taken by DEFRA, that a new system of management

had to be developed, and that the government should be clearer on who was liable (House of Commons, 1989).

During its inquiry, the Committee visited the Netherlands and the USA, and learnt from the experiences of these countries concerning the remediation goal and how to finance remediation. Regarding funding, the Committee learnt about the Superfund in the USA, and decided it was questionable whether it would be suitable for the UK, because of its different tax system. As a consequence, the House of Commons argued that the Superfund would not fit into the UK context (House of Commons, 1989; Jones; 2000; Interview DEFRA, 2007b).

With regard to the policy goal, the Select Committee emphasised the continuation of fitness-for-use as the main approach to managing contaminated land. Not only did the Select Committee learn that the multifunctional target was criticised in the Netherlands for its lack of cost-effectiveness (House of Commons, 1989; Jones; 2000, Interview DEFRA, 2007b), a more dominant factor in this decision was that the UK had used the fitness-for-use approach before in redevelopment programmes and wanted to continue using it. In other words, the UK government followed the path of previous policy decisions because it used to be done like that (House of Commons, 1989). For these reasons, the House of Commons concluded that it was questionable whether the multifunctional approach is appropriate to the UK (House of Commons, 1989).

After the publication of the House of Commons report, the UK government became more pro-active in the issue of contaminated land (Herbert, 1999). In order to create a more comprehensive policy, provision was made to introduce new Section into the Environmental Protection Act of 1990 (Harris and Denner, 1997). Section 143 imposed a duty on local authorities to compile public registers of potentially contaminated land. However, these public registers created debate about possible adverse impacts on the value of the land appearing on the registers (Jones, 2000), and they did not make any specific provision about how such land should be dealt with. Therefore, Section 143 was withdrawn in 1993.

The withdrawal of Section 143 was one of the reasons behind the announcement of a larger policy review in March 1993. The underlying reason was the concern over how liability issues were managed (Meyer *et al.*, 1995; Lowe and Lowe, 2001). A national incentive to outline a clear liability scheme was “to remove the blight from the property market” (Lowe and Lowe, 2001, 25). In addition, in 1993 the European Commission published a green paper on Environmental Damage, which referred to the financing of remediation of contaminated land (Harris and Denner, 1997). Also, the Council for Europe was completing its Convention on Civil Liability for Damage resulting from activities dangerous to the environment, in 1993 (DoE and Welsh Of-

fice, 1994a). These European papers helped to bring to light that the liability issue was not sufficiently arranged in the UK.

The start of the bigger policy review offered an opportunity to start the policy process with a clean sheet, referring to the ICRL problems. The new policy would consist of two parts: Part 2A and technical guidance. Part 2A provided the framework of the policy, dealing with the policy goal and the measures; the technical guidance was meant to help interpret the policy, dealing with the system of management. The intention was to publish the technical guidance around the same time or earlier than the legislation came into force.

The development of the new policy took place at the same time that the ICCL international network started to emerge. Knowledge shared within this international network affected the English policy regarding the remediation goal, the measures and the system of management. The fitness-for-use approach, advocated by the House of Commons in 1989, was reaffirmed in this process as a result of knowledge from VTC (DoE and Welsh Office, 1994b). In 1993, the ICCL thoroughly discussed the fitness-for-use approach and the multifunctional approach. At that time, the UK government was one of few that had adopted a fitness-for-use approach, and it was challenged to defend it in the international network. Later on, the UK succeeded in finding support from other countries for the fitness-for-use approach in VTC, and this was confirmed domestically (Interview DEFRA, 2007b).

The measures also showed policy-oriented learning from VTC concerning funding. The liability issue was addressed extensively in the new policy. The UK government had decided to develop a detailed machinery of defining and regulating liability, not only resulting from the fact that it was an issue at the national level, but also because “international experience shows, at a simple level, that without a clear structure of rules on liabilities to pay for remediation, remediation generally does not happen” (Lowe and Lowe, 2001, 27). More specifically, the government learnt from problems experienced by other countries, for example regarding who would be liable if contaminated land involved several industries (Interview DEFRA, 2007b). In these cases, the government learnt how not to elaborate the liability scheme, rather than learning about positive elements or solutions. It is said that “most solutions of other countries would not work in the UK national legal system and culture” (Interview DEFRA, 2007b).

For the system of management, Part 2A and the technical guidance had to overlap. Technical scientists, policy makers and lawyers therefore sat down together to formulate the policy. A scientist was appointed to spearhead the policy-making process, which was quite unusual (Interview DEFRA, 2007b). In addition, several people were involved who were knowledgeable about ‘two worlds’, for example about techni-

cal issues *and* about the policy, or about policies *and* legal concepts (Interview DEFRA, 2007b).

Together, they agreed that the new system of management, should be based on science and that risk assessment should be at the heart of the policy (Lowe and Lowe, 2001; Interview DEFRA, 2007b). In addition, it was agreed that clear guidelines should be formulated to avoid situations in which people judged land to be contaminated to different extents in different regions. Both generic and site-specific values should therefore be used in the policy, and these were, among others, summarised in the term Significant Possibility of Significant Harm (SPOSH). If there was SPOSH, intervention was necessary. To make SPOSH practical, new values had to be developed, because the ICRC values were not transparent. To be able to adjust values according to specific site characteristics, transparency is essential (Interview LACTORS, 2007; Interview ATKINS, 2007; Interview Environment Agency, 2007b).

However, once the system of management was set up, the views of the scientists and the policy makers drifted apart, for example concerning whether the values should be general or site-specific. This was, among others reasons, due to the split into two. Policy makers continued working at DEFRA, while scientists were grouped together in the Environment Agency in 1997 (Interview Environment Agency, 2007b; Interview DEFRA, 2007b). As a result, there was a lot of debate on the technical guidance. Part 2A for England was published before the technical guidance in 2000, but it took until 2002 before the old ICRC values (system of management) were officially withdrawn and the technical guidance was approved by DEFRA.

The technical guidance included policy-oriented learning from VTC; the technical underpinning of the Environment Agency guidance in particular was developed through looking at different international approaches, such as data to use in calibrating models (Interview ATKINS, 2007; Interview Environment Agency, 2007a). The new system of management included both generic values and the possibility of making site-specific adjustments where appropriate. It was made up out of generic Soil Guideline Values (SGVs), which should provide the technical means for establishing SPOSH. However, the possibility to adopt a site-specific approach was limited: one of the few possible adjustments of the SGVs was to change the acidity value (Interview Bureau Veritas, 2007; Interview Environment Agency, 2007b).

More policy-oriented learning from VTC on the system of management was visible in the guidance formulated by consultancies (SAGTA, 2000; Bardos, 2002; 2003). In the absence of clear technical direction from authoritative bodies, national players, such as local authorities, consultancies, industries, etc., needed help with how to assess risk and how to decide when remediation is needed (Interview Environment Agency, 2007a; Interview Local Authority, 2007; Interview CIRIA, 2007). Therefore, consul-

tancies and universities produced documents containing their own views on how to interpret Part 2A. This guidance contained policy-oriented learning from VTC: several consultancies became involved in international networks when they conducted research under government contract. Once they had participated in international networks, they continued being involved. The reason to stay involved was that the international networks offered the advantage of being more aware of what is out there (Interview ATKINS, 2007; Interview Environment Agency, 2007b; Interview LQM, 2007; Interview R³, 2007). Thus, they were better informed, more aware of relevant documents, and knew how to gain access to these documents.

The latest development, in 2007, also concerns the system of management. The debate centres on making it possible to insert more site-specific circumstances in the technical guidance (DEFRA, 2006; www.defra.gov.uk, accessed April 2007). In addition, in practice, the SGVs turned out to be too strict. Some of the values there were higher than the background values used by local councils and boroughs (Interview Local Authority, 2007; Interview Environment Agency, 2007b). At the time of writing, it looks as if the levels of the SGV will be dropped in the future to meet these practical constraints.

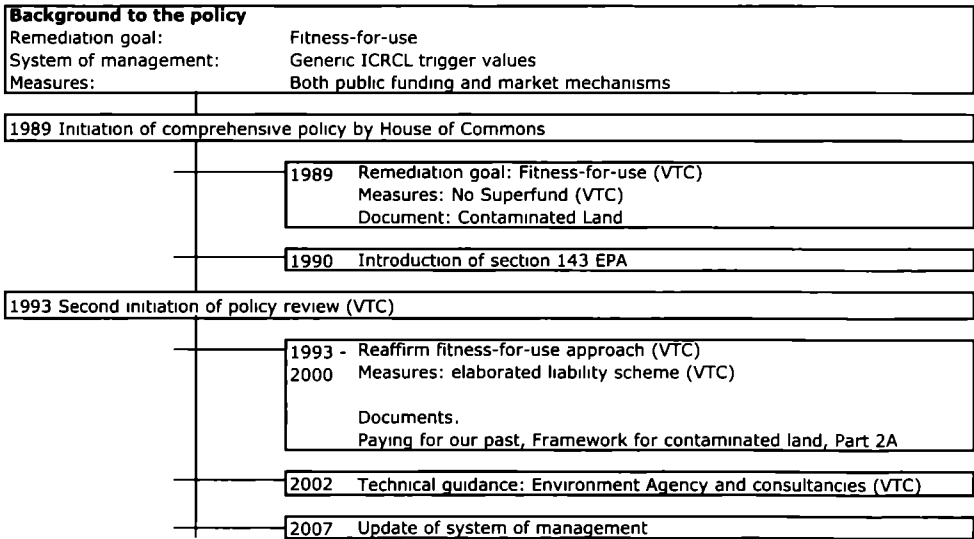


Figure 5.2: Overview of the policy process on contaminated land in England, including legislation mentioned in the text, and policy-oriented learning from VTC

5.4.3 Interpretive analysis

This section answers the case study research question, formulated earlier. To this end, first the concrete cases of policy-oriented learning from VTC are summarised (Fig. 5.2), focussing on the three core issues. This is followed by general observations on the setting of VTC, type of knowledge and learning from VTC. Finally, domestic patterns of learning from VTC are identified (Table 5.6).

In 1989, the House of Commons Select Committee gathered data on knowledge gained through VTC to review the UK's fragmented approach to contaminated land. House of Commons representatives visited the Netherlands to examine the alternative (multifunctionality) policy goal. From this unorganised horizontal VTC, in which soft knowledge was gathered, these representatives learnt about the criticism in the Netherlands on the multifunctionality approach and decided they would carry on with the fitness-for-use approach as they had in redevelopment programmes (fundamental learning). During the early 1990s, the fitness-for-use approach was discussed in international networks – in theoretical terms: soft knowledge was gathered in organised horizontal VTC. Over time, more countries joined the UK in adopting the fitness-for-use approach, which the UK government referred to in its policy decision.

For the measures, House of Commons representatives also visited the USA to gather knowledge about the Superfund. From this experience they learnt that this financial measure could not be implemented in the UK due to differences in the tax system (corrective learning). In addition, the absence of a comprehensive system for dealing with liability matters was emphasised both by national and international developments in 1993. Internationally, the European Commission's green paper on liability and the Convention on Civil Liability for Damage of the Council of Europe motivated the UK to create a clear liability scheme (in theoretical terms: vertical VTC). Finally, the liability issue was evidence of corrective learning from VTC through the ICCL, theoretically: organised horizontal VTC. DEFRA employees learnt from international experience that detailed regulation was necessary in order to regulate liability properly. More specifically, in most cases, these employees learnt how not to handle it. For example, solutions of other countries to allocating liability were considered inappropriate for England, considering its legal context.

For the system of management, the case showed corrective learning from VTC concerning technical details in the guidance of the Environment Agency. In addition, because the technical guidance of the Environment Agency was delayed, several consultancies also produced guidance, which included learning from VTC, to interpret Part 2A.

Core issue (Element)	Type of knowledge	Learning process	VTC	Learning actor	Domestic patterns
Policy goal					
(Fitness-for-use)	Soft knowledge	Fundamental learning	Unorganised horizontal VTC	House of Commons	House of Commons searching for knowledge
(Fitness-for-use)	Soft Knowledge	Fundamental learning (referring)	Organised horizontal VTC	DEFRA	DEFRA decided on the continuation of previously formulated policy
Measure					
(Initiation review)	Hard knowledge	Corrective learning	Vertical VTC	UK government	UK government dominant concerning the measures
Measures					
(US super-fund)	Hard knowledge	Corrective learning (Negative)	Unorganised horizontal VTC	House of Commons	House of Commons searching for knowledge
(Liability details)	Hard knowledge	Corrective learning (Negative)	Organised horizontal VTC	UK government	UK government dominant concerning the measures
System of management					
(Technical details)	Hard knowledge	Corrective learning	Organised horizontal VTC	Environment Agency, consultancies	Consultancies learnt; different views of policy makers and scientists

Table 5.6: Domestic factors and policy-oriented learning from VTC in the English contaminated-land policy in accordance with the core issues

Table 5.6 shows that hard knowledge has led to corrective learning and soft knowledge to fundamental learning. For fundamental learning from VTC, concerning the fitness-for-use approach, soft knowledge was taken into account in 1989, and used as a reference in 1993. Corrective learning regarding the system of management and the measures resulted in hard knowledge gained in VTC.

Furthermore, all three core issues show evidence of policy-oriented learning from VTC. For the measures, however, the people involved in the international networks mainly learnt negatively, i.e. how not to handle it. The foreign solutions were considered to be embedded in their respective national regulation: it was thought that although some of these measures might work in other countries, they would not work in the UK context. Apparently, it is difficult to derive positive solutions from foreign measures due to the embeddedness in the national context, such as a tax system or a legal structure.

For VTC, this case showed that, in general, knowledge was first gathered through unorganised horizontal VTC, and later through organised horizontal VTC. When representatives of the House of Commons wanted to reform the UK's fragmented policy on contaminated land, they visited countries to gather knowledge. Once the international networks were established, knowledge gathering took place through those networks, and no longer through visits. Vertical VTC only stimulated the formulation of a liability scheme.

Two distinct patterns can be recognised in the policy-oriented learning from VTC in the English contaminated-land policy (Table 5.6). First, at the outset of the policy process, although a range of domestic players participated in VTC, such as consultancies and universities, the Environment Agency, DEFRA and the House of Commons, policy-oriented learning from VTC was initiated by the House of Commons and DEFRA – both central government bodies.

Second, in the development of the system of management, consultancies rather than the Environment Agency showed evidence for policy-oriented learning from VTC. The Environment Agency has published only one technical guide, which contained learning from VTC concerning technical details. Because of the absence of technical guidance from the Environment Agency until 2002, consultancies and universities produced guidance, which showed learning from VTC, to help local authorities, industry etc. to deal with contaminated land. The guidance from consultancies and universities contained policy-oriented learning from VTC.

5.5 France

In France, the policy process regarding contaminated land began in 1993 and was placed under the law called Classified Installation for Environmental Protection (*Installations Classées pour la Protection de l'Environnement*, ICPE), which stipulated the liability scheme as the means of funding. Prior to 1993, the French government had identified some 'black spots' (toxic sites) according to the European Directive of 1978 on hazardous waste (EC, 1978). As no further action was taken apart from listing the sites, this simple initiative did not influence subsequent French policy. Therefore, section 5.5.1 discusses the policy process on contaminated land from 1993 onwards, focussing on learning from VTC, followed by section 5.5.2 which gives an interpretation of policy-oriented learning from VTC, answering the case study question.

5.5.1 The policy process

In France, as said, contaminated land was first identified in the context of the 1978 EU Directive on toxic waste. After the identification of contaminated land, the government argued that no further action was required, because the directive did not oblige Member States to take action to remediate. In addition, because it was believed that France had a large amount of non-contaminated land, it was not seen as an urgent problem. As such, contaminated land was seen as an incidental problem and it was not considered necessary to formulate a comprehensive policy (Van Lang, 2000; Interview MEDAD, 2005).

Over time, the issue of contaminated land shifted from being an incidental problem to a structural one as a result of two national developments and one international process. Nationally, the number of identified contaminated sites grew, from 62 in 1978 to 553 in 1993 (Van Lang, 2000). In addition, industries asked for clear guidelines, because different *départements* assessed and managed contaminated land differently, creating legal uncertainty (Interview MEDAD, 2005; Interview DRIRE, 2005). Internationally, the news spread that Germany, the Netherlands and the USA also had problems with contaminated land, which increased political awareness in France (Goubier, 1993, in: Visser, 1993).

As a result, in 1993, the Ministry of Ecology, Sustainable Development and Planning (*Ministère de l'écologie, du développement et de l'aménagement durable*, MEDAD) announced a comprehensive policy on contaminated land. Two public institutes were involved in the formulation of the policy: the Institute of Geological and Mining Research (*Bureau de Recherches géologiques et minières*, BRGM) that mainly assisted the Environment Ministry, accompanied by the National Institute for the Environment and Risk Assessment (*Institut National de l'Environnement Industriel et des Risques*, INERIS).

MEDAD placed the policy on contaminated land in the framework of the 1976 ICPF law, which stipulated how remediation should be funded: the latest industrial operator (and by default the owner of the site) was liable for environmental damage. Thus, industry, for example Gaz de France, was always responsible for the funding of remediation except when a polluted site was abandoned and no responsible party could be identified. In such cases (so-called orphan sites), the French state was responsible. The Environment and Energy Management Agency (*Agence de l'Environnement et de la Maîtrise de l'Énergie*, ADEME) then paid for remediation and carried it out (ADEME, 2001). Besides ADEME, the *Préfet* of a *département* and DRIRE were responsible for the implementation of the policy (Table 5.7).

Organisation (English name)	Organisation (French name)	Abbreviation	Responsibility
Ministry of Ecology, Sustainable Development and Planning	<i>Ministère de l'écologie, du développement et de l'aménagement durable</i>	MEDAD	Formulating the policy
Departmental Prefect	<i>Préfet de département</i>	N.A.	Implementing the policy at this level as governmental representative
DRIRE	<i>Directions Régionales de l'Industrie, de la Recherche et de l'Environnement</i>	DRIRE	Implementing the policy at the local and regional levels
Environment and Energy Management Agency	<i>Agence de l'Environnement et de la Maîtrise de l'Énergie</i>	ADEME	Implementing the policy for orphan sites
Institute of Geological and Mining Research	<i>Bureau de Recherches géologiques et minières</i>	BRGM	Technical, scientific advisory body for the ministry
National institute for the Environment and Risk Assessment	<i>Institut National de l'Environnement Industriel et des Risques</i>	INERIS	Technical and scientific advisory body for the ministry
Industry companies and businesses, for example Movement of French enterprises	<i>Gaz de France, Mouvement des entreprises de France etc.</i>	MEDEF	Responsible for clean-up actions as liable parties

Table 5.7: Key organisations involved in the contaminated-land policy in France

The ICPE law strictly defined the funding by stipulating that industry was always fully liable, and therefore the government developed a “realistic policy” for realistic soil remediation (Sauvalle and Darmendrail, 1999, 49), which means that the policy was structured in such a way that the remediation process would give leeway in establishing the remediation target. This national framework formed the basis of the French policy. Within this framework, policy-oriented learning from VTC took place regarding the policy goal, the system of management and the measures.

MEDAD opted for the fitness-for-use approach for two reasons. First, domestic industry dealing with remediation already applied the fitness-for-use approach and had therefore some experience with this type of remediation (Interview DRIRE, 2005; Interview MEDAD, 2005). In addition, BRGM deemed fitness-for-use to have a more realistic remediation approach, after evaluating experiences with remediation targets in the Netherlands, Germany and the USA, and some other countries such as Canada and Spain (Interview BRGM, 2005; Interview MEDAD, 2005). This knowledge was gathered through direct contacts with national representatives in each of the countries: for example, during meetings with representatives of VROM, Planning and Housing and research institutes, French representatives from BRGM learnt that the Netherlands claimed to apply the multifunctional approach, but in practice it mostly applied the exceptions to this approach (see Section 5.3.2) (Interview BRGM, 2005; BRGM *pers. com.*, 2007).

MEDAD, INERIS and BRGM formulated the system of management. In line with the realistic soil policy, for each site the impact on humans and water resources was taken into account by calculating the risk levels and vulnerability. In order to calculate the risks for each individual site, two studies, both based upon risk assessment, had to be conducted. The Simplified Risk Assessment (*l'évaluation simplifiée des risques*, ESR) would work out, whether the soil was contaminated or not, by identifying the risk on each specific site. If the result of the ESR revealed an unacceptable risk, the Detailed Risk Assessment (*l'évaluation détaillée des risques*, EDR) would be employed to establish a remediation target. Both studies were validated within national working groups (Sauvalle and Darmendrail, 1999; CLARINET, 2002b).

INERIS developed the ESR while taking into account knowledge from VTC concerning technical details. The ESR was aimed at identifying the risk for each specific site; each and every value that had to be inserted in this study depended on the characteristics of the site and had to be gathered on location. Only when it was impossible to calculate site-specific values on the site, the Fixed Impact Values (*Values de Constante d'Impact*, VCI) should be used. These values provided scores for certain contaminants and the impact on the soil, and should be used in the study. Initially, INERIS copied these values from Dutch, German and Swedish values (Interview

INERIS, 2005b); later, it calculated French values for some components, based on reasonably conservative scenarios and models inspired by the Dutch system, which was available in English (Interview INERIS, 2005b). The knowledge that led to both policy-oriented learning processes was identified via literature: INERIS started to participate in international networks only in 2000 (Interview INERIS, 2005a).

The result of the ESR was to place the site under investigation in one out of three categories. These categories reflected the potential risks posed by the site. Sites that fell into the first category were considered safe for current land use, sites that belonged to the second category had to be monitored, while third-category sites required additional investigation (Darmendrail, 2003). If a site fell into the third category, the EDR study was needed to establish relevant remediation targets.

BRGM developed the EDR in 1999. Its target was to establish remediation objectives, based upon criteria for human health and intended use. Similar to the ESR, the models in the EDR used knowledge from models of foreign countries, mostly the USA and the Netherlands (Interview BRGM, 2005). BRGM gathered this knowledge by visiting representatives of the Ministry of Environment in the USA, and through meetings with employees from RIVM and VROM in the Netherlands. Also, it gathered knowledge in the international network CARACAS (Interview BRGM, 2005; BRGM *pers. com.*, 2007).

In 2004, MEDAD revised the ESR because of its disappointing results (Interview BERGM, 2005, Interview INERIS, 2005b; Interview MEDEF, 2005). Actions to control any pollution were postponed until the results of the studies were agreed upon. However, the ESR studies were quite time-consuming, and discussions on the outcome were not uncommon. During these discussions it became clear that the study had to be redone; not much action was therefore taken. In addition, due to the complexity of the study, some implementation authorities would rather use the generic VCI to establish a remediation target or contamination level than perform the ESR studies (Interview MEDAD, 2005; Interview INERIS, 2005b). To overcome these problems, MEDAD first removed the VCI from the ESR and later abolished the ESR altogether.

Regarding liability, a problem appeared when *Metaleurop* failed to clean up the environmental damage it had caused after closing down in 2003. The firm took advantage of a legal loophole in the ICPE law concerning foreign-owned businesses and got away with it (Interview MEDEF, 2005; Interview MEDAD, 2007). The solution to deal with the loophole was the introduction of the ‘financial guarantee’, which ensured that it was not legally possible to close an industrial site without remediation. Employees within MEDAD became familiar with the financial guarantee solution through VTC in the CLARINET network (Interview MEDAD, 2005; Interview BRGM, 2005;

Interview TCB, 2005). Furthermore, experts sent by MEDAD travelled abroad to gather experiences (INERIS *pers. com.*, 2007). The financial guarantee fitted into the French regulatory system (Interview MEDAD, 2007).

The last development concerns the system of management. The replacement of the ESR was under revision at the end of 2006. The revision was predominantly based on domestic experiences from local, regional and national companies, authorities and institutes (INERIS, 2005; BRGM *pers. com.*, 2007; INERIS *pers. com.*, 2007). It was only in the reflection of the old values that INERIS referred to knowledge from VTC. This knowledge, however, did not influence the final result (INERIS *pers. com.*, 2007). The case-by-case approach, based upon risk assessment, still forms the basis of the system (INERIS *pers. com.*, 2007; BRGM *pers. com.*, 2007).

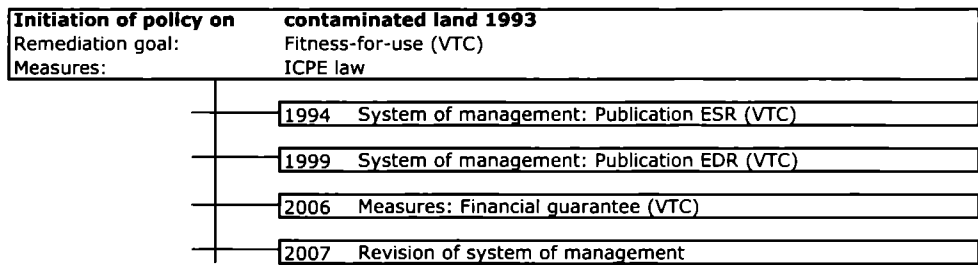


Figure 5.3: Overview of the policy process on contaminated land in France, including legislation mentioned in the text, and policy-oriented learning from VTC

5.5.2 Interpretive analysis

This section analyses policy-oriented learning from VTC in France and how domestic institutional factors affected these processes. To this end, policy-oriented learning from VTC is briefly summarised (Fig. 5.3). Then, some interesting points are emphasised regarding policy-oriented learning, type of knowledge and VTC. Finally, domestic patterns behind learning from VTC are identified (Table 5.8).

Although the initiation of the policy on contaminated land was mainly triggered by domestic developments, through unorganised horizontal VTC, knowledge about problems with contaminated land in the Netherlands and in Germany also raised the awareness of the need for such a policy in France, accelerating the policy process there.

Because the policy was placed under the ICPE law, which stipulated that industry was always liable, the French government decided upon the realistic fitness-for-use approach. This decision was based on national experiences, and confirmed by soft

knowledge from VTC. MEDAD required BRGM to investigate contaminated-land policies in the Netherlands, Germany and the USA. This was done through contacts with representatives – in theoretical terms: unorganised horizontal VTC.

Furthermore, knowledge from VTC led to corrective learning concerning two technical issues in the system of management. First, when INERIS developed the ESR, it learnt about values and models from the system of management of other countries through literature, in theoretical terms: unorganised horizontal VTC. Also, the EDR showed evidence of policy-oriented learning from VTC. The EDR was published later than the ESR, at a time when international networks were being established. BRGM gathered the knowledge for the EDR partly through international networks, in theoretical terms: organised horizontal VTC. Additionally, it learnt through representatives of national authorities of different countries, constituting corrective learning through unorganised horizontal VTC.

Finally, a funding scheme for contaminated-land remediation was put in place when the remediation policy was placed under the ICPE law. In addition, MEDAD introduced the financial guarantee, which it learnt about through VTC (corrective learning), both unorganised and organised horizontally. It was discussed in the international network CARACAS, and MEDAD sent experts to other countries to gather knowledge.

Core issue (Element)	Type of knowledge	Learning process	VTC	Learning actor	Domestic patterns
(Initiation)					
Policy goal (fitness-for use)	Soft knowledge	Fundamental learning	Unorganised horizontal VTC	BRGM and MEDAD	MEDAD responsible for formulating the policy
System of management					
(ESR)	Hard knowledge	Corrective learning	Unorganised horizontal VTC	INERIS Technical nature of the policy	MEDAD responsible for formulating the policy
(EDR)	Hard knowledge	Corrective learning	Organised and unorganised horizontal VTC	BRGM Technical nature of the policy	MEDAD responsible for formulating the policy

Core issue (Element)	Type of knowledge	Learning process	VTC	Learning actor	Domestic patterns
Measures (Financial guarantee)	Hard knowledge	Corrective learning	Organised and unorganised horizontal VTC	MEDAD	MEDAD responsible for formulating the policy

Table 5.8: Domestic factors and policy-oriented learning from VTC in the French contaminated-land policy in accordance with the core issues

Table 5.8 shows that both hard knowledge for the measures and the system of management, and soft knowledge for the approach was gathered through unorganised as well as organised horizontal VTC.

Looking at VTC in particular, it becomes clear that while knowledge was first gathered by visiting other countries, once international networks were established, these networks became more important. For the establishment of the approach and during the development of the ESR (the system of management), knowledge was gathered through visits and by studying literature (unorganised horizontal VTC). Later on, the knowledge from VTC for the EDR and the financial guarantee was mainly gathered through organised horizontal VTC.

Finally, as we have seen in the Dutch and English case studies as well, hard knowledge led to corrective learning: twice in the system of management and once regarding the financial guarantee for the measures. Soft knowledge was referred to when establishing the policy goal – in other words, when learning was fundamental.

The four learning processes show a similar domestic pattern (Table 5.8): MEDAD formulated the policy, advised by INERIS and BRGM. Knowledge from VTC concerning the policy goal, the system of management and the measures was introduced through one of these participants in the policy process. Although there were other participants as well, such as ADEME and certain industries, no policy-oriented learning from VTC was initiated by them.

5.6 Hungary

The Hungarian government only began formulating a policy for the treatment of contaminated land in 1996, and this belated start created opportunities to make use of the experiences of other countries. There were no previous policy decisions to influence

the policy at a later stage, and so section 5.6.1 starts with an outline of the policy process, focussing on policy-oriented learning from VTC. In section 5.6.2, learning from VTC is analysed and patterns beyond the learning processes are identified in order to answer the case study's research question.

5.6.1 The policy process

In Hungary, the policy was formulated by the Ministry of Environment and Water (*Környezetvédelmi és Vízügyi Minisztérium*, KVVM), aided by the Institute for Environmental Management (*Környezetgazdálkodási Intézet*, KGI), a research institute. In 2005, this institute was separated into two organisations; the National Directorate for Environment, Nature and Water (*Országos Környezetvédelmi Természetvédelmi és Vízügyi Főfelügyelőség*, OKTVF), and the Research Institute for Environment and Water for Public Use (*Vízgazdálkodási Tudományos Kutató Intézet*, VITUKI). The OKTVF is responsible for state remediation projects; the VITUKI monitors remediation across the country. The regional environmental inspectorates are responsible for the implementation of the policy. Apart from these governmental bodies, one private consultancy is involved to deal with the technical aspects of the policy, such as risk assessment. Finally, industrial representatives, such as the Association of Chemical Industries (*Magyar Vegyipari Szövetség*, MAVESZ) and the Association of Hungarian Companies and Factories (*Magyar Gyáriparosok Országos Szövetsége*, MAGYOSZ), were involved because they are in some cases responsible for funding the remediation (Table 5.9).

Organisation (English name)	Organisation (Hungarian name)	Abbreviation	Responsibility
Ministry of Environment and water	<i>Környezetvédelmi és Vízügyi Minisztérium</i>	KVVM	Policy formulation
Regional Environmental Inspectorates	<i>környezetvédelmi felügyelőségek</i>	N.A.	Policy implementation
Consultancy: Hungaria Environmental Technology Ltd	<i>BGT Hungaria Környezettechnológiai Kft.</i>	BGT	Consultancy, dealing with the technical aspects (such as risk assessment)
National Inspectorate for Environment, Nature and Water (formerly Institute for Environmental Management)	<i>Országos Környezetvédelmi, Természetvédelmi és Vízügyi Főfelügyelőség (formerly: Környezetvédelmi Intézet)</i>	OKTVF (former KGI)	Research institute, advises the KVVM

Organisation (English name)	Organisation (Hungarian name)	Abbreviation	Responsibility
Research Institute for Environment and Water Company for Public Use	<i>Vízgazdálkodási Tudományos Kutató Intézet</i>	VITUKI (formerly KGI)	Research institute, advises the KVVM
Association of Chemical Industries	<i>Magyar Vegyipari Szövetség</i>	MAVESZ	Funding remediation
Association of Hungarian Companies and Factories	<i>Magyar Gyáriparosok Országos Szövetsége</i>	MAGYOSZ	Funding remediation

Table 5.9: Main organisations involved in the contaminated-land policy in Hungary

In the early 1990s, two national developments and two international processes confronted the Hungarian government with the problem of contaminated land. Nationally, the issue of contaminated land came to the fore when the Russian army left Hungary in 1990, leaving behind many contaminated sites (Deseo, 1999). In addition, during the privatisation process the previously state-owned industries were sold off, and most of them revealed heavily polluted sites (KVVM, 1997). Both developments were managed without formulating an actual policy for contaminated land: the 1991 Remediation Act concerned military sites only and remediation of former state-owned industrial land was arranged in individual contracts between the state and private actors (Interview BGT, 2005; KVVM, 1997).

Internationally, VTC provided an incentive for the government to develop a comprehensive policy on contaminated land. A mix of public and private parties initiated projects to investigate soil and support remediation tasks by means of advice or funding, in the context of the privatisation. For example, a Danish company supported the remediation of a former Russian site in 1992, several German *Länder* made bilateral agreements, and in 1995 the Netherlands initiated the MANTRA project (KVVM, 2003; Interview KVVM, 2007). These public-private arrangements – in theoretical terms: unorganised horizontal VTC – underlined the problem of contaminated land and the costs of remediation (Interview KVVM, 2005b; Interview OKTVF). Furthermore, the fact that most Western countries had a policy on contaminated land stimulated Hungary to follow their example (Interview BTG, 2005; Interview KVVM, 2005a).

As a result, the KVVM introduced a National Remediation Programme (*Országos Környezeti Kármentesítési Programme*, OKKP) in 1996. The purpose of the OKKP was “to terminate the harmful and hazardous effect of long-term environmental pollution that falls within the scope of the government’s responsibility” (KVVM, 1997, 5). With this

focus, the OKKP created a state budget for remediation (Andersen, 2000); it had seen that many Western countries, specifically Austria, had a substantial state budget to remediate contaminated land and the government followed this example (KVVM, 1997; Interview KVVM, 2007).

Furthermore, the OKKP formulated the remediation target, in which knowledge from VTC was taken into account. At the time, the KVVM had little experience with remediation, and actively searched for foreign experiences through its public-private contacts, together with the KGI. These public-private contacts provided and increased the knowledge about the policies of the countries involved: the Dutch multifunctionality approach was studied, as well as the German policy, with its fitness-for-use approach (KVVM 1997, Interview KVVM, 2005a; KVVM *pers. com.*, 2007). The OKKP referred to the Dutch, German and USA policies on contaminated land and formulated a vaguely defined remediation goal: “the pollution is terminated or, if complete clean-up is not possible or if the target condition determined by risk calculations does not warrant it, reduced” (KVVM, 1997, 5).

Although a system of management was not officially introduced in the OKKP, the Dutch values were used (Anderson, 2000; Interview BGT, 2005; Interview KVVM, 2007c), which were known through two different processes of VTC. First, a group of Hungarian experts from selected ministries, industries and universities proposed the Dutch generic system, with additional values found in the German lists and the Canadian values and guidelines (Andersen, 2000). This expert group was aware of these foreign values by studying the situation in other countries via previously described interactions (KVVM *pers. com.*, 2007). Second, the Dutch ABC values were also commonly used by consultancies, and widely known among research institutes: “everybody took the Dutch list” (Interview BGT, 2005). A specific value for remediation was not yet defined, however.

The first legislation on contaminated land was introduced in 2000, and it altered the three core issues. For the introduction of the risk assessment, first, Hungarian limit values replaced the previously used foreign values (Government of the Republic of Hungary, 2000a). Later, the KVVM introduced risk assessment in the system of management, which led to two extra values in the ABC system; values D and E. The E value could replace the generic limit value B when it was supported by a precise site-specific risk assessment (Government of the Republic of Hungary, 2000b). The D value introduced a remediation target, which had been absent in the OKKP. For remediation, the A values of the Dutch Standards were applied in practice, but over time this became too expensive. The Regional Environment Inspectorate used to decide the level on an ‘ad hoc’ basis (Andersen, 2000; Interview Regional Environment Inspectorate, 2005).

The KVVMM learnt about risk assessment through their participation in CARACAS. Although domestic consultancies and industries had used risk assessment informally before, KVVMM employees were not familiar with it. Once risk assessment was discussed at the international level, the KVVMM introduced it in the national legislation, and asked consultancies to participate in the international networks regarding the technical aspects on behalf of the government (Interview BGT, 2005; Interview KVVMM, 2007).

As a consequence of the introduction of the risk assessment, the new policy specified the previously vaguely defined remediation goal. Remediation value D should include in the calculation the future intended use of the site, thereby implying the use of the fitness-for-use approach (Government of the Republic of Hungary, 2000b).

Finally, it was specified who should pay for the remediation. The 1995 Environmental Act established the Polluter Pays Principle, and the new policy specified the principle specifically with regard to soil: industry is liable, except in cases in which the polluter is unknown or 'innocent'. In these cases the state is responsible to pay (Government of the Republic of Hungary, 2000b; Interview KVVMM, 2005b).

The final development concerned the system of management and took place in 2004, when the policy was reviewed in the light of the EU Water Framework Directive. This EU directive stimulated a review of the policy, since water and soil are intertwined in Hungarian legislation (see diffuse and stable contamination, section 5.1) (Interview OKTVF, 2005). KVVMM employees eliminated the C value, regional authorities often used the C values as a remediation target. Officially, a risk assessment had to be conducted to establish the remediation target, but the implementation authorities were not properly introduced to risk assessments, nor did they have sufficient knowledge or the resources to conduct them (Interview Regional Authority, 2005). Instead, to ensure public health, the implementation authorities used limit value C as a remediation target (Interview OKTVF, 2005). Apart from this change in the system of management, there have been no changes since (Interview KVVMM, 2007).

Initiation of policy on	contaminated land 1996/1997				
Remediation goal:	Not clearly defined (VTC)				
Measures:	State budget (VTC)				
System of management:	Adjusted ABC values (VTC)				
	<table border="1"> <tr> <td>2000</td> <td>System of management: Introduction of risk assessment (VTC) Remediation goal: Fitness-for-use approach Measures: PPP Documents: Government of the Republic of Hungary, 2000a; 2000b</td> </tr> <tr> <td>2004</td> <td>Adjustment in system of management Document: Government of the Republic of Hungary, 2004</td> </tr> </table>	2000	System of management: Introduction of risk assessment (VTC) Remediation goal: Fitness-for-use approach Measures: PPP Documents: Government of the Republic of Hungary, 2000a; 2000b	2004	Adjustment in system of management Document: Government of the Republic of Hungary, 2004
2000	System of management: Introduction of risk assessment (VTC) Remediation goal: Fitness-for-use approach Measures: PPP Documents: Government of the Republic of Hungary, 2000a; 2000b				
2004	Adjustment in system of management Document: Government of the Republic of Hungary, 2004				

Figure 5.4: Overview of the policy process on contaminated land in Hungary, including legislation mentioned in the text, and policy-oriented learning from VTC

5.6.2 Interpretive analysis

This section analyses the instances of policy-oriented learning from VTC (Fig. 5.4) and how domestic institutional factors affected these processes. Similar to the previous interpretative analyses, it begins by summarising policy-oriented learning from VTC, followed by general remarks upon the learning process, the type of knowledge and VTC. Finally, domestic patterns behind learning from VTC are identified (Table 5.10).

The late start of the Hungarian policy process created opportunities for using the experiences of other countries. As such, the awareness of the need to create a policy to deal with contaminated land was not only initiated by domestic forces but also by VTC. Some Western consultancies became involved in investigating contaminated land by public-private projects, which increased the awareness of the Hungarian government of this issue (unorganised horizontal VTC). Furthermore, Hungary saw that most Western countries had a policy in place and followed this example. In 2000, as a consequence of the introduction of the risk assessment, the fitness-for-use approach was adopted.

These international contacts were important for the development of the policy. While formulating the remediation goal, the KVVM and KGI met with representatives of Dutch and German ministries and consultancies, through the previously established public-private contacts. Through these contacts, the KVVM and KGI investigated the two different remediation goals, the multifunctional and the fitness-for-use approach. Unorganised horizontal VTC led to fundamental learning for the KVVM. Instead of preferring one remediation goal over the other, they formulated a vague policy goal.

The Hungarian central government authorities initiated three instances of corrective learning from VTC. First, for the system of management, they originally used the

Dutch ABC values, with added German, Canadian and USA values. These values were largely known through previously established contacts, in theoretical terms: unorganised horizontal VTC. Later on, KVVM employees learnt about risk assessment in CARACAS (organised horizontal VTC), and introduced it in the legislation. The last case of corrective learning concerned the measures, when the KVVM introduced the OKKP to establish a large state budget for remediation.

Core issue (Element)	Type of knowledge	Learning process	VTC	Learning actor	Domestic patterns
(Initiation)					
policy goal (Mix of multi-functionality and Fitness-for-use)	Soft knowl- edge	Fundamental learning	Unorganised horizontal VTC	KVVM and KGI	KVVM dominated the policy- making process
(Risk assess- ment)	Hard knowledge	Fundamental learning	Organised horizontal VTC	KVVM	KVVM dominated the policy- making process
System of management (Dutch ABC values, and some additional values)	Hard knowledge	Corrective learning	Unorganised horizontal VTC	KVVM, selected industries and uni- versities	KVVM dominated the policy making process
(Risk Assess- ment)	Hard knowledge	Corrective learning	Organised horizontal VTC	KVVM	KVVM dominated the policy- making process
Measures (Public fund)	Hard knowledge	Corrective learning	Unorganised horizontal VTC	KVVM	KVVM dominated the policy- making process

Table 5.10: Domestic factors and policy-oriented learning from VTC in the Hungarian contaminated-land policy in accordance with the core issues

Looking at Table 5.10, it is striking that the KVVM actively searched for international experience to learn from, not only before the policy was formulated, but also during the policy-making process. First, the KVVM gathered foreign experience through unorganised horizontal processes of VTC, via the public-private contacts made in the early 1990s. The remediation goal and the system of management were established in this way. Later on, a different source of international knowledge was welcomed: as soon as employees from the KVVM, consultancies and research institutes participated in CARACAS – in theoretical terms: vertical VTC – knowledge was actively gathered through this medium.

In line with the previous case studies, the Hungarian case also demonstrated that hard knowledge led to corrective learning, and soft knowledge to fundamental learning. However, on one occasion, hard knowledge led to fundamental learning: the introduction of the risk assessment in 2000 led to the official adoption of the fitness-for-use approach. Before, the remediation goal had been hovering between multifunctional and fitness-for-use.

All instances of policy-oriented learning from VTC had the same domestic patterns (Table 5.10): the KVVM initiated the learning process regarding the remediation goal, the system of management and the measures were initiated by the KVVM. Interestingly, even though risk assessment had long been used by national consultancies and industries, the KVVM learnt about it in CARACAS, and not through domestic actors.

5.7 Conclusions

Detailed descriptions have been given of policy-oriented learning from VTC in the context of policies to tackle contaminated land in the Netherlands, England, France and Hungary respectively. Each case study ended with an interpretive analysis that answered the case study research question: *which aspects of the policy showed evidence for policy oriented learning from VTC and how do domestic institutional factors play a role in these learning processes?* Relevant information was summarised in order to address research questions three and four in this concluding section: *How do the three settings of VTC, the two different kinds of knowledge and fundamental and corrective learning relate empirically?* and *What influence do different domestic policy-making processes and knowledge use have on these learning processes?* Table 5.11 helps to answer these two questions.

Horizontally, the Table 5.11 (p. 98) presents policy-oriented learning from VTC, the type of knowledge that was considered and the setting of VTC in which the knowledge was gathered. Thus, the table helps to answer the third research question

in section 5.7.1, addressing the connection between VTC and policy-oriented learning. Vertically, the table addresses the four case studies and presents the policy-oriented learning that has taken place. This information helps to analyse the fourth research question, which is dealt with in section 5.7.2. Finally, section 5.7.3 analyses and compares the learning processes from VTC that were identified in the four cases, to arrive at how domestic institutional factors affect policy-oriented learning from VTC.

5.7.1 VTC, type of knowledge and policy-oriented learning

This section discusses the relationship between VTC and policy-oriented learning, by looking at the type of knowledge (the object of VTC), the type of policy-oriented learning and the setting in which VTC took place. Who is involved in VTC and policy-oriented learning is dealt with in detail in 5.7.2. This section deals with the third research question: *How do the three settings of VTC, the two different kinds of knowledge and fundamental and corrective learning relate empirically?* Those aspects that are important for the relationship between VTC and policy-oriented learning in this case study are highlighted. Chapter 7 compares the empirical findings of these case studies with those of the cases on airport noise to obtain overall results, fully answering the research question.

Table 5.11 shows that hard knowledge mainly leads to corrective learning, while soft knowledge mainly leads to fundamental learning. Eleven times, corrective learning was initiated by hard knowledge from VTC. Five times fundamental learning resulted from soft knowledge. Once hard knowledge led to fundamental learning, as we saw in the case of Hungary: The introduction of the risk assessment made the fitness-for-use approach more appropriate to the Hungarian government, so the KVVVM adopted a different remediation goal as a result of hard knowledge.

Most policy-oriented learning from VTC concerned the system of management and the remediation goal: both were adjusted six times as the result of learning from VTC. The cases showed four learning occasions from VTC concerning the measures. Furthermore, the learning processes from VTC on the three core issues were different. For the system of management, positive lessons were drawn: countries applied models from other countries at home. Regarding the remediation goal, learning from VTC consisted of ‘checking’ it, in other words soft knowledge was used as a reference, and it took place in a negative way, i.e. they learnt how not to handle it. For example, it was known that the Dutch had implementation problems with the multifunctionality approach, and the other three countries confirmed this was not the way to go about it. Policy-oriented learning concerning the measures was threefold: the Hungarian, and French cases showed that knowledge from VTC stimulated the initiation of certain measures, while in England it was thought that different approach of other countries,

Case study	Hard knowledge (measures and system of management)	Soft knowledge (remediation goal)	Unorganised horizon- tal VTC	Organised horizontal VTC	Vertical VTC
The Netherlands		Fundamental learning: Multifunctionality goal			Soil Char- ter
	Corrective learning: system of management (reference to values)	Fundamental learning: Fitness-for-use goal (reference)	Benchmark	ICCL, CLARINET	
	Corrective learning: measures (reference to carrot and stick)		Visits between national authorities	CARACAS CLARINET	
England		Fundamental learning: Fitness-for-use goal (reference and negative)	Visits between national authorities		
	Corrective learning: initiation measures				Counc. of Eur. and CEC, 1993
	Corrective learning: measures (US superfund, negative)		Visits between national authorities		
	Corrective learning: system of management (technical detail)	Fundamental learning: Fitness-for-use goal (ref)		Common Forum	
	Corrective learning: measures (negative, liability details)			CARACAS, NICOLE Common Forum	

Case study	Hard knowledge (measures and system of management)	Soft knowledge (remediation goal)	Unorganised horizon- tal VTC	Organised horizontal VTC	Vertical VTC
France	<p>Corrective learning: system of management (technical details)</p> <p>Corrective learning: system of management (technical details)</p> <p>Corrective learning: measures (financial guarantee)</p>	<p>Fundamental learning: Initiation of Fitness-for-use goal (reference and negative)</p>	<p>Visits between national authorities</p> <p>Literature</p>	<p>CARACAS</p> <p>CLARINET</p>	
Hungary	<p>Corrective learning: system of management (ABC values)</p> <p>Corrective learning: measures (public fund)</p> <p>Corrective learning: system of management (risk assessment)</p> <p>Fundamental learning: Fitness-for-use goal</p>	<p>Fundamental learning: Initiation of mix of both goals</p>	<p>Visits through private-public relations</p> <p>Visits through private-public relations</p> <p>Visits through private-public relations</p>	<p>CARACAS</p> <p>CARACAS</p>	

Table 5.11: Policy-oriented learning from VTC in policies on contaminated land per country

for example the US Superfund, were not appropriate for the UK because of the differences in national (tax) systems. The Dutch referred to knowledge gained through VTC when adjusting the national policy regarding the measures.

In all three settings of VTC, both hard and soft knowledge were shared, and corrective and fundamental learning were initiated, however, most learning derived from horizontal, VTC. Although there were no international organisations focussing on remediation, some non-binding documents from adjacent policy fields, such as soil protection or the liability issue, led to some policy-oriented learning from VTC. For example, the Dutch learnt from soft knowledge about the remediation goal from the European Soil Charter, and in the UK hard knowledge, gained through vertical VTC, stimulated the initiation of a liability scheme. For organised horizontal VTC, CARACAS for example discussed hard knowledge on risk assessment, whereas in CLARINET soft knowledge on the remediation goal, and hard knowledge on the measures was discussed. In unorganised horizontal VTC, knowledge on all three core issues was shared: France gathered in such a fashion soft knowledge regarding remediation goal and the measures, and it learnt from hard knowledge regarding the system of management.

More specifically, three different kinds of unorganised VTC can be identified. Most knowledge was gathered through visits between representatives from national authorities. Once, French research institute INERIS learnt from overseas literature. The Hungarian case showed that knowledge was shared through public-private relations. Finally, over time organised horizontal VTC more or less replaced unorganised horizontal VTC. At the time when international networks were established, knowledge gathering by national actors individually became less common. Organised horizontal VTC proved to be a useful setting for knowledge sharing and learning and it became less common to learn through unorganised horizontal VTC.

5.7.2 The role of domestic institutional patterns

Whereas the previous section has focussed on the relationship between VTC and policy-oriented learning, this section examines the role of domestic institutional factors. By answering the fourth research question, *What influence do different domestic policy-making processes and knowledge use have on policy-oriented learning from VTC?*, this section analyses how policy-making processes and knowledge affected learning from VTC in each of the four countries. Section 5.7.3 compares the four analyses and examines more generally how domestic institutional factors affect learning from VTC.

Policy-oriented learning from VTC in Dutch policy process on contaminated land

In the Dutch policy process, representatives from VROM, its advisory body (TCB) and the RIVM participated in organised horizontal VTC, through the interna-

tional networks Common Forum and ICCL. These actors also gathered knowledge through unorganised horizontal VTC. Furthermore, some private actors such as VNO-NCW, participated in organised horizontal VTC via the international network NICOLE. Local authorities and provinces did not participate in any of these settings.

The Dutch case mainly showed evidence of learning from VTC by referring to foreign experiences. This means that different national actors were aware of the knowledge from VTC and used it as background information. The interpretive analysis (section 5.3.3) of the Dutch case identified two national patterns behind the policy-oriented learning from VTC (Table 5.12). First, in the beginning of the policy process, VROM learnt from VTC, taking advice from scientists into account. Later on, the discussion with other national actors became more important and knowledge from VTC was referred to. It is now examined how etatist and corporatist policy-making processes, and the technocratic and engineering use of knowledge created these two patterns and affected policy-oriented learning from VTC.

Element	Domestic patterns of policy-oriented learning from VTC:	Conceptual clarification
(1983) remediation goal: Multi-functional approach	Learning actor: VROM Policy formulation by VROM and scientists	Etatist policy-making process Technocratic knowledge use
(1997) remediation goal: Fitness-for-use	Learning actors: VROM, TCB Change to fitness-for-use approach; discussion with other national actors became more important (Reference to VTC)	Corporatist policy-making process Engineering knowledge use
(1999) System of management: Models and values	Learning actor: RIVM Discussion with national players prevailed (Reference to VTC)	
(2001) Measures: Use of 'carrot' and 'stick'	Learning actor: VROM Discussion with national players prevailed (Reference to VTC)	

Table 5.12: Domestic patterns behind policy-oriented learning from VTC in the Dutch policy on contaminated land, in chronological order

The onset of the policy-making process in the Netherlands reflected an etatist process, in which the central government formulated the policy without much participation or indeed opposition from other national actors, and controlled resources such as

money, regulation, knowledge, etc. As to policy-oriented learning from VTC, similarly, it was VROM that formulated the multifunctionality approach (fundamental learning), in line with the European Soil Charter. The multifunctionality approach seemed appropriate at the time, because Lekkerkerk was considered to be a unique and yet a high-risk situation. The decision to apply the multifunctionality concept was made without involvement by other actors, although their assessment of the situation was comparable.

Furthermore, this fundamental learning regarding the remediation goal expressed the technocratic knowledge use at the time, in which policy makers and scientists understand each other, and scientists dominate. When VROM formulated the remediation goal as the multifunctionality approach, the problem of contaminated land had not appeared much across Europe. In the absence of practical experience, scientific knowledge offered help on this issue, and the multifunctionality approach was introduced, offering a solution that was based on science.

The second pattern behind the instances of policy-oriented learning from VTC, i.e. the importance of the discussion with national actors and the reference to knowledge from VTC, reflected a corporatist policy-making process and enlightened knowledge use. Over time, local governments and industries were increasingly included in the Dutch policy-making process: around the mid-1980s, local authorities were made responsible for the implementation and in the course of the 1990s, industries and businesses became partly responsible for funding. Characteristically for corporatist policy-making processes, a stable group of participants was involved, with shared resources and a policy-making style aimed at reaching consensus. Therefore, the system of management was reformulated in deliberation with all those involved in the policy process. Thanks to fruitful discussions at the national level, the Dutch considered it unnecessary to include knowledge from VTC. After all, the solution was within reach; the system of management was established, taking into account all the different national interests and knowledge from VTC was only referred to (corrective learning). In addition, as regards the measures, VROM developed a covenant in cooperation with industry (corrective learning). The discussion between VROM and industry prevented the Dutch from looking for solutions across the borders. Although VROM was aware of foreign experiences, these were only referred to when the covenant was established, and not actively considered in the discussion.

A striking example of the national focus of the Dutch participants in policy-oriented learning processes is how the TCB report was received. In 1993, the TCB published a benchmark for different policies on contaminated land. This report was well received internationally, but not actively studied in the Netherlands. The focus of

the Dutch participants was on harmonising the different interests rather than on gathering extra knowledge.

Furthermore, policy-oriented learning from VTC reproduced the engineering type of knowledge use, in which policy makers dominate the policy-making process, and where there is convergence between scientists and policy makers. When establishing the system of management, the RIVM was aware of the system of management of other countries, but it did not introduce this knowledge from VTC because of the dominant focus on domestic experiences. The same process applied to the measures: the covenant between VROM and industry was based on the experiences VROM (the policy maker) had had with covenants. Once it was established, VROM referred to foreign experiences to legitimise a decision already made. Because policy makers dominated the process, knowledge from VTC was referred to only when it coincided with their views.

The corporatist policy-making process and an engineering knowledge use reinforced one another with regard to the dominance of national experiences. Not only were national players focussed on reaching consensus between the different national interests involved, knowledge from VTC was only taken into account when needed in the opinion of policy makers.

Policy-oriented learning from VTC in the English policy process on contaminated land

In the English policy process, employees from DEFRA, the Environment Agency, consultancies, universities and industry participated actively in organised horizontal VTC, such as NATO/CCMS, ICCL Common Forum and NICOLE. Furthermore, DEFRA and the House of Commons gathered knowledge through unorganised horizontal VTC as well. Actors focussing on the local level were not involved in any kind of VTC.

The English policy showed several instances of policy-oriented learning from VTC regarding the policy goal, measures and system of management. The interpretive analysis of the English case study (Section 5.4.3) identified two domestic patterns of learning from VTC (Table 5.13). First, in the beginning of the policy process, national government initiated policy-oriented learning from VTC regarding the remediation goal and the measures. Second, in the development of the system of management, consultancies rather than the Environment Agency showed evidence of learning from VTC. It is now examined how the processes of policy-oriented learning from VTC reflect the etatist and liberal-pluralist policy-making processes, and technocratic and bureaucratic knowledge use in which they were initiated.

Element	Domestic patterns of policy-oriented learning from VTC:	Conceptual clarification
(1989) remediation goal: Fitness-for-use	Learning actor: House of Commons House of Commons searching for knowledge (Reference to VTC)	Etatist policy-making process Engineering knowledge use
(1989) Measures: USA superfund	Learning actor: House of Commons House of Commons searching for knowledge (negative)	
(1993) remediation goal: Fitness-for-use	Learning actor: DEFRA Continuation of previously formulated remediation goal (Reference to VTC)	
(1995) Measures: Liability details	Learning actor: UK government UK government dominant concerning the measures (negative)	
System of management: Technical details (late 1990s)	Learning actors: Environment Agency, consultancies Divergent views of policy makers and scientists	Liberal-pluralistic policy-making process, bureaucratic knowledge use

Table 5.13: Domestic patterns behind policy-oriented learning from VTC in the English policy on contaminated land, in chronological order

The first pattern, i.e. the fact that national governmental bodies initiated learning from VTC, reflects the etatist policy-making process and engineering knowledge use. In etatist policy-making processes, the national government controls most resources, and imposes the policy. Against this background, the UK case showed that the House of Commons and DEFRA opted for the fitness-for-use approach through fundamental learning, first from the Dutch problems with the multifunctionality approach and later by discussing it in the ICCL. In addition, they showed evidence of initiating corrective learning regarding the measures: the House of Commons when it decided not to follow the example of the US Superfund, and DEFRA when it decided to have a detailed liability scheme and not to follow some liability measures taken in other countries. The knowledge from VTC was easily introduced, because there was no involvement by other national participants.

In an engineering knowledge use process, although policy makers dominate the policy process, scientists and policy makers communicate well. This type of knowledge use is reproduced in learning from VTC in this case. The fitness-for-use approach had been applied previously in England in redevelopment policies and policy makers

wanted to extend this to the policy on contaminated land. Knowledge from VTC was easily referred to, because it underlined the view of the policy makers.

The second pattern, i.e. consultancies rather than the Environment Agency showing evidence of corrective policy-oriented learning from VTC regarding the system of management, was a clear example of a liberal-pluralist policy-making process and bureaucratic type of knowledge use. It is common in liberal-pluralist policy-making processes for many participants to be involved, with more or less equally divided resources and chances to influence the policy, and for the policy-making style to be competitive. Similarly, policy-oriented learning from VTC concerning the system of management was initiated by universities and consultancies; these took an active stance by formulating technical guidance in which knowledge from VTC was taken up. Many consultancies had participated in organised horizontal VTC on behalf of the government while they were carrying out contract research. Once internationally involved, consultancies tended to stay active in horizontal organised VTC, resulting in knowledge from VTC being disseminated amongst the different consultancies. Furthermore, characteristic for liberal-pluralist policy-making processes was the competitive atmosphere among consultancies: each wanted to be better than other competitors. One way to distinguish oneself was to be up to date internationally. Consultancies that participated in organised horizontal VTC continued being involved, which led to favourable conditions for policy-oriented learning from VTC.

The second pattern reflects bureaucratic type of knowledge use, in which there is divergence between scientists and policy makers, with policy makers dominating. The Environment Agency needed approval by DEFRA regarding the technical approach to the system of management. DEFRA, however, had a different perspective on the system of management, which meant that the guidance was not easily approved. This difference in perspective concerning the system of management between policy makers and scientists constrained learning from VTC.

Finally, the combination of the liberal-pluralist policy-making process and bureaucratic type of knowledge use stimulated policy-oriented learning from VTC by consultancies. Because the official technical guidance for the system of management was published quite late, the consultancies were able to jump into this vacuum, and produced technical guidance to assist in the remediation of contaminated land.

Policy-oriented learning from VTC in the French policy process on contaminated land

A small group of national actors was involved in the formulation of the French policy, but several of these participated in organized horizontal VTC, (i.e. ICCL and Common Forum): MEDAD, ADEME, and two public institutes (INERIS and BRGM). In addition, certain industries and businesses participated in NICOLE.

MEDAD, INERIS and BRGM also gathered knowledge through unorganised horizontal VTC. Local authorities were not involved in any VTC.

MEDAD placed the contaminated-land policy under the ICPE law, which defined the funding of the policy as a liability scheme. Because the funding scheme was fixed, the system of management and the remediation goal were formulated accordingly. In spite of this predetermined policy, the French case showed evidence of policy-oriented learning from VTC. The interpretive analysis of the French case study (5.5.2) identified that all learning from VTC followed the same pattern: it was all initiated by central government (MEDAD) in cooperation with the research institutes. As is discussed in more detail below, this pattern reflects an etatist policy-making process and technocratic knowledge use (Table 5.14).

Element	Domestic patterns of policy-oriented learning from VTC:	Conceptual clarification
(1993) (Initiation) remediation goal: Fitness-for use	Learning actors: BRGM and MEDAD MEDAD responsible to formulate the policy (reference)	Etatist policy-making process Technocratic knowledge use
(1995) System of management: ERS technical aspects	Learning actor: INERIS System of management mandatory for national actors to use	
(1999) System of management: DRS technical aspects	Learning actor: BRGM System of management mandatory for national actors to use	
(2006) Measures: Financial guarantee	Learning actor: MEDAD Measures mandatory	

Table 5.14: Domestic patterns behind policy-oriented learning from VTC in the French policy on contaminated land, in chronological order

As is typical for etatist policy-making processes, resources such as money, regulation, knowledge, etc., are mainly controlled by the national government. Reflecting an etatist policy-making process, MEDAD showed evidence of learning from VTC when it decided not to follow the Dutch multifunctionality approach (fundamental learning). In addition, corrective learning concerning the financial guarantee and the technical details for the ESR and EDR (the system of management) was initiated by MEDAD, BRGM and INERIS. These instances of policy-oriented learning from VTC were

easily introduced because there was no significant involvement from other national players.

Furthermore, the instances of policy-oriented learning from VTC reflect a technocratic type of knowledge use. No other participants were actively involved in the development of the system of management, not only as a result of the etatist policy-making process, but also because the technical aspects of the discussion were beyond their capacities. Acting on the advice of the research institutes, MEDAD introduced the knowledge from VTC regarding technical details in the ESR and EDR.

The combination of an etatist policy-making process and technocratic type of knowledge use created an incentive to actively search for knowledge through VTC. Because other domestic organisations were only marginally involved in the creation of the policy, MEDAD and its research institutes could not discuss the system of management domestically. In order to have a discussion and critical reflection on technical details, MEDAD, as we have seen, actively gathered technical knowledge through VTC.

The claim that technocratic knowledge use in an etatist policy-making process resulted in the active search for knowledge from VTC is underlined by the development in the French system of management in 2006. This development is not included in Table 5.14 (above), because there was no learning from VTC. However, the fact that knowledge from VTC was not considered is interesting here because it shows the indirect influence of a shift to an engineering type of knowledge use. In their review of the system of management, the French policy makers decided not to include technical knowledge from VTC as before, because the policy was considered to be too technical. As such, there was still convergence between policy makers and scientists, but now policy makers dominated. When MEDAD replaced the ESR with a new study, this new study was based on national experiences, in contrast to the development of the former system of management, in which technical knowledge from VTC had an important place. Technical knowledge from VTC was not considered, because it was not in line with the view of the policy makers.

Policy-oriented learning from VTC in the Hungarian policy process on contaminated land

Finally, in the Hungarian case, the KVVM and its research institute first gathered foreign experiences through unorganised horizontal VTC in order to formulate a policy. From 1997 onwards, once the KVVM became involved in the international networks that discussed the issue of contaminated land, knowledge was gathered through organised horizontal VTC. In addition, certain industries and businesses participated in NICOLE. Besides the KVVM and industry, one or two consultants participated in international net-

works on behalf of the KVVM to deal with the technical issues. Local authorities were not involved in any VTC.

The Hungarian policy process did not begin until the late 1990s. This belated start enabled participants to learn through VTC, and accordingly, the interpretive analysis of the Hungarian case (see 5.6.2) reflects a fair amount of learning from VTC. All learning processes were initiated by the KVVM. Similar to the French case, this pattern reflects an etatist policy-making process and technocratic knowledge use (Table 5.15).

Element	Domestic patterns behind learning from VTC:	Conceptual clarification
(1997) (Initiation) Remediation goal: Unclear	Learning actor: KVVM and KGI KVVM dominated the policy-making process	Etatist policy-making process Technocratic knowledge use
(1997) Measures: Strong public fund	Learning actor: KVVM KVVM dominated the policy-making process	
(1997) System of management: Dutch ABC system (official)	Learning actor: KVVM and selected industries and universities	
(2000) System of management: Risk Assessment	Learning actors: KVVM (and consultancies) KVVM dominated the policy-making process	
(2000) Remediation goal: Fitness-for-use	Learning actors: KVVM (and consultancies) KVVM dominated the policy-making process	

Table 5.15: Domestic patterns behind policy-oriented learning from VTC in the Hungarian policy on contaminated land, in chronological order

In Hungary, policy-oriented learning from VTC reflected an etatist policy-making process. The KVVM formulated the policy and controlled the main resources. Thus, it was the KVVM that learnt in a fundamental way by gathering foreign experiences when formulating the remediation goal. The KVVM was also responsible for the introduction of the risk assessment. Only certain other participants, selected by the KVVM, were involved in discussions on the system of management. The last instance of corrective leaning was in 1997, when a public fund, similar to that in Austria, was established by the KVVM. This knowledge gained through VTC was easily introduced because other national players did not have the resources to influence the policy.

In addition, policy-oriented learning from VTC reflected a technocratic type of knowledge use, in which policy makers and scientists communicate well and scientists dominate the policy process. Technical aspects provided by experts were quickly absorbed in the policy. The KVVVM not only introduced a combination of systems of management from different countries on the advice of an expert group; a risk assessment was also introduced into the policy once the KVVVM became familiar with it via CARACAS.

Although the etatist policy-making process seemed to stimulate policy-oriented learning from VTC, it also constrained it. The risk assessment had been used by some consultancies and industries for quite some time, but instead of introducing knowledge from VTC gathered by domestic consultancies and industries, the KVVVM only formally introduced the risk assessment when it itself had learnt about it in international networks. This is a consequence of policy-oriented learning from VTC in an etatist policy-making process: bottom-up learning from VTC did not take place. This means that policy-oriented learning that took place apart from the central government remained largely invisible. Learning processes only took effect when the central government introduced them.

5.7.3 The role of domestic institutional factors: a comparative analysis

This section analyses how domestic institutional factors affect learning from VTC in the light of the fourth research question: *What influence do different domestic policy-making processes and knowledge use have on policy-oriented learning from VTC?* To this end, a comparison is made of how policy-making processes affected learning from VTC in the policy on contaminated land, ending with a brief analysis of the connection between the policy-making processes and corrective and fundamental learning. Following the same structure, the next part examines the question of how knowledge use affected policy-oriented learning from VTC in the case on contaminated land.

Policy-making processes

The four case studies have shown similarities and differences in how different policy-making processes affect learning from VTC. Similarities could be found in who participated in VTC across the three policy-making processes. In corporatist, liberal-pluralist as well as etatist policy-making processes, the Environment Ministries participated in the Common Forum and the ICCL, as did the research institutes and some other governmental representatives. Finally, some industries participated in NICOLE. In none of the three policy-making processes, local authorities or interest groups were involved in VTC. A difference in this regard is that in liberal-pluralist policy-making

processes, consultancies also participated in VTC, while in corporatist and etatist policy-making processes this was rare.

Another similarity is that in all four cases, the onset of the policy process took place in an etatist fashion. As is outlined in detail below, during these processes, the central government gathered soft knowledge from VTC to formulate or verify the remediation goal, and gathered hard knowledge on the measures or the system of management.

Policy-making process	Style		Regulatory structure	
	... constraining learning from VTC	... stimulating learning from VTC	... constraining learning from VTC	... stimulating learning from VTC
Corporatist Process	Participants focussed on compromising rather than discussing knowledge from VTC	N.A.	Each actor dominates a certain resource	Participants involved in VTC have different resources to influence the policy
Liberal-pluralist process	N.A.	Competitive style stimulates participants to be well informed	N.A.	Participants involved in VTC have more or less equally divided resources
Etatist process	N.A.	Knowledge from VTC is imposed	No resources: no possibility for bottom-up learning	Participants involved in VTC search for knowledge to legitimise the policy

Table 5.16: How policy-making processes affected policy-oriented learning from VTC in the policy on contaminated land

In spite of these similarities, the three policy-making processes affected learning from VTC differently; this is summarised in Table 5.16. In etatist policy-making processes,

the central state formulates the policy, dominates the resources and imposes the policy. Although several national players participated in VTC in all etatist policy-making processes, learning from VTC, both fundamental and corrective, was initiated by the national governments, mainly in cooperation with national research institutes. The four case studies showed that etatist policy-making processes both hampered and stimulated learning from VTC. On the one hand, the government and its research institutes actively gathered and used knowledge from VTC in order to discuss decisions and scientific elements of the system of management. At the onset of the English and Dutch policy-making processes, which took place in an etatist fashion, the remediation goal was formulated with the help of knowledge from VTC. In France and in Hungary not only the remediation goal showed evidence of policy-oriented learning from VTC, but also the system of management and the measures. On the other hand, there was no bottom-up learning, meaning that policy-oriented learning only took place when the central government introduced it: any learning outside the central government remained largely invisible. The Hungarian case showed clearly that although domestic consultancy and industry had learnt about risk assessment before, the KVVM was not aware of this knowledge. Only when the KVVM learnt about risk assessment through VTC, this knowledge was introduced into the policy.

The liberal-pluralist policy-making process, only visible in the English case, created favourable regulatory conditions for policy-oriented learning from VTC. As is common in liberal-pluralist policy-making processes, there were many participants, with more or less equally divided resources. Learning from VTC was therefore initiated by many different players. For example, not only the Environment Agency learnt through VTC, but also for instance different consultancies and universities. The policy-making style was competitive, as result of which participants were stimulated to outperform others. One way to achieve this was to be well informed. Moreover, the competitive style provided an incentive to the actors in the policy-making process to keep participating in VTC, which in turn led to learning from VTC. For example, three or four different consultancies were involved in VTC, as they said themselves, because it helped them to stay up to date, and to know where to find knowledge.

In corporatist policy-making processes, only present in the Dutch case, the regulatory structure offers favourable conditions for policy-oriented learning from VTC: most of those involved in the policy-making process also participated in VTC, and they had the resources to influence the policy. However, the case study showed that the consensus-seeking style constrained corrective and fundamental learning from VTC: hard and soft knowledge from VTC was merely referred to. Participants seemed to be focussed on each others' interests and on reaching consensus. For example, the Dutch participants together formulated the system of management. The aim was to

come to an agreement between the different interests involved, and as they succeeded, there was no need to discuss knowledge from VTC. The focus on different interests and the shared resources hampered an active discussion on knowledge from VTC between those involved in the policy-making process. Also for example, the RIVM, being responsible for the system of management, was more or less the only participant that was well informed about knowledge from VTC on this issue. However, the RIVM did not need to use the knowledge from VTC in national discussions, because consensus was reached. In corporatist processes, each player has his own function in the policy process, and sharing knowledge from VTC in this context is not common. For example the internationally well known TCB report was not so well known among the participants in the corporatist policy making-processes in the Netherlands – although it was originally developed there.

Compared to liberal-pluralist and etatist policy-making processes, in which learning from VTC is stimulated through competitiveness or by aiming to legitimise decisions respectively, corporatist policy-making processes have no such stimulus. The national discussion lends it a certain degree of legitimacy, and because resources are shared and the policy-making style is aimed at reaching consensus, there is less competitiveness than in liberal-pluralist policy making processes.

Looking at fundamental and corrective learning, it is striking that fundamental learning from VTC was introduced by the same participants in the different policy-making processes. For example, in the English liberal-pluralist policy-making process it was DEFRA that learnt about the remediation goal, while in France it was MEDAD and BRGM. However, the pattern regarding corrective learning from VTC reflects the different policy-making processes. In liberal-pluralist policy-making processes, such as in England; consultancies, the Environment Agency and the central government initiated policy-oriented corrective learning from VTC with regard to the system of management and the measures. In corporatist policy-making processes, the public research institutes and the central government referred to knowledge from VTC concerning the system of management and the measures. In etatist policy-making process, such as in Hungary and France, corrective learning from VTC was initiated by the central government, as was fundamental learning. The difference between fundamental and corrective learning shows that the central government was formally competent to formulate the policy goal in all policy-making processes, while in corrective learning there could be more competent authorities.

Knowledge use

Having looked at how different policy-making processes affect policy-oriented learning from VTC, we now turn to how knowledge use affected learning from VTC in the

development of contaminated-land policies. Table 5.17 shows that the technocratic type of knowledge use stimulated learning from VTC, while the bureaucratic type of knowledge use mainly constrained it, and engineering knowledge use both constrained and stimulated learning from VTC. The case studies did not demonstrate an enlightened type of knowledge use.

Knowledge use...	... constraining learning from VTC	... stimulating learning from VTC
Enlightenment (Divergence, science dominates)	N.A.	N.A.
Technocratic (Convergence, science dominates)	N.A.	Hard and soft knowledge introduced by scientists and policy makers.
Engineering (Convergence, society dominates)	Hard knowledge not in line with the views of the policy makers was ignored	Soft knowledge from VTC coincided with the view of policy makers and was referred to
Bureaucratic (Divergence, society dominates)	Hard knowledge from VTC difficult to introduce because of the dominance of policy makers	Hard knowledge on the measures was introduced

Table 5.17: How knowledge use affected policy-oriented learning from VTC in the development of policies on contaminated land

The cases on contaminated land have shown that technocratic knowledge use, i.e. convergence between policy makers and scientists with a dominant role for the latter, enabled both scientists and policy makers to learn both in a fundamental and corrective way regarding the three core issues. In the Netherlands for example, the policy goal was introduced by VROM (policy makers) in cooperation with the TCB (scientists). In France, INERIS and BRGM (scientists), together with MEDAD (policy maker), introduced knowledge from VTC in the ERS and the DSR, i.e. the system of management. Finally, the Hungarian case showed that the KVVM (policy makers) had learnt from VTC regarding the measures.

In contrast, the case studies have demonstrated that a bureaucratic type of knowledge use – meaning divergence between policy makers and scientists, with the former dominating the policy-making process – constrained corrective learning from VTC initiated by scientists, but not corrective learning initiated by policy makers. The case with a bureaucratic type of knowledge use, only visible in England, showed no

evidence for fundamental learning from VTC. For corrective learning, the English case showed that although the Environment Agency (scientists) gathered hard knowledge through VTC, it could not introduce it. DEFRA (policy makers) did not understand the knowledge proposed by scientists and did not approve it. Policy makers did learn from knowledge from VTC, but only in a corrective way. For example, DEFRA (policy makers) showed evidence of corrective learning when it introduced knowledge from VTC about the liability scheme.

Finally, Table 5.17 shows that the engineering model, i.e. convergence between policy makers and scientists with the former dominating the process, allowed policy-oriented learning from VTC initiated by both policy makers and scientists, as long as the knowledge was in line with the views of the policy makers. In other words, in policy processes with an engineering type of knowledge use, it was common to use knowledge from VTC as a point of reference. For example, the English case showed that policy makers referred to the experiences of other countries when formulating a detailed liability scheme. The Dutch case showed that VROM referred to the internationally more common fitness-for-use approach, once the Dutch remediation goal had shifted to this as a result of domestic developments. The development of the system of management in the Netherlands is striking in this respect: the Dutch research institute was aware of the knowledge from VTC when the system of management was formulated, but it did not guide them in the discussion. When knowledge from VTC was not in line with the view of policy makers, it was just as easily ignored. For example, in France, corrective learning regarding the system of management was constrained when MEDAD (policy makers) considered the hard knowledge from VTC to be too technical; it was therefore not taken into account.

In conclusion, although certain patterns can be discerned concerning knowledge use and policy-oriented learning from VTC, the case studies have not demonstrated a clear link between knowledge use and corrective or fundamental learning from VTC. Rather, they showed that technocratic knowledge use allowed both policy makers and scientists to learn in a corrective and fundamental way from hard and soft knowledge in all three core issues. Furthermore, it has become clear that a bureaucratic type of knowledge use hindered corrective learning regarding the system of management from scientists who had gained knowledge through VTC, but allowed corrective learning regarding the measures. There was no fundamental learning in the bureaucratic type of knowledge use. Finally, the cases have shown that in engineering type of knowledge use, hard and soft knowledge from VTC introduced by scientists as well as policy makers is taken into account (or referred to), as long as it coincides with the views of the policy makers.

CHAPTER 6

COMPARATIVE CASE STUDIES OF AIRPORT NOISE ABATEMENT POLICIES

This chapter examines policy-oriented learning from VTC in noise abatement policies for large airports. For most airports, noise from civil aviation is a long-standing problem that has grown over the years due to an increase in the number of flights. Although aviation is an international issue that takes place in a highly competitive context, noise is a classical example of a local issue that is managed by individual states and/ or airports. Nevertheless, in order to be able to analyse the impact of VTC in isolation, it is necessary to focus on those aspects of noise that are not influenced by other international driving forces (see Chapter 1). Therefore, two demarcations are first made regarding noise management for aircraft in general. Then, more specific demarcations are made according to specific policy aspects.

The first distinction is that between day-time noise and night-time noise. Sometimes, the two are interrelated, for example there can be a trade-off for night-time and day-time noise, when an airport agrees to have less night flights in order to be allowed to increase the number of flights during the day. Nevertheless, the management of day-time and night-time noise is different. For example, Heathrow maintains a quota system for night-time noise, but not for day-time noise; AAS uses a more silent way of landing at night, but not during the day (see sections 5.1 and 5.3). The discussion on night-time noise is heavily influenced by economic arguments; local citizens and environmental interest organisations would like to see an airport closed at night, but this would have severe consequences for long-distance flights. Against this background, this study will focus on day-time noise, because night-time noise is influenced more strongly by international competitiveness.

Secondly, a distinction is made between noise made at the source (the aircraft) and the noise at the reception point (the noise that is heard on the ground), henceforth referred to as noise reception. On the face of it, the noise made at the source and the noise reception may look like they have a one-to-one relationship, but this is not the case. When two planes that produce a similar level of noise at the source fly over a particular area, noise reception may differ. Noise is for example received differently depending on weather conditions: rain increases noise reception, while clouds decrease it. Also, the wind direction influences where noise is heard. Noise at the source and noise reception are managed differently. The former is mainly regulated

internationally (see section 6.2.4), while the latter is a national or local responsibility. This chapter focusses on noise reception to avoid the influence of international regulations, in theoretical terms called harmonisation.

Besides delimiting the case studies to include only day-time noise and noise reception, the case studies need further delimitation regarding specific policy aspects. In order to examine policy-oriented learning from VTC, delimitations are made in order to avoid impact by international competitiveness, to avoid endless discussions on highly technical issues, and finally, to increase the validity of the comparisons.

To avoid as much as possible the impact of economic competitiveness, taxes, operational restrictions and fleet renewal are left aside. Airports may tax certain types of aircraft, such as Chapter 3 aircraft, for landing and take-off. It speaks for itself that these taxes have economic consequences and can influence the competitive position of an airport. The same applies to operational restrictions, referring to limitations to the use of the airport. However, economic benefits are among the most important arguments to allow noisy aircraft with particular merchandise to use an airport. Finally, fleet renewal is strongly dependent on economic incentives as well. A fleet is partly renewed every four years, and airlines time their fleet renewal differently, which makes comparison on this issue difficult. Fleet renewal is therefore not taken into consideration.

Furthermore, there are many (highly) technical operational procedures, meaning which aircraft flies where, that aim to reduce noise (for an overview, see Bolz and Reuss, 2001). In order not to get lost in technical details, these operational procedures are left aside. The focus of this study is on those operational procedures that reduce noise for a wider area around airports, that are widely recognised and that are not overly technical.

Finally, the last delimitation concerns the trend to reduce noise by non-acoustic measures (Stallen, 2003; 2005; Bröer, 2007). The same level of noise does not annoy everyone to the same extent: noise annoyance is connected with personal characteristics such as age, trust, stress, etc. For example, older people tend to be more bothered by aircraft noise than younger people, and people suffering from stress experience more noise annoyance than people without stress. At the time of writing, different measures are being developed and introduced to influence this aspect of noise annoyance, such as building trust between the airport and the community living around it. These measures are closely linked to cultural and psychological aspects, hampering comparative research (Korsten *et al.*, 1995). After all, what might be comforting for the British, might be less comforting for the French. Therefore, the focus will not be on such measures, although one measure is taken into account that is not embedded in a specific cultural and psychological context (see section 6.1).

Before embarking on the four case studies, it is important to emphasise that on the one hand, all these demarcations and nuances are made to benefit the analysis of the impact of VTC. On the other hand, as a consequence, the cases will not provide a full overview of the policy development or the measures for noise abatement. The intention is not to identify whether one airport has a better or more efficient noise abatement policy than another; a non-exhaustive overview does not constrain the analysis.

Against this background, section 6.1 introduces the core issues for these case studies (see Chapter 4). Section 6.2 outlines the international context of the cases by introducing the key international networks and organisations. The international context is followed by the four case studies; sections 6.3 to 6.6 respectively address Amsterdam Airport Schiphol (AAS) for the Netherlands, Heathrow Airport for England, Charles de Gaulle (CdG) Airport for France, and Ferihegy Airport for Hungary. Each of these case studies provides insight into the question: *which aspects of the policy showed evidence for policy-oriented learning from VTC and how do domestic institutional factors play a role in these learning processes?* Finally, section 5.7 analyses and compares the four policy-making processes in terms of the conceptual framework.

6.1 Core issues for noise around airports

We now turn to the four core issues: the policy goal, the management framework, the system of management and the measures, which have been applied to the policy area of airport noise (Table 6.1).

Goal	Management framework	System of Management	Measures
Solve, Reduce	technical concept to limit or reduce noise	<u>Index:</u> Noise Perceived Level (NPdB) or dB(A)	<u>Monitoring:</u> Measure or Calculate
			<u>Planning:</u> contours <u>Operational procedures:</u> Continuous Descent Approach and Noise Preferential Routes and runways <u>Compensation:</u> insulation and commissions to improve communication

Table 6 1: Core issues regarding airport noise policies

The first core issue is the policy goal. As explained in Chapter 4, the policy goal reflects the broader idea (soft knowledge) of what target is to be reached through the noise policy. Particularly in the early years of aviation, in the 1940s and 1950s, when airport noise was becoming a problem, some policies may have had the ambitious target of solving the noise problem. It was thought then that it was possible to avoid noise annoyance from aircraft, for example by making a distinction between spatial functions such as housing and industry (Broër, 2007). Later on, particularly since the 1980s when it became clear that aviation was a growing industry, the most obvious goal was to reduce the noise whenever and wherever possible. This goal acknowledges the fact that there will always be noise emissions around airports. It strives to strike a balance between noise emission and the economic benefits created by aviation. Around large airports particularly, the goal of the noise policy is to reduce the noise where possible.

The second core issue, the management framework, outlines the overall technical concept of how to limit or reduce noise. There are different frameworks to reduce noise: AAS, for example, has based its policy on a geographical noise contour cap. This means that the management framework strives to keep noise exposure within the physical limits of the surroundings of the airport. These physical limits, which represent the noise contour cap, are drawn on a map, and this geographical ‘red line’ should not be crossed. Another example of a strategy for dealing with noise can be found in the UK. Its policy is defined by noise limits for departing and arriving aircraft separately. The policy is aimed at reducing the noise made during the individual departure and arrival of flights. In terms of the types of knowledge introduced in the conceptual framework, the management framework is soft knowledge: it represents the technical concept of how to reduce noise.

The system of management elaborates the framework into two concrete aspects consisting of hard, technical knowledge: whether the system is predominantly based on measured or calculated standards, and the noise index used. First, the noise standards are monitored by measuring and/or calculation. Although most of the time a combination of the two is used, one will be predominant. Measuring noise implies that data are used that are measured on the ground: either people go into the field with instruments, or monitors are set up to measure noise. For example, one respondent remembered from his own experience that “a small army of students was sent into the field every summer to measure the noise of planes” (Interview NATS, 2007a). Calculating noise means computer models and data are used to indicate the noise levels. When monitoring with calculated data, the certification data is used (at the source, see introduction to 6.1); computer-generated models are produced on the basis of information regarding what types of aircraft were flying, where they flew, when they flew,

how high and how fast, how much noise they made, etc. Usually, as said, a combination of measurements and calculation is used, for example computer-generated data are used to correct measured data, and vice versa.

The second aspect in the system of management is the noise index (Table 6.2). This represents the annoyance caused by aircraft noise as a number. There are two types: one for noise made by an individual aircraft (single-event index) and one for noise made over a certain period of time (aggregated index). In both types of index, the key aspect here is which unit of noise is used: the dB(A) or the Noise Perceived dB (NPdB). Indices can use dB(A) as unit of noise, which is more straightforward than NPdB, the aeronautical way of expressing aircraft noise.

Unit of noise	Single-event index	Aggregated index
dB(A)	L _{Amax}	Kosten Unit
	N-70/NA65	Leq
		L _{den}
NPdB		Psophic index
		Noise and Number Index

Table 6.2: Noise indices according to unit

Two indices that represent the noise made by a single aircraft are important to this study: the L_{Amax} and the ‘Number Above’ index: N-70/NA65. Both indices are based upon dB(A), and both represent the noise of a single aircraft. The L_{Amax} can for example be used to fine planes that exceed the set noise limit; the N-70/NA65 is based on the L_{Amax} and relates to insulation measures. For example, the NA65 aims to provide financial compensation for house insulation if noise emissions are above 65 dB(A). Because these indices represent the noise of a single plane, they are not comparable to the following indices that reflect noise over a certain period of time.

The index used to reflect noise over a certain period of time (commonly one year) is more complicated. There are different indices, and each index reflects aircraft noise in a different way, using different technical aspects. For example, one index only takes planes that produce noise levels of over 65 NPdB or dB(A) into account, while other indices set the critical level at 55. However, in order not to make this case too complicated, only the choice of unit of noise (dB(A) or NPdB) is taken into account. For example, the former Dutch index, called Kosten Unit, used the dB(A) unit of

noise. The former British index, the Noise and Number Index (NNI), reflected noise in NPdB. The noise indices which reflect noise over a longer period of time are used for noise contours (see below). As we have seen, AAS used such noise contours in their management framework, but as will appear later, it is the only airport to do so. Finally, at this point the Lden is relevant. As described in the introduction, this is a European index, which has been a requirement for noise mapping since the European Directive was published. Some airports (e.g. AAS and CdG) switched to this index, abandoning their previous index. The Lden uses dB(A).

Finally, the measures represent the actions taken to reduce the noise and are based on hard knowledge. There are many different measures to limit noise. This study roughly distinguishes three categories used at any airport: planning, operational procedures and compensation. The planning category refers to noise contours, expressed in the aggregated noise index (see above). This index is used to formulate contours or zones to which planning restrictions and planning regulation are linked. For example, within a certain zone it is prohibited to build schools, while in other zones it is prohibited even to build industrial buildings. In some countries, these zones form strict planning boundaries, while in others the zones function merely as a guidance tool.

The operational procedures refer to how a national air traffic service and airlines operate flights. The two operational procedures under consideration here are the Continuous Descent Approach (CDA) and Noise Preferential Routes (NPR). The CDA advocates a 'gliding' way for airplanes to approach an airport, instead of 'stairswise' (technically called step-down). In a CDA descent, the engines are used less and therefore produce less noise. NPRs are clearly defined flight paths or routes, technically referred to as corridors, which aircraft follow when departing (technically called Standard Instrument Departures) or arriving (technically called Standard Arrival Routes). As the routes depend on which runways are used, NPRs include a certain noise preferential runway use. These routes and runways, which are to a large extent prescribed by the national air traffic service, tend to avoid densely populated areas, thus causing relatively little noise annoyance.

Unlike the other measures, compensating measures do not focus on reducing the actual noise as such. Two measures in this category are taken into account. The first is noise insulation of houses. Houses are for example insulated when they are within a certain contour, or when they are under a flight path. The second measure relates to the fact that noise, as said, is not an absolute problem: different people are differently annoyed with the same level of noise (Bröer, 2007). As such, noise perception can be influenced by empowerment: if people feel they have some influence on the aircraft that pass over their heads, they might be less annoyed. Most airports anticipate this

and have, among other compensating measures, introduced a noise commission, in which the local community is consulted to make the noise abatement policy more transparent and thereby reduce the noise annoyance.

6.2 The international context for noise around airports

There are many international networks and organisations that deal with different aspects of aviation such as trade aspects, technical aspects, policy aspects, etc. This section does not give an exhaustive overview of all the international networks and organisations. This would require a tremendous amount of detail that is not relevant to the case study. Rather, the key international networks are outlined, those that are likely to have an impact on how noise around airports is dealt with. Although originally set up to address other subjects, most of these networks have an environmental committee that deals, among other things, with noise.

In order to give an organised overview Table 6.3 lists the different networks and organisations, described according to the kind of actors involved, which is also the way they have organised themselves. In addition, Table 6.3 addresses the subjects the different international networks and organisations regularly discuss. However, different networks and organisations may overlap and can be interlinked. For example, a delegation of one international network or organisation may come to the meetings of other international networks or organisations.

Section 6.2.1 outlines the international networks that are meant for governmental actors, followed by international networks for the aviation sector in section 6.2.2. The remaining international organisations, networks and conferences are described in section 6.2.3. Finally, this section closes with a brief outline of some international regulations to which the case studies sometimes refer (section 6.2.4).

Type of actors involved	Actors	Networks and organisations	Relevant issues discussed
Governmental network	National governments	ICAO	Noise contours, operational procedures, indices, compensating measures, measuring/calculating noise standards etc.
Governmental network	National governments	ECAC	Indices, operational procedures, compensating measures
Governmental network	Regional governments	ARC	

Type of actors involved	Actors	Networks and organisations	Relevant issues discussed
Aviation sector	Airlines	IATA	Operational procedures, measuring/calculating noise standards
Aviation sector	National Air Traffic Services	Eurocontrol	Operational procedures, indices, measuring/calculating noise standards
Aviation sector	Airport Council International	ACI	Compensating measures, operational measures, noise contours, etc.
Interest organisations	Interest organisations	UECNA	N-70, insulation, handling complaints
Not actor-linked	All actors dealing with noise around airports	Conferences	Wide range of issues
		ANNA	
		ISO	Technical aspects of noise; indices and the NPdB/dB(A)

Table 6.3: Key international networks and organisations according to the type of actors involved

6.2.1 International networks and organisations for governmental actors

There are several international networks for governmental actors, at the central, regional and local level. For national governments, the International Civil Aviation Organisation (ICAO) and the European Civil Aviation Conference (ECAC) are the most important. For local and regional governments there is a European network called Airport Regions Conference (ARC).

National governments: ICAO and ECAC

The ICAO has been a UN agency since 1947 and has over 200 member states. ICAO is the most dominant network in aviation; it is both an economic and a political network, focussing on aviation at the international level (www.icao.int, accessed December 2007). As such, ICAO deals with aviation in general, and it also addresses noise emissions in the environmental committee: the Committee on Aviation and Environmental Protection (CEAP). The CEAP mainly deals with noise at the source. As said in the introduction, ICAO legally introduced the noise chapter certification, and the phasing out of the noisiest aircraft categories. Furthermore, a wide range of topics

related to noise are discussed in ICAO: noise contours, indices, operational procedures such as the CDA, etc.

At the European level, there is the ECAC; this is a non-regulating-organisation, meaning it is a European political network in which members keep each other informed. Furthermore, European member states discuss issues in the ECAC before they are discussed in ICAO to explore potentially common European perspectives. The noise issue is discussed within the environmental commission, the Abatement of Nuisances Caused by Air Transport (ANCAT). In general, ANCAT deals with the same noise issues as ICAO; specifically, ANCAT has made recommendations on how highly technical noise issues should be dealt with, but these technical aspects are not discussed here.

Regional governments

The ARC is an association of regional and local authorities across Europe that have an international airport situated within or near their districts (www.airportregions.org, accessed December 2007). The ARC has existed since 1994 and brings together expertise on air transport and local and regional policies to balance the economic benefits against the environmental impact. In this context, the ARC sometimes deals with noise issues. Relevant for this research is the discussion on the indices such as N-70 and Leq. Also, operational procedures such as the CDA and compensating measures have been addressed.

6.2.2 International networks and organisations for the aviation sector

In the aviation sector there are several long-established international networks and organisations. For each private actor within the aviation sector there is an international network that discusses the area of expertise: airlines participate in the International Aviation Transport Association (IATA), air traffic services discuss issues pertaining to their field in the European Organisation for the Safety of Air Navigation (Eurocontrol), and airports exchange knowledge in the Airport Council International (ACI). These three networks are outlined below.

IATA

IATA is an international trade organisation for airlines, created approximately 60 years ago (www.iata.org, accessed December 2007). KLM/Air France, British Airways and Malév are among its ca. 300 members. The IATA also has an environmental committee (ENCOM) that addresses noise issues. Topics concerning noise discussed in IATA and relevant here mainly concern operational issues, such as the CDA and the question whether noise standards are measured or calculated.

Eurocontrol

Eurocontrol was created in 1963 and currently has 38 members. Its aim is to develop a pan-European Air Traffic Management System. It established an environmental committee in 2001, the Eurocontrol Environmental Policy and Strategy (www.eurocontrol.int, accessed November 2007). Regarding noise, it mainly deals with operational measures, such as the CDA and NPR, and whether noise standards are measured or calculated.

ACI

The airports themselves share knowledge in the ACI, which is the international trade association of airports (www.airports.org, assessed November 2007). Its purpose is to advance the interests of airports and to promote best practices in airport management and operations. In this context, it also discusses noise issues. To give an impression of the size of this network, at the time of writing, the ACI has around 570 members. Since 1991, the ACI has been organised into five geographical regions (Africa, Asia-Pacific, Europe, Latin America/Caribbean and North America), each with a regional office. The ACI has discussed a wide range of issues, such as noise contours and operational measures.

6.2.3 Other international networks, organisations and conferences

Apart from these two broad categories of international networks and organisations, there are organisations for interest groups, of which the most important one is UECNA. Furthermore, there are international networks specifically for experts, and international conferences open to all involved.

UECNA

The European Union against Aircraft Nuisances (UECNA) has around forty members (interest organisations) (HACAN *pers. com.*, 2008) in Europe. It organises for example international protests such as the European Day of Action, and lobbies with parliaments. The focus is mainly on night flights, but compensation measures such as insulation are also discussed.

International organisations and an expert network

Furthermore, there is one international organisation and one international network discussing a particular field of expertise or policy area. The International Organisation for Standardisation (ISO) is focussed on developing international standards for different areas such as trade, environment, etc. It has over 150 members and both governmental and private research institutes participate. Regarding noise, the ISO discusses

technical aspects, such as the indices and the NPdB and dB(A). In this regard, the World Health Organisation (WHO) should also be mentioned, in which experts carry out research into the effects of noise annoyance on public health, and related technical issues. In addition, there is a recently set up international network called Airport-Noise-Non-Auditory (ANNA) which, as its name indicates, examines the non-acoustic aspects of aircraft noise. Experts from different national and international organisations, involved with aircraft noise, can participate in this network, which has been in existence since 2005.

International platforms and conferences

Apart from these networks, there are many conferences, meetings, seminars etc: too many to list. A wide range of issues is discussed during these platforms and conferences.

6.2.4 Some international regulations

Although noise around airports is, as said, the responsibility of individual states or airports, there are two instances in which the international context plays a role. First, the ICAO formulated the so-called Balanced Approach, which indicates that noise management should be dealt with, with the help of four elements: reduction of noise at the source (the phasing out of the noisiest aircraft categories), operational procedures for noise abatement, noise reduction through the planning process and land use management strategies, and aircraft operating restrictions. This international regulation does not hinder the analysis of policy-oriented learning from VTC, because the Balanced Approach is an ICAO resolution, which means that member states are not officially obliged to follow the rules. In addition, all national noise abatement policies fall within this framework: the concept is too general to have an impact.

The second is the European Directive on the Assessment and Management of Environmental Noise (The Environmental Noise Directive, END; EC, 2002a), which aims to control noise perceived by people in built-up areas. This directive gives two indices to indicate noise, Lday-evening-night (Lden) and Lnight, which must be used for noise mapping. However, although member states are obliged to produce a noise map in the future, including for airports, there are no consequences for this noise map. Other indices are also allowed to indicate and manage noise levels (see 6.2), and as such, END has no direct influence on airport noise abatement policies.

Finally, some information about two important, legally binding international regulations regarding noise at the source is useful. Although noise at the source is not the focus of this chapter, the case studies sometimes refer to these. First, there is the international certification of planes according to the noise they make at the source.

Based on the certification, there are different categories of aircraft noise, called Chapter 1, Chapter 2, etc., referring to those aircraft which meet the standards of noise specified in Volume I, Part II of Annex 16 to the Convention on International Civil Aviation (ICAO, 1944). Second, and in line with this categorisation, ICAO and the EU (EC, 2002b) agreed to legally enforce a gradual phase-out of Chapter 1 and 2 aircraft. This means that between 1992 and 2002, aircraft categorised as Chapter 1 or 2 should have been replaced by a more quiet category, such as Chapter 3 or Chapter 4 aircraft, etc.

6.3 Amsterdam Airport Schiphol

Noise around AAS is, and always has been, a hot item in the Netherlands. The intense debate, both now and in the past, on an appropriate noise policy was not only the result of the number of people that suffered from noise. It was strengthened by the fact that the noise issue became the crux in the debate whether AAS could continue to grow or not; the number of passengers passing through AAS had increased to 47.8 million by 2007. This turbulent debate led to a well-considered but complex noise policy for AAS.

A number of actors are involved in the AAS noise abatement policy (Table 6.4) (Broër, 2006). At the national governmental level, it is mainly the Ministry of Transport, Public Works and Water Management (*Ministrie van Verkeer en Waterstaat*, V&W) that is responsible for formulating a policy for noise around AAS. VROM, in turn, deals with the noise values. Due to the spatial focus, regional and local authorities are also involved, such as the municipalities of Amsterdam and Haarlemmermeer, as well as the province of North Holland, because AAS is located in their districts. In addition, the aviation sector is a participant: the airport operator, AAS (formerly called Schiphol Group), the Royal Dutch Airline (*Koninklijke Luchtvaart Maatschappij*, KLM) and the Netherlands Air Traffic Control (*Luchtverkeersleiding Nederland*, LVNL). The latter is an autonomous public body that has been in existence since 1993. Also included in the policy-making process are research institutes, such as the Netherlands Institute for Spatial Research (*Ruimtelijk Plan Bureau*), The Netherlands Environmental Assessment Agency (*Milieu- en Natuur Planbureau*, MNP) and the National Aerospace Laboratory (*Nationaal Lucht- en Ruimtevaartlaboratorium*, NLR). Finally, interest organisations such as Friends of the Earth Netherlands (*Milieudefensie*) and the Netherlands Society for Environment and Nature (*Stichting Natuur en Milieu*) participate.

Category actor	Organisation (English name)	Organisation (Dutch name)	Abbreviation	Task
National Government	Ministry of Housing, Planning and the Environment	Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieu	VROM	National governmental body
National Government	Ministry of Transport, Public Works and Water management	Ministerie van Verkeer en Waterstaat	V&W	National governmental body, formulate policy
Regional and local government	Municipality of Amsterdam	Gemeente Amsterdam	N.A.	Protect citizens from noise
Regional and local government	Municipality of Haarlemmermeer	Gemeente Haarlemmermeer	N.A.	Protect citizens from noise
Regional and local government	Province of North-Holland	Province Noord-Holland	N.A.	Protect citizens from noise
Aviation sector	Royal Dutch Airline	Koninklijke Nederlandse Luchtvaart Maatschappij	KLM	Airline
Aviation sector	Netherlands Air Traffic Control	Lucht Verkeersleiding Nederland	LVNL	Air Traffic Service
Aviation sector	Amsterdam Airport Schiphol	Amsterdam Airport Schiphol	AAS	Operator of Schiphol
Interest organisation	The Netherlands Society for Environment and Nature	Stichting Natuur en Milieu	SNM	Interest group, focussed on conservation and environment
Interest organisation	Milieudefensie	Friends of the Earth Netherlands	N.A.	Interest group, focussed on the environment
Research Institute	National Aerospace Laboratory	Nederlands Luchten Ruimtevaart Laboratorium	NLR	Governmental research Institute
Research Institute	The Netherlands Environmental Assessment Agency	Milieu- en Natuurplanbureau	MNP	Governmental research Institute

Table 6.4: Key organisations involved in the noise abatement policy for AAS

This section describes the process of the noise abatement policy for AAS in terms of the core issues, answering the case study question. The analysis begins in 1995, a commonly identified year in policy studies on AAS (NMP, 2005; Broër, 2006; van Wijk, 2007) because it was then that the policy document was published that stimulated the introduction of a legal system for noise abatement around AAS. However, as previous policy decisions influenced later policy developments, section 6.5.1 first outlines important aspects of the legacy of previous policy choices and decisions concerning the core issues. Section 6.5.2 then describes the policy process from 1995 onwards, while section 6.5.3 examines policy-oriented learning from VTC, addressing the case study's research question.

6.3.1 Background

The policy goal for noise around AAS shifted over time. In the 1950s, when noise was increasingly acknowledged as a problem, it was believed that with good planning, i.e. keeping houses away from the airport and flight paths, noise annoyance could be solved (Broër, 2006). However, in the 1960s, the Kosten committee, named after its Chair and established to investigate solutions to noise annoyance, stated that measures could only reduce noise annoyance. Therefore, in the mid-1960s the goal for the noise abatement policy was changed from solving noise annoyance to reducing it (Broër, 2006).

Furthermore, in the 1960s Kosten formulated the management framework as a geographical noise contour cap. It was Kosten who recommended the introduction of noise contours, which were based on earlier proposals, such as the report by the municipality of Amsterdam *Grondslagen*, (Bijsterveldt, 2006; Broër, 2006). Against this background, the Kosten committee recommended a legally controlled noise contour cap: at the geographically indicated contour, the annual average noise level should not be more than what was defined as 'acceptable'. This meant that the aim was to keep noise exposure and therefore annoyance within the physical limits of the immediate vicinity of the airport. These physical limits were drawn on a map, and this geographical 'red line' should not be crossed.

The two concrete aspects (hard knowledge) within the system of management, i.e. the index and whether the noise contour cap was measured or calculated, were also established by Kosten. Both aspects were defined by the fact that the physical noise contour cap had to be legally enforceable. First, the monitoring of the standard had to be based on calculations, if only because the noise contour cap was reflected over a year, and future air traffic scenarios were taken into account. Also, measurements were not reliable enough to provide data that would be legally enforceable. Second, the noise index had to be expressed in dB(A) in order to make legal enforcement of

the physical noise contour cap possible (Bijstervelt, 2006). Although the NPdB was at the time considered to be more precise and was therefore chosen by the US and the UK, Kosten used the dB(A), and the index was called Kosten Unit (*Kosten-eenheid*, Ke) (Bijstervelt, 2006).

This initial idea led to an extreme emphasis on noise contours (Bröer, 2006). As is more specifically shown in 6.3.2, the measures for the Dutch policy were mainly focussed on keeping noise within the limits of the contour cap; those measures that were not considered to contribute directly were given minor attention.

As said, the noise contour cap was established within the broader idea of using noise contours for planning purposes formulated by Kosten. As early as in the 1980 Decision on Noise from Commercial Aviation (*Besluit Geluidbelasting Grote Luchtvaart*), noise contours for planning were established, expressed in Ke. These contours were used in planning policies, before the physical noise contour cap was in force. For example, it was stated that within the 35 Ke contour, new housing development was prohibited. Also, noise insulation, a compensating measure, was introduced according to the (planning) contours. Houses located within 40 Ke were allocated financial compensation for insulation. The first insulation project, Noise Insulation Schiphol (*Geluidsisolatie Schiphol*), started in 1984 and was pump-primed by the government, which reclaimed the costs from the aviation sector. In this first project, 3700 houses were insulated, at a cost of 126.8 million Euro (www.progis.nl, accessed January 2007).

There were two measures not linked to the contours; one was another compensating measure, the involvement of the community in various groups, such as the Schiphol Noise Annoyance Committee (*Commissie Geluidhinder Schiphol*), later called Schiphol Regional Advisory Committee (*Commissie Regionaal Overleg Schiphol*, CROS). Secondly, the AAS air traffic service used operational measures to reduce noise nuisance, such as the use of preferential runways and of specific runways for departures.

Having outlined important previous policy decisions, we now turn to an overview of developments in the policy process. As the goal of noise reduction, formulated in the 1960s, has not changed since, this core issue is not further taken into account.

6.3.2 The policy process from 1995 onwards

Ever since it was decided that AAS would have a noise contour cap, there has been a lot of discussion about how such a cap could be made practical, which postponed its introduction (Bröer, 2006; V&W *pers. com.*, 2007). Eventually, in 1995, (for more details on this process see Tan, 1995), the Key Planning Decision for Schiphol Airport and Surroundings (*Planologische Kernbeslissing*, PKB-Schiphol) was formulated with different stakeholders (Table 6.4), which constituted the first steps towards a legal noise

contour cap. The cap fitted in with the double target of AAS, formulated in the PKB-Schiphol: it aimed to stimulate the economic development of AAS as an important hub as well as to improve the environment, the latter being formulated in noise limits. In this context, AAS was allowed to build a fifth runway to be opened in 2003, but at the same time noise had to remain within the noise contour cap. The PKB-Schiphol set the physical contour cap at a maximum of 15,100 houses within the 35 Ke contour (V&W/VROM/EZ, 1995).

In November 1996, the physical noise contour cap, here also called management framework, was formally established (Stb, 1996, 668). The cap was created without help or inspiration from other countries, because AAS was considered to be unique in working with a noise contour cap (Interview V&W, 2007b). V&W primarily established the method to monitor the cap in cooperation with the aviation sector. It was calculated that 250 'contour points' were necessary to measure and monitor the noise. At each of these points on the 35 Ke line, exceeding the noise limit was monitored by means of calculation. In line with the cap, the operational measures were defined as the use of preferential runways. Specific runways for departures were prescribed in accordance with the physical noise contour cap (LVNL *pers. com.*, 2007).

Throughout the process of developing the noise contour cap, there was much criticism on the Ke, and on the monitoring of the noise contour cap by calculations. The Ke was considered opaque and too complicated. Respondents often said that "common people did not understand it, and not even all policy makers who were involved" (Interview CROS, 2007; Interview KLM, 2007; Interview VROM, 2007b). Also, the fact that the monitoring of the noise contour cap was calculated concerned participants, as well as its basis of yearly averages. VROM staff visited Munich, Zurich and Manchester, and noticed that Zurich was handling noise with a prominent role for measuring (Interview VROM, 2007a). Although this point was raised in the discussion, the government argued that measuring was not possible in the Dutch system with its noise contour cap (Interview VROM, 2007a).

Within the first few years of the physical noise cap coming into force, AAS exceeded it, so in 1999 a new proposal was made. Initially, in 1997, the government decided to tolerate this, because some of the contour-points were in an area where no people lived and only the cows would be hindered (MNP, 2005). After the cap was again exceeded in 1998 and 1999, V&W and the aviation sector proposed a revised noise contour cap a policy document titled the Future of the National Airport (*Toekomst van de Nationale Luchthaven*, TNL) (Interview KLM, 2007; Interview LVNL, 2007; Interview VROM, 2007b). This proposal was based on advice from different committees established by the government to investigate how to proceed with the future growth of AAS. The most notable group was the Temporary Consultation Platform

Schiphol (*Tijdelijk Overleg Platform Schiphol*, TOPS). TOPS started in 1998 and was disbanded in 2001 when some NGOs formally backed out.

Before specifically looking at the content of the proposal, two developments should be mentioned. First, the index changed from Ke to Lden, in accordance with European legislation on noise mapping (see section 6.1). The planning contours were expressed in Lden, instead of the Ke (Interview MNP, 2006). In theoretical terms, this constitutes harmonisation. Second, the elaboration of the noise contour cap was highly technical, and consequently AAS's explanation of their exceeding of the noise limits was technical. This created a lot of confusion and dissatisfaction about the policy (Kruize *et al.*, 2007), not only for community living around AAS, but also for participants in the policy-making process. As a result, not only did less and less people understand the discussion, also societal trust in the management framework, in its practical elaboration and in the good intentions of AAS decreased. It has repeatedly been said that a "technical fog" was created around the noise policy around AAS (Interview CROS, 2007; Interview Municipality of Amsterdam, 2007; Interview VROM, 2007a). A good example of the highly technical character of the policy is the often heard statement that "even the boss of AAS does not understand the policy" (www.crosnet.nl, accessed February 2008).

In 2003, the new proposal entered into force, and since the new runway was used, the noise emission in the area around AAS was different. The exact location of the noise contour cap changed, however, the management framework was not changed in the revised system: there still was a physical contour cap. The technical elaboration was different, and some measures to reduce the noise were adjusted. For the technical elaboration, there were less points (35 instead of 250), and the points were located in urban areas to protect people rather than cows in grasslands. When the noise limit at a particular point was exceeded, airplanes were not allowed to fly over that point anymore, and had to use another route and runway. The revised system of management was again complicated, technical and non-transparent, and again it created confusion. An example of the continuous confusion is the discussion between calculating or measuring the noise contour cap, which flared up again. The discussion became politicised and in 2002 the Berkhout committee was appointed to deal with the situation, which was however abandoned because of disagreement in 2004.

Furthermore, the new law influenced the measures. First, new NPRs (operational measures) were prescribed for the LVNL. These operational measures were changed in accordance with the fifth runway: a new runway implies new flight paths and a different dispersion of traffic. In addition to prescribed departure routes, arrival routes were prescribed, relating to the 35 points on the noise contour map. The government

fined the LVNL if it broke the rules. Second, with regard to compensation measures, improved communication between the aviation sector and the community around AAS was stimulated. In 2003, the CROS was established. In addition, another insulation programme had been launched in 1997. In anticipation of the fifth runway that would be opened in 2003, the exact location of the noise cap changed and houses in different locations had to be insulated (www.progis.nl, accessed January 2007).

The importance of involving the community was emphasised by Professor Stallen from the University of Leiden, whose research focussed on non-acoustic factors. He argued that by involving the local community, a greater understanding between the aviation sector and the community could be created, which reduces noise annoyance without reducing the actual dB(A) (Stallen, 2001; 2003). Stallen emphasised the importance of non-acoustic factors, not only nationally but also internationally, among other things by creating the international network ANNA (see section 6.2.3), in which Dutch experts from for example LNR, AAS and universities participate.

As agreed in the 2003 law, the new system was evaluated in 2005 (VROM and V&W 2005), in which knowledge from VTC was discussed. This evaluation led to the conclusion that the management framework was not working optimally. Not only did the aviation sector not fully use the capacity meant to be available within the noise limits, it would in fact be able to *increase* traffic while producing less noise, but such innovation is difficult under the strict current policy rules. Therefore, at the time of writing, stakeholders (Table 6.4) are deliberating a new management framework. As part of this, the aviation sector has raised the issue of using noise monitors, which would measure the noise levels of individual aircraft passages. The usefulness of monitors was underlined by the observation that they work well at Heathrow (see section 6.3). The government and AAS recently learnt about the monitors via benchmarking (Adse and stratagem, 2005; Gordijn, 2006; Interview AAS, 2007c; Interview V&W, 2007a), and it seems that they informed other participants of the possibility of using noise monitors. This is quite remarkable, because most of the actors outside V&W and the aviation sector was involved in international networks such as the ARC since 2000, or had hired consultancies to conduct comparative research, such as AR-CADIS, to gather knowledge about other airports (Interview Municipality of Haarlemmermeer, 2007; Interview Province of North Holland, 2007b; Interview SNM, 2007). As such, they were aware of the information about Heathrow before, but did not introduce this knowledge. Apparently, it was difficult to see the noise monitoring as separate from the UK context and apply it to the AAS situation.

At the time of writing, it is not yet decided whether or not monitoring will be introduced, and if so with which purpose. On the one hand, the aviation sector would like to fundamentally change the management framework into a more transparent

system that functions more effectively. In this context, the noise monitors can possibly be used to replace the physical noise contour cap. On the other hand, the government and particularly the community around AAS propose to use noise monitors in addition to the recently introduced system, because the community does not want to give up the old management framework while they do not know (or trust) the one that will replace it.

Finally, the increase in the use of the CDA has been under discussion. Since 2003, the CDA is obligatory at AAS at night. During the day, CDA is not considered to be feasible because of the national context. As described, national regulation now prescribes certain rules and procedures, instead of allowing more flexible routes that are necessary to perform a CDA. V&W, KLM, AAS and LVNL are aware of the international discussions on CDA in the CAEP and in ENCOM (Interview KLM, 2007; Interview LVNL, 2007). Efforts are currently made to combine a CDA with prescribed descending routes, but this is not possible yet. It appeared from the interviews that there is no obvious pressure from other national actors to introduce the CDA. Although they are to a certain extent aware of the CDA, respondents did not see it as a measure to contribute effectively to the noise contour cap (Interview Municipality of Haarlemmermeer, 2007; Interview Province of North Holland, 2007b)

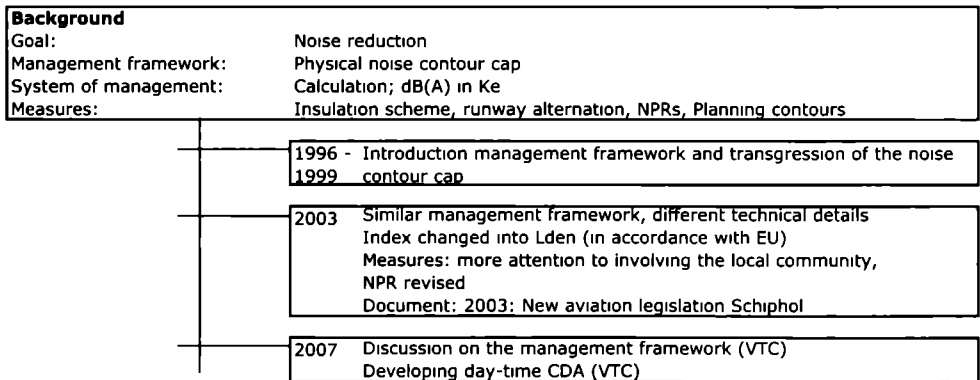


Figure 6.1: The noise abatement policy process for AAS, including legislation mentioned in the text and policy-oriented learning from VTC

6.3.3 Interpretive analysis

This section analyses the role of domestic institutional factors on policy-oriented learning from VTC (Fig. 6.1). It starts by briefly reiterating two possible opportunities

for policy-oriented learning from VTC, followed by two remarks on the type of knowledge and VTC. It concludes with the identification of domestic patterns of policy-oriented learning from VTC (Table 6.5).

Currently, in the noise abatement policy for AAS, most of those involved in the policy have acknowledged that the national regulations for noise abatement around AAS are rigid, and V&W and the aviation sector are looking for ways to overcome this rigidity. In this context, Heathrow's experience with the use of monitors is being discussed. Whether lessons learnt from this hard knowledge lead to fundamental learning, meaning the existing management framework will be abandoned, or to corrective learning, meaning monitors will be used in addition to the recent approach, is not yet clear.

Furthermore, besides a night-time use of the CDA, LVNL and KLM are investigating how the CDA could be used at AAS during the day. In addition to domestic experiences with CDA at night, knowledge on the CDA was gathered in international organisations such as Eurocontrol and ICAO. At the moment, LVNL and KLM are trying to combine the national regulations (fixed descending routes) with a CDA, without creating capacity limits.

Core issue (Element)	Type of knowledge	Possible learning process	VTC	Domestic patterns
*System of management or (measurement)	Hard knowledge	* Possible corrective learning or fundamental learning	Organised and unorganised horizontal VTC	Learning actor: Aviation sector, V&W Belated discussion of knowledge from VTC
Management framework (no physical cap)				
*Measures (CDA)	Hard knowledge	* Possible corrective learning (Negative)	Vertical VTC	Learning actor: KLM, LVNL Belated discussion of knowledge from VTC

Table 6.5: *Possible policy-oriented learning from VTC in the noise abatement policy for AAS in accordance with the core issues

Because little policy-oriented learning has taken place, only two brief remarks can be made on the relationship between policy-oriented learning, VTC and knowledge use. First, the case study showed that the discussion of the CDA, which is hard knowledge, might lead to corrective learning. Whether the discussion on the use of noise monitors, which is also hard knowledge from VTC, will lead to fundamental or corrective learning is not yet clear. Second, for VTC, the knowledge that is under debate was gathered in vertical, unorganised and organised horizontal VTC.

The two possible learning elements show a similar pattern: knowledge from VTC was present, but the discussion was belated. Although there was a lot of criticism on the Dutch management framework, and although quite a few actors involved in the policy also participated in international organisations such as ICAO, IATA, Eurocontrol, ICA and ARC, and benchmarks were also made, knowledge from VTC has only recently come under debate.

6.4 Heathrow Airport

Heathrow has long been the number one airport in Europe: in 2007 67.8 million passengers passed through. As such, it is not surprising that there has been noise annoyance around Heathrow. Initially, noise was the responsibility of the government, but in 1987, the UK government decided to privatise all national airports, which meant that environmental issues became the responsibility of the airport operator. For three London airports, however, an exception was made to ensure British citizens' protection from environmental degradation. Thus, Heathrow, Stansted and Gatwick were turned into 'designated airports'. This means that the government, more specifically the Department for Transport (DfT), is responsible for the environmental policy of the three airports.

Apart from the DfT, the Civil Aviation Authority (CAA) is involved in advising the government (Table 6.6). The CAA works with contract experts, which are advisory bodies, such as the University of Loughborough. From the aviation sector, the owner of Heathrow, the British Airport Authority (BAA), participates in the noise abatement policy, as does the National Air Traffic Service (NATS), managing air traffic, and British Airways (BA), the major airline at Heathrow. Furthermore, several interest groups, such as the Aviation Environment Federation (AEF), the Heathrow Association for the Control of Aircraft Noise (HACAN) and the Strategic Aviation Special Interest Group (SASIG) are involved in the policy process, as well as the local authorities around Heathrow.

Category	Organisation	Abbreviation	Task
Government	Department for Transport	DfT	National government, responsible for noise policy
Government	Civil Aviation Authority	CAA	Governmental research institute
Government	Local authorities, such as Hounslow, Middlesex, etc	N.A.	Protect citizens from noise
Private experts	University of Loughborough	N.A.	Contract experts for CAA
Sector	British Airport Authority	BAA	Owner of Heathrow
Sector	National Air Traffic Service	NATS	Air Traffic Service
Sector	British Airways	BA	Airline
Interest organisation	Aviation Environment Federation	AEF	interest group for environmental issues
Interest organisation	Heathrow Association for the Control of Aircraft Noise	HACAN	interest group focused on Heathrow (noise)
Interest organisation	Strategic Aviation Special Interest Group	SASIG	interest group, focused on economic and environmental aspects of aviation

Table 6.6: Key organisations involved in the noise abatement policy for Heathrow

As early as the 1950s and 1960s, policies were initiated to regulate noise abatement, and some of these decisions have influenced the later policy. Therefore, section 6.4.1 starts with an outline of early policy decisions concerning noise. The development of the policy process from 1980, when the first change in the policy was instigated, is described in section 6.4.2, while section 6.4.3 analyses policy-oriented learning from VTC, answering the case study’s research question.

6.4.1 Background

The goal of the noise abatement policy around Heathrow was defined in the 1960s. Bijsterveld describes how it was explained to protesters in 1960 that there would always be noise near airports: “Minister Duncan Sandys (...) simply responded that noise near airports was unavoidable. ‘It [no noise annoyance] is impossible – unless you close London Airport’” (The Sunday Times, 1960, 38 in: Bijsterveld, 2006, 11).

Clearly, from the start, the goal was to reduce noise where possible, not to try to solve it.

In 1959, the management framework was set up, when Heathrow introduced noise departure limits during the daytime. From this point onwards, the management framework was defined by noise limits for departing and arriving aircraft separately. As such, the policy aimed at reducing the noise made during individual departure and arrival flights. At the time, noise limits were formulated at 110 NPdB for departures during daytime (Flindell and Witter, 1999).

The management framework is elaborated into two concrete aspects (the system of management). First, the noise limits were predominantly monitored with measurements, first done by students, but later the data were gathered by noise monitors positioned close to the runways. Second, the index was developed by the Committee on the Problem of Noise, named after its chair and thus called the Wilson Committee. This committee was established in 1960 to investigate problems caused by noise annoyance, and in this context it developed the Noise and Number Index (NNI). The NNI used the NPdB (the perceived noise level unit) because, as said, the limits had been set in NPdB in 1959. This was the most common way of indicating noise at that time, used by Boeing in the USA (Bijsterveld, 2006), because it was believed that the NPdB presented the most accurate reflection of how people perceived noise.

The Wilson Committee also formulated some measures. It decided to develop noise contours, formulated in NNI, that stipulated planning restrictions (Bijsterveld, 2006). Based on these contours, in 1973 the DoE introduced circular 10/73 called Planning and Noise, which for example advised that no major residential development should be allowed in areas exposed to more than 39 NNI (DoE, 1973).

Based on the noise contours, the government initiated insulation. It selected several houses to benefit from a Noise Insulation Grant Scheme in 1966, and a second scheme was rolled out in 1980 (Flindell and Witter, 1999). The other compensation measure consisted of the various committees that discussed the development of Heathrow specifically with regard to noise, such as the Heathrow Airport Consultative Committee (HACC).

Finally, there were two operational measures for noise abatement. First, runway alternation was introduced in 1972. This refers to the operating regime of the runways, in which one main runway is used for departures and one runway for arrivals for most of the day. At 15:00 the roles switch. Second, there were the NPRs, determined by 'westerly preference', and by the 'Cranford agreement'. The former advocates departures to be directed mainly to the west. This preference was defined in order to avoid the most heavily populated areas in the east and minimise the noise impact there. The latter was established in the 1950s, and constituted an unwritten gentle-

men's agreement, implying that flying over Cranford should be avoided (Flindell and Witter, 1999). The NPRs have not changed since they were established.

Having outlined previous policy decisions, we now turn to the next section, which gives an overview of developments in the policy process for the system of management, the management framework and the measures. The policy goal was explicitly formulated in 1960, namely that noise should be reduced, and it has not changed since.

6.4.2 The policy process from 1980 onwards

The validity of the index, the NNI, had been under discussion since the late 1960s and early 1970s, but it was decided at that time to continue using the NNI. A change in the index was believed to create public distrust in the scientific basis and the methods for noise abatement (Bijsterveld, 2006).

However, in 1982, the DfT initiated a study on the index to be used in the system of management, called Aircraft Noise Index Study (ANIS). There were several arguments to change the NNI, of which two are crucial. First, in 1980, the government learnt that NNI was out of step with the indices used by other international airports (DfT and CAA, 1985; Brooker, 2004). Noise experts from the UK were involved in ISO (in theoretical terms: organised horizontal VTC) and informed the government about the differences in indices. Second, the government argued that people's attitudes to noise had changed, and that ANIS was established to study the changed societal attitude to aircraft noise (DfT and CAA, 1985).

In 1990, after eight years of the ANIS study, the DfT decided to change the NNI to the Leq index, using dB(A). There were national and international reasons to change the index. Nationally, during ANIS, it was argued that the Leq index would reflect noise annoyance more accurately (DfT and CAA, 1985). Internationally, knowledge had moved on and it became clear in international networks such as the ISO that the common unit of noise was no longer NPdB but dB(A) (Interview CAA, 2007b). Especially since the 1980s, the Leq index had been internationally the most widely recognised: "Thus, noise should preferably be described in terms of an equivalent continuous sound level, Leq, measured in dB(A)." (WHO, 1980, section 4.4).

Various organisations were included in the consultation, all with different views. Nevertheless, the CAA had a central role in ANIS and in the decision-making process, due to the difficulty of the topic. Several respondents argued that "the technical side of the policy is the task for the CAA" (Interview BAA Heathrow, 2007; Interview DfT, 2007; Interview Local Authority, 2007). Recalling the change to the Leq index, respondents said that "professional people thought the Leq index was better" (Interview DfT, 2007; Interview HACC, 2007; Interview Local Authority, 2007). In turn,

the CAA employed expert contractors, for example the University of Loughborough, to advise them (Critchley and Ollerhead, 1990; Brooker, 2004). These experts were involved in the international networks mentioned above, in other words in organised horizontal VTC, where they learnt about the indices used at other international airports.

In accordance with the new index (the Leq), the departure limits were adjusted: the index transferred from NPdB (110) during the day to dB(A) (97) (BAA Heathrow, 2004/2005). Also, in 1994, BAA started to fine airlines that exceeded the limits: £ 500 if the limit was exceeded by less than 3 dB(A), and £ 1000 for exceeding it by more than 3 dB(A). Before, there had been no possibility to fine those aircraft that exceeded the limits, because the measurements were not reliable enough. In 1992 and 1993, BAA acquired a Noise and Track Keeping system (NTK system), which gave precise data, and by combining measurements and calculated data, fining became possible. In the meantime, from 1993 to 1999, the government reviewed and tightened the noise abatement policy. The review was in line with the management framework, focussing on arrival and departure noise. A committee set up by the government, the Aircraft Noise Monitoring Advisory Committee (ANMAC), discussed the possibility of lowering departure noise limits. It concluded that departure limits could be lowered, and in 1999 the limits were reduced from 97 dB(A) to 94 dB(A) during the day.

For arrival noise it was not possible to establish noise limits, because arrivals depend on many external factors such as weather conditions (Hales-Dutton, 2007; Interview NATS, 2007b). However, it was possible to reduce arrival noise by adjusting operational measures: The ANMAC study showed that the CDA decreased noise from arriving aircraft. Although the CDA had been used by BA since the 1970s to save fuel, it had never before been linked to noise reduction. Because it was impossible to prescribe how it should be done, a code of practice was published instead (DfT, 2006). This code of practice gave a definition of the CDA and presented best practices to perform a CDA. The first code of practice came out in 2001, and it was updated in 2006. Since 2003, the CDA has been actively promoted in international networks such as ENCOM and ICAO (Interview BA, 2007; Interview NATS, 2007b).

Besides this change in operational measures, BAA made four adjustments in the measures, two of which were linked to VTC. First, BAA launched a voluntary insulation programme in 1995, the Noise Insulation Scheme. This was in addition to the scheme that had been in place since 1980 (Flindell and Witter, 1999). Second, in 2001, the Flight Operations Performance Committee was established to discuss operational issues and their relationship to noise. Third, taking knowledge from VTC into account, in 2003, BAA began to revise its internal policy. The target of the new policy is to be in the top 20% of airports with best practices concerning noise by 2020. In or-

der to reach this target, BAA has conducted a benchmark study (unorganised horizontal VTC) to learn from noise measures of other countries (Interview BAA Corporate, 2007). Fourth, in the new policy, there was to be an increased emphasis on non-acoustic factors, for example regarding communication with the public and the transparency of the policy. BAA was aware of the importance of communicating with the community, but discussions in international networks, such as ANNA (Interview BAA Corporate, 2007), in theoretical terms organised horizontal VTC, emphasised the importance of non-acoustic factors. The development of ANNA was described in the Dutch case study (section 6.3).

In addition to the measures introduced by BAA, the government introduced a future noise contour cap of 127 km² for Heathrow in the 2003 White Paper on Transport (DfT, 2003). When the CAA developed this cap, it was aware through different types of VTC that AAS had introduced a cap as well: through their counterparts in the Netherlands, and through various international networks, such as CEAP and AN-CAT, and publications (Interview CAA, 2007b; Interview DfT, 2007). The CAA learnt that AAS had difficulties with its noise contour cap, which was linked to the number of houses, and decided to focus on square kilometres instead. Another reason not to include the number of houses is that in the UK the housing policy was not so strictly implemented. "Setting a cap based on the number of houses would not be fair to the airport", it was said, as it was expected that housing would increase (Interview CAA, 2007a; Interview DfT, 2007).

Finally, during the interviews it came to the fore that local authorities and pressure groups such as AEF, HACAN and SASIG are currently asking for an index that better reflects their annoyance and that they can understand better (Interview HACAN, 2007; Interview Local Authority, 2007; SASIG, 2007). They feel that the Leq index does not sufficiently reflect the public's perception of noise, and refer to the N-70 model, used in Sydney. N-70 was brought under the footlight in various international conferences and international networks with different participants; such as ANNA and the ARC. At the time of writing the debate is still going on (Interview HACAN, 2007; Interview Local Authority, 2007; Interview SASIG, 2007).

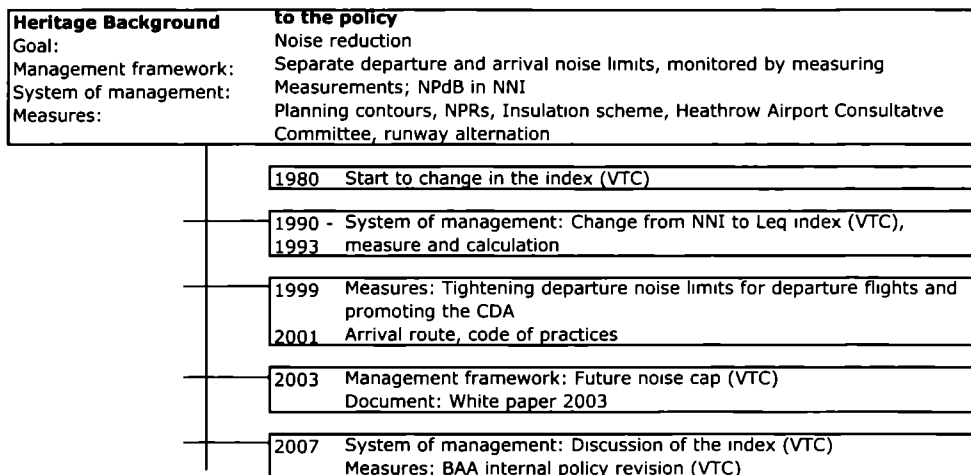


Figure 6.2: The noise abatement policy for Heathrow, including national regulation mentioned in the text and policy-oriented learning from VTC.

6.4.3 Interpretive analysis

We now examine the role of domestic institutional factors on policy-oriented learning from VTC. To this end, the concrete cases of policy-oriented learning from VTC are summarised (Fig. 6.2) followed by some observations on learning, type of knowledge and VTC. Finally, domestic patterns of policy-oriented learning from VTC are identified (Table 6.7).

Although in the 1970s the government decided not to change the index, in the early 1980s, it learnt through the CAA and contract experts that the NNI was out of step with the indices used at most other international airports. This knowledge from VTC encouraged the British government to investigate whether the index needed to be changed. The outcome of the study was also influenced by policy-oriented learning from VTC. The CAA and its contract experts learnt that in international networks (in theoretical terms: organised horizontal VTC) such as the ISO and WHO, the Leq index was regarded as the best index. In addition, it was argued that the Leq would reflect people’s annoyance better than the NNI.

Apart from this corrective learning from VTC, the case study also showed evidence for fundamental learning from VTC, when the management framework was adjusted. In the 2003 White Paper, the CAA introduced a contour cap in case of future expansion of Heathrow. Via its Dutch counterpart, various publications and through international networks, i.e. in theoretical terms: through organised and unorganised VTC, the CAA had learnt how not to establish a noise contour.

At the time of writing, knowledge from VTC regarding the index and the measures is being discussed. As regards the index, local authorities and NGOs ask for the additional use of the N-70 index, which they have become aware of through organised horizontal (the ARC international network) and unorganised horizontal VTC (international conferences). In addition, BAA recently carried out a benchmark study within the context of a policy review to improve the measures. Also, the importance of non-acoustic factors is taken into account in the review, emphasised by ANNA.

Core issue (Element)	Type of knowledge	Learning process	VTC	Domestic Patterns
Initiation of change	Hard knowledge	Fundamental learning	Vertical VTC	Learning actor: DfT, CAA and contractors After the intention not to change, it was changed to be in line with other international airports
Management framework (Index to Leq)	Hard knowledge	Corrective learning	Vertical VTC	Learning actor: CAA, contractors Knowledge from CAA and contractors
(Cap)	Soft knowledge	Fundamental learning (negative)	Organised and unorganised horizontal VTC	Learning actor: CAA, contractors Knowledge from CAA and contractors
(N-70)	Hard knowledge	* Possible corrective learning	Unorganised and Organised Horizontal VTC (ARC)	Learning actor: interest organisations and communities Pressure from an informed local community
Measures (Communication and Insulation)	Soft knowledge	* Possible Corrective learning	Organised and Unorganised horizontal VTC	Learning actor: BAA BAA in charge of the measures

Table 6.7: (* Possible) policy-oriented learning from VTC in the noise abatement policy for Heathrow in accordance with the core issues

An analysis of the relationship between policy-oriented learning, the type of knowledge and VTC, as displayed in Table 6.7, shows that soft knowledge led to fundamental learning, and hard knowledge, concerning the system of management and the measures, led or may lead to corrective learning.

In addition, corrective policy-oriented learning from VTC has taken place mainly regarding the system of management. It is interesting to note that to gather knowledge for the measures, BAA is currently creating a benchmark. This shows that, according to BAA, so far, such knowledge has not been sufficiently shared in the international organisations and networks.

The case showed that VTC was first mainly focussed on experts and the government, but since the late 1990s local communities have also become increasingly involved internationally.

Finally, two different domestic patterns of policy-oriented learning from VTC are identified. First, the CAA and its contractors have so far initiated the policy-oriented learning. Second, the knowledge that is under debate at the moment shows a different pattern: is not initiated by the CAA, but by local communities, interest groups and BAA. As to the former, the policy-oriented learning concerns technical issues: the UK government became aware of the fact that the NNI was out of step with indices at most other international airports through knowledge from VTC via the CAA and its contractors. Also, the actual change from NNI to Leq was based upon knowledge that the CAA and contract experts had gathered through VTC. Finally, the CAA introduced the noise cap based upon km² with future expansion of Heathrow in mind, taking the experiences of AAS into account. The second pattern concerns knowledge from VTC that is under discussion. These debates were not initiated by the CAA, but by local communities, interest groups and BAA. Local communities and interest groups raised the issue of the N-70 index and are still lobbying for it. BAA gathered knowledge horizontally, both unorganised via a benchmark, and organised through ANNA.

6.5 Charles de Gaulle Airport

With Heathrow, Frankfurt and AAS, Charles de Gaulle (CdG) is among the largest airports in Europe, welcoming nearly 60 million passengers in 2007. CdG was built in response to capacity limitations at Orly in 1974, and it has expanded to four runways and three terminals. Although the original plan for CdG included a preventive planning policy to keep the number of people living around the airport to a minimum, due

to poor policy implementation the communities around it expanded anyway (Gordijn *et al.*, 2007). Noise around CdG has therefore increasingly become a problem.

The French state owns 70% of CdG; most other actors involved in the policy (Table 6.8) are also fully or mostly state-owned. The French government, specifically the French Civil Aviation Authority (*Direction Générale de l'Aviation Civile*, DGAC), defines the regulation for CdG, including that on noise and deals with air traffic services. *Airports de Paris* (AdP), which is predominantly state-owned, implements the regulation and provides the technical details for the policy; Air France, the dominant airline, also participates in the policy. Local authorities deal with the regional aspects of the noise abatement policy, such as planning, but they have few resources to influence the policy (IAURIF *pers. com.*, 2007; Interview ENPC, 2007). Furthermore, a governmental planning institute, the Institute for Urban Planning and Development of Île-de-France Region (*Institut d'Aménagement et d'Urbanisme de la région Île de France*, IAURIF), is involved. IAURIF proposes planning policies to the region in which CdG is located. The last organisation, related to but independent from the government, is the Authority to control noise nuisance from aviation (*Autorité de contrôle des nuisances sonores aéroportuaires*, ACNUSA). This organisation was established in 1999 to control the regulation and thereby to restore the public's trust. ACNUSA is authorised to fine airlines, airports and air traffic services when they do not comply with the rules. Finally, interest groups of citizens such as the association against noise annoyance from aviation (*Association de Défense Contre les Nuisances Aériennes*, ADVOCNAR) protest against noise around CdG.

Sector	Organisation (English name)	Organisation (French name)	Abbreviation	Task
Government	French Civil Aviation Authority	<i>Direction Générale de l'Aviation Civile</i>	DGAC	70% owner of CdG
Government	Institute for Urban Planning and development of Île-de-France Region	<i>Institut d'Aménagement de la région Île-de-France</i>	IAURIF	Planning research institute
Government	Authority to control noise nuisance from aviation	<i>Autorité de contrôle des nuisances sonores aéroportuaires</i>	ACNUSA	Controlling the regulation
Government	Départements	<i>Val d'Oise; Seine Saint Denis and Seine et Marne</i>	N.A.	Implementing the planning aspect

Sector	Organisation (English name)	Organisation (French name)	Abbreviation	Task
Government/ private	Air France	<i>Air France</i>	N.A.	Airline
Government/ private	Airports de Paris	<i>Aéroports de Paris</i>	AdP	Implementation and providing technical details
Interest organisation	Association against noise annoyance from aviation	<i>Association de Défense Contre les Nuisances Aériennes</i>	ADVOCNAR	Interest group of citizens

Table 6.8: Key organisations involved in the noise abatement policy for CdG Airport

Similar to the previous two case studies, section the first section outlines previous policy decisions concerning noise abatement that influenced the later policy. Then, section 6.5.2 describes the development of the policy process on noise around CdG from 1996 onwards, when the management framework was developed. Finally, section 6.5.3 analyses policy-oriented learning from VTC, addressing the case study's research question.

6.5.1 Background

Before CdG Airport was established in 1974, a master plan had been formulated in 1965. This master plan aimed to reduce noise as much as possible (Gordijn *et al.*, 2007): “*au voisinage d'un aéroport l'un des critères à considérer (...) est l'intensité plus ou moins grande de la gêne due au bruit des avions fréquentant cet aéroport.*” (AdP, 1965, 76). This shows that, as at Heathrow, the goal of the noise policy for CdG was never to solve the noise problem, but to reduce noise annoyance.

Until 1996, there was no management framework to reduce noise systematically, but there was a noise index, called the Psophic Index (PI). The PI expressed noise in NPdB, which was the common aeronautical approach to indicating noise in those days, following the American index and approach (Barraqué, 2003; Interview Air France, 2007; Interview DGAC, 2007c; Interview ENPC, 2007).

The PI was used for noise contours, first established in 1977, which indicated the first planning measures (Interview AdP, 2007b). The planning was regulated in a Noise Exposure Plan (*Plan d'Exposition au Bruit*, PEB), which identified noise-affected

areas surrounding the airport. The zones took the airport's potential for development into account, such as for example future traffic growth. Based upon such predictions, the PEB imposed appropriate ground occupation restrictions, intending to protect planned housing in areas that were likely to become exposed to aircraft noise.

Besides the planning measures, compensating measures were also in place. In 1994, DGAC launched a programme for the insulation of houses, called the Noise Disturbance Plan (*Plan de Gêne Sonores*, PGS). This plan also defined zones, but these zones indicated the amount of financial compensation for house insulation. The PGS is evaluated annually based on the actual noise made during that year (Interview AdP, 2007a; Interview DGAC, 2007b; Interview IAURIF, 2007). In addition, since 1993, the community around CdG has been involved in the Environmental Consultation Committee (*Commission Consultative de l'environnement*, CCE), which was established to consult the public.

The next section gives an overview of developments in the policy process for the system of management, the management framework and the measures. The policy goal is not taken into account, because it has not changed since 1965.

6.5.2 The policy process from 1996 onwards

In 1996, the environment chart was published, which initiated the development of a management framework to reduce noise levels. After the announcement that CdG would expand with two additional runways, the community living around CdG organised protests (Interview ENPC, 2007). In order to meet the civilian complaints, the government introduced the environmental chart, which, among other things, aimed to ensure that even with the two new runways, the noise produced by CdG would be comparable to the 1997 noise levels.

Consequently, in 1997 the management framework was put in place to limit the noise. Developed by DGAC in cooperation with AdP, it was called the Global Noise Index (*Indicateur global mesuré ponderé*, IGMP). The IGMP fixed the aircraft noise produced at CdG at 100% in 1997 (DGTREN, 2004; Air France, 2005) and from that time onwards, annual noise emissions had to remain below this level. The 100% limit was predominantly monitored with calculations based on certification data from the ICAO. Furthermore, NPdB was used as noise indicator, because this unit came closest to the unit of noise that was generally used in certification data (Interview AdP, 2007b; Interview DGAC, 2007c).

When DGAC and AdP developed the IGMP, they learnt from VTC in two ways. First, during a meeting of the ACI (in theoretical terms: vertical VTC), a Dutch governmental employee convinced a colleague from AdP that a management framework around CdG similar to AAS's physical noise contour cap would run into trouble (In-

terview AdP, 2007b). AdP and DGAC took heed and decided against a physical noise contour cap (Interview AdP, 2007b; Interview DGAC, 2007c). Second, during meetings of the ICAO and CEAP, the decreasing trend in noise contours was discussed. In the meetings it was argued that because planes would become quieter, noise contours would not increase even with an increase in air traffic. From this, DGAC picked up the idea of establishing a management framework based on the idea of noise contours, i.e. the noise contour was set at 100%, but not with a physical component, as AAS had (Interview AdP, 2007b; Interview DGAC, 2007c).

The local community experienced difficulties in understanding the system of management. It believed the IGMP was too 'bureaucratic' and 'technocratic' (Interview ADVOCNAR, 2007). Local associations did not favour the indication of noise in terms of mathematical calculations, because in their opinion it did not properly reflect their perception. Communication between DGAC and local residents therefore remained difficult (DGTREN, 2004; Interview ADVOCNAR, 2007; Interview DGAC, 2007a).

In 2003, the government formulated an environmental package (see also Cordeau and Moulinié, 2003), which contained particularly interesting aspects here concerning operational measures and the system of management. The package was formulated because, after the introduction of the third runway and the realisation of the environmental chart, the construction of a fourth runway was contested. During this period, the option of a third airport (besides CdG and Orly) was discussed. The Minister of Transport later decided not to build a third airport (Interview Air France, 2007; Interview DGAC, 2007a; Interview ENPC, 2007; Interview IAURIF, 2007).

Looking at the operational measures in the environmental package, DGAC ensured compliance with flight paths by establishing the Environmental Protection Volume (*Volume de Protection Environnementale*, VPE). The VPE defined corridors close to the airport to make the area immediately around CdG quieter. In 2002, due to air traffic delays, the flight paths were adjusted; the new routes went over the heads of less residents than before (Interview Air France, 2007; Interview DGAC, 2007b).

Another operational measure, the CDA, is important in the light of policy-oriented learning from VTC. The CDA is not currently practiced at CdG. All those involved in the CdG policy were aware of this noise-diminishing operational measure: local communities and associations, mainly through ARC and by attending international conferences (Interview Air France, 2007; Interview IAURIF, 2007), as well as the responsible parties Air France and DGAC through various international networks, such as ICAO and Eurocontrol (Interview Air France, 2007; Interview DGAC, 2007c). Local communities sometimes suggested the use of the CDA, but DGAC argued that it would be technically impossible to carry out the CDA approach at CdG

in the context of recent regulation. In particular, in the light of how DGAC navigated air traffic at the time, with a two-dimensional way of guiding airlines rather than the three-dimensional approach required for a CDA (Interview Air France, 2007; Interview DGAC, 2007a).

Furthermore, there was a twofold revision within the system of management in the environmental package of noise abatement decisions of 2003. First, the IGMP was given a more stringent reference point: instead of the noise levels in 1997, the new IGMP should not exceed the quieter noise average of 1999, 2000 and 2001 (Air France, 2005; Interview AdP, 2007b; Interview DGAC, 2007c). More interesting here, however, is the change from monitoring the noise limits, primarily by calculations based on certification data, to mainly measurements with the help of monitors (for more technical information on this formula, see DGTREN, 2004, p 31). The government made this change in order to provide a more transparent policy for the public (Air France, 2005; Interview AdP, 2007a; Interview DGAC, 2007c). Although the communities favoured more transparency, they did not ask for this change specifically. Local residents still judged the policy to be too bureaucratic and technical, but nevertheless, the changes in the system of management were accepted (Interview AdP, 2007a; Interview ADVOCNAR, 2007; Interview Air France, 2007). Apart from providing transparency for the local residents, the changes were conform international recommendations from ICAO, which had called for more transparency.

The change to measurements resulted in a change from NPdB to dB(A): measurements were expressed in L_{Amax}, which made use of dB(A) (see section 6.2). Furthermore, the change to measurements was parallel to a change in the index: from IP to L_{den} (AdP, 2005), which was prescribed for noise mapping in the END (EC, 2002a)

The most recent development in terms of policy-oriented learning from VTC concerns the index. ACNUSA proposed to use the NA65 in addition to the L_{den} index to decide on which houses would receive financial compensation for noise insulation. The number 65 coincides with the zone that receives financial compensation: houses affected by noise over the 65 L_{den} zone receive financial compensation. However, some houses are affected by levels of over 65 L_{den}, although they originally fall outside the noise contours. These houses are located at the place where aircraft turn to make their way to the airport, and have to use extra power not to drop several meters (Interview ACNUSA, 2007). Then, the noise level increases to above 65 L_{den}. The NA65 additional noise index was based on the N-70 index used in Sydney, which ACNUSA learnt about during several international conferences, in theoretical terms unorganised horizontal VTC (Interview ACNUSA, 2007, ACNUSA *pers. com.*, 2008).

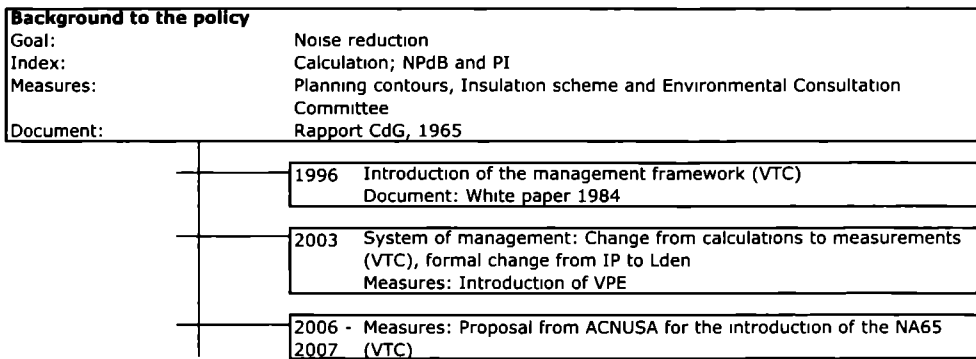


Figure 6.3: Developments in the noise policy for CdG, including documents and policy-oriented learning from VTC

6.5.3 Interpretive analysis

This section analyses how domestic institutional factors affected policy-oriented learning from VTC. As with the two previous cases, first the instances of policy-oriented learning from VTC are summarised (Fig. 6.3), followed by a few observations on learning, the type of knowledge and VTC, and this section closes with the identification of domestic patterns of policy-oriented learning from VTC (Table 6.9).

In the development of the management framework, two fundamental learning processes from VTC can be discerned. First, during a meeting of the ACI, Dutch employees assured colleagues from AdP that the use of a physical noise contour cap would probably lead to problems. The second instance of fundamental learning was initiated by hard knowledge. Through several ICAO and CEAP meetings it was learnt that noise contours would keep decreasing despite increases in air traffic. This inspired DGAC to develop a management framework that was based on the idea of noise contours.

The case study also showed evidence for corrective policy-oriented learning from VTC. In 2003, DGAC changed the monitoring of noise standards from calculations to measurements in order to create a more transparent policy for the local community. Although the local community had called for more transparency, this change was not the local community's idea but DGAC's. In addition to this domestic reason, the change ran parallel to the trend towards transparency in international networks such as ICAO.

Future policy-oriented learning from VTC may occur with the proposal by ACNUSA to use the NA65 index to adjust insulation procedures. This index was inspired by an Australian example, the N-70 index, used in Sydney, which ACNUSA

learnt about through various international conferences. In theoretical terms this is corrective learning through unorganised horizontal VTC.

Core issue Element Management framework	Type of knowledge	Learning process	VTC	Domestic patterns
(Introduction)	Hard knowledge	Fundamental learning	Vertical VTC (CEAP)	Learning actor: DGAC National government responsible for developing the system of management
(Introduction)	Soft knowledge	Fundamental Negative learning (negative)	Vertical VTC (ACI)	Learning actor: AdP National government responsible for developing the system of management
System of management (transparency)	Hard knowledge	Confirmation	Vertical VTC (ICAO)	Learning actor: DGAC National government responsible for developing and maintaining the system of management
Measures (NA65)	Hard knowledge	* Possible corrective learning	Unorganised horizontal VTC	Learning actor: ACNUSA Governmental actor involved in the policy-making process

Table 6.9: (* Possible) policy-oriented learning from VTC and the role of domestic factors in the noise abatement policy for CdG in accordance with the core issues

In terms of the relationship between VTC and policy-oriented learning, Table 6.9 shows that all policy-oriented learning from VTC was initiated by vertical VTC. The one initiative to introduce knowledge gained in unorganised VTC is still under debate. Furthermore, corrective learning was initiated by hard knowledge from VTC. From the two fundamental policy-oriented learning processes, one resulted from soft knowledge regarding AAS's physical noise contour cap, and one resulted from hard knowledge concerning the decrease in noise controls.

Finally, all policy-oriented learning from VTC followed the same pattern domestically: policy-oriented learning from VTC was initiated by central government employees, i.e. AdP or DGAC. The current debate on knowledge gained from VTC is also proposed by a central governmental authority. This pattern is underlined by the fact that local communities and associations advocated the introduction of the CDA, but the part of the DGAC that is responsible for air traffic management considered it unfeasible for CdG and blocked this bottom-up learning from VTC. In other words, because this knowledge gained through VTC was not introduced by the central government, it did not lead to learning from VTC. Section 6.7 looks at this process in more detail.

6.6 Ferihegy Airport

Budapest Airport, also called Ferihegy, is the smallest airport of the four described cases; a 'mere' nine million passengers passed through Ferihegy in 2007. The growth in traffic did not start until 2003 (Gordijn *et al.*, 2006); consequently, noise has only recently become a serious problem, and Ferihegy has dealt less intensively with noise than the three previously described airports. However, precisely as a result of the belated policy formulation, the case shows evidence for quite a few instances of learning from VTC.

Until 2005, the airport was owned by the state; after December 2005, airport operator Budapest Airport (BAirp) was privatised. Since then, BAirp has been responsible for the noise policy around Ferihegy in cooperation with HungaroControl, which has responsibility for air traffic management (Table 6.10). The major airline at Ferihegy, Malév, does not actively participate in the policy-making process. Furthermore, from the government, the Ministry of Economy and Transport (*Gazdasági és Közlekedési Minisztérium*, GKM) formulates the legislative framework for the noise abatement policy. The KVVM is involved in setting general limit values for noise. The National Transport Authority (*Nemzeti Közlekedési Hatóság*, NKH) is responsible for monitoring the implementation of the regulation. Finally, local authorities initially only approved the noise zones, but since 2004 there is a Noise Protection Committee, which discusses noise issues with the local community every three or four months. Recently, interest organisations have started to be increasingly included in the noise abatement policy.

Actors (2007)	Organisation (English name)	Organisation (Hungarian name)	Abbreviation	Task
Government	Ministry of Economy and Transport	<i>Gazdasági és Közlekedési Minisztérium</i>	GKM	Formulating the policy
Government	Ministry of Environment and Water	<i>Környezetvédelmi és Vízügyi Minisztérium,</i>	KVVM	Assisting in formulating the policy
Private actor (aviation sector)	HungaroControl (national Air Traffic Service)	<i>HungaroControl</i>	N.A.	Air traffic service
Private actor (aviation sector)	Budapest Airport	<i>Budapest Airport</i>	BAirp	Airport operator
Research institute	National Transport Authority	<i>Nemzeti Közlekedési Hatóság</i>	NKH	Governmental Research Institute
Local Authorities		<i>For example Vecsés</i>	N.A.	Implementation planning measures
Interest organisations		<i>For example Légtér Egyesület</i>	N.A.	Environment. Interest group

Table 6.10: Key organisations involved in the noise abatement policy for Ferihegy Airport

Before the first legislation was introduced in 1997, there had been no policy of noise abatement, but the government – then still responsible for noise around Ferihegy – had introduced two noise abatement measures. First, in 1982, the government planned to build a second runway, in the process of which the NKH formulated the first noise contours. These contours were set in Leq, using dB(A), following the standards of the Soviet Union (NKH *pers. com.*, 2007). The noise zones created by the contours implied an absence of official planning restrictions; however, building authorities had to be notified. Second, just before the second runway was planned, in other words prior to 1982, the municipality of Vecsés had built new housing close to the projected runway (Interview Local Council, 2007). The government acknowledged the undesirable situation and launched a noise insulation project for the inhabitants of Vecsés (Interview HungaroControl, 2007). The introduction of these two measures was followed by a quiet period in terms of noise measures (Interview GKM, 2007).

Apart from these two measures, there were no previous policy decisions to influence the policy later on. Therefore, no background information regarding previous policy decisions is necessary, and section 6.6.1 describes the noise abatement policy process since 1997, when the first legislation on noise around airports came into force. Section 6.6.2 gives an interpretation of policy-oriented learning from VTC.

6.6.1 The policy process

In 1997, the GKM formulated the first national regulation on noise around airports, based upon the environmental law of 1995. This regulation introduced two noise abatement measures that are important in the light of this study.

The first concerned a compensating measure, and was based upon knowledge from VTC. While finalising the legislation, employees of GKM visited Zurich and Munich Airports, in theoretical terms: unorganised horizontal VTC. During these visits, the employees learnt that Munich had established a Noise Committee to consult the public and that this committee had proven useful for the relationship between the community and the airport in Munich. As a result, GKM decided to introduce a Noise Protection Committee, in other words a compensating measure, for Budapest Airport (Interview GKM, 2007).

Second, the 1997 regulation stated that new noise contours had to be established to replace those of 1982. These 1997 zones, introduced planning restrictions according to the different zones (Government of the Republic of Hungary, 1997a; 1997b), and had to be approved by local authorities before they could become official. In 1998 the NKH developed noise contours, again in Leq and dB(A), and asked the local authorities for approval. However, the local community appealed against the zones, arguing they should receive more financial compensation for insulation (Interview BAirp, 2007; Interview Local Council, 2007). In addition, local residents had difficulty understanding the index (Interview Local Council, 2007; Interview NKH, 2007) and considered the planning restrictions too strict (Interview KVVM, 2007). The legal procedures deriving from the appeals put the process of contours in an impasse and prevented the government from taking further measures, such as the intended planning measures or insulation programmes.

In 2005, this impasse concerning the zones was broken, as a result of one national development and one process of VTC. Nationally, noise annoyance around Ferihegy had become a political issue. Because traffic had grown by around 10% each year since 2003, noise emissions and complaints had increased. Interest organisations emphasised this issue during local elections, which encouraged the national government to place aircraft noise on the agenda (Interview KVVM, 2007; Interview Local

Council, 2007). As a result, the Noise Protection Committee, which had been envisaged by the legislation in 1997, was eventually implemented in 2004.

The second push to break the impasse was initiated by knowledge from VTC. When the airport was privatised, the Hungarian state sold 75% of Budapest Airport to BAA. BAA, as the new owner of Ferihegy, noticed that the airport noise policy was less developed than that of most other international airports. In line with its corporate responsibility, BAA formulated a noise policy (Budapest Airport, 2006; Interview BAirp, 2007).

In this context, new noise contours were created, using noise experts from the UK, (Budapest Airport, 2007). Restarting the creation of noise contours was not the only proposal BAA made. Two more proposals are important here, which were the result of a lengthy consultation process and based upon BAA's experiences. For the operational measures, the CDA was proposed, based upon the NATS experience (Budapest Airport, 2006; 2007; www.bud.hu, accessed November 2007). Second, a first tentative step was made towards a management framework to limit noise, with BAA starting discussions on the introduction of noise limits for individual aircraft, similar to the Heathrow system of management (Budapest Airport, 2006; www.bud.hu, accessed November 2007, see 6.4).

BAA sold BAirp to the German Hochtief in June 2007, and the new management proceeded with the noise policy initiated by BAA. The new owner thought that, after a period of debate, it was time for action and implementation (Interview BAirp, 2007). In line with this thinking, Hochtief finalised the noise contours, which are currently awaiting approval by NHK and the local municipalities. Once these are approved, an insulation programme is ready to be implemented. This noise insulation programme is inspired by the voluntary noise insulation scheme in Hamburg, for example with respect to the geographical extent to which houses should be entitled to insulation (Interview BAirp, 2007). Hochtief owns Hamburg Airport as well, facilitating an exchange of experiences .

The status of the other proposals, however, i.e. the discussion on a management framework and the CDA, remains somehow unclear at the time of writing. The discussion seems to have cooled down and is given less priority (Interview BAirp, 2007; Interview GKM, 2007; Interview HungaroControl, 2007; Interview NKH, 2007).

During all this time, only one or two GKM employees who were part of international networks went to ICAO meetings. The main reasons why GKM or KVVM staff could not attend such meetings more frequently were budgetary and time constraints (Interview GKM, 2007; Interview KVVM, 2007).

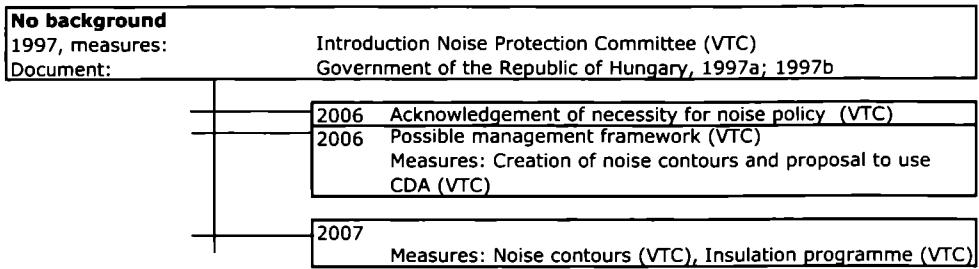


Figure 6.4: The noise abatement policy process for Ferihegy, including documents and policy-oriented learning from VTC

6.6.1 Interpretive analysis

This section analyses policy-oriented learning from VTC and the influence of domestic institutional factors on these processes (Fig. 6.4). First a summary of policy-oriented learning from VTC is given (Table 6.11), followed by some observations upon policy-oriented learning and VTC. This section closes with a description of domestic patterns of policy-oriented learning from VTC.

The noise abatement policy for Ferihegy showed the first signs of learning from VTC in 1997, when the GKM learnt from its visit to Munich Airport – in theoretical terms: called unorganised horizontal VTC – about the positive effects of a Noise Protection Committee, and introduced such a committee for Budapest in the legislation.

In 2006, BAA bought BAirp and observed that Ferihegy had an under-developed noise abatement policy. This observation, made through unorganised horizontal VTC, stimulated BAA to review noise issues at Ferihegy. Consequently, there are a few cases in which knowledge from VTC is currently under debate. First, both BAA and Hochtief worked on noise contours by transferring their own experiences, in other words: knowledge from unorganised horizontal VTC. Furthermore, BAA’s proposal to introduce a management framework to limit noise of single departure and arrival flights by introducing the CDA was based upon its own experiences at Heathrow. Finally, Hochtief formulated a noise insulation scheme that was based upon experiences with Hamburg Airport and its voluntary insulation scheme.

Core issue (Element)	Type of knowledge	Learning process	VTC	Domestic patterns
Measures (Noise protection Committee)	Hard knowledge	Corrective learning	Unorganised horizontal VTC	Learning actor: BAirp GKM responsible for the policy: no other actors involved.
(Initiation) Management framework (Arriving and departing flights)	Soft knowledge	* Possible fundamental learning	Unorganised horizontal VTC	Learning actor: BAirp BAirp responsible for the policy
(Initiation) Measures (CDA)	Hard knowledge	* Possible corrective learning	Unorganised horizontal VTC	Learning actor: BAirp BAirp responsible for the policy
(Noise contours)	Hard knowledge	* Possible corrective learning	Unorganised horizontal VTC	Learning actor: BAirp, local authorities BAirp responsible for the policy: friction with local authorities
(Noise insulation)	Hard knowledge	* Possible corrective learning	Unorganised Horizontal VTC	Learning actor: BAirp BAirp responsible for the policy

Table 6.11: (* Possible) policy-oriented learning from VTC and the role of domestic factors in the noise abatement policy for Ferihegy in accordance with the core issues

Table 6.11 shows that all learning processes were initiated by unorganised horizontal VTC. Furthermore, – not surprisingly seeing the previous three cases – hard knowledge led to corrective learning and soft knowledge led to fundamental learning. Finally, most policy-oriented learning seems to have taken place with regard to the measures, but most of them are not finalised at the time of writing.

Two different patterns of policy-oriented learning from VTC can be distinguished. First, all instances of learning were initiated by BAirp: the Noise Protection Committee (BAirp was still owned by GKM at the time), the CDA, the management framework and the noise insulation scheme. However, one instance of learning from VTC was blocked by local authorities. This situation creates the second pattern: it

turned out that learning from VTC stagnated in the development of the noise contours, which contained knowledge from VTC, because it had to be approved by the local authorities, which they did not.

6.7 Conclusions

The previous sections answered the case study's research question, *which aspects of the policy showed evidence for policy oriented learning from VTC and how do domestic institutional factors play a role in these learning processes?* for the noise abatement policy around AAS, Heathrow, CdG and Ferihegy. This section puts learning from VTC in the four cases in the light of the third and fourth research questions: *How do the three settings of VTC, the two different kinds of knowledge and fundamental and corrective learning relate empirically?* and *What influence do different domestic policy-making processes and knowledge use have on these processes?* Because a similar exercise was carried out in section 5.7.3, reference is made to the case on contaminated land where the patterns in the contaminated-land policy and the airport noise abatement policy s overlap.

Table 6.12 summarises policy-oriented learning from VTC in order to help answer the research questions. The asterisk indicates policy-oriented learning from VTC that is still under debate. Section 6.7.1 analyses the columns of Table 6.12, dealing with the relationship between VTC and policy-oriented learning. Thus, it addresses the third research question. Section 6.7.2 answers the fourth research question, dealing with the role of the policy-making process and knowledge use in the four case studies individually. The four case studies are presented in the columns of Table 6.12. Finally, section 6.7.3 analyses and compares the different policy-making process and types of knowledge use to describe how these domestic institutional factors hampered and stimulated policy-oriented learning from VTC in the case of airport noise abatement.

6.7.1 VTC, type of knowledge and policy-oriented learning

As said, this section deals with the third research question: *How do the three settings of VTC, the two different kinds of knowledge and fundamental and corrective learning relate empirically?* To address this question, important aspects of the relationship between VTC, the type of knowledge (the object) and policy-oriented learning in the airport noise abatement policies are highlighted.

Recapitulating the observations made in the interpretive analyses of the four case studies, Table 6.12 again shows, similar to the case studies of policies on contaminated land, that hard knowledge mainly led (four times) or may lead (seven times) to corrective learning from VTC. Soft knowledge mainly led (three times) to fundamental

Case study	Hard knowledge (Index of measures)	Soft knowledge (management framework)	Unorganised Horizontal VTC	Organised Horizontal VTC	Vertical VTC
The Netherlands (AAS)	(2007) *Possible corrective learning, system of management (measurements)	(2007) *Possible fundamental learning, management framework (no physical cap)	Benchmark		
	(2007) *Possible corrective learning, measures (CDA)				ICAO, Eurocontrol, IATA
England (Heathrow)	(1980) Corrective learning, system of management (index)				ISO
	(1980) Corrective learning system of management (index)				ISO and WHO
		(2003) Fundamental learning, management framework (cap)	Visits and literature		ICAO and ECAC
	(2007) *Possible corrective learning, system of management (N-70)		Conferences	ARC	
	(2007) *Possible corrective learning, measures (insulation, etc.)		Benchmark	ANNA	

Case study	Hard knowledge (Index of measures)	Soft knowledge (management framework)	Unorganised Horizontal VTC	Organised Horizontal VTC	Vertical VTC
France (CdG)	(1996) Fundamental learning, management framework ('100%')	(1996) Fundamental learning, management framework ('100%')			ICAO
	(2003) Corrective learning, system of management (measurements)				ACI
	(2007) *Possible corrective learning, system of management (NA65)		Conferences etc.	ARC	ICAO
Hungary (Ferihegy)	(1997) Corrective learning, Measures (committee)		Visits		
		(2006/ 2007) *Possibly fundamental learning, management framework (individual flights)	Transfer BAirp		
	(2007) *Possible Corrective learning, measures (CDA)		Transfer BAirp		
	(2007) *Possible Corrective learning, measures (planning, noise contours)		Transfer BAirp		
	(2007) *Possible Corrective learning, measures (insulation)		Transfer BAirp		

Table 6.12: (*Possible) learning elements from knowledge gathered in VTC for the noise abatement policy for airports per country in chronological order

learning. Interestingly, hard knowledge was twice taken into account, resulting in fundamental learning: in the case of AAS, the management framework may be altered if hard knowledge regarding the monitoring of noise at Heathrow is taken into account. In France, hard knowledge regarding the continued decrease in noise contours led to policy-oriented learning in the management framework.

With regard to policy-oriented learning from VTC, learning concerning the system of management and turned out to be different to that for the measures. The management framework and the system of management together showed evidence of seven occasions of learning from VTC, while for the measures there was only one instance of policy-oriented learning from VTC. The case studies demonstrated that it was difficult to learn from foreign measures. More specifically, it appeared to be tricky to separate foreign measures from their national contexts and to apply them in the domestic context. For example, at the time of writing the CDA is under discussion for AAS, but it is argued that the CDA as defined for Heathrow is not yet applicable to the Dutch system.

Nevertheless, Ferihegy showed quite a few possible instances of policy-oriented learning from VTC for the measures. This can be explained by the fact that BAA and Hochtief have introduced it by transferring knowledge for the measures from another airport to Ferihegy. These actors initiated a particular measure, which they had carried out in another country before, rendering national contextual factors less confusing and constraining.

Looking at the settings of VTC, especially vertical VTC is interesting here, because it was only marginally represented in the contaminated-land policy. Table 6.12 shows that vertical VTC was in place before horizontal VTC. As early as in the 1980s, vertical VTC influenced the English policy-making process, while the first learning occasion from horizontal VTC was in 1997 in the Hungarian policy-making process. More specifically, the international networks ARC and ANNA (organised horizontal VTC) were established respectively in 1994 and 2005, and BAA and AAS have recently created benchmarks (unorganised horizontal VTC). Furthermore, compared to horizontal VTC, vertical VTC led to both corrective and fundamental learning, while the two settings for horizontal VTC led mainly to corrective learning. Looking more specifically at the issues that were discussed, vertical VTC led to fundamental and corrective learning regarding the system of management and the management framework. The two settings for horizontal VTC stimulated mainly corrective learning concerning the measures.

The three abovementioned observations, i.e. the late appearance of horizontal VTC, the difference between vertical and horizontal VTC concerning the issues discussed, and consequently policy-oriented learning, may be explained by the fact that in

vertical VTC, knowledge for airport noise abatement policies was not discussed in a satisfactorily detailed way. After all, mainly knowledge on the system of management and the management framework was shared, but not knowledge concerning noise abatement measures. The aim of the international networks was to provide economic or political platforms and noise was a marginal issue. It turned out that networks, with either a political or economic aim or both, seemed to have constrained learning from VTC. In a political context, such as ICAO (CEAP) and the ECAC (ANCAT), member states were hesitant to discuss national strategies and perspectives on noise openly. In economically oriented international organisations, such as ACI, knowledge sharing takes place in a competitive context, which puts constraints on private actors to lay bare their strategies and problems. Consequently, international networks were established benchmarks were created (both horizontal VTC) to gather knowledge on strategies and problems; such knowledge was not satisfactorily shared in the already existing vertical VTC.

This provides additional insight into why the Ferihegy case showed evidence for a fair amount of (possible) policy-oriented learning from VTC for measures, whereas the other three airports did so to a lesser extent. The foreign experiences were transferred by the owners of BAirp, who used knowledge from the other international airports they own. This knowledge transfer did not involve competitive pressure; although it ran via market relations, there was no possible political or economic disadvantage.

6.7.2 The role of domestic institutional factors

In order to answer the fourth research question: *What influence do different domestic policy-making processes and knowledge use have on these learning processes?*, this section examines whether and if so how policy-making processes and knowledge use affected policy-oriented learning from VTC in each of the four airports individually. Subsequently, section 6.7.3 compares and analyses the policy-making processes and the types of knowledge use to describe similarities and differences in how domestic institutional factors affected learning from VTC in the airport noise abatement policies.

AAS

Various actors were involved in the AAS policy-making process, and all of them participated in international networks or international organisations. For vertical VTC, KLM was a member of and participated in IATA; LVNL in Eurocontrol; and AAS in ACI. V&W was a member of ICAO and ECAC; and interest groups were members of UECNA. Furthermore, looking at organised horizontal VTC, the relevant municipalities and provinces participated in organised horizontal VTC through the ARC, and

universities and research institutes participated in ANNA. Finally, all actors participated in unorganised VTC: national and regional government representatives paid occasional visits to other airports, and AAS, national government and some regional authorities created benchmarks. All participated in international conferences. Knowledge from VTC, then, was widely distributed among participants.

In spite of this widespread knowledge distribution, policy-oriented learning from VTC in the noise abatement policy for AAS has not taken place so far. The interpretive analysis of the AAS case study (section 6.3.3) identified one national pattern that constrained learning from VTC: actors were aware of knowledge from VTC, but did not discuss it. As is outlined below, this pattern typically reflects the corporatist policy-making process and enlightened knowledge use (Table 6.13).

Element	Domestic patterns of policy-oriented learning from VTC	Conceptual clarification
*(2007) Management framework (no physical cap) or system of management (measurements)	Learning actor: Aviation sector, Ministry of V&W No discussion of internationally gained knowledge Highly technical nature of the policy	Corporatist policy-making process Enlightened knowledge use
*(2007) Measure CDA	Learning actor: KLM, LVNL No discussion of internationally gained knowledge Highly technical nature of the policy (negative)	

Table 6.13: Domestic patterns of possible (*) policy-oriented learning regarding the AAS noise abatement policy, in chronological order

In corporatist policy making processes, a limited number of actors is involved with shared resources and there is a consensus-seeking policy-making style. In section 6.3, we saw that in the policy-making process for the noise abatement policy for AAS a stable group of participants was involved: the aviation sector (AAS, KLM, LVNL), central government (V&W), experts (NLR, MNP) and local and regional authorities (Municipalities of Haarlemmermeer and Amsterdam). Sometimes, interest organisations (SNM, Milieudefensie) were included. Although the aviation sector and central government possessed most of the resources, instead of these being shared, all par-

ticipants were aiming for consensus, trying to find a balance between the different interests. As such, the policy-making process can be considered corporatist.

The Dutch pattern of policy-oriented learning from VTC, the fact that participants were aware of knowledge from VTC but did not discuss it, reflects a corporatist policy-making process, particularly a policy-making style that aims for consensus. In the national negotiations, the participants tried to find consensus and were focussed upon the different national interests. In this process, national actors positioned themselves strategically, either opposing or bonding with others in order to maximise their interests. For example, having similar interests, KLM, LVNL and AAS, together with V&W, more or less cooperated; on the other hand, citizens' and environmental interest groups placed themselves opposite the aviation sector. The regional and local authorities, having less explicitly defined interests, positioned themselves somewhere in between the two opposites. In this strategic game, actors had knowledge from VTC: not only did they participate in VTC, certain actors, such as AAS, the central government and the regional government, also made – or had consultancies make – a benchmark. However, rather than sharing this knowledge, they kept it to themselves in order to use it strategically in the negotiations, to underpin their arguments.

Furthermore, the incidents of non-learning reflect an enlightened type of knowledge use, in which there is divergence between scientists and policy makers, and scientists dominate. The noise policy at AAS was highly technical, being the brainchild of scientists in the 1960s, and most policy makers did not fully understand it. This situation is nicely summarised in the frequently mentioned but quite exaggerated statement that “not even the boss of AAS actually understood the policy”. Although most actors had knowledge from VTC, they did not introduce it, due to extensive confusion about the policy, and there has so far been no policy-oriented learning from VTC.

Heathrow

In the noise abatement policy for Heathrow, many actors were involved in the national policy-making process, and each of them participated in VTC. The CAA and the DfT were members of ICAO and ECAC; the CAA and contract experts such as universities and consultancies were involved in ISO and WHO. BAA was a member of ACI, BA of IATA, NATS of Eurocontrol, and some interest groups of UECNA. In addition, AEF had observer status in ICAO and ECAC: all vertical VTC. As regards organised horizontal VTC, local authorities and some interests groups were involved in the ARC, and BAA and some universities also participated in ANNA. Finally, all actors participated in unorganised horizontal VTC, either through international conferences or by creating benchmarks.

The policy process for noise abatement around Heathrow showed evidence of quite a few instances of (possible) policy-oriented learning from VTC. The interpretive analysis of the Heathrow case study (section 6.4.3) identified two domestic patterns behind this learning. (Table 6.14) First, the CAA, collaborating with either contract experts or national government, initiated policy-oriented learning from VTC. Second, interest groups and local authorities pushed for possible learning, which is being debated at the time of writing. These patterns reflect a liberal-pluralist policy-making process and engineering or a technocratic type of knowledge use.

Element	Domestic patterns of policy-oriented learning from VTC:	Conceptual clarification
(1980) system of management Index	Learning actors: DfT, CAA and contractors While initially not considered subject to change, it was eventually changed to be in line with other international airports	Liberal-pluralistic policy-making process Engineering knowledge use
(1980-1990) system of management Index	Learning actors: CAA, contractors Knowledge resides with CAA and contractors	
(2003) Management framework Cap	Learning actors: CAA, contractors Knowledge resides with CAA and contractors	
*(2007) System of management N-70 Index	Learning actors: interest organisations and communities Pressure from an informed local community	Liberal-pluralistic policy-making process Technocratic knowledge use
*(2007) Measures (insulation, etc)	Learning actor: BAA BAA in charge of the measures	

Table 6.14: Domestic patterns of (*possible) policy-oriented learning from VTC in the noise abatement policy for Heathrow, in chronological order

In a liberal-pluralist policy-making process, there are many participants with more or less equally divided resources and a competitive policy-making style. In the case of Heathrow, apart from local authorities and interest groups, consultancies and contract experts also had their say in the policy-making process. There were over fifty participants in the consultation process, and all competed to be heard.

The first pattern, the initiation of policy-oriented learning from VTC by the CAA, its contract experts and the DfT reflects this liberal-pluralist process. The CAA was in charge of the index study, including experts employed on a temporary basis. These experts actively participated in international institutions, and brought in knowledge from VTC. Why the contract experts and other actors were well informed is related to the competitive policy-making style: all want to be heard in the policy-making process, all have more or less equal amounts of resources and all try to distinguish themselves from the other competitors. Being well informed is a key strategy in this type of policy-making process.

In addition, the fact that policy-oriented learning from VTC was predominantly initiated by the CAA reflects a shift from an engineering type of knowledge use, in which there is convergence between science and politics and the latter dominates the process, to a technocratic type of knowledge use, in which policy makers and scientist also communicate well, but scientists dominate. Before the 1980s, the DfT did not want to change the index, as was suggested by the CAA. The main argument against it was not that the index was not considered suitable, but rather that changing the index might raise public distrust in science, and thus in the policy. Policy makers therefore did not allow the index to change. However, when it became clear that the old NNI index was out of line with the indices used at most other airports, the policy makers eventually decided to change it. The index which was introduced then was internationally and technically considered the most suitable. From then on, as we will see below, the policy increasingly contained more technical details, the scientists were put in charge and the type of knowledge use turned to technocratic.

Reflecting this technocratic type of knowledge use, the CAA initiated most policy-oriented learning from VTC. The change of index was widely discussed with different participants, including interest organisations, experts, the aviation sector etc, but it was the CAA that eventually decided to change it. Although these actors were consulted, the policy was based on technical knowledge, and the CAA was the best informed participant. Therefore, the final decisions both on the system of management concerning the index (corrective learning) and on the management framework (fundamental learning) were dominated by the CAA.

Interestingly, the second pattern, that interest groups and local authorities pushed for learning from VTC, also reflects the liberal-pluralist policy-making process and the technocratic type of knowledge use. Environmental interest groups and local authorities had a more or less equal amount of resources and access to the policy-making process. In addition, most of them participated in VTC. As such, they were able to actively introduce knowledge from VTC into the discussion. For example, the N-70 index is currently under discussion, and BAA is revising the measure to reduce the

noise. In line with the technocratic type of knowledge use, interest groups and local authorities understood the system of management to such an extent that they were able to propose how to use technical knowledge from VTC. As a result, they pushed for the additional index, the N-70 (corrective learning). It will be interesting to see if this bottom-up VTC through interest organisations leads to policy-oriented learning from VTC.

The reason why technocratic knowledge use and the liberal-pluralist policy-making process first reflected the dominance of the CAA and contract experts, and later on the pro-active attitude of interest organisations and local authorities, is increased organised horizontal VTC, such as through the ARC, and the increasing amount of conferences in which interest organisations and local authorities participated. In the 1980s, international networks for interest organisations and local authorities did not exist, so they had few possibilities to be brought up to date with foreign experiences.

Charles de Gaulle

In the noise abatement policy process for CdG, the relevant central government department (DGAC) was responsible for the regulation and participated in most international organisations, i.e. in vertical VTC. DGAC was not only a member of ICAO and ECAC; the department dealing with air traffic was also a member of Eurocontrol and the department dealing with airport management was, together with AdP a member of ICA. Air France was a member of IATA, and ADVOCNAR of UECNA. Furthermore, the regional government participated in organised horizontal VTC, the ARC. ACNUSA mainly gathered information through unorganised horizontal VTC and all participants visited conferences.

The noise abatement policy for CdG showed most evidence of policy-oriented learning from VTC with regard to the system of management; one measure is currently under discussion. The interpretive analysis of CdG (section 6.4.3) identified one domestic pattern of learning from VTC: the instances of learning were all initiated by central government. This pattern reflects the etatist policy-making process and technocratic knowledge use (Table 6.15).

Element	Domestic patterns of policy-oriented learning from VTC:	Conceptual clarification
(1996) Management Framework	Learning actor: DGAC National government responsible for developing and maintaining the system of management	Etatist policy-making process Technocratic knowledge use
(1996) Management framework	Learning actor: AdP National government responsible for developing and maintaining the system of management;	
(2003) System of management Transparency	Learning actor: DGAC National government responsible for developing and maintaining the system of management;	
*(2007) System of management Index: NA65	Learning actor: ACNUSA Governmental actor involved in the policy-making process	

Table 6.15: Domestic patterns of (*possible) policy-oriented learning from VTC in the noise abatement policy for CdG, in chronological order

In etatist policy-making processes, the national government is the dominant player in the policy-making process and controls most resources. The noise abatement policy for CdG took place in such a setting: the French civil aviation authority (DGAC) controlled most resources by largely owning the airport, formulating the regulation, managing air traffic and operating the airport. The other participants, i.e. the regional governments (département of Val d’Oise) and interest groups (ADVOCNAR), did not control many resources to exert influence on the policy process. Furthermore, the central government imposed the policy on the other national actors, such as regional and local authorities.

As such, the pattern of policy-oriented learning from VTC reflects an etatist policy-making process. DGAC was internationally well informed and, together with AdP, introduced knowledge from VTC in the management framework (fundamental learning) and changed the system of management from calculation to monitoring (corrective learning). The last change was made in order to create a more transparent policy, although there had been no specific request for this. In addition, although local and regional government, interest groups and regional research institutes participated in VTC, they had not much opportunity to initiate learning from VTC.

Furthermore, the pattern of policy-oriented learning from VTC reflects technocratic knowledge use, i.e. convergence between scientists and policy makers, with the former dominating. The scientists (AdP in this case), gathered technical knowledge to formulate a management framework. This knowledge was quickly absorbed in the policy, because policy makers and scientists communicated well.

The combination of an etatist policy-making process and technocratic knowledge use created the motivation to actively search for knowledge from VTC. Because interest groups, regional and local authorities and research institutes were only marginally involved in the creation of the policy, the central government could not discuss the system of management or management framework at a national level. In order to have some input and legitimacy, DGAC and AdP were encouraged to gather knowledge internationally. In other words, due to a lack of national discussion, the necessary information was being sought across the borders.

However, although the case of CdG has shown that an etatist policy-making process with technocratic knowledge use stimulated policy-oriented learning from VTC, it should be noted that this was only in as far as the government could use it. Knowledge that was not looked for by the government could just as easily be ignored. An example is the rejection to implement the CDA: although local communities proposed its use, the central government did not consider it achievable, and it had the power to reject it (no bottom-up learning).

Ferihegy

The noise abatement policy for Ferihegy has only recently become a political issue. In this case, only one or two central government employees from the Ministry of Water and Transport (GKM), participated in ICAO, making the GKM the only actor to participate occasionally in vertical VTC. After the privatisation in 2005, BAirp also participated in vertical VTC, i.e. the ACI, and HungaroControl went to several Euro-control meetings. In addition, BAirp gathered knowledge through unorganised horizontal VTC. Local communities were not involved in any setting for VTC, including international conferences.

As a result of the belated start, the noise abatement policy for Ferihegy showed substantial evidence of policy-oriented learning from VTC, but only regarding the measures (corrective learning). The interpretive analysis of Ferihegy (section 6.6.2) identified two national patterns of learning: first, most instances of learning from VTC were initiated by BAirp; second, learning from VTC stagnated in the development of the noise contours. As is outlined below, these two patterns reflect an etatist policy-making process and bureaucratic knowledge use (Table 6.16).

Element	Domestic patterns of policy-oriented learning from VTC:	Conceptual clarification
(1997) Measures Noise protection Committee	Learning actor: BAirp GKM responsible for the policy: no other actors involved.	Etatist policy-making process (with the dominating actor being a private actor after the privatisation in December 2005)
*(2006/ 2007) (Initiation) Management framework	Learning actor: BAirp BAirp responsible for the policy	
*(2006) Measures Noise contours	Learning actor: BAirp BAirp responsible for the policy: friction with local authorities	Bureaucratic knowledge
*(2007) Measures Noise insulation	Learning actor: BAirp BAirp responsible for the policy	

Table 6.16: Domestic patterns of (*possible) policy-oriented learning from VTC in the noise abatement policy for Ferihegy, in chronological order

As we have seen in the case of CdG, in etatist policy-making processes, one actor, usually the central government, dominates the policy development, controlling most of the resources. The process of creating a noise abatement policy for Ferihegy was etatist. Until 2005 the GKM owned Ferihegy (BAirp) and was also responsible for the operation of the airport, for air traffic services, for the airlines and for the regulation. However, there was one aspect of the policy-making process that is not typical for an etatist policy-making process: since 1997, the responsibility to approve noise contours has resided with local authorities.

Interestingly, after the privatisation in 2005, there was still one actor dominating the policy-making process; it was no longer central government, however, but a private actor. The responsibility for the noise abatement policy remained in the hands of BAirp, including most policy resources. As such, there was still a policy-making process in which one actor dominated, but the dominating actor was now a private actor instead of the central government. Although local communities have recently begun to be consulted, they still have no resources to influence the policy process, apart from the power to approve or reject the noise contours.

The first pattern, that most instances of policy-oriented learning from VTC were initiated by BAirp, reflects the dominant player in the policy-making process. First the GKM (as the owner of BAirp), and from December 2005 the private actors owned BAirp and initiated knowledge from VTC in the policy. It was BAirp that introduced

the noise protection committee and proposed a management framework, the CDA, and a noise insulation scheme. Because other national actors had no influence on these processes, there was no opposition and the knowledge was easily introduced.

The second pattern, that the policy stagnated in the development of the noise contours, emphasises the one non-etatist aspect in the policy-making process, and reflects the bureaucratic type of knowledge use, in which there is divergence between policy makers and scientists, while policy makers dominate the process. Since 1997, the local authorities had had the responsibility for approving the noise contours. As such, local authorities had some resources to influence the policy. Because they did not understand the noise contours, however, they did not approve these, and policy-oriented learning from VTC was blocked.

6.7.3 The role of domestic institutional factors: a comparative analysis

This section compares the different policy-making processes and types of knowledge used, to analyse how these domestic institutional factors stimulated and hampered policy-oriented learning from VTC. This way, the fourth research question is answered: *What influence do different domestic policy-making processes and knowledge use have on these learning processes?* Because the same exercise was carried out in the previous chapter on the contaminated-land policy, identifying comparable patterns, the observations here frequently refer to those in Chapter 5. The different policy-making processes in the airport noise abatement policies are discussed, followed by the typology of the type of knowledge use. Both analyses end with some brief comments regarding corrective and fundamental learning.

The policy-making process

In the previous section we saw that the participants in VTC in the three different policy-making processes were similar (except the case of Ferihegy): Interest organisations were members of UECNA; the regional participants who host the international airports participated in ARC; the central governments were members of ICAO and ECAC; and in each case, representatives from the aviation sector, airlines, airport operators and air traffic services, were members of IATA, ACI or Eurocontrol respectively.

In spite of the similarities in terms of participation in the international context, policy-oriented learning from VTC turned out to be initiated differently. Table 6.17 summarises how the policy-making processes, divided into regulatory structure and policy-making style, affected learning from VTC in the airport noise abatement policies. As is explained below, the different patterns considerably overlap with the patterns that were identified in section 5.7.3.

Policy-making process	Style		Regulatory structure	
	... constraining learning from VTC	... stimulating learning from VTC	... constraining learning from VTC	... stimulating learning from VTC
Liberal-pluralist	N.A.	Competitive style looking for the best informed expert	N.A.	Many actors involved with equal access to the resources
Etatist	No discussion with national actors: no bottom-up learning	Imposing knowledge from VTC	Other actors no resources: no bottom-up learning	Few actors formulate the policy: search for legitimacy across borders
Corporatist	Actors focussed on finding a compromise and use knowledge from VTC strategically	N.A.	N.A.	Actors participate in VTC and have access to the policy-making process

Table 6.17: How different policy making processes affected policy-oriented learning from VTC in the airport noise abatement policies

Similar to findings in the case study on contaminated land, this case study also showed that the regulatory structure of the liberal-pluralist policy-making process, with a relatively large number of participants nationally and in VTC, stimulated policy-oriented learning from VTC. Learning was introduced via different channels: national and local governments, interest organisations, the aviation sector and experts. For example, in the English policy, the CAA, AEF, SASIG, BAA, DfT and universities learnt in a corrective way from hard knowledge concerning the system of management and the measures; the CAA and DfT learnt fundamentally through VTC. Furthermore, this case study emphasised that the competitive policy-making style stimulated learning from VTC, because the participants competed to be heard and one of the ways to distinguish themselves was by being well informed through VTC.

In etatist policy-making processes, the central government predominantly initiated policy-oriented learning from VTC, as other national players had few resources to influence the policy-making process. This pattern also overlapped with policy-oriented learning patterns in etatist policy-making processes identified in section 5.7.3. Similarly, the present policy area recognised, on the one hand, that policy-oriented learning

in a bottom-up fashion was hampered; DGAC and AdP did not introduce the CDA, although interest groups asked for it. On the other hand, a small group of people seemed to stimulate to the gathering of knowledge from VTC to help legitimise the policy. For example, in the French case, DGAC and AdP introduced the management framework based upon knowledge from VTC. In addition, this case study also demonstrated stimulation of policy-oriented learning from VTC as a result of the authoritative style. For example, DGAC changed the system of management from monitoring based upon calculations to measurements in order to make the policy more transparent for the national actors.

Finally, although this policy area showed little evidence for policy-oriented learning in corporatist policy-making processes, the case study of AAS did reaffirm the constraining effect of the consensus-seeking style identified in section 5.7.3: as the main target of the negotiations was to reach consensus, participants were mainly focussed on their own interests. Rather than to openly discuss knowledge from VTC, they used it to strengthen their positions. In the Netherlands, for example, in the negotiations on the management framework (fundamental learning), the aviation sector and V&W introduced knowledge from VTC, which strengthened their argument to change the management framework. Furthermore, this case study reaffirmed that in corporatist policy-making processes, no incentive existed to search for knowledge from VTC, similar to that in the etatist or liberal-pluralist policy-making processes: because there was discussion at the national level, knowledge from VTC was less necessary. Furthermore, because resources were shared amongst participants who were looking for a balance in the different interests, knowledge from VTC was not actively used, the way it was in a more competitive policy-making style.

With reference to corrective and fundamental learning, the process of fundamental policy-oriented learning was comparable across the three different policy-making processes – central government was always involved: in the etatist policy-making processes in France, DGAC and AdP showed evidence for fundamental learning when it established the management framework based upon knowledge from VTC. For Heathrow, representing the liberal-pluralist policy-making process, it was the DfT and the CAA who initiated a change in the management framework. In the Dutch corporatist process, AAS and V&W initiated the debate to revise the framework.

By contrast, corrective policy-oriented learning reflected the different policy-making processes: in liberal-pluralist policy-making processes, the CAA, BAA, contract experts, interest groups and local authorities underwent learning; in etatist policy-making processes the dominant actor learnt from VTC regarding the measures and the system of management. The corporatist processes have so far not shown evidence

for corrective learning from VTC, but the debate about knowledge gained in VTC is led by a limited number of actors, such as KLM, LVNL, AAS and V&W.

These patterns overlap with the patterns identified in section 5.7.3, and so does the explanation for the difference in fundamental and corrective learning: in all policy-making processes, the central government or the competent private actor was responsible for fundamental learning, in this case formulating the management framework. Furthermore, in most policy processes any discussion on the management framework was absent, because it is a very complex issue. For example, in France and the UK there had been no discussion on the management framework. The Netherlands has an exceptional position, because the content of the management framework was under discussion there. Still the issue is too complex for most national actors to discuss it in depth. For corrective learning, in contrast, several actors were involved: for example, the CDA was developed by Air Traffic Services and airlines, and advocated by local authorities and environment interest groups. In addition, several experts were involved in the creation of the noise contours, and in the issues surrounding the system of management.

The fact that there was no evidence for learning from VTC in the corporatist policy-making process at the time of writing is not only a result of the consensus-seeking style. It is further explained by the knowledge use: the AAS case demonstrated that knowledge from VTC was not taken into account because of a lack of knowledge on foreign systems of management. Instead, extensive confusion about the policy formed the bottleneck. This is elaborated in detail below.

Knowledge use

Table 6.18 shows how the different types of knowledge use affected policy-oriented learning from VTC, using both hard and soft knowledge. Below it is analysed how a technocratic type of knowledge use stimulated learning from VTC, and how a bureaucratic type of and an enlightened type of knowledge use constrained learning from VTC. The analysis is then linked to fundamental and corrective learning. Again, the results of this case study show great overlap with the results on processes of knowledge use in chapter 5.

Knowledge use...	... constraining learning from VTC	... stimulating learning from VTC
Engineering (Convergence, society dominates)	If knowledge from VTC was not in line with the opinion of policy makers, no learning took place	Knowledge was introduced when it coincides with the view of policy makers
Technocratic (Convergence, science dominates)	N.A.	Technical knowledge was introduced because scientists and policy makers agreed and policy makers had an overview of the policy
Bureaucratic (Divergence, society dominates)	Knowledge on the system of management could not be introduced by scientists; policy makers did not fully understand it	N.A.
Enlightened (Divergence, science dominates)	Misunderstanding and confusion about the policy	N.A.

Table 6.18: How knowledge use affected policy-oriented learning from VTC in the airport noise abatement policies

In a technocratic type of knowledge use, such as the policy-making process for Ferihegy and CdG, there is convergence between scientists and policymakers, with a dominant role for the former. Similar to the case on contaminated land, both scientists and policy makers introduced knowledge from VTC; policy makers because they had a comprehensive overview of the policy, and scientists because they had the same view as the policy makers. For example, in the Heathrow case, BAA may introduce an insulation scheme based upon knowledge from VTC (corrective learning), and at CdG, AdP (scientists) developed the management framework (fundamental learning) in cooperation with DGAC.

By contrast, in policy developments with a bureaucratic type of knowledge use (represented by Ferihegy), policymakers dominated the process and had difficulties understanding the knowledge introduced by scientists. As was also identified in section 5.7.3, policy processes with such knowledge use showed that whereas scientists wanted to introduce knowledge from VTC, policy makers blocked it. An example from this case study is the Hungarian noise contours, created with knowledge from VTC, which were not approved by local authorities because they did not completely understand them.

The engineering type of knowledge use, represented by the Heathrow case, represents convergence between scientists and policy makers, with the latter dominating. The case on contaminated land has dealt more extensively with this way of knowledge use, but the patterns identified here underline those identified in the previous case study. It was shown that learning from scientists was possible only when it was in line with the view of policy makers. For example, although the NNI had been criticised for quite some time, the index was reviewed and allowed to change to be in line with other national airports indices only when policy makers decided to do so.

Finally, the enlightened type of knowledge use, i.e. divergence between policy makers and scientists with a dominant role for science, was only seen in the AAS case; the policy processes on contaminated land did not include this knowledge use either. It turned out that this knowledge use constrained learning from VTC for both policy makers and scientists. The present policy was too complicated to initiate any change, because the confusion about the policy among most actors constrained any change. For example, in the AAS case, the policy makers had knowledge from VTC but did not completely understand how to introduce this knowledge. Also, technical details rarely changed, because the AAS situation was considered to be unique.

In the case studies, fundamental learning only appeared in policy-making processes with a technocratic type of knowledge use, while in policy developments with a bureaucratic, engineering or enlightened knowledge use, fundamental learning was not represented, although it can be case-specific. As in section 5.7, in this case too, there was no clear visible pattern of corrective learning. In policy processes with a technocratic knowledge use, both policy makers and scientists learnt in a corrective way with regard to the measures and the system of management. In the engineering knowledge use, first policy makers hampered scientists to learn in a corrective way, but later on both policy makers and scientists initiated knowledge from VTC. Finally, no corrective learning could be observed in the enlightened type of knowledge use.

CHAPTER 7

CONCLUSIONS AND BEYOND: POLICY-ORIENTED LEARNING FROM VTC AND DOMESTIC INSTITUTIONAL FACTORS

The two previous chapters have given a detailed description and analysis of the empirical relationship between VTC and policy-oriented learning. They examined how domestic institutional factors affected policy-oriented learning from VTC in contaminated-land policies and airport noise abatement policies. This chapter addresses the final research question: *How do VTC and policy-oriented learning relate, and how do domestic institutional factors affect these learning processes?* To that end, section 7.1 summarises the empirical results presented in Chapters 5 and 6. Section 7.2 addresses some unexplained aspects of the empirical analyses, followed by the identification of additional concepts in section 7.3. Section 7.4 clarifies the unexplained aspects with the help of the additional identified concepts. Finally, section 7.5 offers recommendations for further research and briefly touches upon policy recommendations.

7.1 Policy-oriented learning, VTC and domestic institutional factors: a summary of the conclusions

This section brings together the empirical conclusions drawn in sections 5.7 and 6.7. As a reminder, Figure 7.1 repeats the analytical relationship between VTC, policy-oriented learning and domestic institutional factors introduced in Chapters 2 and 3. Section 7.1.1 reiterates patterns in the relationship between VTC and policy-oriented learning by summarising the empirical results, and section 7.1.2 repeats how domestic institutional factors facilitated policy-oriented learning from VTC.

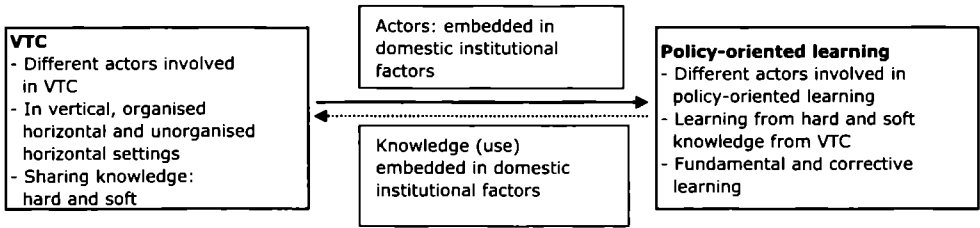


Figure 7.1: The analytical relationship between VTC and policy-oriented learning, adapted from Fig. 3.2

7.1.1 The relationship between VTC and policy-oriented learning

The relationship between policy-oriented learning and VTC was made explicit by dividing knowledge (the object of VTC and policy-oriented learning) in hard and soft knowledge, by dividing VTC in vertical VTC, organised horizontal VTC and unorganised horizontal VTC, and by dividing policy-oriented learning in corrective and fundamental learning. The previous two chapters showed that these concepts refer to the following empirical linkages.

In vertical VTC, referring to the presence of an international organisation in VTC, formal membership was limited to particular kinds of actors. For example, airlines are members of IATA, and national governments are members of ICAO. Besides this formal membership, vertical VTC offered the possibility for other actors to participate, by providing an observer status. This way, some actors outside the formal members group were able to participate in vertical VTC as well. It must be noted, however, that none of the observers initiated knowledge gained through VTC in this manner.

Furthermore, the case study on airport noise abatement policies demonstrated that vertical VTC stimulated both corrective and fundamental learning. Moreover, in vertical VTC, it was mainly hard knowledge regarding the system of management that was discussed, such as the use of dB(A) or NPdB. Sometimes soft knowledge concerning the management framework was shared, for example the physical noise contour cap of AAS. In contrast, knowledge about noise abatement measures was rarely shared.

In order to explain why it was mainly knowledge on the system of management that was shared in international organisations, it is important to note the difference in processes of knowledge sharing on the system of management and the measures. The case studies demonstrated that it was more difficult to share knowledge on policy measures than on the system of management. This difference can not be explained by the conceptual framework: both regard hard knowledge. However, in the case studies

it became clear, empirically, that in order to discuss the measures, an explanation of the national context is required. Policy measures appeared to be strongly embedded in the national context, such as a specific legal framework or specific circumstances, while the system of management was not. To outline how a measure works, understanding of such national aspects is required. This empirical observation will be further dealt with in section 7.2 and below.

Taking this empirical observation into account, the presence of an international organisation turned out to be decisive for the subject of knowledge sharing. International organisations aim to stimulate economic development and/or deal with political issues, and in such a context it is not strategic to give away your expertise, problems and position. A political or competitive context therefore tends to constrain actors to discuss national strategies and problems openly, and tends to hinder policy-oriented learning regarding noise abatement measures. Because for the discussion of the measures an explanation of the national context is required, these issues were less easily discussed. It appeared to be more common to discuss knowledge concerning the system of management, because it is not strongly embedded in the national context and as such does not require revealing much of the national context.

Turning to organised horizontal VTC (international networks without the presence of an international organisation), knowledge about the system of management, as well as knowledge about the measures and the policy goal were discussed. In addition, both corrective and fundamental learning derived from this setting for VTC. Organised horizontal VTC was mainly organised thematically, for example the discussions on the risk assessment in CARACAS in the case of contaminated land, or the discussion of non-acoustic factors in ANNA in the case of noise abatement. By organising international networks according to specific themes without political or economic agendas, actors were able to have frank discussions about national problems and strategies, and they did not have to be wary of possible consequences and risks.

As far organised horizontal VTC is concerned, its participants varied. Sometimes the international networks were restricted to policy makers and research institutes, explicitly not inviting interest organisations and companies to avoid lobbying processes. Such a selected group of actors and the exclusion of lobby groups enhanced a confidential atmosphere, which stimulated open knowledge sharing. However, sometimes a diffuse set of actors, from research institutes to private and/or governmental actors, participated. In these more open international networks, knowledge was also exchanged freely, not because of the limited number of actors, but as a result of the absence of a political or economic agenda.

Three types of unorganised horizontal VTC were identified: reciprocal visits by representatives from national authorities, literature or benchmarks, and public-private

relations. The case studies underlined that most actors, i.e. policy makers, private actors and research institutes, did indeed learn through unorganised horizontal VTC. More specifically, policy makers and research institutes did so mainly by visiting foreign counterparts, while private actors created benchmarks to gain knowledge from VTC. One reason for this benchmarking could be the competition among the private actors. For example AAS may be reluctant to provide the airport operators of Heathrow or Frankfurt with knowledge about their strategies.

In addition, the knowledge shared in unorganised horizontal VTC predominantly concerned the measures and the policy goal, regardless in which form unorganised horizontal VTC was taking place. As outlined above, bilateral contacts were established in a way that minimised political or economic consequences, and as a result, knowledge exchange took place freely, facilitating policy-oriented learning concerning goals and measures. Both fundamental and corrective learning derived from unorganised horizontal VTC.

A final observation regarding the settings of VTC is that organised horizontal VTC tends to gradually replace unorganised VTC over time. Once a policy item became more institutionalised, such as the issue of contaminated land at the end of the 1990s, international networks (organised horizontal VTC) were created, and bilateral contacts became less essential. This replacement of unorganised horizontal VTC by organised horizontal VTC had little or no consequences for the type of knowledge that was discussed: the measures and the policy goal, which were dominant topics in unorganised horizontal VTC, were also discussed in organised horizontal VTC.

Having examined the different settings for VTC, it is time to look at the relationship of VTC with policy-oriented learning. Firstly, it was argued that in theory, hard and soft knowledge could each lead to corrective and fundamental learning. The case studies, however, clearly demonstrated a predominantly one-to-one connection between hard knowledge from VTC and corrective learning on the one hand and soft knowledge from VTC and fundamental learning on the other. Only in exceptional cases did hard knowledge lead to fundamental learning, but as these appeared only two or three times, it is difficult to draw any conclusions.

Secondly, fundamental learning occurred less frequently than corrective learning. This is not so surprising because corrective learning has less far-reaching consequences: rather than changing it, it corrects the policy. In addition, corrective learning was visible in both the measures and the system of management in both case studies. Fundamental learning was visible in either the policy goal or the management framework in the issues of contaminated land or airport noise abatement. However, the case studies contained either the management framework or the policy goal, but not both, while the measures and the system of management were both presented in the two

case studies. Therefore, a case study that would have contained both the policy goal and the management framework, might have shown smaller differences in occurrences of corrective and fundamental learning, although this is not demonstrated in this study.

Thirdly, and most interestingly, looking in more detail at corrective policy-oriented learning from VTC, learning with regard to measures occurred less frequently than concerning the system of management. As we saw above, knowledge about measures was more difficult to share, because of the necessity to provide contextual factors. Consequently, learning about measures occurred less. However, there is more to it than that. The case studies also showed that policy-oriented learning about measures *per se* was more difficult. For learning with regard to the system of management, certain models were used or adjusted to use in the national context, while for the measures, positive aspects had to be separated from a foreign national context before they could be applied to the national situation. For example in Hungary, the Dutch ABC values were used for a certain period of time, while the implementation of the CDA proved difficult in different countries, because it had to be adjusted to the national context. Instead of deriving positive aspects from foreign measures and adjusting them to the national context, it was more common, when dealing with policy measures, to decide not to do it like that – here called negative learning. This difference between learning with regard to the measures and the system of management was not included in the contextual framework, and will be taken up in section 7.2 and further.

Looking specifically at the relation between VTC and policy-oriented learning, no pattern was recognised regarding the settings for VTC and the discussion of a particular kind of knowledge (hard or soft). Moreover, a connection between the settings for VTC and fundamental and/or corrective learning could not be identified. These unidentified issues too are revisited in section 7.2 and further.

7.1.2 How domestic institutional factors affect policy-oriented learning from VTC

This section summarises the common empirical findings in Chapters 5 and 6 regarding how domestic institutional factors affected policy-oriented learning from VTC. Although section 6.7.3 highlighted considerable overlap in the patterns of how domestic institutional factors affect policy-oriented learning from VTC in the contaminated-land policy and the noise abatement policy, the patterns are repeated here to provide a complete overview of the results. First, a summary of how knowledge use affected policy-oriented learning from VTC is given, followed by how policy-making processes affect these processes. Finally, the interdigitation of the policy-making process and knowledge use is outlined.

Knowledge use

The case studies that reflected a technocratic type of knowledge use – meaning that there is convergence between scientists and policy makers – showed that both scientists and policy makers learnt from VTC, in both a corrective and a fundamental way. Scientists could initiate knowledge from VTC (hard and soft) because policy makers agreed to this, and policy makers were able to learn from VTC because they had a comprehensive view of the policy.

The case studies representing a bureaucratic type of knowledge use – i.e. divergence between policy makers and scientists, with the policy process dominated by policy makers – demonstrated no fundamental learning from VTC, although the possibility of this occurring in other policy areas should not be ruled out. With regard to corrective learning, it was seen that the policy makers, the dominant actors, introduced hard knowledge from VTC, while scientists were in a much less favourable position to do so. Because policy makers did generally not understand the hard knowledge initiated by scientists, they often hampered policy-oriented learning from VTC. An example is the policy process for Ferihegy, in which the noise contours, which included knowledge from VTC, were developed by BAirp (the scientists in this example) but have still not been approved by the policy makers (the local authorities).

The only case study representing an enlightened type of knowledge use – divergence between policy makers and scientists with a predominance of science – showed no evidence for learning from VTC at all. In the case of the noise abatement policy around AAS, policy makers were informed about knowledge from VTC, but did not initiate policy-oriented learning because they did not know how to include it. Scientists, in turn, dominated the process but turned out to be too tied to the technical aspects of the policy: the confusion about the policy among most actors constrained the scientists from changing the policy.

Finally, case studies reflecting an engineering model – convergence between policy makers and scientists, with the former dominating the process – showed that both policy makers and scientists learnt from VTC, fundamentally and correctively. Although both learnt from VTC, however, scientists were only able to initiate their new-found knowledge if it fitted with the view of the policy makers. In other words, scientists only initiated knowledge gained through VTC when policy makers allowed them to do so. As a result, knowledge from VTC was mainly used as a reference. An example is the change in index in the noise abatement policy at Heathrow, which had been proposed by scientists before, but which policy makers only allowed when it was in line with their perspective.

The case studies, then, clearly demonstrated who is involved in policy-oriented learning from VTC in the light of the different types of knowledge use. However,

when the focus shifts to fundamental and corrective learning, no general pattern could be recognised. A technocratic type of knowledge use allowed both policy makers and scientists to learn in a corrective and fundamental way from hard and soft knowledge. Furthermore, in a bureaucratic type of knowledge use, there was no fundamental learning, but looking at corrective learning, policy makers initiated such learning from VTC, while scientists were effectively prevented from doing so. Finally, the cases reflecting an engineering type of knowledge use demonstrated that policy makers referred to knowledge from VTC introduced by scientists when learning correctively or fundamentally, as long as it coincided with their view. This unclear situation is discussed in further detail from section 7.2 onwards.

The policy-making process

Looking at the policy-making processes, the case studies also showed similar patterns. Here, the findings are briefly repeated and a connection is made with fundamental and corrective learning.

The case studies with an etatist policy-making process demonstrated that the central government, which controls most of the resources and imposes the policy on the other national actors, initiated both fundamental and corrective learning from VTC. Such a policy-making process both hampered and stimulated policy-oriented learning from VTC. On the one hand, because a broad national discussion on policy decisions was not common, the small group of actors who formulated the policy was stimulated to gain knowledge from VTC to legitimise decisions. On the other hand, policy-oriented learning from VTC was hampered because the central government could easily ignore requests from local authorities, private actors or interest organisations to introduce knowledge from VTC: these actors had little or no resources to influence the policy. Thus, no learning from VTC initiated by actors representing the wider society, called bottom-up learning from VTC, was introduced in etatist policy-making processes.

The cases with a liberal-pluralist policy-making process revealed favourable circumstances for policy-oriented learning from VTC; many actors participated, not only in the national policy process, but also in VTC. Because of a relatively even spread of resources and the open access to the policy-making process, actors had the opportunity to learn from VTC. In addition, the competitive style stimulated such learning, because actors made an effort to distinguish themselves from their competitors by ensuring they were up to date with what happened elsewhere. As a result, knowledge from VTC was scattered among participants, which increased the possibility that someone would introduce it in the policy-making process. As such, corrective learning was initiated by the government, experts, scientists, consultancies and interest organi-

sations alike. Fundamental learning was mainly initiated by the government, or the competent private actor, in combination with a research institute.

The corporatist processes, only represented in the Dutch cases, had favourable conditions for policy-oriented learning from VTC: the different actors involved in the national policy-making process also participated in VTC. In addition, these actors had the access to resources to influence the policy-making process. However, in contrast to the liberal-pluralist policy-making processes, there was little competition between the actors, since resources were shared rather than equally divided, and the competitive incentive to gather knowledge from VTC was missing. At the same time, however, the case studies demonstrated that the consensus-seeking style got in the way of policy-oriented learning from VTC. Because consensus had to be reached, those involved were focussed on the different national interests rather than on what knowledge could be gained through VTC. Furthermore, to further their own interests, they used knowledge strategically rather than sharing it openly. As a result of the consensus-seeking style and national deliberation, there was no urge to search for knowledge through VTC, as was done in etatist processes.

To summarise, the policy-making processes affected who was involved in policy-oriented learning from VTC. Furthermore, looking at fundamental and corrective learning, a general pattern can be identified. It turned out that the different policy-making processes initiated fundamental policy-oriented learning in comparable ways: by central government or (in cooperation with) the formally responsible private actor (the 'competent actor'). Corrective learning reflected the differences in policy-making processes: in etatist policy-making processes, central government initiated corrective policy-oriented learning as a result of knowledge from VTC. In liberal-pluralist policy-making processes, corrective learning was initiated by central government, private actors, interest organisations and experts such as consultancies and universities. In corporatist policy-making processes, central government, research institutes and private actors all initiated policy-oriented learning from VTC.

An explanation for the difference in fundamental and corrective learning relates to who was competent for the issue under consideration, and the difficulty of the fundamental learning process. Regarding fundamental learning, in all policy-making processes, central government or the competent private actor was in charge of the formulation of the policy goal or the management framework. Whether other national actors supported the choice of the policy goal or management framework, or found it too complicated, they saw no possibility or need to get involved and use knowledge from VTC. Fundamental learning from VTC turned out to be a difficult process, because as the term suggests it changes the policy fundamentally, while corrective learning merely corrects it. In corrective policy-oriented learning processes, referring to the

measures and the system of management, more actors were therefore involved in formulating these aspects of the policy. In corporatist processes a limited number of actors was actively involved, and in liberal-pluralist processes a large number of actors, including consultancies and experts, formulated policy guidance. In etatist policy-making processes, however, it was only the central government that initiated change.

Interaction between policy-making process and the type of knowledge use

Having considered the policy-making processes and the types of knowledge use separately, it is interesting to see if, and if so, how the two interact. Table 7.1 shows the combination of knowledge use and policy-making process for the two issues under consideration, airport noise and contaminated land.

Policy-making process	Technocratic	Bureaucratic	Enlightened	Engineering	
Corporatist	N.A.	N.A.	Airport noise: The Netherlands	Contaminated land: The Netherlands	
Etatist	Contaminated land: France, Hungary, England, The Netherlands	Airport noise: France, Hungary	Airport noise: Hungary	N.A.	Contaminated land: France
Liberal-pluralist	Airport noise: England	Contaminated land: England	N.A.	Contaminated land: England Airport noise: England	

Table 7.1: Interaction between policy-making processes and types of knowledge use

At first sight, Table 7.1 displays a random pattern; however, a closer look shows that in most etatist policy-making processes the type of knowledge use was technocratic, whereas corporatist and liberal-pluralist policy-making processes display a more diverse range of types of knowledge use. Both observations are discussed in more detail below.

In a technocratic type of knowledge use, as we have seen, there is convergence between policy makers and scientists, while the process is dominated by scientists. Convergence between the two in etatist policy-making processes is not surprising,

since the policy is formulated by a small group of actors in such policy-making processes. Moreover, within this small group, policy makers and scientists are often closely linked or even the same people (as in the case of noise abatement around Charles de Gaulle). Furthermore, the primacy of science is equally unsurprising, because actors outside central government were not able to exert influence on the policy-making process due to a lack of resources and access to the policy-making process. Consequently, it was observed, the policy was legitimised among other things by knowledge from VTC.

This pattern is underlined by the two deviant cases in the etatist policy-making processes: the engineering type of knowledge use in the contaminated-land policy in France and bureaucratic knowledge use in the airport noise abatement policy in Hungary. First, the engineering knowledge use in France was a reaction to the difficulties in the previous policy (from 1996 to 2005), which had derived from technocratic knowledge use. The French contaminated-land policy had become too technical to work with; therefore, the policy is currently being revised by focussing on national experiences instead.

Second, in the noise abatement policy for Ferihegy, the local authorities did not fully understand how the noise contours had been developed by BAirp. Scientists and the authority responsible for the noise contours, here BAirp, wanted to introduce the noise contours, but because the local authorities had been made responsible for approving the noise contours, they could block the introduction. This situation reflects divergence between local policy makers (local authorities) and national policy makers and scientists (BAirp), and because the local authorities were able to block the decision, they dominated the policy process. This led to a bureaucratic style of knowledge use.

Such a situation is atypical for etatist policy-making processes: devolving responsibility to local authorities is not an etatist characteristic, because this gives actors outside central government access to resources to influence the policy. Although BAirp (providing the scientific knowledge and actually being the policy makers in this regard) formulated the contours – which in a pure etatist policy-making process would have led to a technocratic type of knowledge use –, the local authorities did not understand the zones and did not approve them. As resources were in the hands of the local authorities, bureaucratic knowledge use was applied instead.

The case of Ferihegy sheds light on the second observation based on Table 7.1: corporatist and liberal-pluralist policy-making processes utilise a more diverse range of types of knowledge use. In such processes, several actors had the resources to influence the policy-making process. Although policy makers from central government and those providing the scientific data were in agreement, it was entirely possible that

other national actors were not. As such, divergence as well as convergence between policy makers and scientists was visible in these policy-making processes. Furthermore, the opinions of several other national actors had to be taken into account as well, which often made policy makers the dominant players in the knowledge use.

In summary, the structure of etatist policy-making processes tended to lead to a technocratic type of knowledge use, while in corporatist and liberal-pluralist policy-making processes, a more diverse range of knowledge use was discerned. Distinguishing between policy makers, i.e. the ones who write the policy and are responsible for it, and other national actors who can exert influence on the policy, proved important in gaining insight into the interaction between policy-making processes and knowledge use. This is discussed in further detail in section 7.5.

7.2 Some unexplained aspects

Section 7.1 analysed the relationship between VTC and policy-oriented learning, and summarised patterns in how domestic institutional factors affected these processes. However, it became clear that there were still some unexplained aspects: three analytical patterns could not be detected, and two observations were empirically acknowledged, but so far cannot be explained by the conceptual framework. In order to further analyse the undetected analytical patterns, section 7.3 takes a closer look at the empirical observations to derive additional concepts. These concepts are expected to help clarify the analytical patterns. In section 7.4, the additional concepts are put to work to prove their added value for this research. But first, to create a clear picture of the puzzles to be solved, this section repeats and structures the analytical patterns that could not be established, and recalls the two empirical observations that could not be explained (Table 7.2).

<p>Unexplained analytical aspects</p> <ul style="list-style-type: none"> • Concerning the relationship between VTC and policy learning: <ul style="list-style-type: none"> • The particular type of knowledge (hard or soft) that was discussed in a particular setting for VTC seemed to be random • There was no clear pattern between the types of VTC and corrective or fundamental learning. • How domestic institutional factors affect policy-oriented the specific types of learning (corrective and fundamental learning).
<p>Unexplained empirical observations</p> <ul style="list-style-type: none"> • Knowledge sharing is more difficult for hard knowledge about the measures than for hard knowledge about the system of management • Corrective policy-oriented learning from VTC is more difficult for the measures than for the system of management

Table 7.2: Unexplained aspects

Both the relationship between VTC and policy-oriented learning, and how domestic institutional factors affect policy-oriented learning from VTC contain remaining analytical puzzles. Regarding the former, the particular type of knowledge (hard or soft) that was discussed in a particular setting for VTC seemed to be random. The case studies demonstrated that vertical VTC stimulated hard knowledge regarding the discussion on the system of management, and soft knowledge on the management framework. In contrast, unorganised horizontal VTC was largely occupied by sharing hard knowledge for the measures and soft knowledge for the policy goal. Finally, in organised horizontal VTC, it turned out that hard and soft knowledge were shared for each of the four policy issues. Which type of knowledge was specifically shared, depended on the theme of the organised horizontal VTC. In addition, there was no clear pattern between the types of VTC and corrective or fundamental learning: all three different settings of VTC led to both corrective and fundamental learning. Also the more or less one-to-one relationship between hard knowledge and corrective learning and soft knowledge and fundamental learning did not help to identify a pattern, because, as shown above, the type of knowledge that was shared in the settings for VTC was random.

With regard to the domestic institutional factors, the type of knowledge use and policy-making processes, it became clear who was involved in policy-oriented learning. However, for the types of knowledge use, no general patterns could be identified looking at fundamental or corrective learning, as was the case for the policy-making

processes. For this typology, it turned out that the different policy-making processes initiated fundamental policy-oriented learning in comparable ways: by central government or (in cooperation with) the competent actor, while for corrective learning, the pattern reflected the different policy-making processes.

Besides the remaining analytical patterns that could not be established, there were two empirical observations that could not be explained. The first addresses the different processes of knowledge sharing of the measures on the one hand and of the system of management on the other. The case studies demonstrated that knowledge regarding the system of management was shared more frequently than regarding the measures. There were more discussions on the system of management than there were on the measures. The second unexplained observation concerns the differences in learning processes for either the measures or the system of management. It turned out that policy-oriented learning from VTC was more difficult for the measures than it was for the system of management. As a result, evidence for learning with regard to the measures appeared less frequently than for the system of management.

Such differences were unexpected, since the measures and the system of management are both hard knowledge and concern corrective learning. However, these two observations seem to be addressing a comparable problem: both concern differences between measures and the system of management. In addition, seeing the more or less one-to-one relationship between the type of knowledge and the type of learning, there might be a link between the processes of knowledge sharing and learning regarding the measures on the one hand, and the system of management on the other hand. The next section takes a closer look at the two observations.

7.3 Some additional concepts

This section analyses in detail the two empirical observations that remained unexplained, in order to develop additional concepts that will shed light on hitherto missing analytical patterns of the analysis. The different ways of sharing knowledge concerning the measures and the system of management are addressed in section 7.3.1. Section 7.3.2 deals with the different processes of policy-oriented learning from VTC concerning the measures and the system of management.

7.3.1 Additional concepts on the types of knowledge

The case studies showed that hard knowledge for the system of management was more frequently shared than hard knowledge regarding the measures. Taking a closer look at both, the issues discussed for the system of management in the case of airport

noise abatement were whether to use dB(A) or NPdB, and whether noise standards were best controlled by predominantly measuring or by calculating. In the case of contaminated land, the discussions concerning the system of management revolved around risk assessment and whether to use generic or site-specific values. With regard to the measures, in the case of contaminated land the issue was funding, and in the case of airport noise the use of the CDA and NPR, experiences with planning measures and with compensation measures, such as noise insulation programmes and the inclusion of the community in noise protection commissions.

Although both the system of management and the measures regard hard knowledge, the issues discussed were of a different nature and reflected different kinds of knowledge. It is striking that knowledge for the measures was mainly experiential: the expression of specific situations. Measures are embedded in a national context, such as a specific legal framework or specific circumstances. To outline how a measure works, understanding of such national aspects is required. As mentioned before, discussing the measures was a complicated affair, because of their embeddedness in national contexts. For example, the experience the USA had with the Superfund in its policy for contaminated land was not copied in England, as it would not fit into the national tax system. In other words, the discussions were about *contextually phrased knowledge*. By contrast, the issues concerning the system of management were expressed in numbers, models, mathematics, such as the use of dB(A) or NPdB. It turned out that this knowledge on the system of management could be discussed safely, without touching much upon the national context. After all, one and one makes two in any national context. This type of discussion was clearer and the knowledge more easily shared, because the discussion was expressed in numbers rather than in contingent situations and experiences, expressed in words. As such, this type of knowledge may be called *mathematical knowledge*.

Although less obviously visible in the case studies, a similar distinction can be made within the soft knowledge, i.e. the policy goal or the management framework. On the one hand, there is the management framework, a technical framework for tackling the noise problem, dealing with such issues as whether a physical noise contour cap constituted an effective noise reduction strategy. A noise contour cap, as we have seen, is a technical concept, a tool for addressing policy issues, expressed in numbers and models. On the other hand, the discussions about the policy goal were about the perception or the discourse behind the policy, expressed in ideal situations and experiences. The distinction between these two core issues is comparable to that between the system of management and the measures: the management framework consists of mathematical discussions about models or concepts, while the policy goal is expressed in words and experiences.

This leads on to an additional distinction that will prove helpful, as it explains why hard knowledge for the system of management was more frequently shared than hard knowledge for the measures. Here it is important to distinguish discussions about *mathematical knowledge*, i.e. based on numbers and models (or to oversimplify it: one and one makes two discussions) from discussions about experiences, embedded in a national context and expressed in words. As such, the latter type of knowledge is *contextually phrased knowledge*. Rather than numbers, these discussions address either real or ideal situations. The combination of the concepts of hard and soft knowledge and *mathematical* and *contextually phrased knowledge* creates the following diagram (Fig. 7.2).

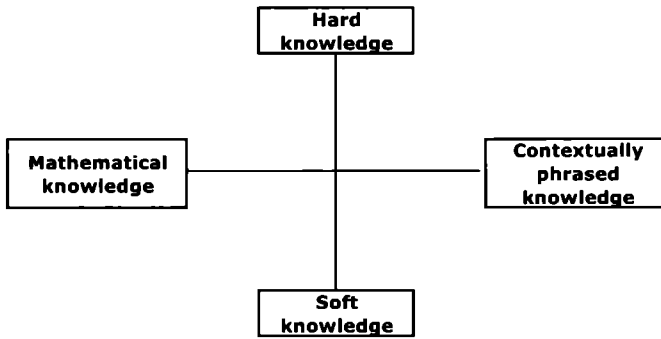


Figure 7.2: Conceptual distinction between mathematical and contextually phrased knowledge, in addition to hard and soft knowledge

Figure 7.2 visualises the distinction between mathematical and contextually phrased knowledge in addition to the distinction between hard and soft knowledge. The vertical axis represents hard knowledge, which is straightforward data, and soft knowledge, referring to concepts and ideas. As outlined in Chapter 3, there is a gliding scale between hard and soft knowledge; it is therefore presented as a continuum, with hard knowledge at one end and soft knowledge at the other. The horizontal axis, in turn, represents mathematical knowledge, dealing with numbers and models, and contextually phrased knowledge, dealing with situations or ideals expressed in words. Again, most policy issues do not consist purely of either mathematical or contextually phrased knowledge, but rather there is a gliding scale between the two. For example, the discussion on the dB(A) sits firmly on the mathematical knowledge side and the liability scheme is a clear example of contextually phrased knowledge, but the discussion on the CDA is on the one hand embedded in the national context and expressed in experiences, but on the other hand also contains technical issues, involving mathematical knowledge. Taking this into account, this matrix does not aim to label knowl-

edge as a certain type, but is rather a heuristic device that allows one to think more systematically about types of knowledge and consequently about processes in which knowledge is discussed.

Having made this additional distinction, four different types of knowledge can be identified. These types of knowledge are further explored below with the help of the core issues, i.e. the measures, the system of management, the policy goal and the management framework. These core issues can now be placed within Figure 7.3, which combines them with hard and soft knowledge and mathematical and contextually phrased knowledge.

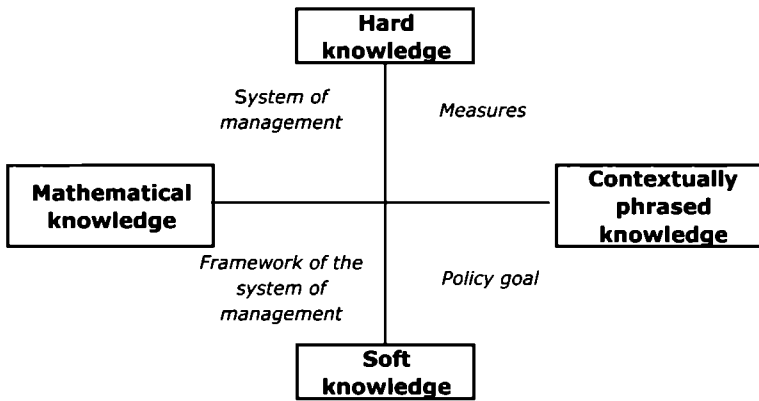


Figure 7.3: Conceptual distinction between mathematical and contextually phrased knowledge, in addition to that between hard and soft knowledge, including the four core issues

Hard mathematical knowledge on the one hand refers to straightforward facts and data (hard knowledge), and on the other hand to the use of models and numbers (mathematical knowledge). In this study, discussions on such knowledge are reflected in the system of management. Discussions revolving around hard mathematical knowledge are likely to focus on establishing ‘mathematical certainties’: there is either a ‘wrong’ or a ‘right’ answer. Furthermore, in this type of discussion, there will not or rarely be a need to share contextual factors. In the discussion on whether to use NPdB or dB(A), for example, before the 1980s, the NPdB was used in the UK, while in the course of the 1980s there was a shift towards dB(A). This shift in preferences was based upon improved technical research on this issue, concluding that dB(A) would be more mathematically suitable, and had nothing to do with any changing contextual factors.

Hard contextually phrased knowledge also refers to straightforward data (hard knowledge), but such knowledge is expressed in words instead of numbers (contextually

phrased knowledge). Such discussions are in this study represented by discussions on policy measures. Compared to the previous type of knowledge, the hard mathematical knowledge, hard contextually phrased knowledge tends to be more difficult to discuss, not only because the knowledge is expressed in words rather than in numbers but also because there are less certainties, referring to the 'mathematical certainties' when discussing hard knowledge expressed in words. Furthermore, discussions on hard contextually phrased knowledge (the measures) tend to be more sensitive than the previous type of knowledge: because the knowledge is embedded in the national context, participants have to outline aspects from their national contexts to clarify what they mean. National experiences, either problematic or successful, are essential in discussions on hard contextually phrased knowledge in order to enhance the understanding. Different case studies on contaminated land, for example, showed that in discussions on the measures, the details about liability schemes as such did not mean much. Rather, particular situations and experiences provided insight into why aspects of a particular liability scheme resulted in problems or successes. Besides, the difficulty with discussing knowledge in words rather than in numbers is particularly relevant in an international setting, because then participants have different languages to contend with on top of the inherent subjectivity of words, and there may be no specific translation for a concept.

Soft mathematical knowledge on the one hand refers to the discussion of models and numbers (mathematical knowledge), while on the other hand it deals with concepts and ideas (soft knowledge). As such, it reflects technical concepts and ideas that are expressed in numbers and models. Such a type of knowledge was in the case studies represented by the management framework. As with the first type of knowledge, the hard mathematical knowledge, discussions on this type of knowledge tend to revolve around numbers and models. However, whereas the first type of knowledge provides straightforward facts and data, the soft mathematical knowledge tends to be concerned with how to tackle a problem, providing the technical concept or the technical perspective on how to deal with the policy issue. For example, in the case studies there were different technical ways to deal with noise around airports. At Heathrow, noise abatement was dealt with by focussing on departing and arriving aircraft individually, while AAS worked with a noise contour cap. These two technical concepts provide the technical framework, in which mathematical knowledge is included.

Finally, there is *soft contextually phrased knowledge*, which refers to concepts and ideals, and which is expressed in words. Similar to discussions on hard, contextually phrased knowledge (the measures), soft contextually phrased knowledge consists of words and phrases. However, it refers to a concept of how to deal with a specific policy issue rather than with particular situations or experiences. In this regard, it is

comparable to the soft mathematical knowledge (the management framework), which has just been outlined. Soft contextually phrased knowledge addresses ideal situations or discourses within a policy area, not a technical framework. Discussions on such knowledge appeared in this study for the policy goal. An example from the case studies is the discussion on the multifunctional and fitness-for-use approaches in the case of policies for contaminated land. In the Netherlands, the strategy was for a long time to completely remediate every contaminated site, while in France it was long thought that there was plenty of non-contaminated land, and therefore there was no problem to acknowledge.

Now that an additional distinction to the type of knowledge has been introduced, this distinction is taken one step further by applying it to policy-oriented learning. As it was said before, there is a more or less one-to-one relationship between the type of knowledge and the type of learning: hard knowledge predominantly led to corrective learning and soft knowledge mainly led to fundamental learning. Therefore, it is expected that different types of learning result from the different types of knowledge.

7.3.2 Additional concepts on policy-oriented learning from VTC

The second empirical observation so far unexplained by the conceptual framework was that corrective policy-oriented learning from VTC on measures seemed to be more difficult than such learning regarding the system of management. As said, building on the one-to-one relationship between hard knowledge and corrective learning and soft knowledge and fundamental learning, it can also be expected that *mathematical knowledge* will lead to *mathematical learning*, and *contextually phrased knowledge* will lead to *contextually phrased learning*. This additional distinction explains that policy-oriented learning from VTC on the measures was more difficult, because it has to deal with knowledge expressed in words and experiences, embedded in a national context. Policy-oriented learning from VTC on the system of management, in turn, deals with models and numbers and does not have such contextual factors to take into account.

As such, the previously made distinction is taken one step further. Mathematical knowledge turned out to be relatively easy to discuss, because it dealt with numbers or models, and a more or less 'mathematical certainty' tends to exist. Similarly, it can be expected that *mathematical learning* is relatively easy, because it deals with numbers and models. In contrast, *contextually phrased knowledge* was more difficult to share because it is expressed in words, and requires additional information on the national context. Similarly, it can be expected that *contextually phrased learning* on the measures was more difficult because it will deal with issues that have to be addressed in words, and the difference in national contexts has to be taken into account.

Consequently, in addition to corrective learning, in which a policy is corrected but not substantially changed, and fundamental learning, which refers to changes in the policy objective, two additional types of learning can be recognised: *mathematical* and *contextually phrased learning*. *Mathematical learning* refers to learning with regard to models, numbers or formulas. These policy aspects can be used or adjusted easily from one country to another. *Contextually phrased learning* refers to learning from experiences that are expressed in words and are embedded in a national context. The two distinctions, i.e. *mathematical* and *contextually phrased learning* and fundamental and corrective learning, create the following diagram (Figure 7.4).

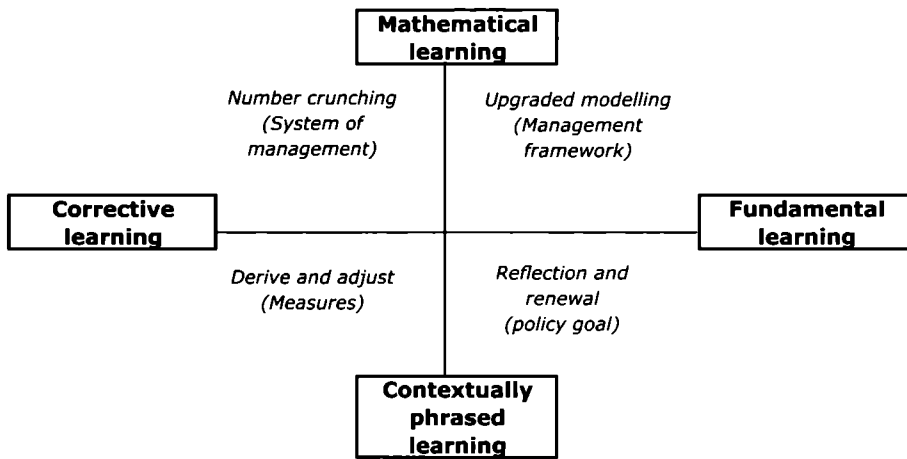


Figure 7.4: Conceptual distinction between mathematical and contextually phrased learning, in addition to corrective and fundamental learning, including the four core issues

It was said earlier that discussions about hard, mathematical knowledge (the system of management) are predominantly about numbers and models and required no, or only a few, contextual factors. Accordingly, policy-oriented learning concerning these issues (*corrective mathematical learning*) tends to focus on correcting the policy by adjusting numbers and models. Therefore, little contextual knowledge is likely to be required. In addition, although not all discussions on numbers are equally straightforward, it is quite clear how numbers can be corrected. This kind of learning may be called *number crunching*, because the discussion tends to revolve around juggling numbers and models. An example in the case studies is the Hungarian government creating a national system of management by combining values from the Dutch and the German systems of management.

In contrast, *corrective contextually phrased learning* (the measures) turned out to be more difficult. This kind of learning tends to focus on adjusting a policy by learning from experiences in other countries. As was pointed out when discussing hard contextually phrased knowledge, contextual factors have to be taken into account when discussing such knowledge. As such, this type of learning tends to require the separation of relevant elements from contextual factors in another country in order to apply them domestically. For example, the Hungarian government became aware of a noise protection committee at Munich airport. Because it worked in that context, the idea was adopted and adjusted to the Hungarian national context. In order to learn concerning the measures, an element has to be derived from the national context of one country and has to be adjusted to that of another country; this kind of learning is referred to as *derive and adjust*. However, also common in this context is negative policy-oriented learning. It turned out to be difficult to separate hard knowledge concerning measures from its national context. It was therefore more common to decide 'not to do it like that', rather than adjusting positive aspects of foreign measures to the national context. For example, in the Netherlands, the CDA is not yet employed during the day because it does not fit in with the legal system.

Fundamental mathematical learning refers to policy-oriented learning that affects the broader approach to how a policy issue should be tackled, expressed in numbers and models. In this study, fundamental mathematical learning is represented by learning concerning the management framework. Such knowledge is aimed at changing the technical policy objective, which is expressed in models and numbers. It tends to be more difficult than number crunching (dealing with hard mathematical knowledge), because fundamental mathematical learning (dealing with soft mathematical knowledge) requires the understanding of complex, interconnected numbers and models that reflect a broader framework for how to tackle a policy issue. An example is how CdG tried to limit the noise by staying within a technically formulated framework. In this case, mathematical knowledge was upgraded to form a broader framework or concept to reflect the policy goal in a technical way. This kind of learning can be called *upgraded modelling*.

Finally there is *fundamental contextually phrased learning*, which reflects learning about an ideal strategy, expressed in words. It tends to change the policy objective fundamentally and it deals with words or ideals that are embedded in a national context. Similar to upgraded modelling (corrective contextually phrased learning), fundamental contextually phrased learning affects the broader approach to or idea of how a policy issue should be tackled. This type of learning does not only require reflection on the present situation, but also renewing the policy framework itself. However, the difference is that it deals with words and ideals. This type of learning is called *reflection and*

renewal. The case studies have shown that this type of learning was often negative, similar to the derive and adjust: France and England, for instance, decided not to adopt the multifunctional approach.

Now that the additional distinction between contextually phrased knowledge and learning and mathematical knowledge and learning have been introduced, the next section puts these additional concepts to work in order to explain the remaining unclear analytical patterns.

7.4 The relationship between VTC, policy-oriented learning and domestic institutional factors

This section revisits the undetected analytical patterns in the light of the additional concepts. The aspect that remained unexplained with regard to the relationship between VTC and policy-oriented learning is discussed in section 7.4.1, while section 7.4.2 focusses on the remaining puzzle concerning the domestic institutional factors. Both sections end with some hypotheses that might be formulated on the basis of the case studies.

7.4.1 VTC and policy-oriented learning refined

As a reminder, the unclear pattern regarding the relationship between VTC and policy-oriented learning was that no particular type of knowledge (hard or soft) or type of learning (corrective or fundamental) appeared to be discussed in a particular setting for VTC. The case studies demonstrated that vertical VTC predominantly stimulated discussion on the system of management and its framework, while in unorganised horizontal VTC it was usually knowledge concerning the measures and the policy goal that was shared. Regarding organised horizontal VTC, the case studies showed that the kind of knowledge discussed depended on the focus of the organised horizontal VTC. Now that these unclear analytical patterns can be re-analysed with the additional concepts, the patterns will be revisited.

In the new terminology, the system of management is identified as hard mathematical knowledge and the management framework as soft mathematical knowledge. Therefore, it can be said that in vertical VTC, mathematical knowledge was mostly discussed, either hard or soft. In contrast, the two issues discussed in unorganised horizontal VTC, the measures and the policy goal, are in the new terminology called hard contextually phrased knowledge and soft contextually phrased knowledge. Consequently, unorganised horizontal VTC stimulated the exchange of contextually phrased knowledge in the case studies, either hard or soft. Finally, regarding organised

horizontal VTC, different types of knowledge were discussed, depending on the focus of the organised horizontal VTC. There were international networks that focussed on the system of management, i.e hard mathematical knowledge, while others focussed on the policy goal and the measures, which reflect hard and soft contextually phrased knowledge. As such, in this setting for VTC, both mathematical knowledge and contextually phrased knowledge, either hard or soft, were shared.

Consequently, looking at the link between the types of learning and the setting for VTC, a comparable pattern can be recognised. The case studies showed that vertical VTC, dealing with mathematical knowledge, stimulated mainly mathematical learning: upgraded modelling and number crunching. For example the discussions in the ACI, ISO and ICAO about the management framework led to upgraded modelling at Charles de Gaulle. Furthermore, in the case studies, organised horizontal VTC, dealing with contextually phrased knowledge, mainly led to contextually phrased learning: derive and adjust and reflection and renewal. For example, in France in the case of contaminated land, a national research institute advised MEDEF on the fitness-for-use approach, after reflection and renewal, resulting from visits to the Netherlands. Finally, from knowledge gained in organised horizontal VTC, all four types of learning occurred in the case studies. For example, in the case of contaminated land, discussions in CLARINET led to derive and adjust in France concerning the financial guarantee, and discussions on reflection and renewal led to the confirmation of the fitness-for-use approach in the Netherlands.

Taking these two analyses one step further, it might be hypothesised that in vertical VTC mainly mathematical knowledge is shared, which tends to stimulate mathematical learning, or more specifically, upgraded modelling and number crunching. Furthermore, since in organised horizontal VTC mainly contextually phrased knowledge is likely to be shared, this type of VTC will lead to contextually phrased learning, more specifically derive and adjust and reflection and renewal. Finally, it appears that in organised horizontal VTC all four types of knowledge could be shared, and consequently all four types of learning might occur. If indeed such patterns are visible in other situations should be examined in further research.

7.4.2 The role of domestic institutional factors refined

This section revisits the unclear pattern regarding the role of domestic institutional factors on policy-oriented learning from VTC. The case studies demonstrated no structure in the relationship between the type of knowledge use with either fundamental learning or corrective learning. Furthermore, a pattern concerning the domestic policy-making processes was hard to discern but not entirely absent. However, in the light of the additional concepts, it is entirely possible that there is more to the distinc-

tion between corrective and fundamental learning than observed so far. Therefore, the patterns in the policy-making processes are re-analysed as well.

First the patterns in knowledge use are re-analysed, followed by the patterns in policy-making processes. As will be shown below, in addition to the distinction between corrective and fundamental learning, the distinction between mathematical and contextually phrased knowledge provides general patterns between type of knowledge use and policy-oriented learning from VTC. Under the umbrella of corrective learning originally fell two different types of learning: derive and adjust (contextually phrased learning) and number crunching (mathematical learning). Fundamental learning too comprised two different types of learning: reflection and renewal (contextually phrased learning) and upgraded modelling (mathematical learning). As will turn out below, by making this additional distinction, a clear general pattern can be identified. Following the analyses of the knowledge use and the policy-making process, more abstract hypotheses regarding the revisited patterns are formulated.

Types of knowledge use and policy-oriented learning from VTC refined

The policy processes that represented a technocratic type of knowledge use demonstrated that both policy makers and scientists learnt in a fundamental and a corrective way. Specifying the policy-oriented learning in terms of the additional concepts (Table 7.3), the case studies showed that scientists predominantly initiated number crunching and upgraded modelling (both mathematical learning) and policy makers agreed with these learning processes. For example, the policy process for CdG showed that AdP (scientists), together with DGAC (policy makers), initiated upgraded modelling. Derive and adjust and reflection and renewal (both contextually phrased learning), in turn, appeared to be initiated by policy makers who did not need any input from scientists to introduce such learning from VTC. An example is the Dutch covenant on contaminated land, which was proposed and introduced by VROM (policy makers).

In the case with a bureaucratic type of knowledge use, there was no evidence for fundamental learning, so the more specific forms of fundamental learning are not helpful here. For corrective learning, the case studies showed that scientists found corrective learning difficult, but policy makers did not. Specifying this in terms of the additional concepts (Table 7.3), policy makers initiated derive and adjust (corrective contextually phrased learning) from VTC, while scientists tried to initiate number crunching (corrective mathematical learning), which was constrained by policy makers. For example, the policy makers in Hungary, the GKM, introduced a noise protection committee in the case of Ferihegy, while in the English policy on contaminated land, the Environment Agency could not introduce technical knowledge from VTC in the system of management until DEFRA approved the documents.

In the policy processes with an engineering type of knowledge use, policy makers controlled their own learning process, while scientists were only able to learn when policy makers allowed this. Revisiting this pattern in terms of the additional concepts (Table 7.3), yet again, policy makers initiated derive and adjust and reflection and renewal (both contextually phrased learning), while scientists proposed number crunching (corrective mathematical learning). The number crunching was only introduced when it was permitted by policy makers, who tended to do so if it was in line with their view. For instance, English policy makers referred to the fitness-for-use approach suggested by scientists. Finally, the cases with enlightened knowledge use did not show any evidence for policy-oriented learning from VTC.

The above analysis showed that a pattern could be detected for the type of knowledge use and policy learning from VTC. However, it was not so much the distinction between fundamental and corrective learning that was relevant in this respect, as the distinction between mathematical and contextually phrased learning. The cases showed that across the different types of knowledge use, policy makers were the dominant initiators of contextually phrased learning, either corrective (derive and adjust) or fundamental (reflection and renewal). Scientists, in turn, initiated mathematical learning, either corrective (number crunching) or fundamental (upgraded modelling).

Type of knowledge use	How knowledge use affected policy-oriented learning from VTC in the case studies in terms of the additional concepts		
	Learning what	Who learns	
Technocratic (Convergence, science dominates)	Mathematical learning	Number crunching	Scientists, policy makers agreed
		Upgraded modelling	Scientists, policy makers agreed
	Contextually phrased learning	Derive and adjust	Policy makers
		Reflection and renewal	Scientists and policy makers
Bureaucratic (Divergence, policy makers dominate)	Mathematical learning	Occasional number crunching	Scientists, only when policy makers agreed
		No upgraded modelling	N.A.
	Contextually phrased learning	Derive and adjust	Policy makers
		No Reflection and renewal	N.A.

Engineering (Convergence, policy makers dominate)	Mathematical learning	Number crunching	Scientists, when allowed by policy makers
		No upgraded model- ling	N.A.
	Contextually phrased learn- ing	Derive and adjust	Policy makers
		Occasional reflection and renewal	Policy makers mainly refer to knowledge from VTC.
Enlightened (Divergence, science domi- nates)	Mathematical learning	No number crunching	N.A.
		No upgraded model- ling	
	Contextually phrased learn- ing	No derive and adjust	
		No reflection and re- newal	

Table 7.3: Types of knowledge use and how they affected policy-oriented learning from VTC in the policy on contaminated land and airport noise abatement policies, in the light of contextually phrased learning (derive and adjust and reflection and renewal) and mathematical learning (number crunching and upgraded modelling)

More specifically, as we saw, in the types of knowledge use in which the policy makers dominated, policy makers prevented scientists from initiating mathematical learning when they did not understand the science. If the knowledge introduced by scientists, mostly mathematical knowledge, was in line with the perspective of the policy makers, scientists were permitted to introduce this knowledge. In contrast, however, in policy-making processes in which scientists dominated, policy makers employed derive and adjust and reflection and renewal strategies (contextually phrased learning). Moreover, in either scenario, scientists did not have much to do with these processes.

Taking this conclusion one step further, the hypothesis can be formulated that policy makers predominantly tend to deal with contextually phrased knowledge, either hard or soft, and that scientists tend to deal with mathematical knowledge. However, the latter type of knowledge only tends to become instrumental in the policy-making process when policy makers allow it. There is scope for further research into whether policy makers are indeed inclined to prevent scientists from initiating mathematical learning from VTC when they do not understand the science, and only permit the introduction of mathematical knowledge if this knowledge is in line with their perspective.

Policy-making processes and policy-oriented learning from VTC refined

Having re-examined patterns in knowledge use using the additional concepts, the same is done here for the different policy-making processes (Table 7.4 p. 203). The pattern identified was that fundamental policy-oriented learning was initiated in comparable ways in the different policy-making processes: by central government or (in cooperation with) the competent actor. For corrective learning, the pattern reflected the differences in policy-making processes: in etatist policy-making processes the central government initiated corrective policy-oriented learning as a result of knowledge from VTC. However, it is expected that more specific insights can be reached when applying mathematical and contextually phrased learning to the analysis.

Using the additional concepts, in etatist policy-making processes, number crunching, upgraded modelling (both mathematical knowledge), as well as derive and adjust and reflection and renewal (both contextually phrased knowledge) were initiated by central government. This does not reveal an additional pattern, because the central government, which controls resources, formulates the policy, and imposes it on the nation, also initiated both corrective and fundamental learning.

Types of policy-making process	How policy-making processes affected policy-oriented learning from VTC in the case studies in terms of the new concepts		
	Learning what	Who learnt actor	
Etatist (central government dominates resources, authoritative policy-making style)	Mathematical learning	Number crunching	Central government
		Upgraded modelling	Central government
	Contextually phrased learning	Derive and adjust	Central government
		Reflection and renewal	Central government
Liberal-pluralist (many actors access to inner circle, resources divided, competitive policy-making style)	Mathematical learning	Number crunching	Contract experts (universities, consultancies, experts), possibly NGOs and local authorities
		Upgraded-modelling	Research institutes, contract experts
	Contextually phrased learning	Derive and adjust	Government and competent private actors
		Reflection and renewal	Central government
Corporatist (shared resources, limited access to inner circle and policy-making style aimed at consensus)	Mathematical learning	Number crunching	Research institute, regional and local authorities
		No upgraded modelling	N.A.
	Contextually phrased learning	Derive and adjust	Central government and competent private actors
	Reflection and renewal	Central government	

Table 7 4: How policy-making processes affected policy-oriented learning from VTC, in the policy on contaminated land and airport noise abatement policies, in the light of contextually phrased learning (derive and adjust, and reflection and renewal) and mathematical learning (number crunching and upgraded modelling)

For liberal-pluralist policy-making processes, in the new terminology, reflection and renewal and upgraded modelling (both fundamental learning), were initiated by the central government. Looking at the two new types of corrective learning, it turned out that it was again mainly the central government (or the competent private actor) that initiated derive and adjust (contextually phrased learning). By contrast, in number crunching (mathematical learning), different actors were involved. For example, DEFRA initiated learning with regard to the liability scheme in the case of contaminated land, while in the same case study, several consultancies in addition to the Environment Agency were involved in the system of management. As such, an additional distinction can be made concerning corrective learning: only number crunching reflected the liberal-pluralist policy-making process, with many actors involved and initiating learning from VTC. Derive and adjust appeared similar to fundamental learning, namely the central government or competent actor was in charge of these learning processes (Table 7.4).

For corporatist processes, only the Dutch case on contaminated land contained evidence for policy-oriented learning from VTC. As said, the central government (in cooperation with the competent actor) initiated fundamental learning (reflection and renewal and upgraded modelling). Corrective learning seemed to reflect the corporatist policy-making style in which each actor controlled a certain resource and initiated policy-oriented learning from VTC accordingly. Looking at the two newly identified types of corrective learning, number crunching (mathematical learning) turned out to be initiated by a research institute (RIVM) and reflection and renewal (contextually phrased learning) by central government, while in derive and adjust (corrective contextually phrased knowledge) the central government together with competent private actors were involved. This analysis shows that, yet again, for derive and adjust, similar to the fundamental learning, the central government with the competent private actor was involved. In learning processes on the system of management, several different actors were involved, such as research institutes, private actors, and local, regional and central government (Table 7.4).

After outlining the different policy-making processes, using the new terminology, it turns out that the distinction between mathematical and contextually phrased knowledge in combination with fundamental and corrective learning proved to be helpful analytical tools to increase the understanding of corrective policy learning from VTC. Earlier analysis suggested that corrective learning reflected the differences in policy-making processes. Now, it becomes clear that only in number crunching were different actors involved, reflecting the different policy-making processes: in etatist policy-making processes, central government initiated these learning processes, in liberal-pluralist processes there were many different actors involved, and in corpo-

ratist processes research institutes, private actors, and local, regional and central government all initiated number crunching. Similar to the two types of fundamental learning, i.e. upgraded modelling and reflection and renewal, derive and adjust was predominantly initiated by central government and/or competent private actors. A possible explanation is that derive and adjust is generally more difficult than number crunching, in the sense that the national context had to be taken into account. As such, it is likely that apart from those who are competent, actors rather do not get involved.

More generally, it might be stated that derive and adjust, upgraded modelling and reflection and renewal tend to be initiated by central government or competent private actors. By contrast, number crunching is likely to reflect the different policy-making processes: in etatist policy-making processes, number crunching is likely to be initiated by central government; in liberal-pluralist processes many different actors tend to be involved in this learning process; and in corporatist processes research institutes, competent private actors and central government could all initiate number crunching.

7.5 Recommendations for further research

Several recommendations for further research result from this study. Following the structure of Chapters 1 to 3, this section provides a clear outline of the scope for further research, as touched upon at various points in the course of the study.

In line with remarks in Chapter 1, theoretical research could be done in the light of multi-level governance. Figure 2.1 showed the analytical relationship between VTC and policy-oriented learning, which included a dashed arrow from policy-oriented learning to VTC. This dashed arrow represented the possibility that policy-oriented learning from VTC may in turn influence VTC. This study created a framework for how to analyse VTC and policy-oriented learning, including useful concepts and additional hypotheses, and it would be interesting to examine in further detail what the influence of policy-oriented learning is on VTC and how the two are interlinked. Such research would add to the discussion of multi-level governance.

Another remark in Chapter 1 concerned the interaction of the four international driving forces, and makes a link with convergence studies (see section 2.1.1). It was said there that international driving forces rarely appear in isolation, but because VTC was underdeveloped as an international driving force, this study isolated VTC in order to create insights into this particular process. Now that this study has developed a way to investigate the influence of VTC on environmental policies, this framework could be taken into account when investigating any other international driving force. After

all, in harmonisation processes, regulatory competition and imposition, VTC tends to take place additionally and as a consequence, policy-oriented learning may occur. Convergence studies could therefore usefully take the relationship between VTC and policy-oriented learning into account.

Also for diffusion studies, this study provides a useful framework for different research foci. For example, the four different types of knowledge identified in this study could contribute to the identification of patterns in *what* is diffused, which is currently becoming a topic in diffusion literature. Another example of how diffusion literature could benefit from the framework presented here, is to take the three different settings of VTC into account, when examining the diffusion policy innovations.

For the transfer literature (see section 2.1.3), the challenge is to organise unorganised horizontal settings for VTC. In this research, only unorganised horizontal VTC that actually led to policy-oriented learning or to a broader discussion was taken into account. As said before, it is likely that there was more unorganised horizontal VTC, which remained invisible in the case studies. Transfer studies could focus in detail on unorganised VTC, to try to identify structures and patterns, for example by taking hard and soft knowledge, and mathematical and contextually phrased knowledge into account. In such a study, it would be important to have clear delimitations, both temporal and spatial, because it would require in-depth analysis to elaborate all foreign contacts in a policy process.

Research on policy-oriented learning could more generally benefit from the additionally identified types of learning: number crunching, derive and adjust, upgraded modelling and reflection and renewal. Section 7.3 showed that these new types of knowledge and learning increased insight into learning and knowledge sharing processes. It is therefore expected that they will also shed light on learning processes that do not derive from VTC.

Another remark concerning policy-oriented learning concerns the five degrees of learning – copying, emulation, hybridisation, synthesis and inspiration – which reflected the extent to which knowledge from VTC was taken into account. However, these turned out to be too detailed to be of use in this study. It was not feasible to examine whether one or two aspects from one policy were introduced into another, or whether this was a combination of two different policies. For this type of research, such a specification turned out too detailed. Perhaps a smaller number of case studies, focussing specifically on these aspects, could create more insight into the degrees of learning.

Turning to the knowledge use literature, it was noted in Chapter 3 when the knowledge use typology was introduced, that the definition of policy makers and scientists had to be adapted to the different policy-making processes. Also, section 7.1.2,

focussing on the interaction between policy-making processes and knowledge use, showed that grouping policy makers and ‘representatives of other institutions’ (Wittröck, 1991) together decreased the understanding of how knowledge use leads to policy-oriented learning from VTC. Whereas the original typology (Wittröck 1991; Hoppe, 2003) placed “representatives of institutions” under the same umbrella as policy makers, and did not make a distinction between different policy-making processes, further research on this topic would benefit from a distinction between representatives of institutions and policy makers. The policy makers could be defined as the people who actually write the policy; the representatives of institutions are the other actors in the inner circle who have influenced the policy-making process, but do not write the actual policy. By making this distinction, for example, it would become clear that the enlightened type of knowledge use is not likely to appear in statist policy-making processes, because in the enlightened model, policy makers *and* representatives of other institutions jointly dominate the process. This need not be specifically in relation to policy-oriented learning from VTC, but could be applied in knowledge use literature more broadly.

Another recommendation with regard to the knowledge use typology is to include a category that represents convergence between scientists and policy makers, without one dominating the other. For example, in the case study on contaminated land in the Netherlands it was difficult to say who dominated the policy-making process, because the convergence between policy makers and scientists was so strong. This option is not pointed out by Wittröck (1991), and it would be interesting to explore it further.

The label of the enlightened type of knowledge use turned out to be misleading. In this research there was only one case with evidence for an enlightened type of knowledge use, namely in the policy-making process for AAS. Science had, originally, enlightened policy makers with noise contours and this scientific idea was upgraded to the approach to limit the noise around AAS in the 1960s. However, this case had a sting in its tail: after the enlightenment, the policy process stagnated. As a result of the divergence between policy makers and scientists, the policy became very complicated and there were only few people who had a comprehensive grasp of it. The label of the enlightened type of knowledge use could therefore usefully be altered; further research into the consequences of this knowledge use could result in a more suitable name.

In Chapter 7, several hypotheses were formulated that resulted from the case studies. Although they have proven useful in this study, whether their value goes beyond a focus on policy-oriented learning from VTC remains to be seen. Therefore, further research could be done on the concepts newly developed in this study.

Finally, a study with a largely empirical focus such as this one would lack usefulness if it did not provide some policy recommendations. First, policies on noise around airports would benefit from the introduction of more international networks. We have seen that there was substantial mathematical knowledge sharing and learning, but that knowledge sharing and learning concerning contextually phrased knowledge was scarce, but often required. This situation is not surprising, since many international organisations were present in this policy field, but international networks were scarce. As we have seen, international organisations stimulated policy-oriented learning on the system of management, but less so on the measures. As a result of the absence of international networks, national actors had to make benchmarks or establish contacts with counterparts to gather knowledge on the noise abatement measures of other airports. To stimulate the knowledge sharing on policy measures in the noise abatement policy field, more international networks could be created, without any political or economic consequences, purely to share experiences on how to deal with noise.

For soil remediation, there were various international networks; national governments, private actors and research institutes participated in such networks. However, there were no organised specific opportunities for local authorities to share knowledge. The case on noise around airports showed that local authorities too could benefit from experiences of other countries. Therefore, international platforms or bilateral contexts that stimulate this should be created.

Looking at how to stimulate policy-oriented learning from VTC, a distinction could be made between those who supply VTC and those who demand VTC. For the suppliers of VTC, i.e. international organisations and international networks, it might be interesting to see how they can stimulate or improve policy-oriented learning by member states. In order to do this effectively, it is important to formulate the exact aim that the suppliers of VTC wish to achieve during the international communication processes. If the aim is, for example, policy-oriented learning on the system of management or the management framework (mathematical knowledge), the presence of an international institution would be helpful. If on the other hand the target is learning concerning best practices on the measures or policy goal (contextually phrased knowledge), knowledge should be shared in horizontal settings, either organised or unorganised. For example, it might be helpful to establish international networks or consorted concerted actions around certain themes, such as the case on noise from airports showed, recently, with ANNA, and the contaminated-land case showed with CLARINET.

For those who seek policy-oriented learning from VTC, i.e. governments, research institutes, local or regional authorities, etc., it could be interesting to see how and where to invest in overseas travel in order to gain insight into alternative policy

options. Here too it is important to formulate the exact aim that participants wish to reach during the international communication processes. For example to gather knowledge on best practices, bilateral contact should be created or active participation in international networks could be stimulated, without a political or economic aim or the presence of an international institution. On the other hand, if more knowledge is required on technical issues, the participation in an international organisation might be helpful, such as ICAO, WHO or ISO.

Finally, local and regional actors may not actively demand knowledge from VTC. The case studies showed that overseas travel is less institutionalised for such actors when compared to, for example, national governments. However, particularly the Heathrow case study demonstrated that knowledge from VTC can be highly beneficial. Therefore, also local actors should be stimulated to seek inspiration regarding how other countries handle particular local problems.

SAMENVATTING (SUMMARY IN DUTCH)

Op internationaal niveau wordt veelvuldig gediscussieerd over nationale beleidszaken. Deze internationale gesprekken - in dit proefschrift *Vrijwillige Transnationale Communicatie* (VTC) genoemd - kunnen nationale beleidsvorming beïnvloeden. Hoofdstuk 1 laat zien dat VTC alleen invloed uitoefent wanneer nationale actoren leren van VTC. Immers, VTC is puur op vrijwilligheid gebaseerd, actoren worden niet gedwongen informatie op nationaal niveau te gebruiken. Nationaal beleid zal dus alleen veranderen als de actoren zelf het nut van zo'n internationale discussie inzien. VTC blijkt in verschillende landen verschillende gevolgen te hebben nationale factoren bepalen hoe die invloed vorm krijgt. Maar welke nationale factoren van invloed zijn en op welke manier dit gebeurt, is nog niet gestructureerd onderzocht. Dit is het onderzoeksdoel van dit proefschrift: *inzicht krijgen in de manier waarop beleidsleren van VTC bepaald wordt door institutionele factoren.*

Informatie over VTC en beleidsleren is te vinden in verschillende onderzoeksvelden. Om een goed beeld te vormen brengt hoofdstuk 2 deze informatie bij elkaar. VTC is daarbij als volgt gedefinieerd: alle processen van internationale communicatie, die niet significant beïnvloed zijn door economische processen, en die geen wettelijke verplichting kennen en waarin geen, of althans weinig, machtsongelijkheid is, vallen onder VTC. Vanuit literatuur over diffusie worden drie verschillende vormen onderscheiden in welke VTC kan plaatsvinden. Verticale VTC impliceert de aanwezigheid van een internationale organisatie; georganiseerde horizontale VTC verwijst naar een internationaal netwerk zonder de aanwezigheid van een internationale organisatie. Ongeorganiseerde horizontale VTC tenslotte, refereert aan contacten tussen individuele nationale actoren. Daarnaast wordt vanuit de transferliteratuur het multiactor perspectief geïdentificeerd, wat betekent dat alle actoren op nationaal niveau betrokken kunnen zijn bij VTC. Ook benoemt de transferliteratuur het object van VTC: kennis. Een structurele indeling van deze kennis is gebaseerd op literatuur over kennisgebruik. Daarbij worden twee categorieën onderscheiden: harde en zachte kennis. Onder harde kennis wordt technische kennis verstaan, die weinig normatieve implicaties heeft. Onder zachte kennis worden ideeën, discoursen en concepten verstaan, die juist wel normatief zijn. Na de uiteenzetting van het begrip VTC wordt de relatie met beleidsleren verder uitgewerkt. Daarin zijn twee vormen aan te wijzen: correctief leren en fundamenteel leren. Correctief leren wil zeggen dat het beleid zelf niet substantieel verandert, maar dat het wordt gecorrigeerd. Fundamenteel leren refereert aan veranderingen in het beleidsdoel of discours. Hoewel het lijkt dat harde kennis tot correctief leren zal leiden en zachte kennis tot

fundamenteel leren, wordt dit verband open gehouden: technische kennis kan tot fundamentele veranderingen leiden, en zachte kennis tot correctief leren.

Hoofdstuk 3 bekijkt hoe nationale institutionele factoren beleidsleren van VTC bepalen. In dit kader worden twee factoren onderscheiden, te weten het beleidsproces en de wijze van kennisgebruik. Het beleidsproces valt in drie typen uiteen. Soms maakt een klein groepje, vaak bestaande uit overheidsactoren, het beleid en legt dit op aan andere nationale actoren: etatisme. Ook kan beleid tot stand worden gebracht via gestructureerd overleg tussen verschillende actoren in de samenleving waarbij wordt gestreefd naar consensus: corporatisme. Tenslotte kan beleid gemaakt worden in een open, vrij toegankelijk netwerk. Dan veroorzaakt het mogelijk grote aantal actoren een competitieve sfeer: liberaalpluralisme.

De tweede factor die het beleidsleren van VTC beïnvloedt, is de wijze van kennisgebruik waarbij vier verschillende vormen vallen aan te wijzen. Allereerst zijn beleidsmakers afhankelijk van de informatie die door experts wordt gegeven. De communicatie tussen wetenschappers en de experts is echter gebrekkig: zie verlichtingsmodel. Ook is de communicatie tussen wetenschappers en beleidsmakers gebrekkig te noemen, maar zijn de beleidsmakers de dominante spelers: zie bureaucratisch model. Als echter dezelfde taal gesproken wordt en beleidsmakers de dominante spelers zijn, spreken we van het engineering model. Tenslotte, als de communicatie tussen beleidsmakers en wetenschappers goed is, en de wetenschappers domineren, is er sprake van het technocratische model.

Na de uiteenzetting van deze concepten komt in hoofdstuk 4 de methode aan bod. Hier zien we dat de gevalstudie de meest geschikte onderzoeksstrategie is, en dat een internationaal vergelijkend onderzoek voor de hand ligt. De keuze voor Nederland, Frankrijk, Engeland en Hongarije als onderzoekslanden wordt verantwoord, evenals die voor de beleidsvelden bodemsanering en geluid rond luchthavens. Om een goed inzicht te krijgen werden kernelementen geformuleerd. Deze delen het beleid verder op waarbij het onderscheid in zachte en harde kennis richtinggevend is. Naast het *beleidsdoel*, wordt hier het *managementraamwerk* geïntroduceerd, het technische concept. Dit concept wordt als harde kennis uitgewerkt in het *managementsysteem*. De *instrumenten* tenslotte geven weer hoe het beleidsprobleem aan te pakken.

De hoofdstukken 5 en 6 geven de empirische analyses van de twee beleidsvelden in de vier landen. Eerst wordt in hoofdstuk 5 de casus over bodemsanering uitgewerkt: de belangrijkste vorm van VTC zijn de internationale netwerken en individuele contacten. De kernelementen zijn uiteraard weer het beleidsdoel (multifunctioneel saneren of functiegericht saneren), het managementsysteem (het gebruik van generieke en/of gebiedsspecifieke waarden) en de instrumenten (publieke

financiering of marktallocatie). De analyse van de Nederlandse bodemsaneringscasus laat zien dat de formulering van het Nederlandse beleidsdoel in de jaren '80, het multifunctioneel saneren, niet alleen nationaal gangbaar was, maar ook beschreven was in een Europees document over bodembescherming. Nederlandse overheidsactoren en wetenschappers hebben dit in het beleid opgenomen. In de loop van de jaren '90 stagneerde het beleid en in 1997 veranderde de overheid het beleidsdoel fundamenteel in functiegericht saneren. Deze verandering was gebaseerd op nationale ontwikkelingen en er werd slechts als referentie verwezen naar kennis uit internationale netwerken. Ook het managementsysteem, de generieke waarden, en het instrument, de marktallocatie, werd gecorrigeerd naar aanleiding van de afweging van nationale belangen. Sommige experts waren zich wel bewust van waarden of ervaringen in andere landen, maar lieten deze geen rol spelen.

In Engeland was in 1989 het beleidsdoel geformuleerd als functiegericht saneren en dit werd bevestigd in 1993. Hoewel het doel voortkwam uit eerder gevoerd ruimtelijk beleid, had de overheid eveneens ervaringen uit andere landen in overweging genomen. Ook in de instrumentkeuze was informatie, die de overheid verkregen had tijdens bezoeken aan het buitenland, overwogen maar zij besloot dat deze niet in het Engelse systeem paste. De aanzet tot de introductie van marktallocatie kwam via een schrijven van de EU raad. De beslissing het systeem in detail uit te werken (correctief leren) was gebaseerd op ervaringen uitgewisseld in internationale netwerken. Bij de ontwikkeling van het managementsysteem waren ook universiteiten en adviesbureaus betrokken. Deze betrokkenheid werd versterkt doordat het managementsysteem vanuit de overheid uitbleef: de technische uitwerking werd tegengehouden door de beleidsmakers. De universitaire en adviserende experts leerden correctief in hun internationale netwerken en zo werd kennis vanuit het buitenland in het beleid opgenomen.

In Frankrijk leerde alleen de overheid van VTC. Hoewel het beleidsdoel nationaal was bepaald, werd het ook bevestigd in internationale netwerken. Ook haalden onderzoeksinstanties in opdracht van de overheid de details voor het managementsysteem uit het buitenland. Tenslotte werden ook de instrumenten aangescherpt op basis van internationale netwerken en individuele contacten met het buitenland.

Hongarije kende een relatief late start. De overheid leerde er fundamenteel wat betreft het doel, door de twee gangbare doelen te combineren, en correctief door het managementsysteem uit Nederland te kopiëren. In 2000 werd het beleidsdoel aanpast tot functiegericht saneren, een consequentie van een verandering in het managementsysteem. Internationale netwerken brachten de Hongaarse overheid op de hoogte van deze technische aanvulling. Ook de instrumenten werden gebaseerd op

VTC: de Hongaren imiteerden Oostenrijk door een ruim overheidsbudget te reserveren voor saneringen.

Hoofdstuk 6 kijkt naar de problematiek van geluid rond luchthavens. De VTC van deze casus is voornamelijk opgebouwd uit internationale organisaties. Er is een beperkt aantal internationale netwerken opgezet en incidenteel zijn er bezoeken geweest tussen nationale actoren om de geluidsproblematiek te bestuderen. De kernelementen in deze casus zijn het technisch raamwerk (de geluidscontouren, de totale hoeveelheid geluid, of het geluid van individuele vliegtuigen), het managementsysteem (de eenheid van geluid, en het meten of berekenen van geluid) en de instrumenten (het reduceren van geluid door ruimtelijke ordening, door operationele procedures, en/of compenserende maatregelen). De Nederlandse casus laat bijna geen beleidsleren van VTC zien. Onlangs heeft de overheid een publicatie het licht doen zien die een internationale vergelijking bevat. Momenteel wordt door de overheid bediscussieerd wat met deze informatie gedaan moet worden. Ook een stillere manier van dalen wordt nader bekeken, dit keer door de sector. Een opmerkelijk punt in dit verband is dat de internationale kennis nu door de overheid wordt geïntroduceerd, terwijl verschillende Nederlandse actoren al eerder in VTC participeerden. Het beleid voor Schiphol is echter door de jaren heen zo technisch geworden, dat er maar weinig actoren zijn die het beleid kunnen overzien en van VTC kunnen leren.

Het beleid rond Heathrow laat beleidsleren van VTC in verschillende kernelementen zien. In de jaren '80 besloot de Engelse overheid om onderzoek te doen naar de eenheid van geluid omdat deze zou afwijken van de internationaal meest gangbare eenheid. De correctie naar de nieuwe index, die acht jaar later werd geïntroduceerd, was toen door de Internationale Standaard Organisatie het meest geaccepteerd. Hoewel er veel gesteggel was over deze, hebben technici uiteindelijk de discussie bepaald. Het technisch raamwerk werd fundamenteel aangepast, gebaseerd op de ervaringen uit de International Civil Aviation Organisation (ICAO) (liberaalpluralistisch en engineering). De discussie over de instrumenten wordt tegenwoordig gevoerd door verschillende nationale actoren. De omwonenden en de lokale belangengroepen -op de hoogte via internationale netwerken- willen een aanvullende eenheid van geluid. Of deze eenheid in het beleid wordt opgenomen, moeten we nog afwachten (liberaalpluralistisch en technocratie).

Het beleid rond Charles de Gaulle laat beleidsleren van VTC door de overheid zien. Het was in Frankrijk de overheid die in 1996 het technisch raamwerk formuleerde (fundamenteel leren) en die de herziening in het managementsysteem doorvoerde (correctief leren). Beide leerprocessen waren met name gebaseerd op

kennis uit ICAO. Ook de vraag naar een meer concrete, aanvullende eenheid van geluid werd in gang gezet door overheidsactoren.

De Hongaarse overheid had met betrekking tot Budapest Airport (Ferihegy) tijdens een bezoek aan Munchen geleerd dat communicatie tussen lokale bevolking en de luchthaven verbeterd kon worden door het instellen van een speciale commissie. De overheid besloot deze correctie in het nationale beleid op te nemen. Na de privatisering in 2005 heeft de nieuwe eigenaar van het vliegveld, BAA, aangekondigd een technisch raamwerk op te zetten, gebaseerd op buitenlandse ervaringen. Voor de maatregelen die nu ter discussie staan, de stille manier van landen en de isolatiemaatregelen, geldt hetzelfde proces. De private eigenaar heeft zijn kennis overgedragen op de Hongaarse situatie. Maar het gebruik van geluidscontouren in de ruimtelijk ordening staat nog ter discussie: lokale overheden begrijpen niet goed hoe de contouren gemaakt zijn en geven hun goedkeuring niet.

Als een eerste opmerkelijke gevolgtrekking, weergegeven in hoofdstuk 7, kan geconstateerd worden dat in beide cases de wijze waarop nationaal institutionele factoren beleidsleren van VTC beïnvloeden, nagenoeg overeenkomt. Bij de beleidsprocessen komt duidelijk naar voren dat in etatistische processen de nationale overheidsactoren kennis vergaard hebben in het buitenland en die introduceerden in het nationale beleid. In liberaalpluralistische processen leerden meerdere nationale actoren van VTC. Het corporatisme liet slechts weinig beleidsleren van VTC zien. In deze processen werd er achteraf naar VTC verwezen om de beleidsveranderingen, gemaakt op basis van overleg en belangenafweging tussen nationale actoren, verder te onderbouwen. Met het oog op kennisgebruik werd in processen met een verlichtend kennisgebruik leren van VTC verhinderd, omdat bijvoorbeeld overheidsactoren de kennis niet begrepen. In bureaucratische processen was leren van VTC beperkt tot fundamenteel leren. In engineering processen leerden zowel experts als overheidsactoren, hoewel de experts alleen kennis inbrachten als de overheidsactoren dit toelieten. Tot slot werd er het meest geleerd in technocratische processen: overheid en experts begrepen elkaar

In hoofdstuk 7 worden eveneens relaties tussen VTC en beleidsleren belicht. In verticale VTC wordt vooral harde kennis over het managementsysteem uitgewisseld en zachte kennis over het technische raamwerk. In ongeorganiseerde horizontale VTC wordt voornamelijk zachte kennis over het beleidsdoel bekeken, alsmede harde kennis over de instrumenten. In georganiseerde horizontale VTC worden alle vier de kernelementen bediscussieerd. Ook is gebleken dat harde kennis vooral tot correctief leren heeft geleid, en zachte kennis vooral tot fundamenteel leren.

De bovenstaande analyse bevat geen verbanden tussen alle concepten. Om deze lacune op te vullen wordt er in hoofdstuk 7 een poging gedaan dergelijke verbanden te

leggen, aan de hand van de gepresenteerde empirie. We onderscheiden zo naast harde en zachte kennis ook enerzijds getalsmatige en anderzijds contextueel verwoorde kennis en leren. Getalsmatige kennis is gebaseerd op getallen en modellen, terwijl contextueel verwoorde kennis specifieke ervaringen en situaties betreft. Zo onderscheiden we vier soorten kennis en vier soorten leren. Harde, getalsmatige kennis (managementsysteem) verwijst naar de discussies over getallen en modellen en naar eenduidige feiten en data. Deze kennis leidt tot correctief, getalsmatig leren, hier *nummertje wisselen* genoemd: gegoochel met getallen. Harde, contextueel verwoorde kennis (instrumenten) verwijst ook naar eenduidige feiten en data maar deze kennis verwijst naar ervaringen en specifieke situaties. Het leren van deze kennis noemen we *ontrekken en aanpassen*, omdat dit impliceert dat harde kennis uit de context van het ene land in de context van een ander land geplaatst zal moeten worden. Zachte, getalsmatige kennis (technisch raamwerk) verwijst naar de discussie over getallen en modellen maar dan in termen van technische concepten en ideeën. Het fundamenteel getalsmatige leren wordt hier *opgevaardeerd modelleren* genoemd. Tenslotte is er de zachte, contextueel verwoorde kennis (beleidsdoel), die verwijst naar ideeën en concepten, en die specifieke situaties en ervaringen betreft. Het leren van deze kennis wordt *reflectie en vernieuwing* genoemd. Deze vorm van leren impliceert dat actoren kritisch en met een open oog voor vernieuwing moeten durven kijken naar het beleid.

Vervolgens worden deze aanvullende concepten opgenomen in de analyse. Wat betreft de relatie tussen VTC en leren lijkt het erop dat in verticale VTC voornamelijk getalsmatige kennis wordt uitgewisseld en opgedaan. In de ongeorganiseerde, horizontale VTC wordt vooral contextueel verwoorde informatie uitgewisseld; in de georganiseerde horizontale VTC komen alle aspecten aan bod. Ook de wijze waarop nationaal institutionele factoren het beleidsleren van VTC bepalen, kan gepreciseerd worden door het gebruik van de aanvullende concepten. Op het terrein van kennisgebruik lijken de nieuwe concepten een verband te leggen tussen enerzijds de beleidsmakers die vooral leren van contextueel verwoorde kennis, en anderzijds de wetenschappers met hun getalsmatige kennis. Voor de beleidsprocessen lijkt het erop dat alleen bij *nummertje wisselen* andere actoren dan overheidsactoren betrokken zijn, ongeacht het beleidsproces. Het zijn voornamelijk overheidsactoren die leren wat betreft de overige drie vormen van leren. Het verder onderzoeken van deze hypothesen vormt een van de vele aanbevelingen voor vervolgonderzoek, geordend naar de verschillende geraadpleegde onderzoeksvelden. Tot slot worden er aanbevelingen gedaan hoe nationale overheden doelmatig buitenlandse kennis kunnen gebruiken, en hoe er, geredeneerd vanuit de internationale context, efficiënt invloed kan worden uitgeoefend op nationaal beleid.

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ANNEX 1: LIST OF INTERVIEWS

Soil contamination

* Respondents with whom personal communication has taken place later on

<u>International</u>	<u>UK</u>	<u>R³</u>	<u>The Netherlands</u>
<u>Ad Hoc, 2005</u> 05-02-2005	<u>ATKINS, 2007</u> 18-06-2007	25-05-2007	<u>SenterNovem</u> 20-01-2005
<u>Common Forum, 2007</u> 25-05-2006	<u>Bureau Veritas, 2007</u> 02-05-2007	<u>France</u> <u>ADEME, 2005</u> 11-2-2005	<u>IPO, 2006</u> 30-03-2006
<u>Hungary</u>	<u>CIRIA, 2007</u> 28-05-2006	<u>APESA, 2005</u> 09-02-2005	<u>Municipality of Amsterdam, 2005</u> 14-03-2005
<u>BGT, 2005</u> 09-05-2005	<u>CLAIRE, 2007</u>	<u>*BRGM, 2005</u> 14-02-2005	<u>*RIVM, 2005</u> 19-02-2005
<u>KVVM, 2005a</u> 03-05-05	<u>DEFRA, 2007a</u> 02-05-2007	<u>DRIRE, 2005</u> 11-02-2005	<u>*TCB, 2005</u> 12-01-2005
<u>KVVM, 2005b</u> 05-05-2005	<u>DEFRA, 200b</u> 09-07-2007	<u>MEDAD, 2005</u> 10-02-2005	<u>TNO, 2005</u> 01-02-2005
<u>*KVVM, 2005c</u> 12-05-2005	<u>Environment Agency, 2007a</u> 22-05-2007	<u>MEDED, 2007</u> 17-10-2007	<u>VNG, 2005</u> 02-02-2005
<u>KVVM, 2007</u> 28-11-2007	<u>Environment Agency, 2007b</u> 19-06-2007	<u>MEDEF, 2005</u> 19-10-2007	<u>VNO-NCW, 2005</u> 03-02-2005
<u>Municipality of Budapest, 2005</u> 12-05-2005	<u>ICRCL, 2007</u> 30-05-2007	<u>*INERIS, 2005a</u> 08-02-2005	<u>VROM, 2004</u> 13-12-2004
<u>OKTVF, 2005</u> 04-05-2005	<u>LACORS, 2007</u> 16-05-2007	<u>INERIS, 2005b</u> 08-02-2005	<u>VROM, 2005</u> 23-12-2005
<u>Regional Environmental Inspectorate, 2005</u> 11-05-2005	<u>Local Authority, 2007</u> 07-06-2007		<u>VROM, 2007</u> 26-01-2007
<u>VITUKI, 2005</u> 09-05-2005	<u>LQM, 2007</u> 22-05-2007		

Noise around airport

<u>International</u>	<u>BAA Corporate, 2007</u>	<u>AAS, 2007c</u> 06-03-2007	<u>VROM, 2007a</u> 07-02-2007
<u>ACI, 2007a</u> 11-06-2007	23-07-2007	<u>CROS, 2007</u> 22-01-2007	<u>VROM, 2007b</u> 14-02-2007
<u>ACI, 2007b</u> 11-04-2007	<u>BAA Heathrow, 2007</u> 5-07-07	<u>Municipality of Amsterdam, 2007</u> 31-01-2007	CdG <u>*ACNUSA, 2007</u> 11-10-2007
<u>UECNA, 2006</u> 02-06-2006	<u>CAA, 2007a</u> 11-06-2007	<u>Municipality Haarlemmermeer, 2007</u> 23-02-2007	<u>ADVOCNAR, 2007</u> 11-10-2007
<u>Ferihegy</u>	<u>CAA, 2007b</u> 12-11-2007	<u>KLM, 2007</u> 28-02-2007	<u>AdP, 2007a</u> 11-10-2007
<u>BAirp, 2007</u> 30-11-2007	<u>DfT, 2007</u> 05-07-2007	<u>*LVNL, 2007</u> 27-02-2007	<u>AdP, 2007b</u> 09-10-2007
<u>GKM, 2007</u> 29-11-2007	<u>*HACAN, 2007</u> 04-06-2007	<u>MNP, 2006</u> 10-11-2006	<u>ADVOCNAR, 2007</u> 6-10-2007
<u>HungaroControl2007</u> 29-11-2007	<u>HACC, 2007</u> 04-07-2007	<u>NSM, 2007</u> 29-01-2007	<u>Air France, 2007</u> 17-10-2007
<u>KVVM, 2007</u> 30-11-2007	<u>Local Authority, 2007</u> 10-06-2007	<u>RPB, 2007</u> 29-01-2007	<u>DGAC, 2007a</u> 12-10-2007
<u>Local council, 2007</u> 30-11-2007	<u>NATS, 2007a</u> 06-06-2007	<u>Province North Holland, 2007a</u> 16-01-2007	<u>DGAC, 2007b</u> 11-10-2007
<u>*NKH, 2007</u> 26-11-2007	<u>NATS, 2007b</u> 29-06-2007	<u>Province North Holland, 2007b</u> 31-01-2007	<u>DGAC, 2007c</u> 16-10-2007
<u>Heathrow</u>	<u>AAS</u>	<u>V & W, 2007a</u> 22-12-2006	<u>ENCP, 2007</u> 15-10-2007
<u>AEF, 2007</u> 07-06-2007	<u>AAS, 2007a</u> 22-02-2007	<u>*V & W, 2007b</u> 23-12-2007	<u>*IAURIF, 2007</u> 10-10-2007
<u>BA, 2007</u> 14-06-2007	<u>AAS, 2007b</u> 06-03-2007		

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ANNEX 3: ABBREVIATIONS AND ACRONYMS

AAS	Amsterdam Airport Schiphol
ACI	Airport Council International
ACNUSA	Autorite de contrôle des nuisances sonores aeroportuaires (French Authority to control noise nuisance from aviation)
ADEME	Agence de l'Environnement et de la Maîtrise de l'Energie (French Agency for the Environment and Energy Management)
AdP	Aéroports de Paris
ADVOCNAR	Association de Defense Contre les Nuisances Aeriennes (French Association against noise annoyance from aviation)
AEF	Aviation Environment Federation
ANCAT	Abatement of Nuisances Caused by Air Transport
ANIS	Aircraft Noise Index Study
ANMAC	Aircraft Noise Monitoring Advisory Committee
ANNA	Airport noise-non-auditory
ARC	Airport Regions Conference
BA	British Airways
BAA	British Airport Authority
Bairp	Budapest Airport
BEVER	BeleidsVernieuwing bodemsanering
BGT	BGT Hungaria Kornyezettechnologia Kft (Hungarian Consultancy Hungaria Environmental Technology Ltd)
BGW	Bodemgebruikswaarden (Dutch Land-use specific Remediation Values)
BRGM	Bureau de Recherches géologiques et minières (French Institute of Geological and Mining Research)
BSB	Bodem Sanering Bedrijventerreinen (Dutch foundation for Soil Remediation for Industrial Areas)
CAA	Civil Aviation Authority
CABERNET	Concerted Action on Brownfield and Economic Regeneration Network
CARACAS	Concerted Action on Risk Assessment for Contaminated Sites in Europe
CDA	Continuous Descent Approach
CdG	Charles de Gaulle
CEAP	Committee on Aviation and Environmental Protection (of ICAO)

CLARINET	Contaminated Land Rehabilitation Network for Environmental Technologies
CROS	Commissie Regionaal Overleg Schiphol (Schiphol Regional Advisory Committee)
DEFRA	Department of Food, Rural Affairs and Environment
DfT	Department for Transport
DGAC	Direction Générale de l'Aviation Civile (French Civil Aviation Authority)
DRIRE	Directions Régionales de l'Industrie, de la Recherche et de l'Environnement (French Regional Regional Directorate for Industry, Research and the Environment)
EA	Environment Agency
ECAC	European Civil Aviation Conference
EDR	L'évaluation détaillée des risques (French Detailed Risk Assessment)
EEA	European Environmental Agency
ENCOM	Environnemental Committee (of IATA)
END	Environmental Noise Directive: Assessment and Management of Environmental noise
ENVIPOLCON	Environmental Policy Convergence in Europe
EU	European Union
GKM	Gazdasági és Közlekedési Minisztérium (Hungarian Ministry of Economy and Transport)
GPPN	Global Public Policy Networks
HACAN	Heathrow Association for the Control of Aircraft Noise
HERACLES	Human health and Ecological Risk Assessment of Contaminated Land
IATA	International Aviation Transport Association
IAURIF	Institut d'Aménagement de la région Ile-de-France (Institute for Urban Planning and development of Ile-de-France Region)
ICAO	International Civil Aviation Organisation
ICCL	International Committee on Contaminated Land
ICPE	Installations Classées pour la Protection de l'Environnement (Installations Classified for Environmental Protection)
ICRCL	Inter-Departmental Committee on the Redevelopment of Contaminated Land

INERIS	Institut National d'Environnement Industriel et des Risques (French National institute for the environment and Risk Assessment)
IPO	Interprovinciaal Overleg (Dutch Association of provinces of The Netherlands)
ISO	International Organisation for Standardisation
KE	Kosten Eenheid (Former Dutch index for noise)
KGI	Környezetvédelmi Intézet (Hungarian formerly Institute for Environmental Management)
KLM	Koninklijke Nederlandse Luchtvaart Maatschappij (Royal Dutch Airline)
KVVM	Környezetvédelmi és Vízügyi Minisztérium (Hungarian Ministry of Environment and water)
LACORS	Local Authorities Coordinators of Regulatory Services
Lden	Lday-evening-night
LGA	Local Government Association
IVNL	Lucht Verkeersleiding Nederland (Netherlands Air Traffic Control)
MAGYOSZ	Magyar Gyáriparosok Országos Szövetsége (Association of Hungarian Companies and Factories)
MAVESZ	Magyar Vegyipari Szövetség (Hungarian Association of Chemical Industries)
MEDAD	Ministère de l'écologie, du développement et de l'aménagement durables (French Ministry of Ecology, Sustainable Development and Planning)
MLG	Multi-Level Governance
MNP	Milieu- en Natuurplanbureau (The Netherlands Environmental Assessment Agency)
NA65/ N70	Number Above 65, Number above 70
NATO/CCMS	North Atlantic Treaty Organisation Committee for Challenges to Modern Society
NATS	National Air Traffic Service (UK)
NICOLE	Network for Industrially Contaminated Land in Europe
NKH	Nemzeti Közlekedési Hatóság (Hungarian National Transport Authority)
NLR	Nederlands Ruimtevaart Laboratorium (Dutch National Aerospace Laboratory)
NNI	Noise and Numebr Index
NPdB	Noise Perceived decibel

NPR	Noise Preferential Routes
OECD	Organisation for Economic Co-operation and Development
OKKP	Országos Környezeti Kármentesítési Program (Hungarian National Environmental Remediation Programme)
OKTVF	Országos Környezetvédelmi, Természetvédelmi és Vízügyi Főfelügyelőség (Hungarian National Inspectorate for Environment, Nature and Water)
PEB	Plan d'Exposition au Bruit (French Noise Exposure Plan)
PGS	Plan de Gêne Sonores, (French Noise Disturbance Plan)
PI	Psophic Index
PKB-Schiphol	Planologische kernbeslissing Schiphol
PPP	Polluter Pays Pinciple
RBLM	Risk-Based Land Management
RIVM	Rijksinstituut voor Volksgezondheid en Milieu (Dutch National Institute for Public Health and the Environment)
SASIG	Strategic Aviation Special Interest Group Strategic Aviation Special Interest Group
SGV	Soil Guideline Value
SNM	Suchting Natuur en Milieu (The Netherlands Society for Environment and Nature)
SPOSH	Significant Possibility of Significant Harm
SRE	L'évaluation simplifiée des risques (French Simplified Risk Assessment)
TCB	Technische Commissie Bodem (Dutch Technical Soil Commission)
TNO	Technisch natuurkundig onderzoekscentrum (Netherlands organisation for applied research)
TOPS	Tijdelijk Overleg Platform Schiphol (Temporary Consultation Platform Schiphol)
TSSP	Thematic Strategy for Soil Protection
UECNA	European Union against Aircraft Nuisances
UK	United Kingdom
UN	United Nations
V&W	Ministerie van Verkeer en Waterstaat (Dutch Ministry of Transport, Public Works and Water Management)
VCI	Values de Constante d'Impact (Fixed Impact Values)

VITUKI	Vízgazdálkodási Tudományos Kutató Intézet (Hungarian Research Institute for Environment and Water Company for Public Use)
VNG	Vereniging Nederlandse Gemeenten (Association of Netherlands Municipalities)
VNO-NCW	Vereniging van Nederlandse Ondernemers en Nederlands Christelijk Werkgeversverbond (Confederation of Netherlands Industry and Employers)
VPE	Volume de Protection Environnementale (Environmental Protection Volume)
VROM	Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieu (Netherlands Ministry of Housing, Spatial Planning and the Environment)
VTC	Voluntary Transnational Communication
WHO	World Health Organisation

CURRICULUM VITAE

Sietske Artemis Veenman was born in Rotterdam on the 20th of December 1978. She completed secondary school (Sint Stanislas College in Delft) in 1997, after which she studied Human Geography at the Department of Human Geography and urban and regional Planning, Faculty of Geosciences, Utrecht University. She followed several courses at the Centre for Environmental Science, Leiden University. Her bachelor thesis studied the dynamics and processes of transition in society-nature interactions in the forest fringe of the Sierra Madre, Philippines. After completing her Bachelor thesis, Sietske went on to study Social and Political Sciences of the Environment at Nijmegen School of Management, Radboud University Nijmegen. Her master thesis analysed strategies of different proactive member states of the European Union to influence European legislation.

Sietske continued to work at the Department of Social and Political Sciences of the Environment as a junior researcher and participated in the international project Environmental Policy Convergence in Europe (ENVIPOLCON). Building on this project, she started her PhD in 2004. At present, she works as a consultant for DHV in Amersfoort, Unit Management Consultants, where she participates in the evaluation of various policy processes.

Stellingen behorend bij het proefschrift

Domestic Environmental Policy & Transnational Communication

Sietske Veenman

- 1 Van de boom van internationale kennis valt nog veel laaghangend fruit te exporteren
- 2 Waar internationale organisaties meer ontvankelijk zijn voor het uitwisselen en leren van technische kennis, lenen internationale netwerken en individuele contacten zich beter voor de uitwisseling en het leren van ervaringen
- 3 Ervan uitgaande dat de “core issues” zoals gedefinieerd in dit proefschrift hun waarde hebben bewezen, is het aan te bevelen om in vergelijkbare onderzoeken deze “core-issues” te hanteren
- 4 De vergelijking tussen de casus bodemsanering en de casus geluid rond luchthavens bewijst dat concurrentie leren door vrijwillige transnationale communicatie (VTC) niet ten goede komt
- 5 De uitdrukking “het braafste jongetje van de klas” reflecteert de opstelling van de Nederlandse overheid ten opzichte van bodemsanering van 1980 tot 1997
- 6 Doordat de gebruikte formules de geluidsoverlast rondom luchthavens niet goed weergeven, praten actoren met een technische en maatschappelijke achtergrond langs elkaar heen in hun discussies hierover
- 7 Neil Armstrongs “giant leap for mankind” kan herhaald worden wanneer mensen echt met elkaar gaan samenwerken
- 8 Als de gebroeders Wright weet hadden gehad van klimaatverandering, zouden ze nooit het eerste vliegtuig gebouwd hebben
- 9 Een proefschrift is als abstract expressionisme: weinig mensen snappen precies waar het over gaat, maar iedereen vindt het creëren ervan een knappe prestatie
- 10 Bij een promotietraject zijn Daedali nodig om hun Icarus voor vallen te behoeden



Domestic environmental policy & transnational communication

Recent studies on global governance and policy convergence suggest that transnational communication is increasingly influential in the process of domestic environmental policy-oriented learning. So far, however there has not been a thorough empirical and conceptual examination of how this process works, nor how it differs among countries.

Sietske Veenman provides insight into how domestic institutional factors determine policy-oriented learning from transnational communication. Armed with a comprehensive conceptual framework, she has studied such learning processes in France, the Netherlands, Hungary and England, focussing on the policy fields of contaminated land and noise around airports (Schiphol, Heathrow, Charles de Gaulle and Ferihegy airports respectively).

Her work results in a specification of different types of knowledge related to types of learning, which can be used to enhance the understanding of the relationship between domestic environmental policy-oriented learning and transnational communication.

Sietske Veenman currently works as a consultant for DHV in Amersfoort, the Netherlands.



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