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## **VAIE**

**Voluntary Agreements – Implementation and Efficiency**

# **Task B Framework for the Country studies**

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# Preface

The VAIE project (Voluntary Agreements – Implementation and Efficiency) is an EU project supported by »DG XII; Science, Research and Development« through »The Joule Research Programme« (Contract No JOS3-CT97-0021/Proposal No PL97-0152). Several national institutions have also financially supported the project. The project began February 1998 and is supposed to end by February 2000. For the time being fourteen researchers and project assistants from five institutions co-operate in the project. Stephan Ramesohl and Kora Kristof from the Wuppertal Institute in Germany; Kornelis Blok and Martijn Rietbergen from Utrecht University in the Netherlands; Matthieu Glachant and Martina Chidiak from CERNA/Ecole des Mines in France; Peter Helby and Jonas Kågström from Lund University in Sweden; and finally Anders Larsen, Signe Krarup, Lars Gårn Hansen, Kirsten Hansen, Katja S. Johannsen and Trine Pippi Kræmer from AKF, Denmark.

The VAIE project investigates the conditions under which voluntary agreements can be expected to achieve environmental targets in an efficient way. This is carried out by a meta-analysis, case studies in five countries, an analysis of the actual outcome in relation to the baseline, and finally an analysis of the role of EU vis-à-vis the member states regarding execution of voluntary agreements in member states and at EU level.

Thus, the generic research questions of the project are:

- what is Voluntary Agreements?
- how does Voluntary Agreements work ?
- is there a role for VA to play in energy policy in the future, on country level and/or at the EU level?

This paper presents the framework for the country studies in the VAIE project. It is a working paper describing the guidelines of these studies, the

so-called task B. It is a purely methodological paper and therefore, it includes no empirical results. The paper briefly introduces general research areas and research design of the whole project. However, the main part of the paper focuses on the structure of the country studies, especially the methodology of the case studies, which is a central part of every country study and actually of the whole project. A significance that could be seen by almost half the budgeted manpower is used to accomplish the country studies (42 manmonths in total). The paper emphasises the methodology of the case studies only submitting a few theoretical discussions mainly in order to structure the analyses. The methodology of the case studies is followed by a discussion of the later assessment of both case studies and country studies.

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# 1 Summary and Design of Investigation

In recent years, agreements are frequently used in the field of energy and environmental policy in both national and international contexts. For instance, more than 300 agreements were concluded in EU in the environmental and energy area during 1996. (European Environmental Agency, 1997). On the one hand, the large number of agreements illustrates a rising appeal to use agreements as a policy instrument in energy and environmental policy, e.g. towards industry. On the other hand, it also indicates that agreements might have become a fashion among policy instruments, as it covers all kinds of constructions. In this project, agreements are among two or more partners, where one of the partners represents the authorities and one represents industry. The agreements could either be concluded on a collective level, e.g. with an industrial sector or with individual firms.<sup>1</sup> The agreement determines goals and possible means in relation to energy and environmental behaviour of industry. Often the agreements reflect national targets of sustainability.

Many attempts have been made to describe the various types of agreements. Krarup and Larsen (1998) divide in six categories of agreements used as a policy instrument on a foundation of empirical research. I.e. agreements concerning research and development, labelling and standards; agreements with very specific goals; agreements creating networks; agreements focussing on information and change in attitude; ad agreements inside the frame of general national goals.<sup>2</sup> The VAIE project concentrates on the last type of agreements. All the case countries in the project, i.e. Denmark, France, Germany, the Netherlands, and Sweden, have signed the Kyoto Protocol and thereby promised to reduce their emission of CO<sub>2</sub>. An essential policy instrument in this connection regarding industrial energy and environmental policy seems to be agreements. Thus, the object of

analysis in the VAIE project is agreements concluded in the energy field with industrial sector organisations and/or firms on the one hand and national authorities on the other. The targets of these agreements are energy savings, increased energy efficiency or reductions in CO<sub>2</sub> emissions.

We look into agreements at different levels of implementation in this project. Therefore, it is necessary to specify more clearly the terms of agreements. When we talk of an *agreement scheme (AS)*, we refer to agreements used as policy instruments. Using the term *voluntary agreement (VA)*, we refer to a specific example of either a collective or an individual agreement. Finally, when talking of *energy conservation projects (ECP)*, we refer to specific technical and organisational activities aimed at energy issues at firm level initiated by a specific voluntary agreement.

Many explanations are given relating to why agreements have become so popular in energy and environmental policy. Firstly, a growing number of environmental and energy problems seem to be unsolvable by traditional policy instruments and technical solutions, in this group of problems the reduction of CO<sub>2</sub> emission is a major issue. Therefore, it is possible to observe a yearning after new types of policy instruments. A second issue is competition and distribution of wealth that seems to be a central obstacle regarding the ambitious goals in the energy and environmental policy in most countries. This is especially true to energy and environmental policy towards the industrial sector. This problem calls upon policy instruments in a spirit of shared responsibility, e.g. agreements. In this light, the VAIE project investigates the effectiveness of agreements.

This report is thought to work as a manual for the country studies. This means that the sections can be read separately. Consequently, when reading the paper as a whole many repetitions will occur. This might seem confusing, but when carrying out the country studies, we hope it will be helpful to be able to consult this paper as a manual.

The following sections briefly introduce research design of the whole project and the case studies. It also presents general research areas including field of investigation and general hypotheses.

## 1.1 Design of Investigation

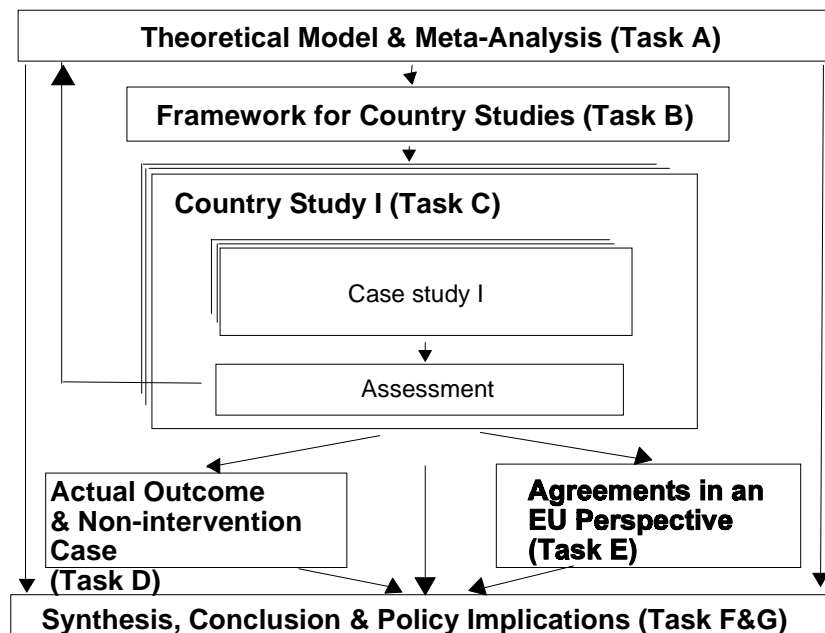
The overall research issue of the VAIE project is the effectiveness, advan-

tages and disadvantages of agreements used as a policy instrument towards industry in energy policy.<sup>3</sup> The approach of the project is interdisciplinary. Four analyses with four different theoretical backgrounds provide material on the research issues. In this way, it is our hop to produce a holistic picture of agreements used as a policy instrument and their capabilities. This section briefly introduces the research design of the whole project and outlines the research design of the country studies.

### 1.1.1 Design of the VAIE Project

The VAIE project has four quite different approaches to the analysis of agreements, which together makes up the whole project. The different approaches are called tasks. Figure 1.1 outlines the relation among the different tasks.

Figur 1.1 Investigation design of the VAIE project



The four approaches in the analysis are:

– *Theoretical model and meta-analysis (Task A)*

In this task three theoretical models on voluntary agreements are presented. The models are confronted with a meta-analysis based on existing investigations of agreements. It covers both agreement schemes and voluntary agreements. The goal is to point to central actors in the policy making and implementation processes, and to new ways of distributing knowledge and information among the actors. Thereby, the analysis (with given strict economic assumptions) discovers the welfare implications of agreements.

– Framework for the country studies (Task B)

It outlines the methodology for the country studies.

– Country studies(Task C)

The five country studies in Denmark, France, Germany the Netherlands, and Sweden have a sociological approach. These studies are based on case studies of agreement schemes, voluntary agreements and energy conservation projects. The objective is primarily to expose mechanisms in relation to the implementation process.

– *Actual outcome & non-intervention case (Task D)*

This task has three different approaches. First a historical analysis of the development of energy efficiency in industry based on statistical data. It is used to adjust the non-intervention case in relation to the general energy efficiency development. Then follow two analyses of the actual outcome of the agreements regarding saved energy. I.e. an estimation of the effect of a voluntary agreement based on behaviour stated by firms and then a simulation of the energy efficiency investment behaviour based on an existing model.

– *Agreements in an EU perspective (Task E)*

The task discusses the possibility of agreement schemes at EU level. The discussion is based on the country studies as well as the actual outcome and non-intervention case analyses.

– *Synthesis, conclusion, and policy implications (Task F & G)*

Discussion and conclusion in relation to the previous four tasks. This task also for dissemination purposes includes a workshop where we try to incorporate experience from other EU countries.

This paper primarily gives a structure for task C, i.e. the framework of the country studies.

### 1.1.2 **Design of the Country Studies**

The five country studies have a sociological approach based on a network approach (see section 2.3), especially in relation to the research objects of voluntary agreements and energy conservation projects. Furthermore, it is inspired by a policy-making and implementation model (see section 2.2) particularly for the research object agreement scheme. Section 3.2 Structure in Case Studies, goes deeper into the specific theoretical issues in order to make them operate in the country studies.

The country studies are carried out in Denmark, France, Germany, the Netherlands, and Sweden. Each country study covers at least one agreement scheme. In most countries only one agreement scheme exists in the field of energy policy to enhance energy efficiency. Therefore, the selection is rather obvious. Nevertheless specific voluntary agreements under an agreement scheme differ a lot, e.g. they might be collectively concluded with an industrial sector or individually concluded with a specific firm. In order to lighten the task of comparing the country studies each country will as far as possible cover voluntary agreements with or within the glass and the paper and pulp industries. In some countries voluntary agreements in both sectors do not exist. These countries will, besides a voluntary agreement with the paper and pulp or glass industries, include a national speciality. The national speciality is characterised by its difference from the other voluntary agreements described. In general, each country seeks to cover voluntary agreements that differ in structure, content and success. Each country study covers all levels of analyses, i.e. agreement schemes, voluntary agreements and energy conservation projects. These issues are discussed further in section 3.1 Case Studies.

Each country study includes assessments of agreement schemes, voluntary agreements and energy conservation projects. It discusses the hypotheses related to the different research objects, and the relation to sustainability. Especially, agreement schemes are also discussed in relation to normative criteria and in relation to Russell's criteria for comparing policy instruments, see chapter 4, Assessment of Country Study. The voluntary agreements and the energy conservation projects are discussed in relation to their

influence on energy practice in relation to organisational and technical changes and supporting initiatives. Furthermore, voluntary agreements are discussed in relation to whether or not they fulfil the goals fixed in the agreement. The criteria for assessment of voluntary agreements and energy conservation projects are described in more details in section 3.,3 Assessment of the Case Study.

## 1.2 **Research Issues**

The objective of the VAIE project is to discover under which conditions agreements can be expected to achieve environmental targets in an efficient way. As agreements include many different constructions, the project looks into: What are agreements and how do they work? The project also discusses whether there is a role for agreements in future energy policy at national or/and EU level. However, the last issue is an assignment of task E and will not be dealt with in the country studies.

The assignment of the country studies is to describe the process of implementing agreement schemes, voluntary agreements and energy conservation projects as energy policy towards industry. Such a description is background for explaining actions of the involved actors along with the effects of the agreements. On this foundation we will clarify the relation between structure of an agreement and its effect, common patterns of behaviour in relation to the agreement as well as general advantages and disadvantages of agreements as a policy instrument.

Below, we briefly introduce the investigations and hypotheses of the country studies of the VAIE project.

### 1.2.1 **Field of Research**

In the project, we define agreements as a commitment undertaken by a firm or/and industrial organisation on the one hand and public authorities on the other hand. The commitment is the result of negotiations with public authorities which also is explicitly recognised by the authorities. Other voluntary approaches, such a unilateral declared codes of conduct, fall outside of this project.<sup>4</sup> The scope of the project is agreements concluded in the energy area with industrial firms and industrial organisations with targets like energy saving, increased energy efficiency or reduction in CO<sub>2</sub>

emissions.

A number of empirical and a few theoretical studies have until now been carried out to evaluate agreements. The main point of interest in these studies has been the negotiation process and the written outcome – the agreement contract. Less interest has been on the implementation process and the efficiency of agreements. These two points are the focus points in this project. The project focusses on the process of policy making and implementation in relation to agreements. The understandings of the agreement of the actors as well as the actors involved changes from the decision of entering an agreement until the implementation and the final outcome, e.g. increased energy efficiency and reduced CO<sub>2</sub> emission.

Therefore, the aims of the project are:

- to improve the understanding of agreements dealing with energy efficiency and CO<sub>2</sub> reductions
- to discover under what conditions agreements can be expected to achieve the environmental target in an efficient way
- via the identifications of agreement best-practice, to give recommendations on how to improve the policy mix to be used to cope with energy efficiency and reductions in CO<sub>2</sub> emission in industry.

The discussion of efficiency in relation to agreements should be understood in a broad sense covering traditional technical and economic judgements as well as sociological evaluations.

### 1.2.2 **Key Research Issues & Hypotheses**

Even under the above mentioned limits, agreements are many different kinds of constructions working in different national surroundings. Therefore, it is necessary to describe what agreements are in different contexts and to judge how they work in these contexts. Different actors have different reasons to get involved in agreements at different levels of the process. We discuss agreements at three levels, i.e. agreement scheme (AS) referring to agreements used as policy instruments; voluntary agreement (VA) referring to a specific example on either a collective or an individual agreement; and energy conservation projects (ECP) referring to specific technical and organisational activities aimed at energy issues at firm level initiated by a specific voluntary agreement. These levels of agreements structure the

investigation. The investigation is also structured by the network approach and the policy formulation and implementation model. Related to the three arenas of policy formulation, negotiation and implementation, the case studies look after actors involved (nodes), their relations (links), if and how agreements interfere with existing networks of policy, especially regarding meaning and practice, influence regarding knowledge distribution; and the effects of the agreement. These are the key research issues of the studies. They relate to hypotheses and assessment criteria of the analysis. Below, we briefly sketch the key research issues, hypotheses and assessment criteria of the country studies. See also Appendix II.

### **Agreement Schemes**

For almost all the agreement scheme studies in the VAIE project, the process of formulating, negotiating and implementing the scheme is now history. The agreement schemes have now specific voluntary agreements as a basis and are an integrated part of national energy policy approaching industry. Policy formulation, negotiation and implementation regarding agreement schemes primarily relate to parliament discussions, lobbying and implementation in the state administration. This part of the process is not the one most in focus in the VAIE project, but it provides a background for the description regarding voluntary agreements and energy conservation projects. Below, the key research issues, hypotheses and assessment criteria of the country studies. See also Appendix II.

### **Key research issues relate to the following themes**

- discussion areas such as:
- policy formulation
- negotiation
- implementation
- actors involved
- their relations
- stability of the network (meaning and practice)
- knowledge distribution
- effects.

## **Hypotheses**

- Industrial organisations basically support agreements in order to avoid stricter regulation in the future, e.g. emission standards.
- Politicians primarily support agreements to actively work for environmental protection without overburdening the firms.
- Agreements as a policy instrument close out the influence of parties not directly involved in the process, e.g. environmental organisations.
- AS is a continuation of the logic of previous energy policy towards industry.
- The effects of agreements in terms of energy savings are very close to the base-line scenario.

## **Assessment criteria**

- Discussion of hypotheses
- Normative demands for agreement schemes
- Criteria for discussing agreement schemes
- Influence on sustainability.

## **Voluntary Agreements**

Voluntary Agreements studied in the VAIE project are examples of specific implementation of an agreement scheme. The level is inter-organisational, i.e. between organisations, between authorities and representative of the industry. If it is a collective agreement, the focus is on the agreement between authorities and an industrial organisation and the implementation of the agreement in member firms of the industrial organisation. The voluntary Agreements are the main focus of the VAIE project and the focus is on description of the process and the outcome. Below, the key research issues, hypotheses and assessment criteria are listed. They are developed further in Appendix II and section 3.3 Assessment of the Case Studies.

## **Key research issues relate to the following themes**

- discussion areas such as:
- policy formulation
- negotiation
- implementation
- actors involved

- their relations
- stability of the network (meaning and practice)
- knowledge distribution
- effects.

## **Hypotheses**

- Firms have a big room for interpretation within the different contracts of VAs.
- Authorities seldom use sanctions if the firms do not keep a VA contract.
- Industrial sectors with many big firms are more simple in relation to VAs than industrial sectors with many SMEs.
- In the short run the VA does not improve the level of energy efficiency considerably above the non intervention level, but in the long run new procedures and a higher level of information regarding energy efficiency will lead to considerable energy savings.
- Firms get more information through VA networks on energy efficiency from other firms within or without the industrial sector, which reduces the transaction costs of energy saving projects.
- Authorities get a deeper knowledge of the specific production processes through VAs (VAs decrease the asymmetric information problem).

## **Assessment Criteria**

- Discussion of hypotheses
- Technical and organisational changes
- Effects on energy practice
- Relation to supporting initiatives
- Fulfilment of Agreements' own targets
- Influence on sustainability.

## **Energy Conservation Projects**

The energy conservation projects are specific technical and organisational activities aimed at energy issues at firm level initiated by a specific voluntary agreement. The investigation of such a project illustrates how the agreement interacts with the specific culture at a firm. The focus is on the energy practice and its possible transformation in the firm.

The policy formulation regards the firms' agenda setting and decisions

in relation to the demands of the voluntary agreement. The negotiation relates to reformulation and negotiation of energy conservation projects normally between employer and employees, but it could also be the local electrician, the technical management or somebody else. A typical negotiation is here less important than in relation to agreement schemes and voluntary Agreements, but if the energy conservation project touches issues of importance employees it might be very essential, e.g. issues regarding number of jobs. The implementation relates to how the energy conservation projects are integrated in other practices in the firm. Below, key research issues, hypotheses and assessment criteria are listed.

### **Key research issues relate to the following themes**

- discussion areas such as:
- policy formulation
- negotiation
- implementation
- actors involved
- their relations
- stability of the network (meaning and practice)
- knowledge distribution
- effects.

### **Hypotheses**

Energy conservation projects are often a minor appendix to the everyday life of the firm, therefore they will often relate to other issues the firm find more important, e.g. environmental considerations.

Most energy conservation projects are implemented by a top-down approach from management.

Energy conservation projects are often rather technical and therefore involve the technical staff rather than ordinary employees.

Energy conservation projects do not relate to the PR strategy of the firm.

### **Assessment criteria**

- Discussion of hypotheses
- Technical and organisational changes
- Effects on energy practice

- Relation to supporting initiatives
- Influence on sustainability.

## Notes

1. In economic literature agreements with an industrial sector are referred to as covenants, i.e. in our terms collective agreements, while agreements with an individual firm, are referred to as a contract, i.e. in our terms individual agreements. E.g., see van Dunn, 1993.
2. Other ways to structure various types of voluntary agreements can be found in e.g. International Energy Agency (IEA, 1997) and European Environmental Agency (EEA, 1997).
3. In the country studies the actual outcome data are based on the words of the interviewees. This paper skips the discussion of stated energy behaviour in relation to actual behaviour as this is investigated in task D of the VAIE project.
4. This definition is the same as used for environmental agreements in the report Environmental Agreements, EEA.

## 2 Theoretical Elements

The VAIE project regards implementation and effectiveness of agreements used in energy policy. An important element in evaluating the effectiveness is the actual outcome as a result of change in behaviour due to agreements in relation to a referee level. The outcome of an agreement basically depends on its ability to change the behaviour in relation an overall goal. In this project the target group of agreements used in energy policy is industry. The goal of the policy is energy saving, increased energy efficiency or reduction in CO<sub>2</sub> emissions. An effect of an agreement can be evaluated in many different ways. Appendix II discusses the issues we have chosen to use in the country studies of the VAIE project. The country studies are primarily based on interviews, and therefore, the main focus is on changes in behaviour (organisational and technical changes) resulting in changes in energy efficiency. In the country studies, we will primarily base the observed behavioural changes on statements of the interviewees, in spite of the difference that might exist between stated and actual behaviour. However, task D investigates actual behaviour in relation to a referee level.

Different theories understand behaviour and its interdependency of actors and surroundings differently. Section 2.1.1 discusses the economic and the sociological disciplines' approaches to institutional theory.

The economic discipline sees actors' preferences as consistent and external to the surroundings in the process of acting, though the preferences are created in the face of cognitive limits, incomplete information, and difficulties in monitoring and enforcing agreements (Pedersen, 1997; DiMaggio & Powell, 1991b).

The sociological approach to institutional theories distinguishes actors' behaviour as a product of their meaning and understanding of a situation of actions, thus, internal to the actors. Furthermore, the sociological approach

stresses the meanings and understandings as collective systems rather than individual characteristics. (Pedersen, 1997; DiMaggio & Powell, 1991b). The frame for the country studies takes its starting point in the understanding of behaviour in relation to the sociological approach to institutional theories.

Research always draws boundaries between essential and not essential parts of reality. In this way, it becomes possible to see things we do not notice in our everyday life. This study also draws boundaries. The boundaries are to some degree defined by the theoretical background and the empirical experience of the researchers in the project. The background forms a kind of glasses through which the world is seen. The project brings together many different researchers from various research environments, therefore, it is necessary to unify the setting of boundaries within the same task. The VAIE project emphasises an empirical foundation. Therefore, only theoretical fragments will be presented below contrary to a total theoretical model. The theoretical fragments or elements structure the country studies, rather than they are proved correct or false through the analysis. The theoretical fragments used in the analysis are actor and structure interdependence, a policy-making and implementation model and network approaches. The structure/actor interdependence throws light on relations between context and the behaviour of the actors. The policy-making and implementation model helps to define the boundaries of a specific context and understands the outcome of an agreement, while the network approaches illuminate the importance of relations among actors for actual behaviour. These issues are discussed below.

## 2.1 **Actors and Structures**

The VAIE project distinguishes itself by a strong foundation on empirical information regarding experience with agreements in the energy area. It also covers a number of theoretical approaches, as always when many different institutions and researchers co-operate, as well as the four tasks employ different theoretical approaches, see section 1.1.1. In order to avoid contrasts between the various theoretical approaches within the same task, it is important to be aware of the preconditions in the different tasks and

levels of analysis. Basic elements like structure and actors are helpful components in such a process.<sup>1</sup> Definitions of actors and structure and their interdependence are also important in relation to the possibility of generating general conclusions at the end of the project. Finally, the definition of actors and structures is essential regarding the methodology in the case studies. For these reasons, the following section will discuss actors and structures and their interdependence.

### 2.1.1 Clarifying the Concepts

Many approaches exist to the discussion of structures and actors each with different definitions of the concepts. The starting point for the discussion below is institutional theories, i.e. theories with a common interest in structural aspects called institutions.<sup>2</sup> The approach covers from game theories in the economic discipline to social constructivism in the sociological discipline.<sup>3</sup> The VAIE project covers economically as well as sociologically based analyses, so the institutional theories seem appropriate. Therefore, the definition of structures and actors in the following section relates to these theories.

The institutional theory's structure is called institutions. Scott (1995) presents the following omnibus definition of institutions:

»Institutions consist of cognitive, normative and regulative structures and activities that provide stability and meaning to social behaviour. Institutions are transported by various carriers – cultures, structures, and routines – and they operate at multiple levels of justifications.« (Scott, 1995, p. 33)

The core of the definition is the stage setting for social behaviour by creating meaning and stability through cognitive, normative and regulative structures. This is also important in the VAIE project. Social behaviour is performed by actors under the immediate circumstances handed down. These circumstances creating stability and meaning for the actors in relation to their social behaviour are institutions. Thus, institutions constrain and regulate behaviour, but at the same time produce meaning and stability for the acting actors. Different theoretical approaches emphasise different parts of the definition of institution as well as they see different relations between the institutions and the actors. Below, two paragraphs discuss an economic

and a sociological approach to institutions and social behaviour.

### **Actors and Institutions in an Economic Approach**

The economic approaches are based on a socially realistic ontology<sup>4</sup> and some degree of rational choice in relation to logic of action. Thus, the »reality« to be investigated is external to the individual – imposing itself on individual consciousness from without (Scott, 1995). The actors react in relation to a physical, biological and psychological reality, which can be found and described independent of the actor. The surrounding reality influences the behaviour of the actor, but it can be investigated independent of the actor – from without. Also, the actors are real – natural people having inherited capacities to act so as to secure and protect their interests. The interests are taken for granted. Actors are primarily responding to incentives and constraints operating in their environment, and again also the environment is real – part of the natural world (Scott, 1995).

DiMaggio and Powell (1991b) also discuss institutional theory. They define institutions in the economic approach<sup>5</sup> as regulations for acting.<sup>6</sup> The economic approach to institutional theories adds a dose of realism to the standard assumption of actors' behaviour over stable and consistent preferences. They do so, the institutional economists argue, due to cognitive limits, incomplete information, and difficulties in monitoring and enforcing agreements. Institutions arise and persist when they confer benefits greater than the transaction costs incurred to creating and sustaining them. Thus, the primary unit of analysis is transaction costs (DiMaggio & Powell, 1991b). The focus in an institutional analysis with this approach is on rule-setting, monitoring and sanction activities. Though, these processes might operate through diffuse, informal mechanisms, involving folkways such as shaming or shunning activities or they may be highly formalised and assigned to specific actors, such as the industry or the parliament. According to this perspective legitimate actors are those established by and operating in accordance with relevant legal or quasi-legal requirements (Scott, 1995). DiMaggio and Powell (1991b) point at the actors constructing the institutions that gives the output they desire. The institution changes as the actors change. Therefore, institutions are establishments of relative permanence, as long as the cost of creating and sustaining an institution is below the transaction costs if it did not exist. The actors

legitimated by the institution will attempt to keep the institution as it is. New actors will attempt to construct themselves in order to get legitimacy from the institutions. In this way the actors conserve the institutions.

The institutions are embedded in various types of repositories. Scott identifies three types of carriers of institutions, i.e. culture, social structure and routines. Each carrier is defined differently according to the theoretical approach in focus. According to the economic approach cultural carriers primarily rely on interpretative structures, this approach stresses the importance of conventions, rules and laws. The social structural carriers rely on social pattern expectations connected to networks of social positions: role system. The economic approach is likely to view this carrier as governance system emphasising the power aspects of these structures. Finally, the routines as carriers of institutions in the form of habitualised behaviour and routines are in the economic perspective seen as protocols and standard procedures.

### **Actors and Institutions in a Sociological Approach**

The sociological approach is likely to work from a social constructor set of assumptions and to take a broader view of social choice and action. The »reality« to be investigated is the product of individual consciousness – a product of one's mind. At the same time the construction processes construct the actors, no matter if they are individuals or collectives. Thus, the actors are inseparable from the context in which they occur. The actors do not discover the world and its ways, but they always collectively invent the world – in their minds. Such inventions arise out of and are informed and constrained by existing social arrangements and beliefs. In the social construction process symbols, words, signs, and gestures have their effects by shaping the meaning we attribute to objects and activities. Meaning arises in interaction and is maintained – and transformed – as it is employed to make sense of the ongoing stream of happenings. Choice is informed and constrained by the ways in which knowledge is constructed. Individuals are not simply constrained but informed and empowered by pre-existing knowledge and rule systems (Scott, 1995).

DiMaggio and Powell (1991b) define institutions in relation to the sociological approach<sup>7</sup> as cognitive and cultural frames for explanations.<sup>8</sup> The focus in the analysis is on the rules that constitute the nature of reality

and the frames through which meaning is made. It stresses the cognitive dimension of human existence, not as internal and subjective, but as external and objective to the individual and shared by a collective (Scott, 1995). The institutions are created and developed in a historical process. They are tested incessantly in the process of new generations being socialised into the institutions and the institutions being legitimated (Andersen & Kasperen, 1996). The sociological approach sees legitimacy coming from adopting a common frame of reference for definition of a situation. To adopt an orthodox structure or identity in order to relate to a specific situation to seek the legitimacy that comes from cognitive consistency (Scott, 1995). DiMaggio & Powell (1991b) point at the institutions in a sociological approach as created through culture and history, creating the frames upon which the individuals act. Therefore, the institutions are very hard to change fundamentally, but through the social construction process, the socialisation and legitimating processes small modifications are continually embodied in the institution.

## Comparing the Concepts

Table 2.1 sums up the most important differences between the economic and the sociological disciplines' approach to institutional theory.

Table 2.1 Comparing the economic and sociological approaches to institutional theory

	<b>Economic discipline</b>	<b>Sociological discipline</b>
<b>Definition of institutions</b>	Regulations for acting	Cognitive and cultural frames for explanations
<b>Relation between actors and institutions</b>	Actors external to the institutions, the actors relate to the institution	Actors inseparable from the institutions, the institutions define the actors
<b>Changeability of the institutions</b>	Institution rather stable, changeable through actors' changes	Institutions very stable, slightly changeable through the process of socialisation and legitimation
<b>Carriers:</b> <b>Culture</b> <b>Social structure</b> <b>Routines</b>	Conventions, rules and laws Governance system (power) Standard procedures	Meaning Identity Practice

Sources and inspiration: DiMaggio & Powell (1991b) & Scott (1995).

### 2.1.2 Debate of Actor & Structure

In the rest of the paper, we will talk of structures instead of institutions, as

institutions in everyday language relate to organisations, e.g. universities and ministries. Therefore, it is possible to be confused by the use of the concept institutions. The definitions of structure equal the definitions of institutions in the previous paragraph depending on which discipline applies to the concept.

An important dispute in diverse social science theories is the relation between actors acting and structures binding the actors' possibility of behaving. In general terms, actor theories see action as an actor acting in relation to goals, preferences and values, while structure theories explain patterns of simple or complex fixed relations between elements like constraining actions of the actors. This debate is also visible between the economic discipline primarily applying actor theories and the sociological discipline mainly applying structure theories. In spite of the theoretical discussion, it is important to notice that the division between structure and actor is purely analytic. No one in the real world sees himself as an actor constrained by structure. Furthermore, the antagonism is more complex than it seems at first sight. One can question the equality of structure, macro and society on the one hand and individual, micro and actor on the other. Besides these issues, the assumptions of automatic freedom to actors in micro models, and a priori determinism by structure in macro models could also be questioned. Mortensen (1991) re-questions this problem to an issue of conscious volition creation of systems or structures contra reflection and non-controlled creation of systems or structures. Likewise, actors could be more or less free and the structure more or less binding the actors' behaviour.

Mortensen (1991) points at several issues regarding the antagonism of structure and actors. Firstly, the level of individuals could seem to be equal to a micro level, but the micro level also covers relations between individuals. Individuals are not equal to actors as actors are both individual and collective and are found at both micro and macro level. On the other hand, aggregated level is more than an accumulation of all individuals. Aggregated level is not equal to structure as structure is found both on macro and micro levels. A second dimension in the structure/actor debate is the hermeneutic and objective perspectives.

A hermeneutic perspective looks upon research as a process where the phenomenon interpreted by the researcher is itself an interpretation. There-

fore, the phenomenon is inseparable from the context in which it occurs. This, among other things, covers the social constructivism assumptions of the sociological discipline in relation to institutional theory.

The objective perspective to a considerable extent ascribes characteristics of action independent of the acting actor. Thus, the phenomena are relatively independent of the context. This among other things covers the economic discipline's approach to institutional theory. The two perspectives also use two different methodologies. The hermeneutic perspective makes use of qualitative methods, e.g. case studies, where the studied phenomenon is investigated in its own context. The objective perspective also employs quantitative methods, where big numbers of single acts are classified under the same conception or ascribed the same value (Mortensen, 1991).

To sum up, it is important to be aware of how individuals are constructed as actors, how actors correspond with the context, and the level of analysis. It is also important to be aware of the possibility in the methodology to understand actors and structures in different ways. This is precisely the case in the VAIE project. The actors are understood in different ways in the different parts of the project according to different theoretical approaches. This will be explained in more detail below.

### 2.1.3 **Actors and Structures in the Analysis**

After this introducing debate of actors and structures and their inter-dependency, the crucial question is how it relates to the VAIE project. The two following paragraphs illuminate this issue, first in relation to the whole project and then specifically in relation to the case studies.

#### **Actors and Structures in the Project**

The different tasks of the VAIE project have different theoretical approaches. This paragraph briefly announces the differences regarding actor-structure interdependency in the tasks.

*The theoretical model and meta-analysis (Task A)* are an economic actor analysis. The object of the analysis is organisations and the level of the analysis is society. Thus, actors are understood as organisations or groups. Individuals represent the actor, to which they are employed or member, e.g. a firm or an interest organisation. Actor is not implying a specific organisa-

tion, but referring to a standardised actor, e.g. any kind of firm. In line with the economic discipline, the logic of action is rational choice. I.e. the focus is on common issues among firms; thus, the approach overlooks specific characteristics of individual firms. The actors will in a specific situation relate to their surroundings in order to optimise their utility. Again the surroundings or the structure are not referring to a specific context, e.g. the Danish Parliament and in this way the context is also standardised. The assignment of this task is to identify standard actors and standard preferences in relation to agreements in energy policy regarding especially information. The analysis has an objective perspective<sup>9</sup>, therefore, the observations are not context dependent. The method is a survey interviewing researchers who have already investigated the field of agreements and who have their view of standardised actors, preferences and behaviour. Thus, the outcome of the task is researchers view of standardised actors, preferences and behaviour especially regarding information distribution in relation to agreements linked to three models, and stressing the possibility of generalisation.

*The country studies (task C)* are a sociological analysis inspired by social constructivism. The object of analysis is specific actors, both individuals and organisations dependent of the level of analysis, in relation to a specific structure. I.e. actors as groups and organisations at society level and between organisations (inter-organisational level), but at the level inside an organisation the actors are individuals. See also the next paragraph: Actor and Structure in the Case Studies. A specific actor's behaviour is dependent on a specific local context. More precisely, the structure determines the actors, their interest and behaviour. Thus, both actors and structures are specific and interdependent. The analysis has a hermeneutic perspective, and the method is casestudies. The outcome is context dependent examples of agreements, emphasising the context dependency in each case.

*The actual outcome and non-intervention analysis (task D)* is an analysis of the actual improvement in energy efficiency until today and an extrapolation of the effects caused by agreements. The analysis has three different approaches. First a historical analysis of development of energy efficiency in industry based on statistical data. It is used to adjust the non-intervention

case in relation to general energy efficiency development. Then follow two analyses of the actual outcome of a VA in saved energy. I.e. an estimation of the effect of a VA based on behaviour stated by firms and then a simulation of the energy efficiency investment behaviour based on an existing model. The object of the analysis is actors understood as organisations (firms) and the level of analysis is inter-organisational, i.e. between organisations. As in task A, the firms are understood as standardised actors behaving in relation to a standardised structure in the form of preferences. The perspective of this analysis is objective and unlike task A it is mainly built on statistical methods. The objective of the task is to estimate the effects of agreements regarding energy efficiency.

*Agreements in an EU perspective (task E)* compare the outcomes of the previous tasks in order to point at the influence of national context and the possibility of making agreements in energy policy towards industry at EU level.

The different approaches have different strengths and weaknesses regarding the analyses of outcome of agreements in relation to a long-run and short-run on the one hand and outcome in the form of technical and organisational changes on the other hand. See Table II.2 in Appendix II. The different tasks focus on different parts of this outcome. The theoretical model and meta-analysis (task A) mainly focus on energy as technical changes based on researchers' interpretations in the short-run. The actual outcome and non-intervention analysis (task D) primarily emphasise energy saved based on statistical data in the short and maybe also in the long run. The country studies (task C) focus on energy saved as technical and organisational changes stated by the involved actors.

The outcome in the short run is well covered, but the outcome in the long run is harder to judge. Though, organisational changes, e.g. new employees with energy knowledge as well as the extrapolation in task D, might indicate a possibility of continuous energy saving in the long run.

The different tasks represent different theoretical understandings of actors and structures. However, they all represent one side of the truth, though, they set different boundaries in their description of reality. We just have to be aware of these differences when we compare, discuss and conclude upon the four tasks.

## Actors and Structures in the Case Studies

The case studies operate at three levels in relation to agreements, i.e. agreement schemes, voluntary agreements and energy conservation projects. The policy-making and implementation model defines three areas for influencing the process of policy-making and implementation covering all these three analysis objects. The policy-formulation settles the agenda and chooses a specific policy, the negotiation specifies the policy, and finally the implementation covers the performances of the target group in relation to the specific policy. Section 2.2 The Policy-Making and Implementation Process discusses the model in more details. The three areas are found in relation to all the three analysis objects (see 3.2. Structure in the case-studies). Relating to each object of analysis different actors with different interpretations of the policy are involved. Thus, the case studies cover various levels of actors in the different levels of analysis.

The *agreement scheme*, i.e. agreements used as policy instruments, is described to a degree relevant to the rest of the analysis. The actors involved in the policy-making and implementation of agreement schemes are primarily interest organisations, departments in the state administration and parties in parliament.<sup>10</sup> Thus, the analysis is primarily inter-organisational (between organisations). Structure is represented as institutional carriers of culture, social structure and routines, see also Table 2.1. I.e. actors' meaning of a situation or phenomenon in relation to which they act, actors' identity in relation to this situation or phenomenon and finally actors' practice or how they usually act in relation to this situation or phenomenon. The perspective is hermeneutic, thus the local political context to some degree determines the design of an agreement scheme. The method is expert interviews with key actors as well as collection of relevant available written materials of the process and the outcome, e.g. evaluation of the agreement scheme. Thus, the outcome is one or a few key actors' views of actors involved in the process and at the same time presumably statements representing e.g. the department or organisation in which the key actors are employed. Together with the written materials, it forms a framework for the description of voluntary agreements and energy conservation projects.

The process regarding *voluntary agreements* is described in more detail than the agreement scheme part. Voluntary agreements are specific examples on agreements. The voluntary agreement occurs as either a

collective or an individual agreement. A collective agreement is an agreement between e.g. an industrial sector association and authorities, where the association approves the contents and goals of the agreement on behalf of its member firms. An individual agreement is an agreement between a specific firm and authorities. The room for negotiations is defined by the contents of the agreement scheme. In some cases the VA is so structured that there is almost no room for negotiations, in other cases there is plenty of room. The actors are groups and organisations, e.g. industrial sector organisations, authorities, firms and interest groups, thus, the level of analysis is inter-organisational. Structure is defined as meaning, identity and practice. Men or firms react to a new phenomenon by employment of meaning, identity and practice. Through these elements an everyday use is built up, e.g. of a VA. This social pattern represents structure (Lie & Sørensen, 1996). In relation to the VAIE project, the employment of a VA constructs

- meaning: what is this?
- identity: who am I in relation to this?
- practice: how do I use this?

The three elements are woven together, although the VAIE project will especially emphasise the meaning and the practice regarding VAs. A new policy instrument like agreements enters into the actors' already existing understanding of relations. E.g. a firm will include a VA in its already existing understanding of its relations with energy and environmental authorities. Thus, the firm's existing meaning and practice, regarding industrial energy and environmental policy in general, defines and restricts its behaviour in relation to a new policy instrument like agreements. The arising phenomenon, e.g. a VA, represents an occasion for change and may provide an input into breaking the routines, but may just as well be a force of stability and conservation. In this way, VAs could change, e.g. the relations and distribution of knowledge between industry and authority or it might just conserve the old relations. In this part of the case studies, the method is interviews with the most essential involved actors and collection of relevant available written material. These interviewees as well as most of the written material represent the actor's view of the process and effects regarding voluntary agreements, e.g. a firm's view.

The *energy conservation projects* are investigated at the intra-organisational level, i.e. inside a firm. Energy conservation projects are specific technical and organisational activities aimed at energy issues at firm level initiated by a specific voluntary agreement. At each firm 1-2 specific energy saving activities related to the VA, e.g. implementation of an energy management system or optimisation of a ventilation system, are looked into. At this level, actors are individuals and structure again is meaning and practice related to the specific energy saving activities. Meaning and practice regarding an agreement and resulting energy conservation projects could very well enter into an existing discussion of employer and employees, e.g. in relation to working conditions. Thus, the three areas of policy formulation, negotiation and implementation are also important in relation to energy conservation projects. The method is interviews with essential involved actors (individuals) and collection of relevant written material, e.g. data on an energy management system.

## 2.2 **The Policy-Making and Implementation Process**

The process approach in the VAIE project regarding implementation and effects of agreements is inspired by implementation research.<sup>11</sup> The field of implementation research primarily focusses on the reinterpretation of politics among different levels of authorities and other actors. The VAIE project takes the approach a bit further, it also looks into reinterpretation of a policy in a target group. In our case the target group is the industry, and the policy goal is some kind of energy efficiency improvements using the policy instrument of agreements. In order to identify the points creating the background for contrast between policy intentions and implementation effects, implementation research emphasises describing policy formulation and implementation as a process. The policy formulation might have great consequences for the implementation. E.g. the choice of policy instruments might not be optimal regarding the policy goal. Both choice of policy goal and instruments are part of a political process – not based on a collective rationality – therefore, goals and instruments might become incoherent. Various descriptions of the policy formulation and implementation process

with different purposes exist. Below, we briefly introduce two approaches.

Mitnick (1980) describes a five step policy-making and implementation process. He considers the steps to be a positive description of the steps a policy process passes through. The five steps are:

- Access  
Issues enter a political agenda through a process, where many different actors could be involved. The background for issues and political ideas is discussed.
- Decision  
The policy is chosen.
- Implementation  
The chosen policy is implemented at a general level, e.g. a decision about establishing the necessary administrative apparatus.
- Administration  
The concrete implementation takes place, e.g. various policy instruments (e.g. taxes or prohibitions) are implemented.
- Impacts/effects  
The effects of a chosen policy appear.

Mitnick mentions a sixth phase, the termination, but concludes that termination of a policy can best be described with the same five-phased process mentioned above.

The five phases of Mitnick are also found in Winter (1994), but here the five phases are concentrated into three phases, a possibility also mentioned by Mitnick. Winter's three phases are: Policy formulation, implementation and impacts/effects. The perspective of Winter is not a positive description of a normal policy-making process, but primarily focusses on the implementation of a chosen policy. Thus, Winter's three phases are based on actual and empirical views of the policy-formulation and implementation process and not to same degree as Mitnick from a positive point of view.

The models include some kind of logic time dimension moving from step one to step three or five. Winter breaks up this view as empirical research might show that the logic time dimension is not followed. He emphasises that the different phases might materialise in reverse order, overlap each other or be repeated more than once etc. This point of view in relation to the

time dimension we will adapt in the following case studies. Below we will introduce how we intend to use these inspirations in the case studies.

### 2.2.1 **Policy and Implementation in the Case Studies**

All the models are based on a top-down perspective indirectly assuming that government decides, authorities implement, and citizens react to a given policy. The VAIE project adopts the top-down perspective as it also investigates effects of a given policy instrument, i.e. agreements used in energy policy. Though, we moderate the top-down perspective giving all actors room to operate in all stages of the process. This moderation has two reasons. Firstly, empirical research proves that many different actors are involved in all parts of the policy formulation and implementation process (see e.g. Winter, 1994), and secondly the policy instrument of agreements needs to be analysed as an open process as at least two parties interact in some kind of common understanding of the commitments within an agreement. Examples of agreements having a moderate top-down perspective are the Swedish »Eko-energi« and the British »Making a Corporate Commitment Campaign«. These agreement schemes could be interpreted as a common policy interest of firms and the public administration though still being a top-down public policy initiative (Krarup & Larsen, 1998).

#### **The Model**

The process of policy formulation and implementation is usually a very complex process, and often the outcome is quite different from what is foreseen in the beginning of the process. Inspired by Winter (1994) we set up the following three phases which in one way or another are included in the policy-formulation and implementation process, i.e. policy formulation, negotiations and implementation. Each phase should be understood as areas where it is possible to influence the process of policy making and implementation.

The *policy formulation* is the arena for agenda setting, discussing political issues and finally it might result in a political decision. This phase determines the intentions related to a policy which may cover areas like goals, policy instruments (organisation, process and performance) and appropriation. This part of the process illustrates how controversies and consensus processes lead to a dominating agenda and maybe also to a

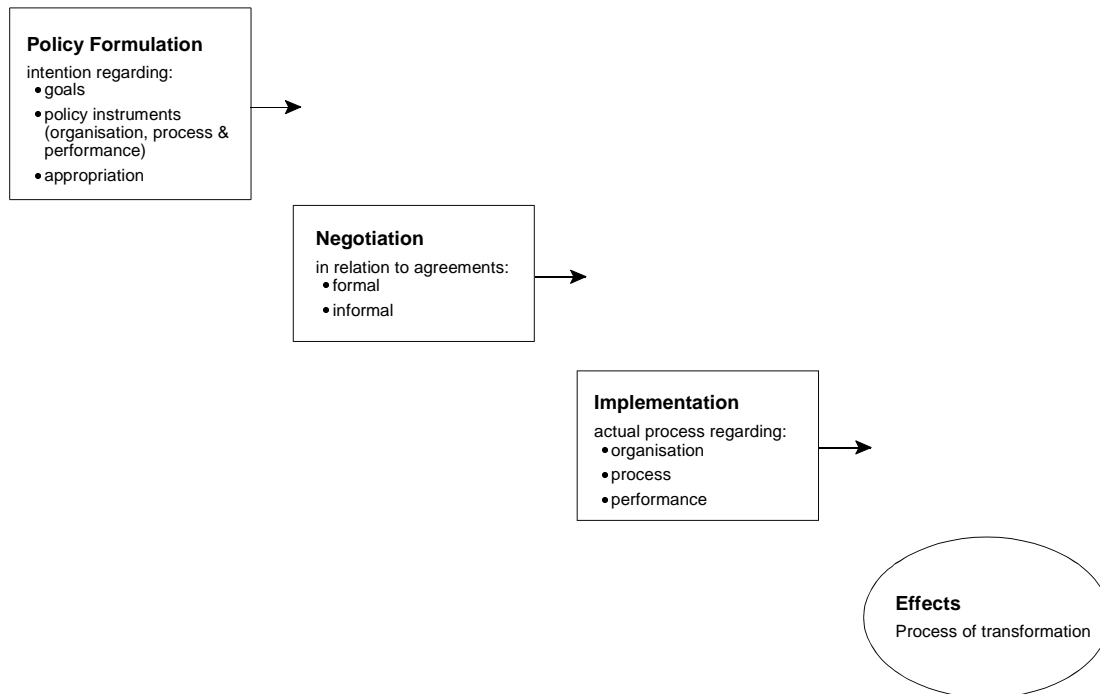
decision, though many of the controversies might come up again in the following phases.

The *negotiation* is not directly related to Winter's model, but as we look into the policy instrument agreements one part of the process relates to at least two partners (industry and authority) making some kind of common understanding of the commitments of an agreement. These issues we name negotiations. The phase covers both formal negotiation with partners around a table signing declarations and/or contracts, and informal negotiations concerning the adjustment of a policy to make it fit the individual case. Contrary to the policy formulation process, the negotiation process describes actual action and not written intentions of a policy.

The *implementation* describes the actual actions of organisations (the structure of organisations carrying out the policy), processes (the production of a policy, e.g. administration relating to a policy) and the actual performance which could be in accordance with the intentions of a policy, but not necessarily. The implementation leads to an effect. Thus, the power of a given policy primarily depends on the implementation phase as it is here the actual behaviour occurs (Winter, 1994). Figure 2.1 illustrates the process of policy formulation and implementation.

Like most models the picture occurs quite simple compared with empirical studies. Again, we need to emphasise that the phases do not necessarily follow a logic time dimension in the illustration, as the different phases might materialise in reverse order, overlap each other or be repeated more than once, etc. The three phases represent areas for influencing the policy and they might therefore be useful in the investigation.

Figure A conventional policy-formulation and implementation process.  
2.1 Inspired by Winter, 1994.



### The Model in the Case Studies

The model stresses the process issues of the policy formulation and implementation making room for actors to interfere. In the studies we investigate three objects, i.e. agreement schemes, voluntary agreements and energy conservation projects. The model could be used at all these investigation objects though not at the same time.

Our starting point for using the model for the process of policy formulation and implementation was quite different. Originally, the idea was that policy formulation was explained through the analysis of the superior level, the agreement scheme. The negotiations should be studied in relation to specific agreements with a sector or a firm, a voluntary agreement and the superior level, the agreement scheme. Finally, the implementation would be analysed in relation to the voluntary agreement with sector and energy conservation projects at firm level. However, this approach does not cover

the existing agreement quite well as all three phases could be found for all investigation objects. Also, e.g. negotiations do not necessarily occur at the level of voluntary agreements with the sector or firm. Therefore, all phases could be investigated for all investigation objects. Consequently, some (or many) of the levels of analysis are not relevant for every agreement. The relevant levels of analysis should be dealt with.

Regarding the investigation object of an *agreement scheme*, i.e. agreements used as policy instruments, the policy formulation settles an agenda on industrial energy efficiency and policy instruments like agreements. This frames the following voluntary agreements and energy conservation projects under the agreement scheme. Typical actors involved could be parties, government, departments within public authorities, interest organisations and so on. The negotiation phase might be less relevant in this part of the analysis. The implementation phase regards implementation inside public authorities, e.g. building up new spheres of competence and administration relating to a given policy. The implementation at this level might bring forward a different picture than the intentions of the policy. Implementation of agreement schemes has some kind of effect on the target group. This effect we disclose under investigation of the voluntary agreements and energy conservation projects. This last level is basically the one treated by Winter, 1994.

The next level of investigation object is *voluntary agreement*, i.e. a specific example of implementation of an agreement with or within an industrial sector. Two different forms of voluntary agreements exist, i.e. collective voluntary agreements between a group of firms, typically an industrial association and authorities, or individual agreements between a firm and the authorities. The kind of agreement in question is almost always defined in the agreement scheme. The agreement scheme also settles – more or less tight – the contents and goals of a voluntary agreement. Sometimes a big room for interpretation of goals and contents exists, sometimes it is a small room. Thus, both policy formulation and negotiation phases are highly influenced by the agreement scheme. The negotiation for the collective voluntary agreements has two levels. Firstly, relating to the negotiation between industrial association and the authorities, and secondly, negotiation between the industrial association and its member firms regarding their obligations in relation to the agreement. Typically, an individual agreement

only deals with the latter step. Typical actors are industrial organisations, authorities and firms. In general, this part of the process is closed for third parties. The implementation also differs depending on the form of agreement (collective or individual). A collective agreement is implemented in both the industrial organisation and inside its member firms, while an individual agreement only is implemented at firm level.

In order to get deeper into the specific behaviour in relation to the agreements at firm level, the last object of investigation is *energy conservation projects*, i.e. projects started as a result of a voluntary agreement. Typical actors are individuals or groups inside the firm, e.g. employees, management and technical management or actors outside the firm such as consultants and electricity utilities. The formulation of energy conservation projects could be determined by the voluntary agreements or could be more free. The energy conservation projects interfere with traditions and culture of the individual firm. Sometimes negotiations occur especially if the energy conservation projects touch areas relating to working conditions. During the implementation at firm level part of the actual outcome and effects of an agreement scheme are uncovered.

## 2.3 Networks

Network approaches<sup>12</sup> primarily structure the analysis in the implementation phase for both the voluntary agreements and the energy conservation projects parts in the case studies.<sup>13</sup> The focus is here implementation of a VA inside an individual firm or within an industrial sector in general as well as examples of specific energy saving projects realised as a result of a VA on individual firms. Another focus point in the analysis is the changes in meaning and practice of especially regulating authorities and firms regarding agreements compared with earlier and remaining forms of energy and environmental regulation.

In this section, the starting point for the description of networks is network approaches used in technology studies. The strength of these approaches is their focus on production firms, which is also important for voluntary agreements and energy conservation projects. A weakness in relation to this study is the focus on a core element in firms' everyday life<sup>14</sup>, i.e.

production and technology, while our analysis focusses on a more peripheral part, i.e. regulation regarding energy efficiency in the form of agreements. In this relation, everyday life is structure defined as meaning and practice in relation to a VA and energy conservation projects. The peripheral position of energy aspects in the firms suggests rather weak and fragmentary networks regarding energy and environmental issues.

Empirical investigations among firms in relation to production and development of new technologies point at networks as an important element of explanation. Håkon Håkonsson (1994) speaks of three observed aspects of the relations between firms in order to argue for the importance of networks:

- relations between firms, organisations and institutions were the major triggering evidences for a development process
- the relations seem to have the following characteristics: a striking continuity, big complexity, dominated by a low degree of formalization, a symmetry in resources and initiatives, leading to adaptations, and represent both cooperations and conflicts
- the relations relate to different types of connections typically technical, but it could also be, e.g. administrative and social ones.

The assumption in the VAIE project is that appearance of a VA leads to relations between e.g. firms, authorities and consultants. These relations we understand as networks bearing in mind that a network has several degrees of stability and it might be more essential to some of the involved actors than to others. Thus, we expect the VA to be more essential for the energy authorities than for the firms as energy policy is one of the main issues of the energy authorities and not of production firms. Below, networks are described in more detail and they are discussed in relation to the VAIE project.

### 2.3.1 Elements of Networks

In general terms, networks consist of nodes (usually actors) and links describing the relations between the actors.<sup>15</sup> The degree of stability and fragments depends among other things on the age and the contents of the network. Networks also differ depending on from which part you look at it. For some actors a specific network is an important part of their life, while

for others it is quite peripheral. Bijker (1995) talks of different degrees of inclusion in networks. Networks grow up and develop in a historical process of social construction. Meaning, identity and practice are constantly constructed and redefined relating to arising phenomena influencing the relations among the actors. Meaning, identity and practice as structural carriers inform and empower the actors in the network. At the same time, the actors can be members of many different networks. This section discusses nodes and links in networks, knowledge and power in network and stability of networks.

### **Nodes and Links**

In a network, nodes are actors and links are their relations. The relations in a network always relate to a specific field. In our case, the field is industrial energy and environmental policy. A network is built up through interactions between at least two active parties representing actors within and/or outside the firm regarding energy conservation projects and between firms, authorities and other actors regarding voluntary agreements. In the long run, the network will represent a structure of meaning, identity and practice, which structures future interactions<sup>16</sup>.

The important elements in a network are actors (nodes) and their relations (links). The links always include a short-term exchange, which has three dimensions, i.e. activity, resource and actor relations. Repeating exchanges could lead to long-term relations stabilising the network. The nodes and links are the basic elements in the flow-charts, these will be discussed in section 2.3.2 Network Elements in the Case Studies.

### **Knowledge and Power in Networks**

A hypothesis of the VAIE project is that agreements result in a redistribution of knowledge among firms in a sector, moreover between a firm and a regulating authority. In many ways knowledge relates to power issues, and as one focus point in the case studies is knowledge, the reverse of the coin is power. This paragraph discusses the knowledge and power issues in relation to a network approach. First, it considers establishment of knowledge systems in networks and power issues in this relation. Then, it reflects on knowledge systems and power in relation to individual actors and finally, it discusses different forms of knowledge and the possibility of

redistribution among different actors.

Sociology and political science define several forms of power.<sup>17</sup> Below, we present four types of power perspectives with rising complexity (Kleven & Røiseland, 1993):

- *Power are factors of causality*

The nature of power is instrumental. Power and its actors are visible and possible to observe. The focus in this perspective is situations of conflicts. E.g. formal power regarding legislation.

- *The conditions of power*

This perspective relates to the distribution of resources of power<sup>18</sup>, strength's costs and powerlessness<sup>19</sup>. The crux of this perspective is the actors' understanding of the situation and the problem, their intentions and the expectation of the results. The perspective describes interrelations between strategic actors.

- *Power's hegemony over behaviour*

Focus on the invisible part of power, e.g. the hidden agenda and the questions not asked.

- *Strategies of power*<sup>20</sup>

Focus on how power is exercised. Power is various open and hidden centres of power, their mutual relations and the strengths among them. Power is negative sanctions, in fact power produces. It produces reality, it produces domains of objects and rituals of truth.

In some ways, these perspectives on power are competing explanations of power, though they emphasise different aspects of power. In the following these perspectives on power will be explained related to agreements.

*Power as factors of causality* relates to elements of goal-mean-rationality and will among other places occur as an important element in the policy formulation phase when choosing an agreement scheme as policy instrument under an overall goal.

*The conditions of power* distribute resources of power among the actors. In relation to our object of analysis, conditions of power will probably occur in the negotiation process not only as the resources defined in possible legislation, but also as intentions and expectation of the process, which will provide more room for some actors than for others. E.g. if an industry

expects the authority to dictate the issues of an agreement, then the authority gets a big space for doing this. Another example is that the industry might think of all kinds of cunning ideas to prevent what they think is the authorities' intentions, but in reality the minds of the authorities might be on quite other things.

*Power's hegemony over behaviour* illustrates how some dominating pictures of what is appropriate govern the context of the agenda.

*Strategies of power* picture how the production of meaning, identity and practice presents itself as the correct knowledge, i.e. truth. When actors in a network over a longer period create meaning, identity and practice in relation to agreements, they also produce knowledge of what an agreement is. Therefore, it becomes hard for outsiders (with a different understanding) to enter the network. E.g. a network is built up around energy and environmental policy in the industrial area operating agreements could build up an understanding of shared responsibility for externality between authority and industry. A firm not recognising this shared responsibility will have a hard job in entering such a network.

The stabilisation of a network by establishment of long-term relations parallelly builds up common understandings and practices in a specific field. E.g. implementation of agreement schemes might lead to more links between a regulating authority and a regulated firm with activity, resource and actor relations. This makes the actors and their respective meanings and practices more alike. Common activities like negotiating a VA will in the long run lead to a certain consensus of the meaning and practice attached to a VA. The firm gains more understanding of energy conservation and the authority gains more respect of production issues. Thus, long-term relationships in networks build up common knowledge systems of meaning, identity and practice inside the network. See e.g. next paragraph: Stability of a Network to get an example of a network marked by long-term relationships and a common knowledge system.

An actor's relation to such a network and its knowledge system depends on his or her inclusion in the network.<sup>21</sup> Actors with high inclusion in a network also have high inclusion in a possible common knowledge system and thereby high influence on strategies of power. They will have long-term relationships and therefore worked for a long time with e.g. agreements. Thus, they will have a hard time accepting new conflicting dimensions of

energy policy, e.g. emission standards of CO<sub>2</sub>. Because these actors have worked a long time with agreements they will see many possible differentiations in them, e.g. they can differentiate the contents of an agreement. Such actors also have a big influence on the common knowledge system of the network which they themselves are part of. Actors with low inclusion in a network, e.g. firms without an agreement forced to conclude one, will more see a VA as outside their reach of influence. It will be hard for them to influence the meaning and practice around a VA for it is already stable and established, it becomes a »take-it-or-leave-it« decision. For such firms the choice of a VA and an emission standard might not be so obvious. Thus, the possibility of influencing a network and its possible knowledge system depends on the actors' inclusion in the network (Bijker, 1995). In this way, networks have a great deal of obduracy regarding the existing knowledge system of meaning, identity and practice. In other words, the network possesses power in relation to definition of knowledge and truth, e.g. regarding agreements.

The distribution of knowledge in a network is related to the kind of links involved. Theoretical and some practical knowledge of e.g. energy conservation easily spread within resource and actor relations, but tacit knowledge will only diffuse in activity relations.<sup>22</sup> Tacit knowledge is also able to diffuse in networks when employees change jobs, e.g. between competing firms. Thus, the case studies should be aware of the knowledge need in relation to energy conservation in relation to the dimensions involved in the links (See also Sverrisson, 1994).

### **Stability of Networks**

Network approaches emphasise the relations between actors, through which they might build up long-term relationships and common knowledge systems. A well stabilised network includes both individual and collective actors, e.g. institutions sharing a common knowledge system of meaning, identity and understanding. Networks are in their nature heterogeneous including whatever is relevant for the description. The relevant elements are selected by the researcher on the basis of what he or she sees as relevant elements and what the actors in the network point out as relevant<sup>23</sup> (Bijker, 1995).

Thus, networks might be flexible in many aspects, but they are also

inflexible and maintaining new phenomena into their traditional way of interpretation issues. The Swiss watch industry is a typical example of the obduracy of a network.<sup>24</sup> To turn to the VAIE project for a moment. Agreements could conserve the old practice in energy regulations or it could build something new.

### 2.3.2 **Network Elements in the Case Studies**

The network elements are used to structure the analysis in the implementation phases of voluntary agreements and energy conservation projects and if sensible also in the negotiation phase of the voluntary agreements and energy conservation projects. This section concretizes the use of the network approach in relation to the case studies. First, agreements are related to the network context, then the different elements are related to a flow-chart illustration of the empirical data and finally a brief summary presents the essential issues of networks in relation to the case studies.

#### **Agreements in Networks**

The object of analysis in the VAIE project is agreements concluded in the energy or environmental field with industrial sector organisations and/or firms on the one hand and national authorities on the other. The targets of these agreements are energy savings, increased energy efficiency or reductions in CO<sub>2</sub> emissions. Thus, we expect agreements to enter into an existing network of energy and/or environmental policy. The stability of such a network depends of the previous political traditions, the interpretation of agreements in relation to former policy, the specific actor's degree of inclusion in the network etc. The level of stability in a network is indicated by the types of links in the network; thus, the more activity links the higher the stability. Another indication of stability would be whether all kinds of actors (authorities, firms, industrial associations, consultants etc.) have a high degree of inclusion in the network; thus, the more examples of different type of actors with high inclusion the higher the stability. In most cases, agreements are incorporated in an existing network of energy and/or environmental policy, though that might not always be the case. Therefore, be aware of the empirical material in the case studies and let it determine whether and what kind of network a specific agreement enters.

Agreements are phenomena firms pick in the surroundings or phenomena

coming to the doors of the firm. Firms almost always include a new phenomenon in their everyday life. Everyday life denotes the routine activities of human existence, the ordinary actions taking place in various settings, spanning production as well as reproduction. Generally, everyday is associated with what we do over and over again, thus signifying stability and the reproduction of social patterns (Lie & Sørensen, 1996; see also section 2.1 Actors and Structures). Actors react to employment of a new phenomenon, e.g. a VA by constructing meaning (what is this?), identity (what am I in relation to this?) and practice (how do I use this?) (Lie & Sørensen, 1996). In other words, it constructs carriers of structure, see Table 2.1. The three elements are woven together, though, the VAIE-project will especially emphasise the meaning and the practice regarding agreements. Different actors' meaning as well as their practice around an agreement among other things point to, whether it – for them – is something new or a continuity of something old. This might give us a hint of which degree the agreement leads to new practices in the long term.

A focus point in the project is the distribution of knowledge in relation to agreements. The knowledge transferred could be theoretical, practical or tacit. The possibility of transferring these types of knowledge again depends of the types of links. Activity links give a possibility to transfer all three kinds of knowledge.

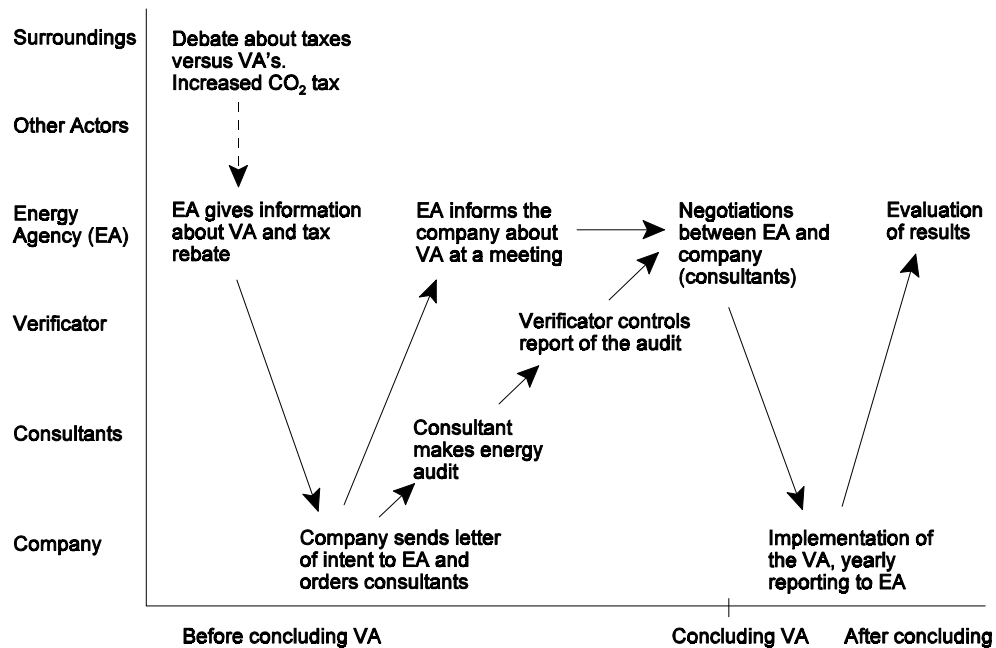
The arising phenomenon of an agreement in an industrial energy and environmental policy network either conserves or modifies the existing meaning and practice of the network. We assume that some degree of fragmentary network exists in the industrial energy and environmental policy area including at least relations between authorities and firms. Agreements enter into this existing network probably stabilising the relations as the negotiation process might lead to more contact including activity relations among the actors in the network.

### **Flow-Chart Illustration**

As mentioned earlier we suggest to illustrate the empirical data of the implementation phase of voluntary agreements and energy conservation projects and if sensible also the negotiation phase in a flow chart with a time dimension and an actor dimension. Figure 2.2 illustrates a conventional flow chart at the inter-organisational level; the object of analysis is the

specific VA with an individual firm. Appendix III gives an example of a flow-chart of the intra-organisational level in the implementation phases; here the object of analysis is a specific energy saving project.

Figure 2.2 Illustration of a flow chart at inter-organisational level covering the implementation phase and the negotiation phase of a specific VA



The figure shows a flow chart at inter-organisational level. At this level actors are organisations and the object of analysis is the specific VA. If we were analysing energy conservation projects instead, the actors are individuals inside and outside the firm (See appendix III). The flow chart includes the surroundings. Though the surroundings are actually not an actor but summarised all kind of frame conditions influencing the process of implementation. It is important to be aware that one flow chart can only cover one object of analysis. However, it could be relevant to integrate the negotiation phase in the flow-chart along with the implementation phase, especially if the industrial associations are not involved in relation to voluntary agreements. The time dimension in the flow chart logically has three phases, i.e. the time before concluding a VA, the time of concluding a VA and the time after concluding a VA in relation to voluntary agreements. Due to the object of analysis there will be more nodes and links before the conclusion of the VA.

The time before concluding a VA can also describe the previous relations between the actors, especially the authorities and the firms in the field of industrial energy and/or environmental policy. This should illustrate whether or not the VA enters into an existing network of energy and/or environmental policy. The focus is on existing knowledge systems in such a network and the reasons and motives to wish to conclude a VA. If the industrial associations are involved in the process then the time of concluding a VA describes the process of getting the elements of the VA projected down at individual firms. It is a process that might include some negotiation between the industrial sector organisation and the individual firm. This part of the analysis emphasises power relations among the actors and the actual written result of that process. Finally, the time after concluding a VA describes the building up of meaning and practices in relation to a VA along with the actual outcome. Issues in focus in all stages are knowledge distribution and new meaning and practice.

### 2.3.3 Summary on Networks

When talking of network, it is important to remember that the look of the network might depend on the person looking. Thus, authorities or energy managers at a firm might pay more attention to a network of industrial energy and environmental policy, than the firm does in general. This paragraph briefly sums up the most important elements, mechanisms and issues of the network discussion in the three following tables.

A network is a heterogeneous collection of actors (both collective and individuals) and their mutual relations. A stable network is kept together of a common understanding and practice related to a specific field. In the VAIE project the field is energy issues.

Table Elements in networks

2.2

	Explanations
<b>Nodes</b>	Actors in the network <sup>1</sup>
<b>Links</b>	Actors' relations in the network

1 Actor could be both collective and individuals.

In this way, networks simply describe actors and their relations. Some of

the mechanisms in relation to networks are listed below.

Table Mechanisms in networks

2.3

	<b>Explanations</b>
<b>Links</b>	Short-term exchange in the form of: <ul style="list-style-type: none"> <li>• activity</li> <li>• resource</li> <li>• actor-relations</li> </ul>
<b>Growing stability in a network</b>	Repeating short-term exchanges resulting in <ul style="list-style-type: none"> <li>• long-term relationships</li> </ul> create common structure of <ul style="list-style-type: none"> <li>• meaning and practice</li> </ul> which <ul style="list-style-type: none"> <li>• stabilize the network</li> </ul>
<b>Possible modifications in the structure of a network</b>	New arising phenomena could modify or conserve the network depending on how it connects with the meaning and practice of the existing network

The term of stability is a relative term describing one network compared with another. The lack of repeating short-term exchanges could probably result in the absence of a network. Many activity links indicate a relatively high stability in the network. Actors with high inclusion representing all kinds of actor types (firms, authorities, consultants etc.) also indicate a high stability of the network.

A special interest of the VAIE project is knowledge and power issues in relation to an agreement. Table 2.4 gives some definitions on these issues.

Table Knowledge and power in networks

2.4

	<b>Explanations</b>
<b>Four types of power</b>	<ul style="list-style-type: none"> <li>• Power is factors of causality, visible actors and e.g. legislation</li> <li>• Conditions of power</li> <li>• Power's hegemony over behaviour hidden agendas and »questions not asked«</li> <li>• Strategies of power</li> <li>• pictures of meaning and truth</li> </ul>
<b>Three types of knowledge exchange</b>	<ul style="list-style-type: none"> <li>• theoretical</li> <li>• practical</li> <li>• tacit</li> </ul>

The four types of power exist in parallel, but often one aspect will dominate

depending on the situation. The strategies of power could in a stable network represent the structure of meaning and practice. The three types of knowledge also exist in parallel, but their ability to diffuse in a network differs as tacit knowledge could only diffuse through activity relations.

## 2.4 Theoretical Elements in the Case Studies

The following table briefly summarises the theoretical elements and dimensions and their use in relation to the VAIE project.

Table Essential dimensions in the case studies

2.5

	Agreement Scheme	Voluntary Agreement	Energy Conservation Projects
<b>Level of analysis</b>	Inter-organisational <sup>1</sup>		Intra-organisational <sup>2</sup>
<b>Actors</b>	Organisation and groups		Individuals and groups
	Parties Environmental org. Industrial associations Bureaucrats Etc.	Individual firms Energy authorities Industrial Associations Etc.	Energy manager Energy consultant Electrician Consultant Etc.
<b>Structure</b>	Meaning, identity and practice		
<b>Method</b>	Expert interviews Written materials	Interviews with important involved actors Written materials, measurements	
<b>Reporting<sup>3</sup></b>	Description of: the system & the process	Decription of e.g. VA the process, & the outcome	Decription of e.g. ECP the process & the outcome
<b>Assessment<sup>3</sup></b>	Hypotheses Normative demands Discussing AS Sustainability	Hyptheses Outcome Fulfilment of VA goals Effects on practice Supporting initiatives Sustainability	Hyptheses Outcome Effects on practice Supporting initiatives Sustainability

<sup>1</sup> between organisations

<sup>2</sup> inside organisations (opening the black-box of the firm)

<sup>3</sup> See also Appendix II

## Notes

1. Sociological theory of today exists in a dualism of two main paradigms, one stressing the structure part and one emphasising an actor part. Dawe (1970) talks of two sociologies,

i.e. one of social systems and one of social action. Newer sociologists as Habermas, Pierre Bourdieu and Anthony Giddens attempt to overcome this dualism in their theories, which is necessary as an interdependence exists between the two sides. Marx (1857) explains: «People create their own history, but they do not create it at their discretion and not according to self-elected conditions. People create history under the immediate circumstances handed down» (own translation) (Andersen, 1992)

2. The institutional theories draw on ideas of Emile Durkheim (1858-1917) and Max Weber (1864-1920). (DiMaggio & Powell, 1991b & Scott, 1995) Durkheim contemplated social facts as things, existing outside and independent of individuals, and constraining them. Thus, the social facts are objective, but at the same time not able to exist without the individuals and their ideas. (Andersen & Kaspersen, 1996). Weber discusses action; action is social – when and in so far as the acting individual attaches a subjective meaning to his behaviour. Individuals do not mechanically respond to stimuli; they first interpret them and then shape their response (Scott, 1995). Thus, Durkheim represent the structural aspects and Weber the actor aspect of institutional theories. Today, institutional theories are a very heterogeneous group containing both economical and sociological approaches. The theories' differences in relation to their relative emphasis on micro and macro features, their weightings of cognitive and normative aspects of institutions and the importance the attribute to interests and relational networks in the creation and diffusion of institutions. (DiMaggio & Powell, 1991b)
3. The classification below primarily built on the work of W. Richard Scott (1995). It is always possible to discuss a classification of theories as the one Scott presents, but the objective in this section is rather to examine differences and similarity among the approaches. Therefore, the specific classification will not be discussed.
4. Ontology deals with the question of how many fundamentally distinct sorts of entities is the universe composed of. The socially realistic approach considers social science as describing real objects and processes, though this reality exists independent of our description of it. We might succeed in an adequate description. (Andersen & Kapsersen, 1996).
5. This classification is a bit different from Scott's. DiMaggio and Powell define institutions relating to game theory and public choice theory in the disciplines of political science and economy as what Scott calls a regulative pillar.
6. Theorists included in this approach are Coase (1937, 1960), Williamson (1975, 1985), economic historians like North (1981), law and economics like Posner (1981), game theorists like Schotter (1981), and organisational economists like Alchian & Demsetz

(1972), Nelson & Winter (1982) and Grossman & Hart (1987).

7. DiMaggio & Powell (1991b) restrict the sociological approach to entirely social constructivism.
8. This approach covers researchers like Meyer (1977), Meyer & Rowan (1977,1991), Meyer & Hannan (1979), Meyer & Scott (1983, 1991), Zucker (1983, 1987), DiMaggio (1988), DiMaggio & Powell (1991a), Abelson (1976), Cantor & Mischel (1977), Bower, Black & Turner (1979), Taylor & Crocker (1980), Kiesler & Sproul (1982), Rosch (1976, 1978), Fiske (1982), Fiske & Pavelchak (1986), Kulik (1989), Bem (1970), and Kelley (1971).
9. Here, objective perspective relates to the term of Mortensen from the last section.
10. Here, the state is considered to be multi-directed, i.e. working in many different directions and with many different and maybe opposite goals. Therefore, it would be heedless to operate with abstract macro-actors like the state or the government.
11. Implementation research came into being in the fields of public policy and public administration as a rising number of analyzes pointed at a lack of coherence between the intentions of a policy and the specific implementation, e.g. in areas of relieving unemployed among minority groups, integration of refugees and support of regional development. (Winter, 1994)
12. The network approaches represented in this section originate from the field of technology studies. The focuses of these studies are different from the present ones, as they look into development, diffusion, production and innovation of technology. As this is not the focus of the VAIE project, this section does not present a specific theoretical approach, but instead it offers useful elements from the network approaches for later use primarily in the analysis of the implementation phase of the policy-making and implementation process.
13. The network approaches might also provide a sensible description in the negotiation phase for voluntary agreements and energy conservation projects, but it depends of the empirical data. Therefore, each case study should consider the usefulness of a network approach in the negotiation phase for voluntary agreements and energy conservation projects.
14. Often the concept of everyday life is reserved for the households and reproduction sphere. Here it is used in a broader sense. »It denotes the routine activities of human existence, the ordinary actions taking place in various settings, spanning production as well as reproduction. Generally everyday is associated with what we do over and over again, thus signifying stability and the reproduction of social patterns.« (Lie & Sørensen, 1996, pp. 2-3). In this way, the everyday life represents structure.

15. The fundamental actor and structure assumption in the framework of the country studies prescribe inseparability of actors and context, see section 2.1: Actors & Structures. In the building up phases of a network, actors from different contexts will begin to interact, e.g. an energy consultant and an energy manager of a production firm. In the long run, their interactions and possible long-term relationship will build up a common structure of meaning, identity and practice. This common structure corresponds with the contexts from which the actors originate, thus, it is also influenced by the network structure.
16. Looking in more detail at links, an interaction always includes some kind of short-term exchange. The short-term exchange has three forms. I.e. relating to activities with direct connection to the production process in a broad sense, relating to other resources, e.g. financial support, and finally relating to specific actors (Håkonsson, 1994). E.g. an activity relation would be consultants and a firm establishing an energy management system together. This activity also includes a resource relation as the firm pays the consultant and maybe it also includes some actor relations as the management might know this consultant beforehand, e.g. from earlier cooperation. In this way, the activity relation could include the two other relation dimensions. A resource relation could be a subsidy paid by the authority to an energy conservation project on a firm, this might also include an actor relation. A purely actor relation might be a manager using his knowledge from an old fellow student in an internal energy management project. Thus, links always include some kind of short-term exchange, which have three dimensions: activity, resources and actors. Activity relations might include the two other dimensions, and resources might also include the actor relation. Therefore, the firm as a whole is typically more engaged in activity relations compared with resource and actor relations. Reiterate short-term exchanges could lead to long-term relationship. During the long-term relationship the parties would build up mutual trust in each other. This trust is among other things reflected in adaptations of technical, administrative, organisational aspects, thus the actors become more alike (Håkonsson, 1994). They build up a common structure of meaning, identity and practice, therefore, long-term relations stabilise a network.
17. Power is one of the most discussed concepts in sociology and political science, therefore an ocean of definitions exists. The different approaches differ not only in the contents of the concept, but also in relation to the necessity of a clear definition as a definition always includes a delimitation. The power issues presented here relate to the foundation and basis of power, the actors of power, and the process and dynamic of power. Different competing and supplementary perspectives on power are presented, each with different strengths relating to the specific situation and context.
18. Kleven & Røiseland (1993) mention five resources of power. I.e. the possibility of exercise compulsion, the possibility of paying (economic reward), control over physical capital, influence on human capital (e.g. knowledge and skills of employees), and control

over normative and symbolic resources (e.g. laws, rules, norms and models). The resources of power could be material, non-material (e.g. an actor's ability to present and master models of explanations which other actors do not have access to and do not understand) and symbolic power (that is when one part defines or thinks of the other part as more important and conclusive in the interaction).

19. Kleven & Røiseland (1993) define an actor affected by powerlessness, when the condition for effective goal-directed action does not exist. Such a situation is characterised by unclear goals, and little awareness of a problem and its consequences.
20. This aspect of power is inspired by Michel Foucault. Foucault explains: »Power is not an institution and not a structure; neither is it a certain strength we are endowed with; it is the name that one attributes to a complex of strategical situation in a particular society« quoted by Kleven & Røiseland (1993).
21. Bijker's concept of inclusion relates to technological frames that structures the building up of meaning, identity and practice around a technical artefact. Bijker uses the term to discuss actor's ability to adapt and adopt new and possible conflicting dimensions to an existing meaning, identity and practice of a technical artefact (Bijker, 1995). The technological frame could very well be seen as a network with long-term relationships. Our phenomenon is not a technical artefact, but agreements. The concept of inclusion is in this connection used to describe actors' ability to adapt or adopt to new and possible conflicting dimensions in an existing understanding. E.g. an agreement in an energy and environmental policy network with a stable knowledge system would have a very definite meaning and practice connected. When a new phenomenon arises, e.g. a new policy instrument, the network will include it by reinterpreting the meaning, identity and practice around it, so it fits the existing knowledge system. Sometimes a new phenomenon is in conflict with a network's meaning and practice, e.g. regarding energy and environmental policy. It could be a network of energy and environmental policy with a practice of agreements; such a network (both firms and authorities) could have a hard time accepting standards of production specifications as it changes the practice of the network. The actors with a high inclusion in a network, e.g. a firm with many VAs with authorities, will have a hard time accepting such a new policy as it is conflicting with their understanding of energy and environmental policy. Contrary, if the actors are able to include the new standards in the agreements (reinterpret the phenomenon so it fits the existing practice), they will have no problem accepting it in the network. In this way, networks have an obduracy in relation to knowledge system of meaning, identity and practice. Actors with high inclusion in a network have big ability to influence the contents for the knowledge system, e.g. define the production standards as part of the agreements. On the other hand, actors with low inclusion, e.g. a firm making its first agreement with the authorities, will have almost no possibility of influencing the meaning and practice of the specific VA.

22. Tacit knowledge is knowledge that actors are unable to pass on by word of mouth. It could be the colour of hot iron when it is ready for founding or the sound of a drill just before it breaks etc.
23. Bijker argues that using a double strategy during the identification of relevant actors, opening for both representations of the actors' view as well as space for groups that do not figure in the standard stories. On the one hand, he uses the snowball technique, i.e. following the actors, making their description of a situation lead to definition of new actor groups. On the other hand, he combines this approach with a positive heuristic, i.e. making the researcher identify actor groups that do not figure in the standard stories of e.g. implementation of a VA. Thus, no simple identity between actor and researcher categories of actor groups is advocated.
24. An example of a very stable network and its destabilisation is a historical analysis of the Swiss watch industry which in spite of different challenges from new technical innovations was world leading until the digital watches of the 1970s. The network of the Swiss watch industry is very geographical limited to the Jura mountains and consists of production units, distribution units, import and export regulation, education institutions and a common understanding of Swiss watch industry as master of precision metal machining and timekeeping accuracy, along with other elements. The production units co-operate on development and production of watches. They also co-operate with education institutions leading to a strong tradition for mechanical qualifications among engineers, which among other things made it hard to shift to electronical watches. They composed import and export regulation that protect domestic production technology protecting the Swiss production equipment industry from new concepts from abroad. Binding the network elements together is a common understanding of precision and accuracy as the unique of Swiss watch industry (Glasmeier, 1991). Glasmeier describes the destabilisation of the network, when it is challenged by electronical watches:

»The transition from mechanical to electric moments manufacturing called into the heart of the Swiss watch industry. To say that precision metal machining no longer rules the sacred domain of timekeeping accuracy was simply too much for the centuries-old Swiss tradition to endure. They chose to diminish its significance – with grave consequences« (Glasmeier, 1991, p. 478).

# 3 Methodology in Case Studies

This chapter discusses how the case studies should be carried out in relation to the theoretical framework. It discusses the case selection, number of cases and contents of each case study. Subsequently, the chapter describes theoretical fragments in relation to the investigated phenomenon, i.e. agreements. With the theoretical fragments as point of departure, key research issues are debated. This discussion frames issues explored in the case studies.

When carrying out the case studies, especially this chapter will serve as manual. In order to be able to read the sections separately, we have chosen to keep repetitions instead of making cross-references. What could be confusing repetitions when reading the chapter as a whole, are hopefully helpful explanations when carrying out the case studies.

## 3.1 Cases Studies

Each country study covers at least two cases. A case study covers an investigation of one VA, i.e. an agreement concluded with or within an industrial sector and national authorities. The cases analyse all research objects: agreement scheme, voluntary agreement and energy conservation projects. Two types of voluntary agreements exist, i.e. collective voluntary agreements and individual voluntary agreements. Collective agreements are agreements between an industrial organisation and national authorities, where the industrial organisation is responsible for accomplishing the commitments in the agreements to its member firms. An individual voluntary agreement is an agreement between national authorities and a specific firm.

The VAIE project discusses the learning from each country study, but it also compares the different studies in order to discuss best-practice, the effect of the structure of agreements in relation to outcome etc. In order to be able to compare the case studies afterwards, it is necessary to introduce some criteria for selection of the cases.

### 3.1.1 **Criteria for Selection of Cases**

In this project, the phenomenon to investigate is agreements between the national authorities and an industrial sector or an individual firm. Agreements in energy policy are a quite new invention. Therefore, the selection of an agreement scheme is very obvious as most countries only have one. Denmark and Sweden have primarily individual agreements, Germany and France have mainly collective agreements. For practical and research reasons, we therefore see the structure of an agreement as a variable in the project.

A way to throw light on this variable is to look at the same industrial sectors in all the countries. At the same time, several statements in the project proposal call for investigation of more than one industrial sector, e.g.:

- What are the differences between agreements in different countries and sectors?
- Under what conditions can agreements be expected to achieve environmental targets in an efficient way?

In order to be able to compare national varieties of the agreement schemes and specific implementation of agreement among industrial sectors, all countries should, if possible, cover a voluntary agreement in the glass industry and one in the paper and pulp industry. It is not possible for all countries to cover both sectors. The countries not able to look into both sectors, should also look into a national speciality that differs from the other case by structure, contents or success.<sup>1</sup> Table 3.1 summarises the most important requirements to the case studies.

Table Requirements to case studies

3.1

	Requests
<b>Country Study</b>	cover at least <ul style="list-style-type: none"> <li>• 2 cases</li> </ul> if possible in the two industrial sectors: <ul style="list-style-type: none"> <li>• glass</li> <li>• paper &amp; pulp</li> </ul>
<b>Case Study</b>	covers all three research objects: <ul style="list-style-type: none"> <li>• agreement scheme</li> <li>• voluntary agreement</li> <li>• energy conservation projects</li> </ul>
<b>Sectors</b>	should if possible cover <ul style="list-style-type: none"> <li>• glass industry &amp;</li> <li>• paper and pulp industry</li> </ul> if not possible <ul style="list-style-type: none"> <li>• glass or paper and pulp &amp;</li> <li>• a national speciality<sup>1</sup></li> </ul>

<sup>1</sup> a national speciality differs from the other case(s) in terms of structure, content or success.

Industrial sectors are not similar in the different countries, so some description of the sectors is needed to clarify the differences. If other industrial sectors are looked at, they should also be described regarding the parameters listed below. As far as possible the description should include quantitative data; if this is not possible, the description could be qualitative.

Following parameters seem to be some of the important issues to describe characteristics of an industrial sector:

- *the industrial sector's share of total industry*  
calculated in share of total industrial energy consumption and share of turnover (1997)
- *structure of industrial sector*  
calculated in number of firms, average number of employees, and in turnover (1997) in ECU
- *level of energy use*  
calculated in energy consumption for different kinds of products (if possible) and calculated in energy cost in relation to total cost
- *economic performance/situation for the sector and the investigated companies*  
position of companies in world market as well as their future strategies
- *national regulation*  
regarding industrial energy and environment policy. The previous national regulation as well as the actual, additional energy regulation besides

agreements

- *public pressure*

in terms of environmental as well as social pressure. Pressure from environmental organisations and from the public towards the industrial sector, the chosen companies or industry in general concerning environmental and other issues

- *technology*

employed in industry and the individual firm.

Every case study covering a voluntary agreement should look into the results of this agreement on firm level. For individual agreements this is quite easy, but for collective agreements it is a bit more complicated. The collective agreements should cover both implementation within an industrial organisation and at the individual firm.

### 3.2 **Structure in case studies**

The three objects of research are the point of departure for the case studies, i.e. agreement schemes, voluntary agreements and energy conservation projects. See also Section 1.2.2: Key Research Issues and Hypotheses. The agreement scheme frames the structure and contents of the voluntary agreements, which again frames the structure and contents of the energy conservation projects at the individual firms. In relation to the different research objects, different actors are in focus. In agreement schemes it is mainly the government, administrative departments and national interest organisations. Regarding the voluntary agreements it is primarily the partners of the agreement, and if it is a collective agreement, also member firms in the industrial organisation. Finally, regarding the energy conservation projects the core actors are individuals and a group inside the firm. Partly due to the different actors and partly due to the different levels within an agreement, the interpretation and understanding of structure and contents in an agreement shift through the process of policy-making and implementation. Therefore, it is essential to describe the process in order to understand how and why an agreement is a success. This is the main task of the case studies. The emphasis will be on the processes regarding volun-

tary agreements and energy conservation projects, while the description of the agreement scheme provides a background for these issues.<sup>2</sup>

The three objects of research are analysed according to the three phases in the policy-making and implementation model as explained in 2.2.1. Policy and Implementation in the case studies. In order to be able to uncover the understandings and actions of the actors, the networks within which they participate are characterised in terms of relations, stability, knowledge and effects. Therefore, this approach is combined with the three-phased analyse.

The following sections describe and discuss investigation design and research issues of the case studies. Appendix II summarises on these issues, while Appendix IV outlines the framework for reporting on the country studies.

### 3.2.1 **Agreements Schemes**

The overall question regarding agreement schemes is why agreements are chosen as a policy instrument, and how it happened. The agreement scheme is not the main focus for the investigation but it provides a background that frames the voluntary agreements and energy conservation projects. Therefore, the study of agreement schemes should concentrate more on the contents of the scheme than the process of establishing it. Below, we discuss the key research issues, hypotheses, and methodology related to the research object agreement schemes.

#### **Key Research Issues**

The key research issues are based on the policy-making and implementation model, see Section: 2.2 The Policy-Making and Implementation Process, and the network approaches, see Section 2.3: Networks. They are meant as guidelines in the investigation. Different actors will look upon different research issues in different ways. Therefore, be aware of who says, means and understands what, in relation to the research issues. See also Appendix II.

The investigation of agreement schemes should reveal the actors involved in the policy-making and implementation process and their mutual relations. The actors involved would typically be departments, parties, interest organisation and politicians. Each actor behaviour would relate to his or her

understanding of agreement scheme and how his and her practice is influenced by the agreement scheme. The mutual relation could be described by the form of links (activity, resource and actor) see also Section 2.3 Networks. Regarding policy formulation the central question for the different actors is, what problems are agreements supposed to solve, including which national goals they fulfil. This question also throws light on the different actors' understanding of agreements as a policy instrument. Regarding the negotiation, central issues are the alternatives to agreements, and the actors excluded from the process. The alternatives could unveil different actors' strategies in relation to the suggestion of applying agreements as a policy instrument. Survey of excluded actors could indicate future areas of conflict, e.g. if the environmental organisations are excluded from the negotiation, they might sabotage the system in the future, if they get a chance. The implementation in relation to agreement scheme deals with implementation *within* administrative bodies in authorities. Essential issues are to uncover what kind of relations the agreement schemes imply and new practices in this relation. The new practices regard the goals of the agreements, the organisation of the administration, the process leading to the conclusion of an agreement, the performance of the relation regarding the agreements and appropriation. The relations implied by the agreement scheme throws light on the building up of administration and the kind of administration inside the authority. New practice uncovers the interaction and fixes an order of priority between agreement schemes and previous or other policy areas.

The stability of a network, as the one building up within authorities when implementing agreements schemes, depends on the number of activity links<sup>3</sup> and the types of actors centrally placed in the network. Many activity links and many different kinds of actors (interest organisation, different administrative departments etc.) centrally placed in the network indicate a high stability. Central issues in relation to policy formulation are how the agreement scheme relates to existing policy. This could uncover some issues of conflicts and consensus and that is also the issue of the negotiation. Regarding implementation the focus is on understanding of the agreement scheme and the relation to other policy; again the focus is on conflicts and consensus.

Knowledge distribution is a central issue in the VAIE project. Three forms of knowledge can be distinguished: theoretical, practical and tacit,

where tacit knowledge only can be distributed through activity links. Regarding policy formulation the research issue is the ideal on which the agreement as a policy instrument is based, e.g. foreign examples. The negotiation deals with exchange of the three different types of knowledge. The implementation looks at learning processes and new practices for all actors regarding information and knowledge gathering.

The effects only relate to implementation of agreement schemes. The evaluation results are central along with the demands to the authorities concerning organisation, process and performance. Table 3.2 sketches the key research issues for agreement schemes. The key research issues appear when combining the three-phased analyse of the agreement scheme with the factors describing networks. This approach results in many levels of analyses, which ensures that a variety of agreements can be analysed.

Table 3.2 Key research issues for agreement schemes (AS)

	Policy Formulation	Negotiation	Implementation
<b>Actors</b>	Actors involved		
<b>Relations</b>	Relations between the actors involved in form of links (activity, resource and actor links)		
	<ul style="list-style-type: none"> <li>what problems are agreements supposed to solve? (understanding of AS)</li> <li>national political goal</li> </ul>	<ul style="list-style-type: none"> <li>alternatives to agreements</li> <li>actor excluded from the negotiation process</li> </ul>	<ul style="list-style-type: none"> <li>which kind of relations are implied by the AS</li> <li>new practices regarding               <ul style="list-style-type: none"> <li>goals</li> <li>means/instruments</li> <li>organisation</li> <li>process</li> <li>performance</li> </ul> </li> <li>financial support</li> </ul>
Stability	<ul style="list-style-type: none"> <li>How is AS imagined to relate to existing policy</li> </ul>	<ul style="list-style-type: none"> <li>Controversies and consensus</li> </ul>	<ul style="list-style-type: none"> <li>understanding of AS among involved actors</li> <li>understanding of relation to other policy</li> </ul>
<b>Knowledge</b>	<ul style="list-style-type: none"> <li>what kind of experiences are involved in construction of AS? (e.g. foreign ideals?)</li> </ul>	<ul style="list-style-type: none"> <li>Exchange of knowledge (theoretical, practical, tacit) before implementing AS</li> </ul>	<ul style="list-style-type: none"> <li>Is the administration involved in learning processes?</li> <li>Does it lead to new practices regarding gathering of knowledge?</li> </ul>
<b>Effects</b>	-	-	<ul style="list-style-type: none"> <li>New practice among authorities?               <ul style="list-style-type: none"> <li>Organisation</li> <li>Process</li> <li>Performance, e.g. results of evaluation</li> </ul> </li> </ul>

In general, the key research issues uncover the underlying themes of understanding of the agreement schemes and changes of practice in relation to the

agreement scheme. These issues represent structure in the network. In order to describe new practice, it might be relevant to describe the energy and environmental practice before implementation of agreements as a policy instrument.

## **Hypotheses**

The hypotheses are discussion issues in the analytical part of the country studies as such, not themes in the descriptive part of the studies. The hypotheses represented here basically relate to motives for employing agreements, the exclusion of actors, the relation to previous energy and environmental policy, and also expected results.

- Industrial organisations basically support agreements in order to avoid stricter regulation in the future, e.g. emission standards
- Politicians primarily support agreements to actively work for environmental protection without overburdening the firms
- Agreements as a policy instrument exclude the influence of parties not directly involved in the process, e.g. environmental organisations
- AS are a continuation of the logic of previous energy policy towards industry
- The effects of agreements in terms of energy savings are very close to the base line scenario

## **Methodology**

As the focus in this project is primarily on the voluntary agreements and energy conservation projects, agreement schemes will be covered by a few interviews with key persons involved in the policy-making and implementation process, supported with relevant literature and other written materials. The main focus is on the contents of the agreement scheme and the implementation of organisation, practice, relations etc. within the authorities. The design of the scheme should also be presented here, as it is the only research object dealing with general issues. This presentation includes the target for agreement scheme, how big part of industry is covered, characterisation of target group, monitoring and sanctions, the effects of the scheme if these data are available. The data on agreement schemes should cover the key research issues above and also make the

researcher able to answer the assessment criteria for country studies, see chapter 4: Assessment of Country Studies.

The reporting should contain a description of the agreement scheme in general and an analytical part dealing with the themes described in chapter 4: Assessment of Country Study. If more than one agreement scheme is described in one country, both schemes should relate to the questions in chapter 4.

### 3.2.2 **Voluntary Agreements**

The agreement scheme is now implemented and the concrete voluntary agreements are starting to take form. Two forms of voluntary agreements exist, i.e. collective voluntary agreements between authorities and industrial organisations and individual agreements between authorities and a specific firm. An important issue for the voluntary agreement is the process of negotiation between authorities and firm or industrial organisation, and also for collective agreements, the adaptation of the agreement in member firms of an industrial organisation. Therefore, focus of the investigation is put on the process of establishing a voluntary agreement as well as the results of it. Below, we discuss the key research issues, hypotheses and methodology related to the research object, voluntary agreements.

#### **Key Research Issues**

The key research issues are based on the policy-making and implementation model, see Section: 2.2 The Policy-Making and Implementation Process and the network approaches, see Section 2.3: Networks. They are meant as guidelines in the investigation. See also Appendix II.

The investigation of voluntary agreements should reveal the actors involved in the policy-making and implementation process and their mutual relations. The actors involved would typically be authorities, individual firms, industrial organisations and their member firms. In general, the process, and also the specific context of a voluntary agreement, is closed for other actors than the partners in the agreement. Each actor's behaviour would relate to his or her understanding of voluntary agreement and how his and her practice is influenced by the voluntary agreements. The mutual relation between the actors could be described by the form of links (activity, resource and actor), see also Section: 2.3 Networks. Regarding policy

formulation the central question for the different actors is the ideas of entering an agreement and the motives of doing so. The authorities' motives are more or less given by the legislation, while the motives of the other actors are manifold. The motives reveal part of the actor's understanding of agreements. The process of negotiation is central for the voluntary agreements. Characteristics for voluntary agreements are the flexibility related to each firm. In order to adjust the demand to each firm some kind of negotiation takes place. This negotiation might be more or less structured, leaving more or less room open for the actors to define. Central issues to be investigated are the exclusion of actors and the room for interpretations. The room for interpretation indicates something about the degree of flexibility within the individual agreement. It is also important to investigate the settings of the negotiations, i.e. the conditions for the negotiations, e.g. the duration of the negotiations, the frequency of meetings, the parties involved, and important issues. The implementation in relation to voluntary agreements deals with implementation *within* individual firms or industrial organisations. For collective agreements there are two levels, i.e. first implementation in the industrial organisation and then implementation or adaptation in its member firms. Essential issues are new practices and relations to other policy areas. New practice uncovers the interaction between voluntary agreements and previous or other policy areas in industrial organisations and firms.

The stability of a network, as the one building up between authorities and firm or industrial organisation when implementing a voluntary agreement, depends on the number of activity links and the types of actors centrally placed in the network. Many activity links and many different kinds of actors, such as authorities, firms, industrial organisations, centrally placed in the network, indicate a high stability. Central issues in relation to policy formulation are how voluntary agreements relate to previous practice and policy in the energy and environmental field. This could uncover some issues of conflicts and consensus, and this is also the issue of the negotiation. Regarding implementation the focus is on the actors' understanding of the voluntary agreement.

Knowledge distribution is a central issue in the VAIE project. Knowledge concerns three forms: theoretical, practical and tacit, where tacit knowledge can only be distributed through activity links. Regarding policy

formulation the research issue is previous experience with agreements and the ideas of consensus and controversies in the negotiations and implementation. The negotiation deals with exchange of the three different types of knowledge between authority and individual firm or industrial organisation and between industrial organisation and its member firms. The implementation looks at learning processes and new practices for all actors regarding knowledge issues.

The effects only relate to implementation of voluntary agreements. The new practice concerning organisation, process and performance is central along with actual energy saved. The energy saved is based on measurements carried out by the firm and the statements of the interview persons, though some practical problems arise as the companies are not always aware of the exact distribution of their energy consumption. Thus, it is difficult to determine the size of the resulting energy savings for different investments or activities. What can be done, is to describe the expectations to the effects of the VA, expressed by the industry and authorities. In other words, the understanding of the actors can be investigated. Table 3.3 sketches the key research issues for voluntary agreements.

In general, the key research issues uncover the underlying themes of understanding of the voluntary agreements and the changes of practice. These issues represent structure in the network, see also Section 2.1: Actors and Structures. In order to describe new practice it might be relevant for describe the energy and environmental practice before implementation of the voluntary agreements.

Table 3.3 Key research issues for voluntary agreements (VA)

	Policy Formulation	Negotiation	Implementation
<b>Actors</b>	Actors involved		
<b>Relations</b>	Relations between the actors involved in form of links (activity, resource and actor links)		
	<ul style="list-style-type: none"> <li>• motives to enter VA</li> <li>• ideas of entering VA</li> </ul>	<ul style="list-style-type: none"> <li>• exclusion of partners</li> <li>• room for interpretations</li> </ul>	<ul style="list-style-type: none"> <li>• relation to other policy</li> <li>• new practices regarding previous relations?</li> </ul>
<b>Stability</b> (activity links & centrally placed actors)	<ul style="list-style-type: none"> <li>• relation to previous practice and policy in the field</li> </ul>	<ul style="list-style-type: none"> <li>• Controversies and consensus</li> </ul>	<ul style="list-style-type: none"> <li>• Understanding of VA, goals and content</li> </ul>
<b>Knowledge</b> Theoretical Practical Tacit	<ul style="list-style-type: none"> <li>• previous experience with agreements</li> <li>• ideas of needs for knowledge (theoretical, practical &amp; tacit) in the process</li> </ul>	<ul style="list-style-type: none"> <li>• exchanges of knowledge between authority and industry/firm (theoretical, practical &amp; tacit)</li> <li>• between industry organisation and member firms (theoretical, practical &amp; tacit)</li> </ul>	<ul style="list-style-type: none"> <li>• Learning processes by the different actors</li> <li>• New practices in relation to information and knowledge gathering</li> </ul>
<b>Effects</b>	-	-	<ul style="list-style-type: none"> <li>• New practice regarding               <ul style="list-style-type: none"> <li>• Organisation</li> <li>• Process</li> <li>• Performance</li> <li>• Saved energy</li> </ul> </li> </ul>

## Hypotheses

The hypotheses are discussion issues in the analytical part of the case studies as such, not themes in the descriptive part of the studies. The hypotheses represented here basically relate to conditions for actors within the agreement, the suitability of an industrial sector for agreements, the long and short term effects of agreements, and agreement's influence on actors' knowledge and information.

- Firms have a big room for interpretation within the different VAs
- Authorities seldom use sanctions if the firms do not keep a VA
- Industrial sectors with many big firms are more easy in relation to VAs than industrial sectors with many SME's
- In the short run the VA does not improve the level of energy efficiency considerably above the non-intervention level, but in the long run new procedures and a higher level of information regarding energy efficiency will lead to considerable energy savings

- Firms get more information through VA networks on energy efficiency from other firms within or without the industrial sector, which reduces the transaction cost of energy saving projects
- Authorities get a deeper knowledge of the specific production processes through VAs (VAs decrease the asymmetric information problem)

## **Methodology**

As the core issue in relation to voluntary agreements is the process and the contents, the research object of voluntary agreements should be investigated through in-depth interviews with key persons involved in policy-making and implementation process. Along with the interviews, official documents and other written materials might form part of the data on voluntary agreements. It is suggested to identify relevant actors by two strategies. Firstly, the actors pointed at as relevant by the interviewed persons should be chosen. Secondly, relevant persons, understood as relevant by the researcher, should be picked out. This is to ensure that relevant persons are included even though they are not visible actors to the actors directly involved. The data on voluntary agreements should cover the key research issues above, and also make the researcher able to answer the assessment criteria for case studies, see Section 3.3 Assessment of the Case Study.

Besides description of the process and the contents of it, the reporting from this phase will contain flow charts. An individual agreement will need one, and a collective agreement two, i.e. one to cover the process between authorities and industrial organisation and one to cover the process between industrial organisation and member firms. The flow charts will plot in the interactions between actors. The nodes in a flow chart are actors involved, and the links are the subject for the contact. The links could be short term exchanges of activity, resources and actor relations, see also Section: 2.3 Networks. The actors involved in the agreement will figure at the y-axis, which is divided in different types of actor groups. The x-axis could be divided into time-periods in a way that suits the specific process: before entering the agreement, the period of concluding the agreement, and the time after. The »before« part of the x-axis will be the longer. The period of conclusion might be a point, ref. figure 2.2. A flowchart at inter-organisational level.

When plotting the course of the agreement into the flow chart, especially

the distribution of knowledge in the network should be looked for. As explained in 2.3.2 Network Elements in the Case Studies, we assume that a network, or at least some kind of relations between industry and authorities concerning environmental and energy policy, exists before implementing agreements. Thus, the development of information structure in these relations must be analysed.

### 3.2.3 Energy Conservation Projects

The energy conservation projects are specific technical and organisational activities aimed at energy issues at firm level initiated by a specific voluntary agreement. The investigation of such projects illustrate how the agreements interact with the specific culture of a firm. The focus is on the energy practice and its possible transformation in the firm. Implementation of a voluntary agreement might result in various initiatives at firm level. The VAIE project only goes in depth into a very limited number of these. Therefore, it is important to select energy conservation projects that illustrate changes in technical and organisational practice related to energy issues and knowledge, which is the main focus of the project. Below, we discuss the research issues, hypotheses and methodology in relation to the research object of energy conservation projects.

#### Key Research Issues

The key research issues are based on the policy-making and implementation model, see Section: 2.2 The Policy-Making and Implementation Process and the network approaches, see Section 2.3: Networks. See also Appendix II.

The investigation of energy conservation projects should reveal the actors involved in energy conservation projects at firm level and their mutual relations. The actors involved would typically be management, employees, consultants, and suppliers. Each actor's behaviour would relate to his or her understanding of energy conservation projects and how his and her practice is influenced by the energy conservation projects. The mutual relation could be described by the form of links (activity, resource and actor) see also Section: 2.3 Networks. During the policy formulation the actor's understanding of the problems in relation to an energy conservation project is in focus. In consequence of the hierarchic relations between employer and

employees, the management is far the most active part in the policy formulation, unless the energy conservation project touches some essential issue for the employees, e.g. number of jobs or work conditions. Also in relation to the actors outside the firm, the management has a very central role as it often pays for the actors' jobs, e.g. electricians or consultants. However dominating the role of management, it does not exclude other actors having an opinion of the energy conservation project, but their opinion might not have a big saying. If a negotiation process takes place, the research issues are controversies and consensus including the question of alternative options to the energy conservation project. Typically, the far most important actor in the implementation is the employees. They interpret and modify the results of the energy conservation project to fit their understanding and practice. Thus, the employees are very central for the results of the energy conservation projects, although their saying in relation to the policy formulation are not always very big. In relation to implementation, essential issues are new practices and relations to other policy areas uncovering the building up of a possible network inside the firm in relation to the energy conservation project.

The stability of a network, as the one possible building up inside a firm also with outside participants when implementing an energy conservation project, depends on the number of activity links and the types of actors centrally placed in the network. Many activity links and many different kinds of actors (management, employees, consultants, etc.) centrally placed in the network, indicate a high stability. In relation to policy formulation, central issues are how energy conservation projects relate to previous practice and policy in the energy and environmental field. This could uncover some issues of conflicts and consensus, and that is also the issue of the negotiation. Regarding implementation the focus is on the actors' understanding regarding the energy conservation project.

Knowledge distribution is a central issue in the VAIE project. Knowledge concerns three forms: theoretical, practical and tacit, where tacit knowledge can only be distributed through activity links. Regarding policy formulation the research issues are views of the needs for knowledge and the question of how to get it. The implementation looks at learning processes and new practices for all actors.

The effects only relate to implementation of energy conservation projects.

The new practice concerning organisation, process and performance is central, along with actual energy saved. The energy saved is based on the statements of the interview persons, although some practical problems arise as the companies are not always aware of the exact distribution of their energy consumption. Thus, it is difficult to determine the size of the resulting energy savings for different investments or activities. What can be done is to describe the expectations to the effects of the VA expressed by the industry and authorities. In other words, the understanding of the actors can be investigated. Table 3.4 sketches the key research issues for the energy conservation projects.

Table 3.4 Key research issues for energy conservation projects (ECP)

	Policy Formulation	Negotiation	Implementation
<b>Actors</b>	Actors involved		
<b>Relations</b>	Relations between the actors involved in form of links (activity, resource and actor links)		
	<ul style="list-style-type: none"> <li>• problems relating to ECP</li> </ul>	<ul style="list-style-type: none"> <li>• possible consensus and controversies</li> </ul>	<ul style="list-style-type: none"> <li>• new relations?</li> <li>• new practices?</li> </ul>
<b>Stability</b> (activity links & centrally placed actors)	<ul style="list-style-type: none"> <li>• relation to previous energy practice in the firm</li> <li>• relation to other practices inside the firm</li> </ul>	<ul style="list-style-type: none"> <li>• consensus and controversies</li> </ul>	<ul style="list-style-type: none"> <li>• understanding of ECP</li> </ul>
<b>Knowledge</b> theoretical practical tacit	<ul style="list-style-type: none"> <li>• view of need for knowledge (theoretical, practical &amp; tacit)</li> </ul>	-	<ul style="list-style-type: none"> <li>• Learning processes inside the firm</li> <li>• new practices regarding knowledge (theoretical, practical &amp; tacit)</li> </ul>
<b>Effects</b>	-	-	<ul style="list-style-type: none"> <li>• New practice regarding <ul style="list-style-type: none"> <li>• Organisation</li> <li>• Process</li> <li>• Performance</li> <li>• Saved energy</li> </ul> </li> </ul>

In general, the key research issues uncover the underlying themes of understanding of the energy conservation projects and the changes of practice in relation to the energy conservation project. These issues represent structure in the network, see also Section 2.1 Actors and Structures. In order to describe new practice, it might be relevant to describe the energy and environmental practice before implementation of the energy conservation projects.

## **Hypotheses**

The hypotheses are discussion issues in the analytical part of the case studies as such, not themes in the descriptive part of the studies. The hypotheses represented here basically relate to the status of energy issues in the firm's everyday life, the course of implementing the projects, the central issues of the energy conservation projects, and the importance of energy issues in relation to the outside world.

- Energy conservation projects are often a minor appendix to the everyday life of the firm, therefore they will often be related to other issues, which the firm finds more important, e.g. environmental considerations
- Most energy conservation projects are implemented by a top-down approach from management
- Energy conservation projects are often rather technical, and therefore involve the technical staff rather than ordinary employees
- Energy conservation projects do not relate to the PR strategy of the firm.

## **Methodology**

As the core issue in relation to energy conservation projects is the process and the contents, the research object of energy conservation projects should be investigated through in-depth interviews with key persons involved in policy-making and implementation process. Along with the interviews, official documents and other written materials might form a part of the data on energy conservation projects. It is suggested to identify relevant actors by two strategies. Firstly, the actors pointed at as being relevant by the interviewed persons should be chosen. Secondly, relevant persons, understood as relevant by the researcher, should be picked out. This is to ensure that relevant persons are included, even though they are not visible actors to the actors directly involved. The data on energy conservation projects should cover the key research issues above and also make the researcher able to answer the assessment criteria for case studies, see Section 3.3: Assessment of the Case Studies. Besides description of the process and the contents of it, the reporting from this phase will consist of flow charts. The flow charts will plot in the interactions between actors. See also Section 3.2.2 Voluntary Agreements, the paragraph about Methodology.

### 3.3 **Assessment of the Case Study**

A country study covers at least two cases in the paper and pulp industry and the glass industry. If a voluntary agreement does not exist in one of these industries, the country study covers a national speciality, that differs in relation to the other voluntary agreements studied in terms of contents, structure, or success. A country study covers all three research objects, i.e. agreement scheme, voluntary agreements and energy conservation projects.

A case study covers a voluntary agreement, no matter if it is individual or collective. The cases in a country study often relate to the same agreement scheme, but more than one agreement scheme might exist. If this is the case, both agreement schemes should be described in the country study. The assessment of the case studies relates to the research objects of voluntary agreements and energy conservation projects, while the country study goes deeper into overall issues regarding agreement schemes. The assessment criteria are also discussed in Appendix II.

#### 3.3.1 **Assessment of Voluntary Agreements**

The assessment of voluntary agreements is the analytical part of the case studies. Here, the researches discuss and assess the description of the cases. Regarding the voluntary agreements the criteria for assessment is the hypotheses, the technical and organisational changes, effects on energy practice, relation to supporting initiatives, fulfilment of the agreement's own targets, and relation to sustainability.

#### **Hypotheses**

The hypotheses of voluntary agreements should be discussed in this relation. Just to remind you, the hypotheses are:

- Firms have a big room for interpretation within the different VAs
- Authorities seldom use sanctions, if the firms do not keep a VA
- Industrial sectors with many big firms are more easy in relation to VAs than industrial sectors with many SMEs
- In the short run the VA does not improve the level of energy efficiency considerably above the non-intervention level, but in the long run new procedures and a higher level of information regarding energy efficiency

will lead to considerable energy savings

- Firms get more information through VA networks on energy efficiency from other firms within or without the industrial sector, which reduces the transaction cost of energy saving projects
- Authorities get a deeper knowledge of the specific production processes through VAs (VAs decrease the asymmetric information problem)

### Technical and Organisational Changes

Another important issue is the outcome of the agreements. Implementation of a voluntary agreement influences the practice regarding energy issues by changes in technology or organisational changes. New technologies might be employed resulting in direct energy savings as well as new procedures, and other organisational initiatives might be employed. The organisational changes might influence the energy saving in the long run. Table 3.5 sketches the effects of technical and organisational changes.

Table 3.5 Effects of technical and organisational changes in relation to VAs

	<b>Already established</b> (short run)	<b>Planned</b> (long run)
<b>Technical change</b>	E.g. improved energy efficiency by stopping compressed air systems when not needed	E.g. improved energy efficiency by implementing new production processes
<b>Organisational change</b>	E.g. new procedures by appointing an energy responsible in the board	E.g. new procedures through a major reorganising of the firms handling of the energy

The organisational changes might influence the energy efficiency in the long run, and planned organisational changes might influence the energy efficiency in the very long run. In this way the organisational changes indicate possible future improvements in energy efficiency. The researchers should be able to state the already established energy savings and estimate the planned technical changes and the established organisational changes effect on energy efficiency. These statements and estimations should be in quantitative number, if this is not possible, then qualitative data must be provided.

### Effects on Energy Practice

Founded on the description of the technical and organisational changes, we

need a discussion of to what degree the voluntary agreements have led to new energy practices in the industrial organisation and/or at firm level. Such a discussion opens for assessment of whether the agreement have introduced something new or conserved the old relations and understandings.

### **Relation to Supporting Initiatives**

Often, firms and industrial organisations are involved in many different kinds of policies e.g. environmental policy and industrial policy, as well as other kinds of initiatives, e.g. competition of most environmental firm in a sector. These initiatives might influence the agreements positively or negatively. We need a description of what other kinds of initiatives the industrial organisation and/or the firm are involved in, and how these initiatives influence the voluntary agreement. Such a discussion opens up assessment of negative and positive interactions with other initiatives.

### **Fulfilment of Agreements' Own Targets**

The stated targets in the agreement should be assessed. If the targets are not fulfilled or able to be reached during the agreement period, the agreements show considerable weaknesses. The consequences in such a situation are important to discuss. The targets could also be so weakly formulated that they are always reached, even though the course of the agreement might not change the energy efficiency level considerably in relation to a baseline scenario. Therefore, it is not possible to say that the agreement is a success just because it fulfils its own targets.

### **Influence on Sustainability**

The studied agreements also relate to the national energy policy, and one of the most important issues in these years in all the studied countries is the obligations relating to sustainability. This could either be in terms of substitution of exhaustible resources with renewables or in terms of various obligations to CO<sub>2</sub> reductions. In order to be able to fit the agreements into this relation, the assessment of voluntary agreement will briefly discuss the relation to sustainability. Four issues are discussed, i.e.

- Consumption of non-renewable resources

In order to judge the effects of the consumption we need to know the fuel mix (oil, gas, coal and electricity), the amount of consumption and the savings.

- CO<sub>2</sub> emission in relation to nature's sink  
The numbers above should also cover this issue, although it might be difficult to say something about long term effects
- Investment in human capital  
Covers all kinds of learning processes for various actors that increase the knowledge of society.
- Time dimension  
This issue includes topics as continuity of improvements in energy efficiency due to the agreements, assessment of the long term perspective and consequences for the future generations.

Sustainability can be interpreted in many different ways, see e.g. Hanley (1998). Hanley describes 7 different measurements of the sustainability of Scotland<sup>4</sup>. So the assessment in relation to sustainability can only be a discussion. But the issues mentioned above are core issues in all interpretations of the concept.

### 3.3.2 Energy Conservation Projects

The assessment of energy conservation projects is the analytical part of the case studies. Here, the researches discuss and assess the description of the cases. Regarding the energy conservation the criteria for assessment are the hypotheses, the technical and organisational changes, effects on energy practice, relation to supporting initiatives, and the relation to sustainability. Thus, the criteria are similar to the assessment criteria for voluntary agreements, they merely lack the assessment of the agreement's own target.

#### Hypotheses

The hypotheses of energy conservation projects should be discussed in this relation. Just to remind you the hypotheses are:

- Energy conservation projects are often a minor appendix to the everyday life of the firm, therefore they will often be related to other issues, which the firm finds more important, e.g. environmental considerations

- Most energy conservation projects are implemented by a top-down approach from management
- Energy conservation projects are often rather technical, and therefore involve the technical staff rather than ordinary employees
- Energy conservation projects do not relate to the PR strategy of the firm

### **Technical and Organisational Changes**

Another important issue is the outcome of the agreements. Implementation of an energy conservation project influences the practice regarding energy issues by changes in technology or organisational changes. New technologies might be employed resulting in direct energy savings as well as new procedures, and other organisational initiative might be employed. The organisational changes might influence the energy saving in the long run. Table 3.5 above sketches the effects of technical and organisational changes for voluntary agreements, but could be used for energy conservation projects as well.

### **Effects on Energy Practice**

Founded on the description of the technical and organisational changes, we need a discussion of to what degree the energy conservation project has led to new energy practices inside the firm. Such a discussion opens for assessment of whether the agreement have introduced something new or conserved the old relations and understandings.

### **Relation to Supporting Initiatives**

Often, firms are involved in many different kinds of policis, e.g. environmental policy and industrial policy, as well as other kinds of initiatives, e.g. competition of most environmental firm in a sector. These initiatives might influence the agreements positively or negatively. We need a description of what other kinds of initiatives the firm is involved in, and how these initiatives influence the energy conservation project. Such a discussion opens up assessment of negative and positive interactions with other initiatives.

## **Influence on Sustainability**

The studied agreements also relate to the national energy policy and the most important issues in these years in all the studied countries are the obligations relating to sustainability. This could either be in terms of substitution of exhaustible resources with renewables, or in terms of various obligations to CO<sub>2</sub> reductions. In order to be able to fit the agreements into this relation, the assessment of energy conservation projects will briefly discuss the relation to sustainability.

## **Notes**

1. These two sectors are chosen as they are covered by agreements in most of the countries. Furthermore, the paper and pulp sector produces fairly homogenous products making it relatively easy to compare the effects of the agreements that is dealt with in task D.
2. For political and institutional conditions leading to voluntary approaches in environmental policy, we refer to another JOULE research project: »Joint Environmental Policymaking: New Interactive Approaches in the EU and Selected Member States«, CT96-0227.
3. Activity links are relation between actors relating to activities directly connected with production (Håkonsson, 1994). Production is here understood in a broad sense.
4. Larsen and Mortensen (1995) discuss sustainability in relation to the energy sector

## 4 **Assessment of Country Studies**

A country study covers all the case studies investigated in a nation. Normally, it only includes one agreement scheme, but it is possible that more than one agreement scheme is included. The assessment of the country study primarily assesses the agreement schemes on the basis of the experiences gained through the analyses of voluntary agreements and energy conservation projects. In other words, it is assessed how and how much the agreement scheme had led to enhanced energy efficiency. The assessment of the country studies relates to the hypotheses for agreement schemes, normative demand for agreement schemes, criteria for discussing the agreement scheme, and a brief debate of sustainability and agreement schemes.

### 4.1 **Hypotheses for Agreement Schemes**

The hypotheses presented below are tools in a analytical part of the country study. For agreement schemes the hypotheses basically relate to motives for employing agreements, the exclusion of actors, the relation to previous energy and environmental policy, and also expected results. As this is the assessment part, it is obvious to involve the relations to voluntary agreements and energy conservation projects. The hypotheses are:

- Industrial organisations basically support agreements in order to avoid stricter regulation in the future, e.g. emission standards.

The industrial organisations' participation in the policy formulation and negotiation might have marked the design of the agreement scheme. The organisation's motives to be positively involved in the process might be governed by apprehension of future regulation. But this is not necessarily the motives that govern the organisation, if it gets involved in voluntary agreements. Such possible discrepancies between motives to be involved in the policy-making and implementation process of agreement schemes, and motives to participate in a voluntary agreement, might be interesting to look at. Also member firms in an industrial organisation might have different motives to implement energy conservation projects than the demands of a voluntary agreement. The motives of the firm are also interesting to compare with the motives of the industrial organisation in relation to both the voluntary agreement and the agreement scheme.

- Politicians primarily support agreements to actively work for environmental protection without overburdening the firms
- Agreements as a policy instrument close out the influence of parties not directly involved in the process, e.g. environmental organisations.

This hypothesis relates both to the concrete voluntary agreements and energy conservation project, and the exclusion of actors in those processes, as well as the more general democratic problem of excluding third parties for knowledge of and influence in industrial energy policy.

- AS are a continuation of the logic of previous energy policy towards industry

Looking at practice both in authorities, industrial organisations and individual firms in relation to respectively agreement schemes, voluntary agreements and energy conservation projects, it will be possible to judge whether or not the agreement is a new phenomenon in the energy policy towards industry.

- The effects of agreements in terms of energy savings are often close to the base-line scenario

The energy savings already established and the planned energy savings regarding voluntary agreements and energy conservation projects indicate the truths of the hypothesis above.<sup>1</sup>

Discussion of the above hypotheses get around some of the basically

research question of the VAIE project.

## 4.2 **Normative Demand on Agreement Schemes**

Many normative demands on agreements could be stated. Our point of departure is the recommendations and considerations of the European Union research network on market-based instruments for sustainable development (Ekins, 1998) that have dealt with agreements used as a policy instrument. Their recommendations deal mainly with the organisational prerequisites and to some extent with the contents of the agreement. Based on our interpretation of the policy briefs the following nine criteria are set up for agreement schemes. Five of them are concerning organisational demands and the remaining four are dealing with the contents of the agreement. One of the outcomes of the country studies will be an evaluation of each agreement related to these nine criteria. Thereby, we will build on the research carried out in the network, and by using the criteria we will be able to improve them.

### 4.2.1 **Organisational Prerequisites**

Many of the criteria grouped here relate to the possible inconsistency in the agreement system and the implementation of agreement schemes in authorities. Below we will briefly discuss these points. The criteria basically relate to the written roles, rights and responsibilities, but with the description of agreement schemes, voluntary agreements, and energy conservation projects, it is possible to analyse the actual implementation of these roles, rights and responsibilities. This comparison between written intentions should be born in mind for all criteria.

- A clear statement should be articulated concerning the role, rights and responsibilities of all parties.
- The government should have an agency close enough to industry to understand both the concerns and the potential of business, but in turn under the control of an upper administrative branch to limit collusion (agency capture) between agencies and the industrial interests.
- The jurisdiction in question should have an administration to interpret

the terms of an agreement scheme.

- Environmental interests should be sufficiently organised and informed concerning the environmental performance and potentials of firms and industrial sectors.

It is interesting to explore actors' (including the environmental organisations) views of the environmental organisations' participation.

- A system involving concerned parties, independent of industry, should be established to monitor and verify progress towards, and achievement of, targets.

#### 4.2.2 **Contents of the Agreement Scheme**

Concerning the more concrete contents of an agreement scheme, the policy brief suggests the following criteria.

- Improvement targets and procedures should be transparent, known and understood by the key stakeholders involved.

Here it would be relevant to follow the interpretations of agreement scheme to a specific voluntary agreement and look into the specific implementation processes through the energy conservation projects.

- There should be a mechanism for imposing sanctions in the event of non-compliance.

Sometimes the effects of sanctions are so big that it is hard for the authorities to impose the sanctions. In other cases the sanction has no actual effects.

- Before adopting reduction targets, procedures or investment criteria, an independent estimation of business as usual should be made to give a counterfactual that is a likely outcome in the absence of voluntary agreements.
- Obstacles to restrain free riders should be implemented when agreement schemes involve a collective of firms.

### 4.3 **Criteria for Discussing Agreement Schemes**

Comparison between different policy instruments has long been a central part of environmental economic literature (e.g. Pearce and Turner 1990, Bohm and Russel 1985). Economic incentives, or so-called market based

instruments, e.g. a CO<sub>2</sub> tax or tradable permits are often expected to be superior to other policy instruments. This is because the tax (under certain circumstances) can realise an environmental target (e.g. a CO<sub>2</sub> reduction) with the minimum possible cost for the society as a whole. In situations where damage costs (the external effects) are known, one can further argue that the degree of pollution is optimal, if the pollution is charged with a tax equal to the damage cost (a so-called Pigouvian tax). It is further argued that taxes are easier to control and sanction than other policy instruments.

New analyses of advantages and disadvantages with policy instruments have put a question mark on the superiority of the so-called market based instruments. According to, e.g. Field (1994) and Russell and Powell (1996) it is sometimes a big challenge for the regulator to obtain the necessary information about the damage cost and abatement cost of firms. It is furthermore an assumption that control and sanctioning can be carried out without costs. Here it has to be remembered that a tax in itself gives an incentive to avoid the regulation. All in all, in practice, market based instruments are not as superior a policy instrument as one often gets the impression.

To give a more many-faceted picture of the advantages and drawbacks of the different agreements described in the VAIE project, the following five criteria have been suggested as themes of discussion of practical considerations of instruments in environmental policy (Russell and Powell 1996)<sup>2</sup>.

#### 4.3.1 **Static Concerns**

Under this criterion agreements are compared according to the costs of the society by realising the necessary change in behaviour (leading to e.g. a CO<sub>2</sub> reduction). When it is static, it means that given preferences, given technology and so on, are assumed. Other elements of static concerns are questions like: registration, control and sanctioning. Some emissions from combustion of energy are hard to control, e.g. NO<sub>x</sub> that has to be measured directly in the flue gas from the combustion. Other emissions like the CO<sub>2</sub> emissions, are one of the most simple emissions to measure, because it is proportionate with the use of various kinds of fossil fuel, i.e. it can, as one of the only emissions we can think of, be measured at the input side.

#### 4.3.2 **Dynamic Considerations**

The basic question is whether the policy instrument is flexible over time and stimulates the development of new energy efficient technology. All in all, whether the instrument also in the long run leads to (dynamic) efficiency, with a similar definition as in the static case, though of course from a dynamic point of view. In relation to industry, one has e.g. to consider instead of a fixed number of energy users with a fixed technology that new energy users come into the scene and others disappear. Both production technology as well as abatement technology change over time. Also preferences will change over time. These changes can be endogenous as well as exogenous. Endogenous changes are due to reactions on the policy instruments used, e.g. concerning preferences and technology. Exogenous changes can be about income, availability of capital and technology that has nothing to do with the policy instruments used. The static efficiency has its well established forms of analyses, e.g. cost benefit and principal/agent analyses. This is not the situation for dynamic efficiency. This is, of course, unfortunate as the dynamic efficiency is much more interesting than the static.

#### 4.3.3 **Institutional Demands on Regulator and Regulated**

If the involved regulator should be able to implement the policy instrument, the regulator of course needs the necessary professional and technical expertise. If an employment of agreement makes it necessary for the regulator to inform companies, collect data and control, the regulator of course needs to be able to carry through these tasks, e.g. by employing more people. And the regulated on the other hand, shall be able to handle the instrument. E.g. market-based instruments in a society, where no market exists, are of course not the optimal solution.

#### **Political Considerations**

Distribution of advantages and disadvantages by employing different policy instruments has for various reasons great importance. It is often from a political point of view one of the most, if not the most, crucial issues. The regulator might also in a more specific way need to take this into consideration; if the implementation of a policy instrument is blocked by certain groups in society that do not feel they get their fair share of the

advantages, which the policy instruments should create; the policy instrument can be impossible to employ and therefore only interesting from a theoretic point of view. It can also from a theoretically economic point of view be a welfare loss if the regulation harms, e.g. low income groups in population. The question of industrial competitiveness can also be seen as a question of distribution of advantages and disadvantages. The competitiveness issue is extremely central in the political discussion of various political instruments within the energy policy.

### **Risk**

The question here is which understanding the regulator and the regulated have concerning the risk related to different policy instruments. There will always be risks related to different instruments, among others whether the political targets are reached. Another issue concerning risk is the robustness of e.g. agreements towards shocks, e.g. drastic drops in oil prices.

All these aspects have to be taken into consideration when discussing the policy instruments of agreements. The characters of these five criteria are very different. One could argue that the criterion »dynamic considerations«, covers all other criteria. But it is our opinion that from a pragmatic point of view, we get a more many-faceted analysis by using all these criteria than only using one very ambitious criterion, e.g. dynamic efficiency.

## **4.4 Sustainability and Agreement Schemes**

It is not sensible to talk about sustainability in general terms without building on actual behaviour. We discuss this in relation to the case study assessments, see section 3.3 Assessment of the Case Study. In relation to the time dimension it will be fruitful to discuss this in regard to the consideration of dynamic characteristics of agreements, see section: 4.3.2 Dynamic Considerations.

## Notes

1. Task D, analysing the actual outcome and non-intervention case will go further into this issue.
2. Russell and Powell (1996) use the criteria to compare different types of policy instruments. However, the construction of agreements in the different case countries are so different that we find it reasonable to compare the agreement schemes on the foundation of the criteria listed here.

# Appendix I

## **Demands on a Country Study**

A country study covers at least one agreement scheme.

A country study covers as far as possible voluntary agreement with or within the glass industry and the paper and pulp industry. In some countries voluntary agreements in, or within, both these sectors, do not exist; these countries will besides a voluntary agreement with, or within, the paper or glass industry, include a national speciality.

The selected voluntary agreements will as far as possible differ in structure, contents and success.

A country study covers all levels of analyses, i.e. agreement scheme, voluntary agreements and energy conservation projects.

A country study is at least based on 25 interviews and include investigation at three firms.

Three flow charts covering the implementation and negotiation phase of a specific VA.

A joint assessment is made for the whole country study as well as for the different cases. For the levels of voluntary agreements and energy conservation projects, flow charts are made to describe the process.

The analyses in the country studies are based on the network approach combined with the discussion arenas of the policy making and implementation model.

# Appendix II

## **Relations between Key Research Issues, Hypotheses & Assessment Criteria**

Appendix II sketches the key research issues, hypotheses and assessment criteria for the three research objects. The three research objects are: *agreement schemes (AS)*, i.e. agreements used as policy instruments, *voluntary agreement (VA)*, i.e. specific example on either a collective or an individual agreement, and finally, of *energy conservation projects (ECP)*, i.e. specific technical and organisational activities aimed at energy issues at firm level initiated by a specific voluntary agreement. In order to be able to read this appendix as a manual, some repetitions will occur.

The research issues are on the one hand related to the policy-making and implementation model, see section 2.2: »The Policy-Making and Implementation Process«. It is the policy formulation, negotiation and implementation on the horizontal part of the tables. On the other hand the research issues are related to the network approaches, see section 2.3: »Networks«. It is the actors involved, their relations, the stability of the network, distribution of knowledge, and learning process in the network and the effects of the network in terms of changed behaviour and saved energy on the vertical part of the tables. The research issues are also discussed in section 3.2: »Structure in Case Studies«.

The hypotheses are primarily central ideas from the project proposal, which we wish to test during the VAIE project. The assessment of agreements discusses the hypotheses related to the different research objects, and the relation to sustainability. Especially, agreement schemes are also discussed in relation to normative criteria and in relation to Russel's criteria for comparing policy instruments, see chapter 4: »Assessment of Country Study«. The voluntary agreements and the energy conservation

projects are discussed in relation to their influence on energy practice in relation to organisational and technical changes and supporting initiatives. Furthermore, voluntary agreements are discussed in relation to whether or not they fulfil the goals fixed in the agreement.

## **II.1 Agreement Scheme**

Agreement schemes are agreements discussed and utilised as a policy instrument. The policy formulation regarding agreement schemes considers the idea of using agreements as a policy instrument. It concerns themes as alternative policy instruments, adaptation to previous energy and environmental policy, and so on. The negotiation process relates primarily to lobbying by interest organisations and discussions in parliament in relation to the agreements. The negotiation uncovers some of the controversies and consensus themes regarding agreements. The implementation relates to implementation in the state administration, such as building up new competence in a department or employing new administrators. The investigation of agreement schemes should primarily work as a background for the study of voluntary agreements and energy conservation projects. Therefore, the focus is on issues influencing and reflected in the voluntary agreement and energy conservation projects, e.g. controversies in the implementation of an agreement scheme. In almost all the countries, the policy-making and implementation of agreements as a policy instrument is history. The agreement schemes are implemented and both some voluntary agreements and energy conservation projects exist. Today, the public discussions relate primarily to the voluntary agreements, while discussions inside firms also relate to energy conservation projects.

### **II.1.1 Key Research Issues**

The key research issues are based on the policy-making and implementation model and the network approach. They are meant as guidelines in the investigation. Table II.1 lists the most important research issues in relation to agreement schemes.

Table Key research issues for agreement schemes

II.1	Policy Formulation	Negotiation	Implementation
<b>Actors</b>	Actors involved		
<b>Relations</b>	Relations between the actors involved in form of links (activity, resource and actor links)		
	<ul style="list-style-type: none"> <li>what problems are agreements supposed to solve? (understanding of AS)</li> <li>national political goal</li> </ul>	<ul style="list-style-type: none"> <li>alternatives to agreements</li> <li>actor excluded from the negotiation process</li> </ul>	<ul style="list-style-type: none"> <li>which kind of relations are implied by the AS?</li> <li>new practices regarding                             <ul style="list-style-type: none"> <li>goals</li> <li>means/instruments</li> <li>organisation</li> <li>process</li> <li>performance</li> <li>financial support</li> </ul> </li> </ul>
<b>Stability</b>	<ul style="list-style-type: none"> <li>How is AS imagined to be related to existing policy?</li> </ul>	<ul style="list-style-type: none"> <li>Controversies and consensus</li> </ul>	<ul style="list-style-type: none"> <li>understanding of AS among involved actors</li> <li>understanding of relation to other policy</li> </ul>
<b>Knowledge</b>	<ul style="list-style-type: none"> <li>what kind of experiences are involved in construction of AS? (e.g. foreign ideals?)</li> </ul>	<ul style="list-style-type: none"> <li>Exchange of knowledge (theoretical, practical, tacit) before implementing AS</li> </ul>	<ul style="list-style-type: none"> <li>Is the administration involved in learning processes?</li> <li>Does it lead to new practices regarding gathering of knowledge?</li> </ul>
<b>Effects</b>	-	-	<ul style="list-style-type: none"> <li>New practice among authorities?                             <ul style="list-style-type: none"> <li>Organisation</li> <li>Process</li> <li>Performance, e.g. results of evaluation</li> </ul> </li> </ul>

Describing these issues makes it possible to answer the hypotheses below.

### II.1.2 Hypotheses

The main hypotheses are listed below.

- Industrial organisations basically support agreements in order to avoid stricter regulation in the future, e.g. emission standards
- Politicians primarily support agreements to actively work for environmental protection without overburdening the firms
- Agreements as a policy instrument excludes the influence of parties not directly involved in the process, e.g. environmental organisations
- AS is a continuation of the logic of previous energy policy towards industry
- The effects of agreements in terms of energy savings are very close to the base-line scenario

### **II.1.3 Assessment Criteria**

The assessment criteria for the agreement schemes are discussed in details in chapter 4: Assessment of Country Studies. The assessment criteria relate to the hypotheses, normative demands for agreement schemes, criteria for discussing agreement schemes, and the influence on sustainability.

#### Hypotheses

In the assessment of the country studies the hypotheses regarding agreement schemes above will be discussed.

#### Normative Demands for Agreement Schemes

In the country report each AS will be discussed regarding the following normative criteria for agreements used as energy or environmental policy instruments in industry.

- organisational prerequisites
- clear role, rights and responsibilities of all parties
- existence of an agency close enough to understand both concerns and potentials of business, but in turn under control of an upper administrative branch
- an administration in place to interpret the terms of an agreement
- environmental interest should be sufficiently organised and informed
- monitor and verify system should exist independent of industry
- contents of the agreement
- improvement targets and procedures should be transparent
- mechanism for imposing sanctions should exist
- independent estimations of business-as-usual should be made
- obstacles to restrain free riders should be implemented.

#### **Criteria for Discussing Agreement Schemes**

Also, in the report each AS will be discussed in relation to the following criteria:

- static concerns
- costs of society
- dynamic considerations
- flexibility over time
- institutional demands

- needs for professional and technical expertise
- political considerations
- distribution of advantages and disadvantages
- risk
- understanding of risk by involved actors
- robustness.

### Influence on Sustainability

In order to relate the effect of the agreements to overall national goals in the area of sustainability, the AS will be evaluated in relation to the criteria below:

- consumption of non-renewable resources<sup>1</sup>
- CO<sub>2</sub> emission in relation to nature's sink
- investment in human capital
- time dimension.

## **II.2 Voluntary Agreement**

Voluntary agreements are specific examples of agreement schemes on either collective or individual level. Collective voluntary agreements are agreements between an industrial organisation and authorities where the industrial organisation promises an actual behaviour on behalf of its member firms. An individual voluntary agreement is an agreement between authorities and an individual firm. The research object of the voluntary agreements discusses the issues between organisation, e.g. authorities and industrial organisations, and between firms, industrial organisations and authorities.

The policy formulation part regards the motives for the actors involved in the voluntary agreement and their idea of entering an agreement. Often, the negotiation process and results are closed to all other than the partners involved. It normally settles the specific goals and specific contents under the frame established by the agreement scheme. The implementation regards implementation of these goals and contents on a general level. For collective agreements the implementation has two levels: first, in relation to the industrial organisation, and then, in relation to its member firm. Individual agreements only have one level. Below, the key research issues, hypotheses and assessment criteria are presented.

## II.2.1 Key Research Issues

The key research issues are based on the policy-making and implementation model and the network approach. They are meant as guidelines in the investigation. Table II.2 lists the most important research issues in relation to voluntary agreements.

Table II.2 Key research issues for voluntary agreements

	Policy Formulation	Negotiation	Implementation
<b>Actors</b>	Actors involved		
<b>Relations</b>	Relations between the actors involved in form of links (activity, resource and actor links)		
	<ul style="list-style-type: none"> <li>• motives to enter VA</li> <li>• ideas of entering VA</li> </ul>	<ul style="list-style-type: none"> <li>• exclusion of partners</li> <li>• room for interpretations</li> </ul>	<ul style="list-style-type: none"> <li>• relation to other policy</li> <li>• new practices regarding previous relations?</li> </ul>
<b>Stability</b> (activity links & central placed actors)	<ul style="list-style-type: none"> <li>• relation to previous practice and policy in the field</li> </ul>	<ul style="list-style-type: none"> <li>• Controversies and consensus</li> </ul>	<ul style="list-style-type: none"> <li>• Understanding of VA, goals and content</li> </ul>
<b>Knowledge</b> Theoretical Practical Tacit	<ul style="list-style-type: none"> <li>• previous experience with agreements</li> <li>• ideas of needs for knowledge (theoretical, practical &amp; tacit) in the process</li> </ul>	<ul style="list-style-type: none"> <li>• exchanges of knowledge between authority and industry/firm (theoretical, practical &amp; tacit)</li> <li>• between industry organisation and member firms (theoretical, practical &amp; tacit)</li> </ul>	<ul style="list-style-type: none"> <li>• Learning processes by the different actors</li> <li>• new practices in relation to information and knowledge gathering</li> </ul>
<b>Effects</b>	-	-	<ul style="list-style-type: none"> <li>• New practice regarding               <ul style="list-style-type: none"> <li>• Organisation</li> <li>• Process,</li> <li>• Performance</li> </ul> </li> <li>• saved energy</li> </ul>

Describing the research issues makes it possible to answer the hypotheses below.

## II.2.2 Hypotheses

The hypotheses regarding voluntary agreements are listed below.

- Firms have a big room for interpretation within the different VAs
- Authorities seldom use sanctions, if the firms do not keep a VA.
- Industrial sectors with many big firms are easier to conclude VAs for than industrial sectors with many SMEs.

- In the short run the VA does not improve the level of energy efficiency considerably above the non-intervention level, but in the long run new procedures and a higher level of information regarding energy efficiency will lead to considerable energy savings.
- Firms get more information through VA networks on energy efficiency from other firms within or without the industrial sector, which reduces the transaction cost of energy saving projects.
- Authorities get a deeper knowledge of the specific production processes through VAs (VAs decrease the asymmetric information problem).

### II.2.3 Assessment Criteria

The assessment criteria for the voluntary agreements are discussed in details in section 3.3: Assessment of the Case Study. The criteria are hypotheses, technical and organisational changes, effects on practice, relation to supporting initiatives, fulfilment of the agreements' own targets and the agreements' influence on sustainability.

#### Hypotheses

In assessment of the case study the hypotheses regarding voluntary agreements above will be discussed.

#### Technical and Organisational Changes

Implementation of a VA influence in the practice regarding energy issues. New technologies might be employed resulting in direct energy savings as well as new procedures, and other organisational initiative might be employed. The organisational changes might influence the energy saving in the long run. Table II.3 sketches the effects of technical and organisational changes.

Table II.3 Effects of technical and organisational changes in relation to VAs

	<b>Already established</b> (short run)	<b>Planned</b> (long run)
Technical change	E.g. improved energy efficiency	E.g. improved energy efficiency
<b>Organisational change</b>	E.g. new procedures <sup>α</sup>	E.g. new procedures <sup>α</sup>

The organisational changes might influence the energy efficiency in the long run (illustrated by <sup>α</sup>) and planned organisational changes might

influence the energy efficiency in the very long run. The organisational changes in this way indicate possible future improvements in energy efficiency.

### **Effects on Energy Practice**

Founded on the description of the technical and organisational changes, we need a discussion of to what degree the voluntary agreements have led to new energy practices in the industrial organisation and/or at firm level.

### **Relation to Supporting Initiatives**

Often, firms and industrial organisations are involved in many different kinds of policy, such as environmental policy and industrial policy, as well as other kinds of initiatives, e.g. co-operation with energy utilities. These initiatives might influence the agreements positively or negatively. We need a description of what other kinds of initiatives the industrial organisation and/or the firm are involved in, and how these initiatives influence the voluntary agreement.

### **Fulfilment of Agreements' Own Targets**

Relates to whether or not the goals and contents of the specific agreement are fulfilled.

### **Influence on Sustainability**

In order to relate the effect of the agreements to overall national goals in the area of sustainability, the VA will be evaluated in relation to the criteria below.

- Consumption of non-renewable resources.
- CO<sub>2</sub> emission in relation to nature's sink.
- Investment in human capital.
- Time dimension.

## **II.3 Energy Conservation Project**

The energy conservation projects are specific technical and organisational activities aimed at energy issues at firm level initiated by a specific voluntary agreement. The investigation of such projects illustrates how the agreements interact with the specific culture at a firm. The focus is on the

energy practice and its possible transformation inside the firm.

Implementation of a voluntary agreement might result in various initiatives at firm level. The VAIE project only goes into depth with a very limited number of these; therefore it is important to select energy conservation projects that illustrate changes in technical and organisational practices related to energy issues and knowledge, which is the main focus of the project.

The policy formulation regards the firms' agenda-setting and decisions in relation to the demands of the voluntary agreement. Often, the energy conservation projects will also include other issues than energy. Issues that in some way are central for the firm; it could be working conditions, a new management system or quality improvements. The negotiation relates to reformulation and negotiation of energy conservation projects, normally between employer and employees, but it could also be the local electrician and the technical management or somebody else. Typical negotiation is here less important than in relation to agreement schemes and voluntary agreements, but if the energy conservation project touches issues of importance for employees, it might be very essential, e.g. issues regarding number of jobs. The implementation relates to how the energy conservation projects are integrated in other practices of the firm.

### **II.3.1 Key Research Issues**

The key research issues are based on the policy-making and implementation model and the network approach. They are meant as guidelines in the investigation. Different actors will look upon different research issues in different ways. Therefore, be aware of who says, means and understands what in relation to the research issues. Table II.4 lists the most important research issues in relation to energy conservation projects.

Table Key research issues for energy conservation projects (ECP)

II.4	Policy Formulation	Negotiation	Implementation
<b>Actors</b>	Actors involved		
<b>Relations</b>	Relations between the actors involved in form of links (activity, resource and actor links)		
	<ul style="list-style-type: none"> <li>Problems relating to ECP</li> </ul>	<ul style="list-style-type: none"> <li>possible consensus and controversies</li> </ul>	<ul style="list-style-type: none"> <li>new relations?</li> <li>new practices?</li> </ul>
<b>Stability</b> (activity links & centrally placed actors)	<ul style="list-style-type: none"> <li>relation to previous energy practice in the firm</li> <li>relation to other practices inside the firm</li> </ul>	<ul style="list-style-type: none"> <li>consensus and controversies</li> </ul>	<ul style="list-style-type: none"> <li>understanding of ECP</li> </ul>
<b>Knowledge</b> Theoretical Practical Tacit	<ul style="list-style-type: none"> <li>view of need for knowledge (theoretical, practical &amp; tacit)</li> </ul>	-	<ul style="list-style-type: none"> <li>Learning processes inside the firm</li> <li>new practices regarding knowledge (theoretical, practical &amp; tacit)</li> </ul>
<b>Effects</b>	-	-	<ul style="list-style-type: none"> <li>New practice regarding</li> <li>Organisation</li> <li>Process</li> <li>Performance</li> <li>Saved energy</li> </ul>

Description of the above research issues makes it possible to answer the hypotheses below.

### II.3.2 Hypotheses

The hypotheses regarding energy conservation projects are listed below.

Energy conservation projects are often a minor appendix to the everyday life of the firm, therefore they will often be related to other issues, which the firm finds more important, such as environmental considerations

Most energy conservation projects are implemented by a top-down approach from management

Energy conservation projects are often rather technical, and therefore involve the technical staff rather than ordinary employees

Energy conservation projects do not relate to the PR strategy of the firm.

### II.3.3 Assessment Criteria

The assessment criteria for the energy conservation projects are discussed in details in section 3.3: Assessment of the Case Study. The criteria are

hypotheses, technical and organisational changes, effects on practice, relation to supporting initiatives, and the agreement's influence on sustainability.

### **Hypotheses**

In assessment of the case study the hypotheses regarding energy conservation projects above will be discussed.

### **Technical and Organisational Changes**

Implementation of an energy conservation project influences in the practice regarding energy issues. New technologies might be employed, resulting in direct energy savings, just as new procedures and other organisational initiatives might be employed. The organisational changes might influence the energy saving in the long run. Table II.3 (above) sketches the effects of technical and organisational changes.

### **Effects on Energy Practice**

Founded on the description of the technical and organisational changes, we need a discussion of to what degree the energy conservation project has led to new energy practices inside the firm.

### **Relation to Supporting Initiatives**

Often, firms are involved in many different kinds of policies, such as environmental policy and industrial policy, as well as other kinds of initiatives, e.g. cooperation with energy utilities. These initiatives might influence the agreements positively or negatively. We need a description of what other kinds of initiatives the firm is involved in, and how these initiatives influence the energy conservation project.

### **Influence on Sustainability**

- Consumption of non-renewable resources
- CO<sub>2</sub> emission in relation to nature's sink
- Investment in human capital
- Time dimension

## Notes

1. In order to calculate CO<sub>2</sub> consequences, each case study must state the fuel mix (gas, coal, oil, electricity) and the consumption and savings.

# Appendix III

## Outline for Reporting on Country Studies

The reporting of the country should follow this structure.

- Presentation of Agreement Scheme
  - The system
  - The policy-making and implementation process
- Selection of case studies
  - Presentation of the industrial sectors (glass industry, paper and pulp industry and/or national speciality)
  - Presentation of the voluntary agreements in the chosen sectors
  - Presentation of the chosen companies and the chosen energy conservation projects
- Reporting from Case 1
  - The policy-making and implementation process
  - Flow charts
  - Assessment of case
- Reporting from Case 2
  - The policy-making and implementation process
  - Flow charts
  - Assessment of case
- (Reporting from Case 3
  - The policy-making and implementation process
  - Flow charts
  - Assessment of case)
- Assessment of Country Study

# References

Abelson, Robert P. (1976): Scripts Processing in Attitude Formation and Decision Making. In: Carroll, J.S. & J.W. Payne (Eds.): *Cognition and Social Behaviour*.

Hillsdale, N.J.: Erlbaum. Pp. 33-45.

Alchian, Armen A. & Harold Demsetz (1972): Production, Information Cost and Economic Organization

*American Economic Review* 62, Pp 777-795.

Andersen, Heine (ed.) (1992): *Sociologi - en grundbog til et fag*

Hans Reitzels Forlag.

Andersen, Heine & Lars Bo Kaspersen (eds.) (1996): *Klassisk og moderne samfundsteori*

Hans Reitzels Forlag.

Bem, Daryl J. (1970): *Beliefs, Attitudes and Human Affairs*

Belmont, Calif.: Books Cole.

Bijker, Wiebe E. (1995): *Of Bicycles, Bakelites and Bulbs*

MIT Press.

Bohm, Peter & Clifford S. Russell (1985): Comparative analysis of alternative policy instruments. In: Kneese, A.V. and J. L. Sweeney (Eds.): *Handbook of Natural Resource and Energy Economics* (Vol. I).

Elsevier Science Publishers B. V.

Bower Gordon H., J. Black & T. Turner (1979): Scripts in Text Comprehension and Memory

*Cognitive Psychology* 11. Pp. 177-220.

Cantor, Nancy & Walter Mischel (1977): Traits as Prototypes: Effects of Recognition Memory

*Journal of Personality and Social Psychology* 35. Pp. 38-49.

Coase, Ronald H. (1937): The Nature of the Firm

*Economica* 16. Pp. 386-405.

Coase, Ronald H. (1960): The Problem of Social Costs

*Journal of Law and Economics* 3. Pp.1-44.

Dawe, A. (1970): The two sociologies

*British Journal of Sociology*, Vol. 21, No. 2, Pp. 207-218.

DiMaggio, Paul J. (1988): Interest and Agency in Institutional Theory. In: Zucker, L.G. (Ed.): *Institutional Patterns and Organizations*

Cambridge, Mass. Ballinger. Pp. 3-22.

DiMaggio & Powell (1991a): The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality. In: DiMaggio, P.J & W.W. Powell (Eds.): *The New Institutionalism in Organizational Analysis*

The University of Chicago Press. Pp. 63-82.

DiMaggio, J.P. & W.W. Powell (Eds.)(1991b): *The New Institutionalism in Organizational Analysis*

The University of Chicago Press.

EA/OECD (1997): Voluntary Actions for Energy-related CO<sub>2</sub> abatement.

*Energy and Environment*. Policy Analysis Series.

Ekins, Paul (ed.) (1998): *Voluntary approaches*, Environmental policy briefs number 1, CERNA, Paris.

European Environmental Agency, EEA (1997): *Environmental Agreements - Environmental Effectiveness*.

Environmental Issues Series No.3 - Vol.1.

Fiske, Susan T. (1982): Schema-Triggered Affects: Applications to Social Perception. In: Clake, M.S. & S.T. Fiske (Eds.): *Affects and Cognition: The 17th Annual Carnegie Symposium on Cognition*.

Hillsdale, N.J, Erlbaum. Pp. 55-78.

Fiske Susan T. & Mark A. Pavelchak (1986): Category-Based versus Piece-Meal-Based Affective Response: Developments in Schema-Triggered Affects. In: Higgins, E.T. & R.M. Sorrentino (Eds.): *Handbook of Motivation and Cognition: Foundations of Social Behaviour*.

New York, Guilford. Pp. 167-203.

Glasmeyer, Amy (1991): Technological Discontinuities and Flexible Production Networks: The Case of Switzerland and the World Watch Industry

*Research Policy* 1991 (10). Pp. 469-485.

Grossman, Stanford J. & Oliver Hart (1987): The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration

*Journal of Political Economy* 94. Pp. 691-719.

Hanley, N.; I. Moffatt, R. Faichney and M. Wilson (1997): *Measuring sustainability: A time series of alternative indicators for Scotland*. Working paper.

Håkonsson, Håkon (1994): Economics of Technological Relationships

*Economics of Technologies*, 1994. Pp 253-270.

Kelley, Harold H. (1971): *Attribution in Social Interaction*

Morristown, N.J. General Learning Press.

Kleven, Terje, Asbjørn Røiseland (1993): *Institusjonelle reformer og lokalpolitisk styring. Utkast til et forskningsprogram om makt og styring i*

*kommunene*

KS Forskning, NIBR.

Krarp, Signe & Anders Larsen (1998): *Energieffektivisering gennem aftaler*

Copenhagen, AKF Forlaget.

Kiesler, Sara & Lee Sproul (1982): Managerial Responses To Changing Environments: Perspectives on Problem Sensing from Social Cognition

*Administrative Science Quarterly* 27 (4). Pp. 548-579.

Kulik, Carol (1989): The Effects of Jobs Categorization on Judgements of Motivating Potential Jobs

*Administrative Science Quarterly* 34 (1). Pp. 68-90.

Lie, Merete & Knut H. Sørensen (1996): Making Technology Our Own? Domesticating Technology into Everyday Life. In: Lie, Merete & Knut H. Sørensen (Eds.): *Making Technology Our Own? Domesticating Technology into Everyday Life*

Scandinavian University Press. Chapter 1, Pp 1-30.

Meyer, John W. (1977): The Effects of Education as an Institution

*American Journal of Sociology* 83. Pp.53-77.

Meyer, John W. & Brian Rowan (1977): Institutionalized Organizations: Formal Structure as Myth and Ceremony

*American Journal of Sociology* 83. Pp. 340-363.

Meyer, John W. and Michael Hannan (1979): *National Development and the World System*

Chicago, University of Chicago Press.

Meyer, John W. and W. Richard Scott (1983): *Organizational Environments: Ritual and Rationality*

Beverly Hills, Calif., Sage.

Meyer, John W. and Brian Rowan (1991): Institutionalized Organisations: Formal Structure as Myth and Ceremony. In: Walter W. Powell and Paul DiMaggio (1991): *The new Institutionalism in Organizational Analysis*. The University of Chicago Press. Pp. 41-62.

Meyer, John W. and Scott (1991): The Organization of Societal Sectors: Propositions and Early Evidence. In: DiMaggio, P.J & W.W. Powell (Eds.): *The New Institutionalism in Organizational Analysis* The University of Chicago Press. Pp. 108- 141.

Mitnick, Barry M. (1980): *The political economy of regulation* Columbia University Press, New York.

Mortensen, J. Birk and Larsen. A. (1994): Economic Growth, Sustainability and the Role of Local Authorities. In: *Challenges to Local Government in European Welfare Development*, pp. 85-101. Copenhagen, AKF Forlaget.

Mortensen, Niels (1991): Modsætninger og forsoninger mellem strukturer og aktører  
*Politica*, 23. Årg. Nr.1 1991. Pp. 42-59.

Nelson, Richard & Sidney Winter (1982): *An Evolutionary Theory of Economic Change* Cambridge, Harvard University Press.

North, Douglass C. (1981): *Structure and Change in Economic History* New York, Norton.

Pearce, David W. & R. Kerry Turner (1990): *Economics of Natural Resources and the Environment* Harvester Wheatsheaf.

Pedersen, Lene (1997): *Kan nyinstitutionel teori bidrage til forståelsen af aktørernes adfærd i forbindelse med energibesparelser? - En teoretisk diskussion*

AKF Forlaget.

Posner, Richard A. (1981): *The Economic of Justice*  
Cambridge, Harvard University Press.

Rosch, Eleanor et al. (1976): Basic Objects in Natural Categories  
*Cognitive Psychology* 8. Pp. 382-439.

Rosch, Eleanor (1978): Principle of Categorization. In: Rosch, E. & B.B. Lloyd (Eds.): *Cognition and Categorization*  
Hillsdale, N.J., Erlbaum. Pp. 27-48.

Russel, Clifford S. and Philip T. Powell (1996): Practical considerations and comparison of instruments of environmental policy. In: J. van den Berg (ed.): *Handbook in environmental and resource economy*  
Edwin Elgar Publisher (forthcoming).

Røvik, Kell-Arne (1996): Deinstitutionalization and the Logic of Fashion. In: Czarniawska, B. Sevon (ed): *Translating Organizational Change*  
DeGruyer. Berlin - New York. Pp.139-172.

Schotter, Andrew (1981): *The Economic Theory of Social Institutions*  
New York, Cambridge University Press.

Scott, W. Richard (1995): *Institutions and Organizations*  
SAGE Publications.

Sverrisson, Arni (1994): Making Sense of Chaos: Socio-technical Networks, Careers and Entrepreneurs  
*Acta Sociologica* (1994) 37. Pp.401-417.

Taylor , Shelly E. & Jennifer C. Crocker (1980): Schematic Bases of Social Information Processing. In: Higgins, E.T., P. Herman & M.P. Zanne (Eds.): *The Ontario Symposium on Personality and Social Psychology*  
1, Hillsdale, N.J. Erlbaum. Pp. 89-134.

van Dunné, Jan M. (Ed.) (1993): *Environmental Contracts and Covenants: New instruments for a Realistic Environmental Policy?*

Proceedings of an International Conference held in Rotterdam, 14-16 October, 1992.

Williamson, Oliver E. (1975): *Markets and Hierarchies*

New York, Free Press.

Williamson, Oliver E. (1985): *The Economic Institutions of Capitalism*

New York, Free Press.

Winter, Søren (1994): *Implementering og effektivitet*

Forlaget Systime A/S.

Zucker, Lynne G. (1977): The Role of Institutionalization in Cultural Persistence

*American Sociological Review* 42. Pp 83-107.

Zucker, Lynne G. (1983): Organizations as Institutions. In: Bacharach, S. B. (Ed.): *Research in Sociology of Organizations*

Greenwich, Conn. JAI Press. Pp. 1-42.

Zucker, Lynne G. (1987): Institutional Theories of Organizations

*Annual Review of Sociology* 13, Pp. 443-464.