



*Institutional support to the Bulgarian Ministry of Economy and Energy for building up its capacity for managing and developing public-private partnership for energy efficiency*

# **Overview of Voluntary Approaches in the European Union with focus on Long-Term Agreements on energy efficiency improvement in the Netherlands**

Activity 3.1

*FINAL REPORT*

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## Summary

This overview of Voluntary Approaches (VA's) has been compiled in the context of the Dutch project "Institutional support to the Bulgarian Ministry of Economy and Energy for building up its capacity for managing and developing public-private partnership for energy efficiency" financed by EVD. It aims to identify critical success and failure factors as well as lessons learnt from the use of voluntary agreements in Europe and specifically the Long-Term Agreements (LTA's) on energy-efficiency improvement in the Netherlands. It has been based on a large number of SenterNovem LTA publications, personal experiences as a LTA programme manager, LTA evaluation reports by independent organisations and the Wuppertal Institute report "Review of Voluntary Approaches in the European Union". This study on Voluntary Approaches has been carried out last year by our German project partner in SenterNovem's EU Asia Pro Eco project "Feasibility study on Demonstration of Voluntary Approaches for Industrial Environmental Management in China". A selection of highlights and results of European voluntary agreements and LTA's in the Netherlands has been presented for providing a basis for adoption and further development of LTA's in Bulgaria. Conceptual information and some cases have been included with respect to voluntary agreements between industry and public authorities in order to illustrate the main principles of the LTA instrument and the importance of independent LTA supervision and management.

In order to define voluntary agreements two aspects must be highlighted. Firstly, industry has to participate voluntarily. Secondly, there is an interaction between the public authorities on the one hand and industry on the other hand in order to enforce environmental action. Some European voluntary agreements are closer to self-commitments of industry with low degree of interaction with public authorities. Others demand intense negotiations with public authorities and end up in a legally binding civil law contract. Voluntary agreements are widely spread over the European Union, but there are considerable differences between the member states. In some European countries only a few agreements have been concluded, whereas in the Netherlands and Germany voluntary agreements cover a range of different sectors and environmental issues.

In the first years of the decade 1990-2000 a particular version of voluntary agreements has been developed in the Netherlands. These agreements focus on energy efficiency improvement. They are called "Long Term Agreements on energy-efficiency improvement" and are strictly monitored. These LTA's were first applied in sectors of industry. Later on LTA's were also practiced in the services and commercial sectors. LTA's are primarily negotiated agreements between the government and representatives from sectors in the national economy. Usually it took a few years to establish an LTA. Once it is effective, it puts energy-efficiency into focus in all individual companies in the sector. A variety of activities is employed to improve the sector's energy efficiency. As LTA's focus on particular sectors, their content is highly dedicated to the characteristics of the individual sectors. By means of the LTA programme different parties agree to pursue the same target, though their primary motives may differ. Government primarily aims for an emission reduction of carbon dioxide, while industry is primarily driven by cost benefits and the expectation that future regulation can be prevented by active participation. About 90% of industrial energy consumption is covered by LTA's.

An intensive monitoring process assures that achievements are made visible and can be compared with the set target. This target for industry was set at 20 % efficiency improvement in 2000 with respect to the reference year 1989. From the monitoring process the result turned out at 22.3 %. This meets the expectations of all involved stakeholders. The related CO<sub>2</sub>-emissions however show an increase, instead of a reduction. The main reason for this

is the economic growth over recent years that turned out to be higher than anticipated when the LTA framework was set up. In the year 2000, annual savings of about 700 million Euro for the Dutch industry have been achieved. This implies that the Dutch industry has improved its performance compared with international competition.

The LTA's offer a framework that has been continued as second generation of LTA's (LTA2) for the medium scale energy users in industry for the period 2001-2012. As the most obvious measures for energy improvement have been taken, new themes are addressed. They focus on product design and other energy related areas, e.g. transportation and renewable energy. This topic will play a more qualitative role in the first phase of LTA2, 2001-2004. In the current phase, 2005-2008, the new themes will also be included more quantitatively in the targets. The energy intensive industry sectors meanwhile pursue a different type of agreement for the period 2001-2012, called Benchmark covenant. In this type of agreement the target is to become the "best in the world" in terms of energy efficiency, per product class. Two types of agreements have therefore been established for the period 2001-2012: Benchmark for the energy-intensive sectors and LTA2 for the remaining industry sectors. This deepening and broadening follow-up VA steps have been based on the vast experiences of LTA1. Without these long-term experiences this ambitious continuation of VA's after 2000 would not have been possible. For Bulgarian context it is therefore advised to start with the main principles of LTA1, as LTA2 is rather complex at current conditions.

Part of the success of Dutch LTA's can be explained by the stimulation of systematic research and development within companies as well as sectors. It appeared useful to carry out studies to check the technological and organisational potential for energy efficiency improvement. The LTA working groups led to further effects like peer pressure, learning and information dissemination. Also the strong political framing is a strength of LTA's. The LTA's are embedded in a policy mix with incentives and sanctions to promote compliance. In addition, SenterNovem as an independent government agency is involved in a comprehensive monitoring and guards the implementation of the agreement. Good monitoring mechanisms have shown to be essential for effective supervision of the LTA's.

In general European covenants show ambitious results when success factors are incorporated like a comprehensive target setting with a time frame and a structured process organisation. At least annual monitoring and reporting is an important feedback mechanism to push action and ensure compliance. The compliance pressure through in-built and external incentives and sanctions as well as the integration into a policy mix leads normally to a successful implementation of the VA instrument. Furthermore the country's attitude to VA's and its (policy) culture play an important role. Supportive factors for VA implementation are a culture of mutual trust between government and industry and the willingness to co-operate via dialogue instead of confrontation. Also the existence of credible threats and homogeneous industry sectors contribute to the success of VA. For designing a robust LTA on energy efficiency the local circumstances have to be taken into account, e.g. the willingness of actors, the involvement of stakeholders, the interests of involved parties, the provincial or national level and the environmental challenges.

This overview including the appendices containing results from the first and second generation of LTA's in the Netherlands provides a broad range of information with respect to European and especially Dutch experiences with VA's. It can be used to develop a blueprint for adoption of a Bulgarian-specific LTA scheme for energy efficiency in industry. In the next phase of this project this overview will be used and reflected in the LTA comparative study by our Bulgarian project partners. To support these tasks nine steps have been identified that lead to a successful LTA on energy-efficiency improvement.

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## List of Acronyms

ACEA	European Automobile Manufacturers Association
CO <sub>2</sub>	Carbon Dioxide
EACEM	European Association of Consumer Electronics Manufacturers
EAP	Environmental Action Programme
EC	European Commission
ECP	Energy Conservation Plan
EEC	European Economic Community
EEIP	Energy Efficiency Improvement Plan
EIA	Environmental Impact Assessment
EMAS	Eco-Management and Audit Scheme
ETS	European Trading System
EU	European Union
EUR	Euro
ISO	International Organization for Standardization
LTA	Long Term Agreement
LTA1	First generation of LTA
LTA2	Second generation of LTA
LTP	Long Term Plan for energy-efficiency improvement
MJ	Megajoule (10 <sup>6</sup> joule)
NEPP	National Environmental Policy Plan
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Cooperation and Development
PJ	Petajoule (10 <sup>15</sup> joule)
SEC	Specific Energy Consumption
TJ	Terajoule (10 <sup>12</sup> joule)
UNEP	United Nations Environmental Programme
VA	Voluntary Agreement

# 1 Introduction

Voluntary agreements (VA's) are a relatively new factor in environmental policy in Europe. In the 1990s, the use of VA's was one of the most rapidly growing – in terms of number and scope – policy instrument for environmental management in Europe. Trying to avoid problems occurring in using 'command-and-control' and economic instruments, industry leaders and government policy-makers have created voluntary approaches. Thus, VA's are not the product of government intervention or political scientists' theories. VA's are pragmatic responses to the need for more flexible ways to implement measures and complex environmental problems (Highley, Convery, Lévêque 2001). In general there is consensus that sustainable development cannot be achieved through a regulatory approach alone (UNEP 2000). Voluntary agreements are needed to meet the complex challenges of sustainable development. However, each policy instrument is having its own benefits and limits. This overview provides a basis for discussing European and Dutch experiences with the aim to implementing voluntary agreements on energy efficiency between governmental parties and industry in Bulgarian context.

## 1.1 Background of the report

This overview of voluntary approaches is part of the Dutch project “Institutional support to the Bulgarian Ministry of Economy and Energy for building up its capacity for managing and developing public-private partnership for energy efficiency” financed by EVD. It aims to identify critical success and failure factors as well as lessons learnt from the use of voluntary agreements in Europe and specifically the Long-Term Agreements (LTA's) on energy-efficiency improvement in the Netherlands.

The Bulgarian Ministry of Economy and Energy has requested the Netherlands assistance in strengthening its capacity on the development of policy for business associations on public private partnerships concerning energy efficiency, particularly in industry, which accounts for 50% of the nation's final energy consumption. The Bulgarian Ministry of Economy and Energy is interested in the instrument of Voluntary Agreements (VA's), in particular Long Term Agreements (LTA's) on energy-efficiency improvement. This Dutch instrument makes use of voluntary agreements that are established between enterprises, governmental bodies and other institutions or agents. In this LTA a combination of both realistic and ambitious targets are set. Furthermore, LTA includes procedures on how to strive towards a more efficient use of energy in industry and the services sectors and how to monitor progress via the Energy-Efficiency Index (EEI). In the Netherlands LTA are used extensively to achieve the aims of energy-efficiency improvement and environmental protection. This successful instrument is not well known and has not been used in Bulgaria. The use of this instrument could increase Bulgarian industries' competitiveness by decreasing energy expenses, as well as charges and sanctions for harmful emissions in the atmosphere. Furthermore the implementation of a Bulgarian-specific LTA could help Bulgaria to achieve the Kyoto Protocol obligations. So, LTA might strengthen the public-private partnership by increasing the commitment of involved Bulgarian parties, and can therefore contribute to achieving the common goals that are of mutual interest to both the Bulgarian society and businesses. The Ministry of Economy and Energy has formed a working group for developing a programme for energy efficiency with representatives from other governmental organizations and industrial associations. This



working group will evaluate the usefulness of negotiated agreements for energy efficiency in Bulgaria and draw up the necessary steps for their implementation.

SenterNovem has been asked to assist in generating more insight in the instrument of voluntary agreements with focus on Dutch LTA's and the way this instrument is implemented in the Netherlands. This also includes to point out the distinction between energy saving and energy-efficiency improvement. Energy saving is an indicator reflecting the difference in absolute values of final energy consumption. This implies that energy savings can be reached through cut backs in production, without changing the system itself. Therefore, SenterNovem prefers to use the energy-efficiency improvement indicator EEI, which reflects the energy input needed per unit of production. This energy-efficiency indicator is independent of productivity. Energy efficiency can be improved while productivity rises. Furthermore the EEI is independent of a change in the product mix and is able to include the overall energy savings effects of cogeneration, an important option for industry. So the EEI is a robust indicator that does not obstruct (sustainable) economic growth.

The approach SenterNovem recommends for achieving the project purpose is of a participatory kind, implying that all relevant stakeholders are involved in defining realistic ambitions and targets as well as developing an appropriate Voluntary Agreement scheme for Bulgaria. Stakeholders include the ministries related to energy and environment, the working group on energy efficiency in industry, the national energy agency, the local and/or regional authorities that issue permits and maintain compliance, the industry associations and some larger industrial companies. An independent intermediary and/or facilitating agent could also be very helpful in smoothing and managing the LTA process. Involvement of these stakeholders from the start of the project will ensure that this project will result in an appropriate LTA-model for Bulgaria that has a broad support base in society. According to SenterNovem this is essential for the successful implementation of the Bulgarian-specific LTA in a later stage.

SenterNovem has formulated five main project activities that will contribute to the achievement of the overall project purpose. The results from these five activities will undoubtedly lead to increased insight of Bulgarian ministerial experts on LTA and LTA-implementation in the Netherlands and intensified interaction between Bulgarian governmental bodies and industrial parties on energy-efficiency improvement. The results of these five activities are:

1. Network of interested Bulgarian stakeholders.
2. Insight in the Bulgarian context in which voluntary agreements will have to be applied.
3. Insight in strengths and weaknesses of voluntary agreements used in the Netherlands and European Union.
4. Blueprint for an appropriate Bulgarian VA scheme on energy-efficiency improvement in industry.
5. Proposal for implementation of a Bulgarian VA scheme on energy-efficiency improvement in industry.

This overview provides the insight of voluntary agreements used in the Netherlands and EU (activity 3.1). It has been based on a large number of SenterNovem LTA publications, SenterNovem experiences on LTA programme management, LTA evaluation reports by independent organisations and the Wuppertal Institute report "Review of Voluntary Approaches in the European Union". This study on Voluntary Approaches has been carried

out recently by our German project partner in SenterNovem's EU Asia Pro Eco project "Feasibility Study on Demonstration of Voluntary Approaches for Industrial Environmental Management in China". A limited selection of highlights and results of European VA's and LTA's in the Netherlands will be presented for providing a solid basis for adoption and further development of LTA's in Bulgaria. Conceptual information and some cases will be included with respect to voluntary agreements between industry and public authorities in order to illustrate the main principles of the LTA instrument and the importance of independent LTA supervision and management.

## **1.2 Objectives and methodology**

The aim of this overview is to provide our Bulgarian project partners with a better understanding of the European experiences with and lessons learnt from VA's with focus on the Dutch LTA's on energy efficiency improvement. This report together with a parallel study of the Bulgarian context will be the basis for assessing the opportunities to implement LTA's on energy efficiency in Bulgaria. For this reason some highlights of different types of voluntary approaches will be summarized and commented. On the basis of this information and my personal experience with the facilitation and management of Dutch LTA's of energy-intensive industries conclusions will be drawn and recommendations will be listed regarding crucial VA-issues. These success factors need particular attention in the process of designing and implementing a Bulgarian-specific LTA.

## **1.3 Content of report**

The study contains six chapters. Following the introduction, the second chapter includes information about the context of policy-making in the European Union and the development of voluntary approaches in Europe. Types and characteristics of VA's are described including chances and risks of VA's. This is followed by a description of the geographical and sectoral distribution. The fourth chapter focuses on three successful Dutch VA instruments on energy efficiency improvement (LTA1, LTA2 and benchmark covenant), its characteristics and the overall results of the completed first generation of LTA's. Subsequently lessons learnt and conclusions from Dutch LTA experiences are described. At the end of chapter 4 recommendation are provided that are derived from LTA1 experiences. Chapter 5 addresses the VA success factors in a comparative perspective. Nine VA process management steps are identified for successful design and implementation of VA's. Chapter 6 contains the overall conclusions, lessons learnt and recommendations for implementation of successful Bulgarian LTA's on energy-efficiency improvement.

## **2 European environmental policy and voluntary agreements**

As pollution does not stop at national borders and the opening of the market also affects environmental legislation, the European Union addresses the issue of environmental protection. The development of European environmental policy is briefly described in section 2.1. In the subsequent sections the role and characteristics of European VA's within this context will be illustrated.

### **2.1 The development of European environmental policy**

Complex environmental problems like climate change could not be tackled without joint action by all EU countries. Successful voluntary environmental agreements exist mainly on national and regional/local levels. The main principle is that VA's represent common action of public and industrial actors to alleviate environmental problems.

Until now, the EU has adopted over 200 environmental protection directives that have to be applied in all member states. Most of the directives are designed to prevent air and water pollution and encourage waste disposal. Other major issues include nature conservation and the supervision of dangerous industrial processes. Fiscal measures like energy taxes are policy instruments that are not covered on EU level. However, economic instruments are of growing importance, as the example of emission trading shows.

Voluntary agreements are instruments to address policy issues in which conventional regulation is limited and/or difficult to enforce. Also VA's might be considered in relation to new economic instruments like European Trading System (ETS) both for preparation and full industrial energy consumption coverage purposes.

Voluntary agreements contribute to the widening and mixing of policy instruments. In most European cases VA's do not replace regulation but extend environmental thinking to new areas (bridge function). Thus VA's exist side by side to regulation and economic instruments like energy taxes and ETS. In Europe most voluntary agreements are embedded in a policy mix. This mix can be interpreted as a strategic and multi-fold approach to the integration of environmental objectives in other policy areas like innovation and sustainable economic growth .

Despite European integration trends each EU member state still has a particular institutional setting. All nations are democracies with highly evolved and heterogeneous policies and differing policy cultures. For example Germany is a federal nation state with strong regional governments, whereas France and Great Britain are highly centralised. In environmental policy terms, some countries can be described as forerunners (e.g. Scandinavian countries and the Netherlands) whereas other countries can be characterised as laggards (e.g. south and east European countries). Also variation exists in the policy culture like consensus orientated (e.g. the Netherlands) or more hierarchically orientated (e.g. Germany or Italy). In general the European countries differ with respect to various cultural and political issues. Hence, the implementation of VA's in a specific country has to take into account the institutional settings and legal systems of that country. For this reason it is important to learn from good and bad practice aspects of European experiences with VA's.

There is a high number of voluntary approaches in the European Union. Since the early 1970's VA's have been used for finding solutions to environmental problems that were not (easily) solved by other policy instruments. In the following sections some general VA

definitions and categories will be introduced that will be used for characterizing Dutch LTA's and some other EU VA-cases.

## **2.2 The range of voluntary agreements**

Voluntary approaches have been part of the policy mix in Europe at least since the 1970's. Starting point for environmental agreements was the will to find solutions for concrete environmental problems, in which cases regulation or economic instruments did not work properly or political support was too weak for implementation. For that reason, public authorities and industrial parties tried to find other ways of policy-making in order to alleviate environmental problems. Therefore VA's can be considered as a "new mode" of governance.

### **2.2.1 Two types of voluntary agreements**

VA's can be described by two dimensions. Firstly industry has to participate voluntarily. Secondly, there is an interaction between public authorities and industrial parties. OECD has proposed a categorisation based on different involvement of stakeholders. Two main types of VA's can be distinguished (OECD 2003):

- Unilateral commitments made by industry

This form of voluntary approach consists of a unilateral commitment by a firm or industry to voluntarily abate pollution or tackle an environmental problem. The definition of environmental targets and the provisions how to reach this target is determined by industry. These commitments consist of environmental programmes that are communicated to employees, clients, and the public or public authorities.

- Agreements negotiated between industry and public authorities

This approach can be defined as a commitment or contract for environmental protection that is developed by bargaining between industry and public authorities (at local, regional, federal or national level). Consequently interaction between industrial parties and public authorities is rather high, especially compared to other forms of voluntary approaches. At the end of the negotiation process, contracts or letters between the public authority and industry are signed. These agreements usually contain environmental targets for industry as well as a timetable to achieve them. On the other hand, the public authorities commit to facilitate this VA and/or to introduce no other more stringent policy instruments (e.g. new legislation or taxes) if the targets of the VA are fulfilled by industry.

Pure self-regulation seldom emerges without public pressure and "the shadow of hierarchy". This term stands for the threat that public authorities would use regulation in case of VA failure. Mostly VA's are contracts between a public body and a branch organisation of industry, setting collective pollution abatement or energy-efficiency targets.

Due to the scale of the policy instrument the following two levels of voluntary agreements can be distinguished:

- Agreement schemes

Agreement schemes are used as an effective policy instrument. Such a scheme is a part of the national environmental policy and can be seen as a framework for specific voluntary agreements with branch associations. Examples for agreement schemes are the Dutch LTA's and the German Declaration of Industry on Global Warming Prevention.

- Single voluntary agreements

Single VA's are either concluded with an industrial branch association or individual companies. These agreements can be part of an agreement scheme (e.g. the Dutch benchmarking covenant) or exist independently.

Independently from the form they take, VA's in the EU can have a support function that means that these agreements add-on existing legislation (e.g. existing limits or taxes). In case of a transition function, VA's are concluded at a preliminary stage of a legislative process to allow quick action. A third possibility is an independent function of VA's in cases where they are fully replacing regulation and used as an independent environmental policy instrument.

### 2.2.2 Relation to conventional policy instruments

In the context of defining the boundaries of voluntary agreements, Mol et al. (2000) propose the two aspects of jointness and voluntariness. The aspect of jointness is defined as the extent to which policies are formulated and implemented jointly between public authorities and industry. The aspect of voluntariness can be measured on a continuum between obligatory (command-and-control policies) and voluntary (self-regulation). These two criteria allow classifying policies into four categories (see figure 1). A low degree of jointness in combination with a low degree of voluntariness leads to conventional command-and-control regulation, whereas a rather high degree of jointness and voluntariness indicates VA's like the Dutch LTA's.

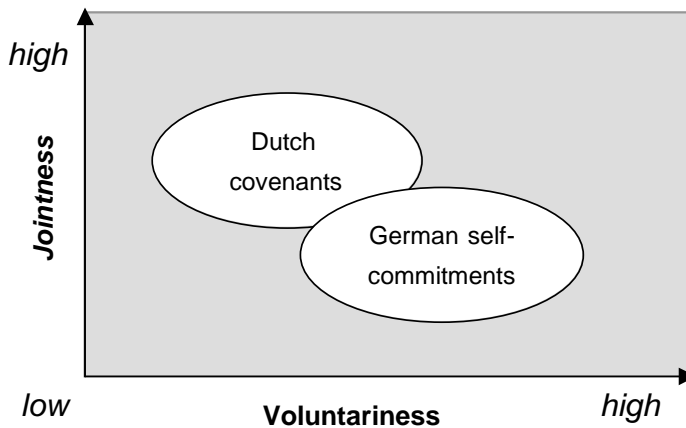
**Figure 1: Classification of environmental policy instruments**

		Voluntariness	
		<i>Low</i>	<i>High</i>
Jointness	<i>Low</i>	Command-and-control regulation as well as economic instruments	Self-regulation
	<i>High</i>	(Co-)Regulation by consensus-seeking	Voluntary agreements

Source: adapted from Mol et al. 2000

The two dimensions of voluntariness and jointness can also be used to explain variation of voluntary agreements, which are situated within the lower right side quadrant of figure 1. The Dutch energy-efficiency covenants have a high level of interaction between public authorities and industry and contain legally binding sanctions. This means that voluntariness is less pronounced for Dutch LTA's. In the case of German self-commitments the voluntary element predominates. These commitments are usually legally not binding and the only sanctioning mechanism is a threat of legislation by public authorities. Regarding jointness, the self-commitments are less developed as industry is the main actor. There are only a few meetings and no formal contract is signed. Figure 2 illustrates these two dimensions of agreements.

**Figure 2: Dimensions of agreements**



Source: Wuppertal Institute

### 2.2.3 Additional characteristics

There are further characteristics that can be used to describe and/or design VA's. There are at least five dimensions that can be useful to understand the proper functioning of VA's:

- Product versus process oriented  
Whereas process oriented approaches aim at improving production processes (e.g. reduction of emissions which damage the environment), product oriented voluntary agreements aim at the (improved) product at the end of the production process. They have the target to improve the environmental performance of a product.
- Target-based versus implementation based  
Voluntary agreements can either set pollution abatement targets or the implementation procedure how to achieve them.
- Binding versus non-binding  
The legal form of a VA has considerable implications on its outcome. A VA can be considered to be legally binding, when it includes sanctions in case of non-compliance and is enforceable through a court's decision.
- Individual versus collective liability  
This criterion underlines the fact that voluntary agreements can be either concluded with single companies or a branch association representing a group of companies. In case of collective liability, industry or an industry sector is collectively liable for the implementation of the VA and will be sanctioned collectively in case of failure. Free riding can be limited in case of an individual agreement as the performance of all participating companies is controlled.
- Open versus close access to third parties  
Voluntary approaches do not necessarily involve third parties, as they are normally not part of the agreement. However, for transparency reasons community organisations or environmental groups play an increasing role in VA's.

## **2.3 Chances and risks of voluntary agreements**

During the last decades, environmental problems have changed. The example of climate change shows that they are highly complex. Complex and persisting problems set limits to traditional regulation and end-of-pipe-technologies and challenge environmental governance. They have to be tackled by encompassing strategies, as interdependences with other areas, e.g. the economy occurs very often. In this context, new forms of governance, such as voluntary agreements can be a chance. However, some risks related to this form of governance have to be considered as well.

### **2.3.1 Chances of voluntary agreements**

Voluntary agreements help to find an access to environmental problems which are complex and can not be easily tackled via regulation. Especially in the case of complex environmental problems that involve many actors, it can be useful to design a VA. By means of this VA the public authority and industrial parties can exchange their knowledge and can jointly develop policies and road maps adjusted to the complex environmental problem. The voluntary agreement can build on business's particular knowledge of its own capacity to address environmental problems and respond to particular requirements of the local level. In this way the gap can be bridged between national legislation and local needs.

Another positive argument is the high flexibility in the implementation of VA's and hence cost-efficiency for firms in realising the environmental targets agreed upon. Furthermore, there are a lot of soft effects, which can be attributed to VA's:

- VA's foster the dissemination of information between participating firms.
- VA's create environmental consciousness within firms and a greater appreciation of environmental issues in industry.
- VA's stimulate action of companies within their own possibilities.
- VA's create awareness that that environmental protection is not only connected with additional costs (as it is often the case with environmental regulation), but can also have benefits in terms of reduction of production costs.
- VA's improve industry's environmental image with respect to the public and hence increase their sales to green consumers.
- VA's lead to win-win situations, as pollution abatement may lead to a better use of resources. Energy-efficiency improvement is a good example. If a company consumes less energy, it saves money and protects the environment at the same time. This is called no-regrets action or win-win-situation.

### **2.3.2 Risks of voluntary agreements**

A general problem exists in case the public authority itself would not have strong interests in stringent environmental solutions but want to moderate public concerns. The public authority could initiate a VA to circumvent other action and stop discussion. In this case, the VA could be easily captured by industry, as government would not have interest in an ambitious VA. Also in some cases there is a strong incentive for industry to influence the outcome of voluntary agreement in its own interest. If this succeeds, it leads to weak measures. The environmental target set is no more than the abatement associated with a business-as-usual trend.

Another risk is associated with the link and (limited) access to (confidential) information. If VA's are aimed at to be effective, the government will have to collect representative information about the environmental problem, abatement strategies and reduction costs. For this fact finding the governmental parties are dependent on information from industry. However, companies tend to act in a selfish manner, which means that they tend to underestimate the consequences of pollution and to overestimate the abatement costs.

Also some risks are related to a lack of legitimacy and/or transparency. Mostly VA's are concluded between public authorities and industry only. Third parties like NGO's, local communities or research institutes are usually not involved in the negotiation process. Without their participation they can not function as a kind of "watchdog" to ensure that ambitious targets are set in the VA. A lack of transparency or limited participation of third parties can lead to criticism by the public and the credibility of the VA can be undermined.

VA's might also have a risk is to encourage free riding. This parasitizing behaviour occurs when one or more parties to the VA refrain from taking action agreed upon. These companies can take advantage of the commercial benefits arising from doing nothing whilst the other participating companies are facing economic costs in taking action in order to achieve the targets set down by the VA. Free riding especially occurs when the number of participating companies is high and collective compliance (instead of individual compliance) is applied. In this way non-compliance of single companies can not easily be detected.

The cost-effectiveness of VA's might be worse than expected on beforehand. Usually, it is assumed that (successful) VA's have low transaction and administration costs. However, if too many partners take part in the negotiations, it becomes difficult to reach consensus about targets. Then the transaction costs increase because it takes more time to collect all the relevant information and to agree upon unambiguous targets. In addition, also monitoring and supervision can turn out quite costly if the KISS (Keep It Super Simple)-principle has not been used.

## **2.4 The use of voluntary agreements in the EU**

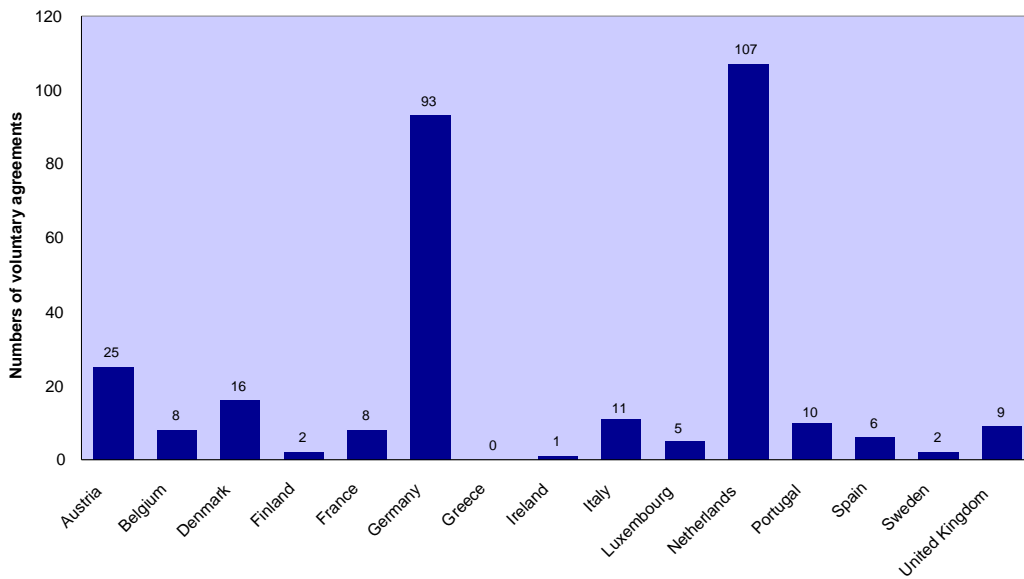
The use of voluntary agreements varies considerably. Therefore, an overview about the VA practice in the European Union and its member states is given. This will provide some patterns concerning the geographical locations, the economic sectors as well as the environmental issues affected. Since a VA study of 1996 (European Commission 1997) no systematic data-collection was carried out. Also other studies have been mostly based on these EC data.

### **2.4.1 Brief Chronology**

Since the beginning of the 1990s the use of voluntary agreements has become more common in almost every member state of the European Union. A huge proliferation of voluntary agreements with a number of 305 at the national level (up to 1996) has been taken place (see figure 3). Over the past ten years it is assumed that there are a lot of additional VA's.



**Figure 3: Distribution of voluntary agreements in the EU-15 in 1996**



n = 305

Source: European Commission 1997

Germany and the Netherlands account for two thirds of the concluded agreements. The VA's in the Netherlands represent more or less the "independent type", whereas the German VA's belong (like most agreements in the rest of the EU) to the "supporting or transition type".

The first VA's were implemented in France (1971) and the United Kingdom (1972). However, the 1970's could not be labelled as the decade of VA's. Most of the European countries detected VA's as a useful tool for environmental policy in the 1980's. The majority of the European states introduced this approach on several administrative levels: the national, the regional as well as the local level.

#### **2.4.2 Distribution among sectors and policy issues**

Voluntary agreements establish targets for specific products, for production processes or for other process steps like recovery and recycling. They can be categorized according to their legal status. In the Netherlands 90 percent of the VA's are legally binding. In the other EU countries non-binding VA's are the dominant form. Furthermore, the use of VA's varies from country to country and from sector to sector. But the VA instrument is not limited to these categories. There are multi-sector agreements and multi-issue agreements. Some of these patterns will be described in more detail.

The VA's concluded in the EU member states are related to different sectors. The industry and the energy sector are the most important ones, agriculture and tourism are less important. On closer examination within the sectors, it appears that almost one third of all VA's in the European Union were concluded in the chemical industry, followed by the manufacture of food products, accounting for 12 percent.

All European states get involved with measures that contribute to the abatement of industrial pollution. But also the energy sector is a field of great VA interest. Eight of 15 member states, i.e. more than 50 percent, have concluded VA's in this sector.

Waste management, air pollution, climate change, water pollution, ozone depletion and soil contamination are the most important environmental issues for VA's in the European Union. Waste management is subject to VA's in nearly every EU country. In absolute numbers waste management (ca. 82) and climate protection (ca. 77) are the most important policy fields.

### **2.4.3 Trends of development**

The 1990's were a boom period for VA's as the number increased significantly during this period. Part of these VA's continued to exist until the beginning of 2000 or even beyond. Other VA's have been further developed. Furthermore, new VA's have been set up since 2000, which differ from the traditional VA's from the end of the 1980's and beginning of the 1990's.

The VA's or commitments during the 1980's and early 1990's were mainly concerned with the topics of pollution abatement or phase-out of dangerous substances. Examples for this type are the agreements to reduce SO<sub>2</sub> and NO<sub>x</sub> emissions in Germany, the Netherlands and Belgium in order to limit the environmental problem of acidification.

Since 2000 the content of VA's has changed and VA's also include qualitative goals. This can be demonstrated with the Long Term Agreements on energy-efficiency improvement in the Netherlands. The first phase of Long Term Agreements (1990-2000) set quantitative targets for energy efficiency whereas the second phase for Long Term Agreements (2000-2010) puts also a focus on qualitative targets as the further development of energy management, energy efficient product development and renewable energy. For Dutch energy-intensive industries, a totally new approach has been developed: the benchmarking covenant on energy-efficiency after completion of LTA1.

In Germany, a shift from phase-out and reduction agreements to more complex agreements has taken place. Examples are the environmental pacts that have been concluded at the federal state level and which aim at the implementation of environmental management schemes as EMAS or ISO 14001.

An environmental problem that demonstrates the development of VA's is the issue of climate change. From the early to the mid 1990's, unilateral commitments such as the commitment by the German automotive industry to reduce fuel consumption of cars by 25% (1990) or the German declaration of industry on global warming prevention (1995) prevailed. They partly continue to exist by means of updating its contents. Further examples are the British climate change agreements and the Austrian Kyoto Cooperation and Initiative for Climate Policy. These examples show that VA's are still an important policy option in the field of climate change. The context of international climate policy and the legally binding targets on CO<sub>2</sub>-emission levels for each EU member state were a strong driver for VA's. However, the new instrument of EU-wide emission trading will probably have significant effects on most of these VA's, as the Emission Trading System (ETS) obliges industry to reduce CO<sub>2</sub>-emissions or to pay for CO<sub>2</sub> allowances in the future (ca. 10-40 €/ton). For instance in Germany the ETS will probably become more important than the industry's commitment and will almost completely replace it.

Up to now a rather limited number of VA's have been concluded at the European level. Most of them also deal with climate change. Examples are the ACEA-agreement (European Automobile Manufacturers Association) focussing on the reduction of CO<sub>2</sub>-emissions from passenger cars (released in 2002) and EACEM-agreement on Reduction of Standby Power

for televisions and video recorder (released in 1997) dealing with the reduction of energy consumption of these products.

Already in its Fifth Environmental Action Programme (5<sup>th</sup> EAP) from 1992 the European Commission has called for a broad mix of instruments to be applied in environmental policy. Voluntary environmental agreements explicitly complement this mix. In 1996, the European Commission published a first communication on the issue of environmental agreements (EC 1996). Subjects were of textual nature and about how to implement guidelines through environmental agreements in the member states. In the context of the action plan "Simplifying and Improving the Regulatory Environment" a follow-up communication on environmental agreements from 2002 deals with the question how to use environmental agreements on the community level (EC 2002). Thereby, this communication puts a focus on a future framework. Furthermore, several environmental issues are identified for the development of voluntary agreements: PVC, Integrated Product Policy, waste management and climate change. Besides unilateral commitments, the Commission would also like to push VA's as a means of implementation in the framework of legal acts (co-regulation).

Generally speaking, VA's in Europe continue to develop. Furthermore EU directives take often the form of framework directives that leave more room for implementation. There are already some examples (e.g. in waste and packaging sector) that VA's can serve for implementation of European directives. If this trend continues, VA's will evolve towards an element of co-regulation. That means that laws and VA's concerning the same issue are developed side-by-side in order to benefit from the advantages of both policy instruments. A recent example for such a scheme is the German nuclear-power phase-out process. Thereby, a regulation describing the time horizon and the intermediate targets is accompanied by a voluntary commitment of the electricity producing industry to phase out their nuclear power plants step by step with certain flexibility.

In the 2005 EC Green Paper on energy efficiency the European Commission concludes that a large number of voluntary agreements in industrial sectors have already been taken. Such VA's by industry reinforce energy-efficiency measures. EC quotes two examples:

- United Kingdom: the "Energy-efficiency commitment" (2002-2005) obliges electricity and gas suppliers to achieve targets for installing energy-efficiency measures in households. This programme has proven to be extremely cost-effective in reducing energy consumption and has been extended from 2005 to 2008.
- The Netherlands: thanks to the tradition of VA's with industry, the Netherlands has become one of the best performing economies in the world in terms of energy-efficiency. In July 1999, the Dutch government signed a benchmarking agreement on energy efficiency with industry. Companies representing about 90% of industrial energy demand have signed up the agreement. In return for commitment by industry to reach the absolute top in energy-efficiency by 2012, the government agreed to refrain from imposing additional national energy measures. The first review of measures taken and planned by these companies indicated that they will save 82000 TJ in 2012 (2 Mtoe), thus avoiding emissions of around 5.7 million tonnes of CO<sub>2</sub>.

### **3 Dutch voluntary agreements on energy efficiency improvement**

As shown in the previous chapter, the range of VA experiences in Europe is quite large. Between the two poles of entirely voluntary commitments and conventional regulation, a large number of environmental problems are addressed in a variety of VA's between public and private actors. Each VA contains a varying amount of strong and weak points that are of interest for the development and implementation of industrial LTA's in the Bulgarian context. Lessons learnt and recommendations also from other EU VA cases than Dutch LTA will be presented at the end of this report. However, the main VA principles in practice can be illustrated very well by the experiences of the first generation of LTA's in the Netherlands in the period 1989 upto and including 2000.

#### **3.1 Dutch policy background and scope for LTA**

Before 1990 environmental policy in the Netherlands was mainly based on direct regulation. Standards for harmful activities were set in laws and in orders in council. At the end of the 1980's the government shifted emphasis to the stimulation of sector target groups to take responsibility. Instead of being opponents in the realisation of desired environmental results, government and the sectors are viewed as co-makers, working jointly towards established pre-set goals, which were negotiated and agreed upon. The main advantages for industrial sectors are:

- A more integral approach allows companies (within sectors) to set their priorities themselves. This means that an optimal trade-off is made between costs and results. So for limited costs the maximum results are achieved.
- Interference between normal operations and environmental activities can be diminished by careful phasing.

Significant benefits for the government are:

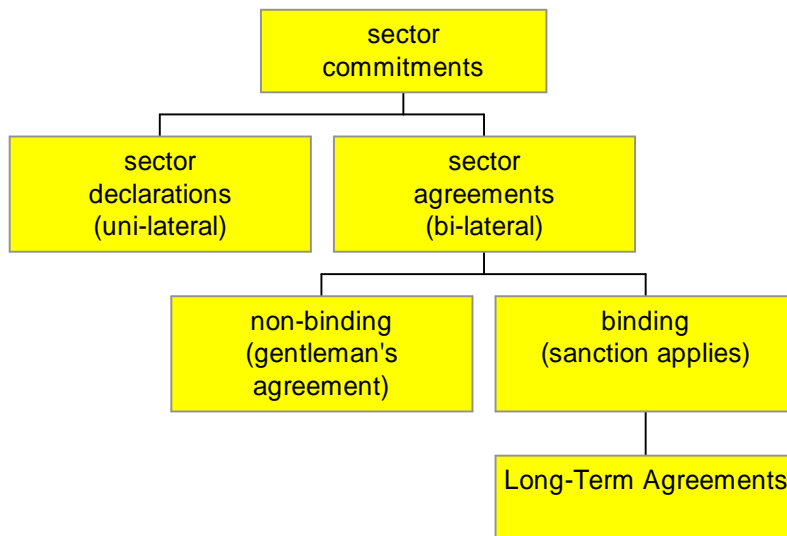
- A pro-active attitude in industrial sectors that guarantees better implementation with less emphasis on "control".
- Improved predictability of environmental developments, as targets are agreed and fixed in contracts.

Since the early nineties many agreements have been established between government and various sectors in the Dutch economy. It appeared that the benefits as anticipated by both sides, were realised in most cases. A special version of sector agreements is worked out concerning targets on energy efficiency improvement. This approach turned out to be very successful. One of the reasons for this is that the results (made visible objectively through an intensive monitoring process) meet the expectations.

As described in previous chapter there is a hierarchy in types of sector commitments including VA's. In all cases there is a commitment from a sector in society to take responsibility for certain activities. A subdivision can be made between sector declarations (unilateral commitment) and sector agreements (bilateral negotiated agreements). The agreements can be further distinguished in those that are non-binding (gentleman's agreements) and those that are binding (sanctions apply). The Long Term Agreements on energy-efficiency improvement (LTA's) as worked out in the Netherlands are considered to be of the type "sector, binding voluntary agreements".

This hierarchy in commitments is illustrated in figure 4. More to the bottom, the commitments are stronger and more specific.

**Figure 4: Hierarchy of voluntary sector commitments**



Sector VA's are a powerful policy instrument to stimulate developments in national societies into a socially desirable direction. An environmental sector VA may be defined as:

*A negotiated agreement between government and a sector in the national economy to facilitate voluntary action with a desirable social outcome, encouraged by the government. This action is undertaken by the participant, based on the participant's self interest.*

In the Netherlands a special version of sector VA's has been developed since the 1990's: Long Term Agreements on energy-efficiency improvement (LTA's). In these LTA's, sectors from industry (and services, agricultural and commercial sectors) agreed to improve their energy-efficiency over a range of years, to meet a set goal in the year 2000. The Ministry of Economic Affairs usually represents the government. SenterNovem - as a Government Agency - supports the LTA process, assists the sectors and controls the monitoring.

The National Environmental Policy Plan (1989) formulates the national policy for reduction of the emission of greenhouse gases. The national target is a reduction of CO<sub>2</sub> emissions by 3 percent, in the year 2000, compared to the 1989 level. One of the means to reach that goal is the LTA. Reduction of energy consumption is seen to be largely congruent with reduction of CO<sub>2</sub> emissions, as by far the largest part the energy supply is based on fossil fuels. For other greenhouse gases, like methane and PFC's, other policy instruments apply to achieve reductions. The main regulatory instrument is the "Environmental Management Act" that sets the framework for permits on industrial operations. Against this background the policy goal of the LTA's is to stimulate energy efficiency improvement beyond existing trends, in a context of low energy prices, without resorting to new regulations. The first LTA's were signed in 1992 and as of 31 December 2000, the status was:

- 31 LTA's with industry associations;
- more than 1000 industrial companies participated within LTA's;
- over 90% coverage of industrial primary energy consumption;
- the target for energy-efficiency improvement over the period 1989-2000 is 20% and by the end of 2000 the energy efficiency improvement actually turned out at 22,3 %;

- 7 LTA's with groups of users in services sectors;
- 3 LTA's with agricultural sectors.

## **3.2 LTA methodology**

The Dutch LTA scheme is supported by an intensive process management including monitoring, subsidy schemes, information services and enforcement procedures. Below important features of this LTA methodology are highlighted.

### **3.2.1 LTA participants and process**

Prior to the signature of an LTA, the feasibility of the target to be specified in the agreement is assessed. Potential signatories are consulted to check their willingness to participate in such an agreement. In general the following steps lead to signature:

1. On behalf of the government the agency SenterNovem approaches the industry for a preliminary assessment of its energy efficiency potential.
2. The industry association issues a Letter of Intent to undertake energy efficiency improvement, addressed to the Ministry of Economic Affairs.
3. SenterNovem makes an inventory of economically viable measures (acceptable pay back period) that can be undertaken in representative companies within the industry sector. This yields the basis for the target for energy efficiency improvement.
4. The LTA is signed by the industry association, the Ministry of Economic Affairs and SenterNovem. Individual companies express their participation by accession letters.

The measures needed to achieve the objectives of an LTA are set out in the "Long Term Plan for Improvement of Energy Efficiency" (LTP). This LTP or "Energy Saving Plan" is the basis for the implementation of an LTA. It is flexible to allow for unexpected developments in market economics and technology.

A LTP starts with a description of the concerned sector and the role of energy within that sector. It includes:

- assessment of energy consumption in 1989, as "reference year";
- survey of opportunities for energy efficiency improvement;
- model for company energy plans;
- monitoring and energy management in each company;
- research and development on new low-energy technologies;
- demonstration projects for energy savings measures;
- market introduction of low-energy techniques;
- assistance to individual companies;
- transfer of know-how and information.

### **3.2.2 LTA commitments and targets**

The target of the LTA's was on average a 20% improvement in energy efficiency by the year 2000, from 1989 levels. The signed LTA specified the commitments of both Government and industry, including objectives, targets and procedures how measures can be implemented. The government agreed not to introduce other regulations on energy efficiency in industry, and the industry voluntarily agreed to reduce its energy intensity.

The document signed by the parties started with a recognition of the greenhouse issue and of the national objective of CO<sub>2</sub> emissions stabilisation in 1995 at the 1989 level, and a reduction by 3% in the year 2000. Based on the "Memorandum on Energy Conservation", the objective for industry was a 20% improvement in energy efficiency by the year 2000, from the 1989 level. Each LTA is a contract under civil law and it is target based.

### **3.2.3 Definition of energy efficiency targets**

The energy efficiency targets are defined as a percentage improvement in overall energy efficiency within each participating industry sector (with individual companies contributing different amounts to the target). The definition of Energy Efficiency Index is:

*The energy consumption in the year in question to produce the total output in that year, divided by the energy consumption that would have resulted had the same production been made with the energy efficiency in the year of reference (1989).*

For electricity consumption the primary input to electricity production is taken. The efficiency of public electricity generation is assumed to be 40%. Reducing final consumption of electricity by a certain amount thus contributes more to the energy efficiency of a plant than saving the same energy amount of natural gas. This method creates an extra incentive to co-generation, to fully utilise the primary energy content of fuels. Calculation of the energy efficiency improvement excludes energy-carriers used as feedstock (non-energetic use) as these are related to production volume (according to stoichiometry) and not to energy efficiency. Furthermore feedstock usually does not directly contribute to CO<sub>2</sub> emissions.

Production is defined differently for different sectors. In many industries, a stated weight of product can be used as an indicator, where little product change is expected until the end of the decade. In a second method the energy consumption per process step is taken as the basis for energy-efficiency (e.g. refineries). Each plant determines the energy requirements of specific process steps. Changes in energy requirements which might be considered structural (for example purchase of intermediary products previously manufactured within the plant) are separated from those that are purely efficiency based.

LTA's stimulate broad areas of action to improve energy efficiency. Indicative contributions are made from measures such as energy management, good housekeeping, combined heat and power, improved power generation, heat integration and modernisation of processes.

### **3.2.4 LTA commitments of the signatories and termination**

The commitments of the signatory parties vary from one agreement to another, depending on the specific characteristics of the sector. All companies agree to work out an energy efficiency improvement plan (also called energy saving plan), and improve energy efficiency as far as practically and economically viable, to contribute to the industry (sector) target.

Energy efficiency improvements do not have to be distributed equally among different sites of the same company. New facilities for instance usually show a better overall energy efficiency

than older ones. This clause is not straightforward as provinces and municipalities have the authority to impose requirements with respect to operation permits, including energy efficiency requirements. Signatories to an LTA are considered to be in compliance with permit requirements concerning energy efficiency when SenterNovem provides a positive LTA advice to local authorities.

An energy efficiency improvement plan and annual monitoring reports are mandatory for each company. Failure to provide one or the other is a valid reason to exclude that company from the LTA. The company will then be subject to normal existing regulations. When an entire sector fails to meet the goal as agreed, and is not able to provide a suitable explanation, the sector LTA as a whole can be terminated. The industry association must actively support energy efficiency improvements among its members. To that end it develops programs, with the overall sector energy efficiency target as goal.

### **3.2.5 LTA government commitments and actions**

The Minister of Economic Affairs agrees to provide support to the program, including:

- financial instruments aiming at industry: tax abatement can be granted if investments in energy efficient (or clean) technologies are realised. This scheme, however, applies to all companies, whether they are signatories to an LTA or not.
- financial assistance within the framework of LTA, including various subsidy schemes.
- increase of the above financial assistance if the program is more promising than expected.
- support in the form of a detailed audit of the industries' facilities. This includes an inventory of energy consuming equipment within plants, the specification of how energy is used, and the identification of cost effective energy efficient investments.
- co-ordination of regulatory measures aimed at energy efficiency in industry, including requirements to obtain permits and energy taxes.

The government assures consistency in and protection from new regulations aimed at improving energy efficiency. It also provides financial and technical support in exchange for voluntary participation.

Each agreement specifies that if significant policy changes were to occur before 2001, the LTA parties may consider revision of the agreement. Either party may terminate the contract if no consensus is achieved.

### **3.2.6 LTA's and other energy policy measures**

In 1994 the government decided to cut the subsidy on co-generation. Industry has decided not to step out of the LTA's in response to the cut in this subsidy scheme. In 1996 the government introduced a so-called carbon-tax. This tax is bound to a limit, such that most industrial companies are hardly affected. Nevertheless industry demonstrated great difficulty to accept this new tax. However, again they decided to adhere to the existing agreements. The government in turn introduced a new tax abatement scheme for energy efficiency investments starting in 1997.



### **3.2.7 LTA time period**

Preparations for LTA's started in 1990, with the first agreement signed in May 1992 (iron and steel industry). Negotiation of a LTA typically took one to two years in the Netherlands, from the Letter of Intent to signature. In the early years, some industries felt that the period until the year 2000 was too long, prone to too many uncertainties to be covered by a LTA. So they set intermediate targets for the year 1995. Being open to international markets, industry is reluctant to sign an agreement with a real long-term target. This also explains to some extent why an agreement on absolute CO<sub>2</sub> emissions could not be reached. Industry sectors would have to forecast their growth over a relatively long period. The main reason to refuse an agreement on absolute CO<sub>2</sub> emissions is that industry is not prepared to restrict the production volume when market demand grows.

### **3.2.8 LTA monitoring and reporting**

Each year, companies report to government on the previous year's energy efficiency index (EEI), the amounts of energy purchased and net primary energy used, including corrections for:

- energy to meet more stringent environment, safety or health requirements;
- changes in energy consumption resulting from more severe product specifications;
- changes in energy consumption due to change in manufactured or purchased intermediary materials.

These three items, represent changes not driven by energy efficiency. They are eliminated from the EEI-calculation if specified in the sector LTA and agreed by all parties. Actually these corrections vary considerably between sectors. Some sectors do not include corrections, while in other sectors these corrections amount to several percentage-points.

An annual report is prepared by representatives of all signatories in order to make the progress public. This and other forms of publicity inform the public and provide recognition for industries that successfully improve their energy efficiency. SenterNovem supports this process as an independent agency, and assures quality and objectivity of the figures produced.

### **3.2.9 Conditions for successful LTA implementation**

In an European Conference (Zeist, 1997) important conditions for successful implementation of LTA's were established. The main success factors appeared to be:

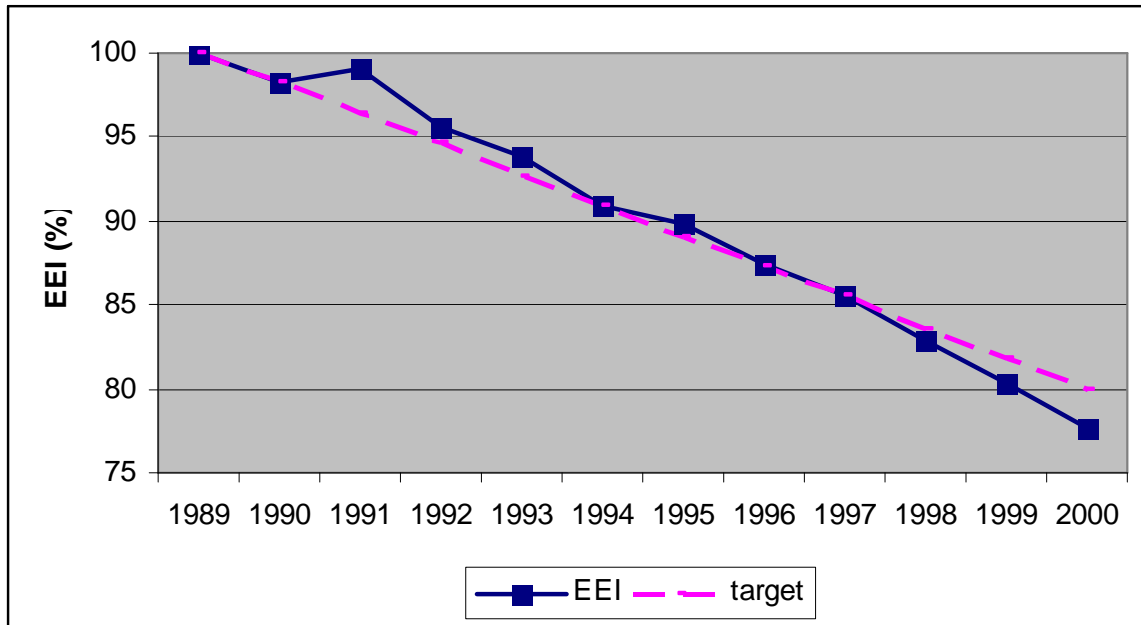
- A basis of mutual trust must exist between partners.
- Participating sectors must be homogeneous and well organised.
- Information on the actual progress must be made available, without jeopardising the confidentiality of company 'sensitive' data.

## **3.3 Dutch LTA1 results**

At the end of 2000 31 LTA's are effective in industry sectors and 7 in the services sectors. Based on monitoring reports from these LTA's the average Energy Efficiency Index (EEI) in 2000 indicate a result of 77,7 %. The 31 LTA's from which monitoring reports are available

cover more than 90% of the industrial energy consumption. Figure 5 below shows how the EEI develops over the years.

**Figure 5: Energy Efficiency Index (EEI) versus target for the period 1989-2000**



In terms of CO<sub>2</sub>-reduction however, the target has not been achieved. Instead of a reduction in CO<sub>2</sub>-emission, actually an increase of a few percent was observed. The main reason for this deviation is a higher volume growth than anticipated at the time that the framework for LTA's was set out.

Industry sectors demonstrate a positive perception of the LTA approach. In an evaluation they expressed their support to the approach and no industrial sector stepped out of an agreement. This opened the perspective to continue this approach after expiration of the LTA1 target year 2000. The contents of the LTA can be more or less adapted as long as the basic mechanisms stay the same.

The impact on Dutch economy can be assessed globally. An improvement of energy efficiency of 20% on primary energy input to the industry yields a saving of about 150 PJ. With 2000 price levels for energy, this represents a value of about 700 million € (1500 million guilders; 1 € = 2,20 Gld) . These savings from the national economy will repeat each year, from the year 2000 onwards. A rough estimation of total costs over the period 1989-2000 shows that the savings outweigh the costs by far. Figure 6 below shows a rough economic input/output model, in terms of costs and benefits.

Figure 6: The LTA process seen as an economic input/output box

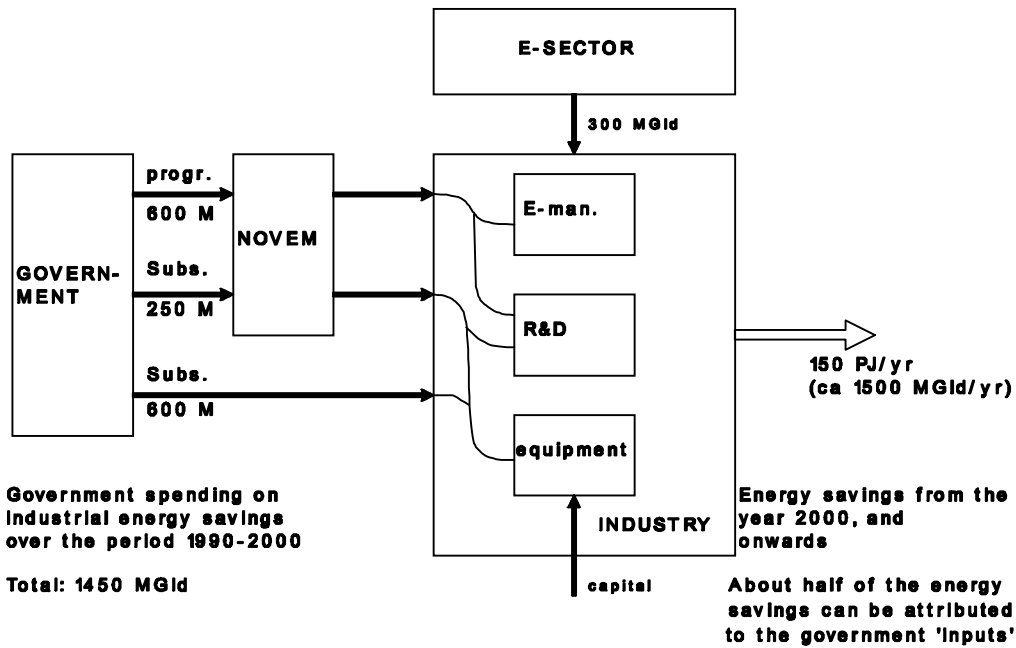


Table 1 below shows an overview of all the sectors participating in the first generation of LTA's in the Netherlands and their individual results on energy-efficiency improvement.

Table 1: Individual results of sectors participating in Dutch LTA1

INDUSTRY	PRIMARY ENERGY		% TARGET	DATE LTA	NR. OF LTA
	CONS.(PJ) (CBS '89)	REALISED TARGET 2000	EN.EFF.IMPR. (year 2000)	CONCLUDED (yr/mnth)	SETTLE- MENTS
<b>LARGE ENERGY USERS</b>					
Cement industry	11,0	22	20	92/07	3
Chemical industry	310,0	25	20	93/11	111
Glass industry	11,1	16	20	92/07	7
Iron and steel industry	58,5	17	20	92/05	2
Non-ferrous metals industry	8,0	17	15	93/10	21
Oil refineries	161,2	17	10	95/09	5
Paper industry	33,5	23	20	93/05	30
Sugar industry	8,7	26	20	93/09	5
<b>Subtotal Large</b>	<b>602,0</b>				<b>184</b>

<b>MEDIUM SIZED ENERGY USERS</b>					
Breweries	4,0	29	18	93/10	17
Building ceramics industry	8,8	11 (1999)	20	93/10	55
Calcium-silicate brick industry	1,2	11	20	92/11	11
Cocoa	2,2	17	18 (2005)	98/07	5
Coffee-roasting industry	1,5	22	20	94/05	12
Dairy industry	18,1	14	20	94/07	86
Fine ceramics industry	3,1	7 (1999)	20	94/04	19
Industrial washing	1,7	24	20	94/06	66
Margarines, fats, oils	7,6	21	22	93/06	27
Meat processing	5,8	13	20	93/09	70
Oil and gas production	39,0	35	20	96/06	12
Philips	10,8	35 (1999)	25	93/05	62
Potato-processing industry	0,5	24	20	96/06	18
<b>Subtotal Medium</b>	<b>104,3</b>				<b>460</b>
<b>SMALL ENERGY USERS</b>					
Asphalt industry	2,5	9	20	95/11	57
Carpet industry	1,0	19	20	96/06	15
Iron foundries	2,0	18	16	95/06	24
Large individual companies	14,5	13	20	97/03	139
Plastics processing industry	10,2	19	20	94/12	78
Refrigeration and cold storage	2,2	18	28	96/03	87
Rubber processing industry	2,2	19	20	94/11	25
Soft drinks industry	1,0	13	20	96/07	7
Surface treatment	1,5	17	20	96/03	147
Textile industry	8,2	22	20	92/10	49
Vegetable & fruit processing	3,0	11	20	93/10	29
<b>Subtotal Small</b>	<b>48,3</b>				<b>657</b>
<b>INDUSTRY TOTAL</b>	<b>754,6</b>				<b>1301</b>

NON INDUSTRIAL SECTORS	PRIM. ENERGY		% TARGET	DATE LTA	NR LTA
	CONS.(PJ) (CBS '89)	REALISATION 2000	EN.EFF.IMPR. (year 2000)	CONCLUDED (yr/mnth)	SETTLE- MENTS
Royal Dutch Airlines (KLM)	1,0	35 (1999)	28 (1989-1999)	94/10	1
Amsterdam Airport (Schiphol)	1,4	21 (1999)	28 (1989-1999)	94/11	1
Secondary Vocational Education	4,0	18 (1998)	30 (1989-1999)	94/12	100
Health care sector	27,0	3	30 (1989-2000)	95/06	500
Higher Vocational Education	2,0	10 (1996)	30 (2004-1989)	96/02	33
Banking sector	6,0	8	25 (1995-2006)	96/12	11
Insurance sector	1,9 (1998)	-5 (1999)	23 (1996-2006)	98/03	14
Universities	0,4	1	14 (1996-2006)	99/04	30
Netherlands Railways	13,3(1997)	8	11 (1997-2011)	99/10	5
Supermarkets	7,2	not available	32 (1995-2011)	99/10	30
<b>TOTAL</b>	<b>64,2</b>				<b>725</b>

More detailed information on Dutch LTA1 results over the period 1989 upto and including 2000 is provided in appendix 1.

### 3.4 Dutch LTA1 evaluation results

The University of Utrecht extensively evaluated the LTA's in 1997. The conclusions from this survey can be summarised as:

- Participation in LTA's generates more management attention for the energy situation in companies.
- Participating companies become more aware of existing opportunities for energy saving.
- Consequently, the exploration of the existing potential is accelerated.

Also various points for further improvement were indicated:

- Quality and impact of Energy Savings Plans needs to be improved.
- Procedures need to be more uniform (energy savings plans, monitoring).
- Targets could even have been more ambitious.
- More focus on long term developments.
- Impact of subsidies not to be overestimated.
- Room for extension with other new themes (indirectly related to energy).

On the basis of this positive LTA1 assessment and the valuable recommendations, most parties expressed the desire to continue with the framework of LTA's, taking into account that new elements are to be added and some (mainly procedural) improvements need to be implemented.

### **3.5 Continuation with LTA2 and Benchmark covenant**

According to changes in the Environmental Management Act all companies have to take the profitable measures that conserve energy. A profitable measure is interpreted as having an internal rate of return of 15% or larger. As an alternative a pay back time of 5 years or less can be used. This rule plays a central role in the energy paragraph of a company's environmental permit. For companies that have joined an LTA, the energy savings plan is used by the authorities as input for this energy paragraph.

The next generation LTA's will span the period 2001 – 2012. Two approaches were chosen:

- Second generation of LTA's involving the medium users of energy;
- Benchmarking involving the heavy users of energy (> 0.5 PJ for a plant).

#### **3.5.1 Second generations of LTA's**

As the most obvious measures for energy efficiency improvement have been taken in the first period upto and including 2000, the range of energy themes is extended with new ones. These themes can be grouped into three categories:

- Process efficiency
- Energy efficient product development
- Renewable energy

The category "Process efficiency" is subdivided in:

- energy management and good house keeping,
- process energy conservation,
- energy conservation in utilities and buildings
- strategic projects.

In the category "Energy efficient product development" the new themes are included, with a separate target to include in LTA's. From a policy viewpoint they are subdivided in:

- Sustainable products
- Optimisation of transport, logistics and chain management
- Sustainable industrial areas

The new themes comprise improvement of energy efficiency in the fields of:

- Optimisation of function
- Dematerialisation
- Improvement of process efficiency outside the site
- Optimisation of distribution
- Decrease of energy while using the product
- Optimisation of product life
- Optimisation of (partial) removal of the product
- Optimisation of (partial) reuse of the product

Renewable energy is also considered a separate target area, with a separate target to include in LTA's. It includes:

- Purchase of renewable energy
- Hydropower
- Wind energy
- Thermal solar energy
- Photovoltaic solar energy
- Passive solar energy
- Heat and cold storage
- Geothermal heat
- Heat pumps
- Energy from waste and biomass

A global assessment revealed that a total saving of more than 300 PJ is possible in all industry sectors, on a total of roughly 1400 PJ in the year 2000 (including non-energetic energy). Each sector has been challenged to investigate which themes they are able (and willing) to address. In the period 2001 – 2004 this occurs on a voluntary basis. In 2004 each sector should write a broad study on production processes within the sector in which the energy use is analysed on the basis of energy and mass balances. Then a quantified target needs to be set for the period 2005 - 2008. From this it will be clear that the LTA2 monitoring process will be substantially complicated. For this and other reasons it is advised to start with a relative simple covenant and not to start with LTA2 ambitions in Bulgaria without having obtained experience with the main LTA1 principles.

On December 6, 2001 the new LTA2 agreement was signed by:

- the Ministers of
  - Economic Affairs
  - Agriculture, Nature Conservation and Food Quality
  - Housing, Spatial Planning and Environment
- representatives of the provinces and municipalities
- 15 industrial sectors.

### **3.5.2 Benchmark covenant**

In the year 1998, the energy intensive industry proposed to replace the LTA approach by a different type of agreement, still resembling much of the features of and experience from the LTA's. This new approach is called "International Benchmarking". The basic idea is that the energy intensive industry in the Netherlands cannot be pushed further than to become (and stay) among the "Best in the World" (in terms of energy efficiency). Exactly this situation (being the best in the world) is made the target of so called Benchmarking Agreements. On July 6, 1999 these were signed by:

- the Minister of both Economic Affairs and Housing, Spatial Planning and Environment
- representatives of the provinces

- the employers' organisation VNO-NCW
- 6 industrial sectors (chemicals, iron and steel, non-ferrous, oil refineries, paper and board as well as power generation)

The individual companies joined this agreement later. About 175 major companies cover about 80% of the total industrial energy consumption in the Netherlands. It is difficult to assess on beforehand what energy savings can be expected from the Benchmark covenant. Studies have been carried out to determine what the position is of Dutch companies with respect to international competition. From the (partly confidential) results of these studies companies will know the gap that they have to bridge in order to become (and stay) among the "Best in the World". When "best of the world" class improves its energy efficiency, participating companies have to move along.

### **3.6 Lessons learnt and conclusions from Dutch LTA experiences**

The implementation of LTA's as developed in the Netherlands appears to work out well. Energy efficiency developed much better than expectations (business-as-usual) and no industrial LTA contract has been terminated.

CO<sub>2</sub> emissions are reduced substantially with respect to what they would have been when the same production would have been made with the 1989 energy efficiency. Production volume growth however led to a small growth in absolute CO<sub>2</sub> emissions.

Dutch industry continues to improve its performance and has become more competitive as a result of LTA's (also due to "innovation management"). Energy cost savings outweigh significantly the funds that the government has made available within the framework of LTA1.

Energy conservation plays an increasingly important role in environmental permits.

Participation in LTA's generates more management attention for the energy situation in companies. As a result companies become more aware of existing and new opportunities for energy saving.

LTA1 has been effective in enhancing the rate of energy efficiency improvement significantly, although independent evaluators could not exactly determine what would have happened without LTA (business-as-usual).

The effectiveness of LTA1 can be explained by the robust design consistent with the cultural and political context in the Netherlands. VA's have to deal in a robust and transparent way with targets, accompanying measures, sanctions and time-frame.

A basis of mutual trust must exist between LTA partners, dialogue instead of confrontation.

Participating LTA sectors must be homogeneous and well organised.

Monitoring results on the actual progress must be made available, without jeopardising the confidentiality of company sensitive data.

The intention of most LTA parties was to extend and widen this approach into the period 2001-2012. New energy themes have been indicated and industrial sectors have been challenged to make clear which new themes they address in that period and what savings can be expected.

Introduction of the new type of Benchmark covenant for energy-intensive industry sectors reduces substantially the widening impact of the second generation of LTA's, as LTA2



include only a relatively small part of industrial energy consumption. On the other hand many of the mechanisms (e.g. monitoring process) of the LTA will be maintained in Benchmark covenant.

As a result of the new themes, the LTA2 monitoring process will be significantly complicated. For this and other reasons it is not advised to start with this type of LTA2 ambitions in Bulgaria without having obtained experience with the main LTA1 principles.

In summary, the Dutch covenants on energy-efficiency improvement are successful examples of European VA's. As a result of the comprehensive scheme and the extensive process management these covenants illustrate well how the complex problem of climate change and energy efficiency can be addressed in a win-win situation. The Dutch LTA1, LTA2 and benchmarking covenant scheme represent highly developed systems of co-ordinated action for environmental industrial management and cleaner production.

### **3.7 Recommendations derived from Dutch LTA experiences**

From the evaluation of the LTA experience in the Netherlands (including experiences with VA's in other European countries) "golden rules" have been set up by SenterNovem for the design of VA's. These recommendations have also to be taken into account for considering implementation of LTA's in Bulgaria.

1. VA's will only be effective if they are part of a total policy package, including fiscal regulations, subsidy schemes and support.
2. The number of covenant partners (companies and associations) that sign the VA should be limited, so that companies feel individually addressed and free-rider behaviour is minimised.
3. The negotiation position of the government has to be good. Preferably the government should set binding targets and come up with offers and accompanying measures.
4. The VA targets must be ambitious as well as realistic and clearly defined within strict long-term time schedules.
5. There should be long-lasting government support (expertise, subsidies for feasibility studies, etc.).
6. VA's on energy efficiency improvement are preferably used only for energy-intensive companies. For small companies the monitoring and reporting efforts are not in balance with energy savings.
7. Experts prefer and advise physical energy efficiency monitoring (as applied in Dutch Energy Efficiency Index EEI).
8. There should be clear and transparent monitoring guidelines, both for company level and independent monitoring agency.
9. Independent verification of individual and aggregated results is required for trustworthiness of VA's.

In summary, especially the Dutch LTA1 illustrates well the essentials to be integrated in a suitable scheme for a successful VA. It is recommended that our Bulgarian project partners learn from these experiences and subsequently transform the Dutch LTA model into a Bulgarian-specific LTA scheme.

## **4 Success factors in a comparative perspective**

The presented LTA experiences and the recent Wuppertal Institute review study provide the main basis for the definition of VA success factors in this chapter. The formulation of more general success factors follows the terms “problem solving capacity”, “legitimacy” and “costs”.

### **4.1 Success factors for environmental problem solving capacity**

Problem solving capacity is the main dimension for the design and evaluation of VA's. It is closely related to the direct and indirect environmental effects of the agreements. As success can be related to an improvement of the environmental situation, success factors for problem solving capacity are elements of the agreement or measures in the process of developing and implementing VA's that make the effects occur and contribute to a more positive environmental situation.

However, direct links between agreement and improvement of the environment are seldom. The difficulties derive from the fact that the development of the environment is depending on a variety of factors including unintended side effects. The effect of one single policy measure (e.g. the VA) can therefore be overshadowed or supported by other trends like economic growth and/or technological development. For simplicity reasons the environmental problem solving capacity is split up into three substantive dimensions of success:

1. The ambitiousness of agreed targets;
2. The compliance with these targets;
3. The contribution towards policy learning.

While the first point refers to the environmental situation, the second is only connected to internal developments of the agreement. The third aspect of policy learning is pointing towards long-term related soft effects based on the cooperative relation between industry and environmental authorities.

The main categories for design and evaluation of VA's are ambitiousness and compliance. Only if both aspects are fulfilled, VA's will be assumed to be successful. VA's will be considered unsuccessful in case industry achieves unambitious targets or fails to reach ambitious targets.

#### **4.1.1 Ambitiousness of VA targets**

Voluntary agreements cover a broad range of policy issues. Thus the targets can be multi-fold. Target setting is a crucial task in each VA process. A first task is to check if the VA and its proposed targets are in line with the political targets that are defined in development plans, sustainability strategies or multilateral agreements between nation states. Secondly, the defined VA targets should be somewhere in the range between ambitious and realistic targets. For the definition of “ambitiousness” it is necessary to define a business-as-usual trend. Only if the targets extend the measures that would have been taken anyway, additional effects can be expected.

Hence, an important success factor is to define a business-as-usual trend prior to the negotiations. In this context, the Dutch LTA provide an interesting approach towards realistic but still ambitious targets. Prior to negotiations, energy potential scans (EPS's) or studies

concerning the potential for energy efficiency in production processes were carried out. The results from these studies provided a pragmatic picture of possible measures and showed a rough trend on how the targets could look like depending on pay back times from roughly 1 to 10 years. Therefore an independent analysis of targets is helpful in negotiations to determine the level of ambitiousness.

After defining the ambitiousness, further aspects related to targets are relevant. A common element of VA's is the long-term perspective and the challenge to organise a continuous process of environmental improvement. Therefore two aspects are crucial in order to achieve ambitious results. Quantified and staged objectives and a clear time horizon for implementation. These success factors are especially important in order to measure, check and evaluate compliance. In the Dutch LTA, the development of the energy efficiency index (EEI) was a crucial element for reaching consensus about an objective that is still relatively easy to measure and to monitor.

In summary, five success factors towards ambitious target setting can be identified: independent analysis, relation to political targets, going beyond business-as-usual, quantified and easily measurable targets as well as a concrete time horizon with interim objectives.

#### **4.1.2 Compliance with VA targets**

After agreeing on certain targets, it is important to comply with those VA objectives via the implementation of measures. At that stage it is desirable that the agreements have a status close to legally binding. Then the relation between public and private actors is quite similar to implementation of command-and-control approaches. In the Dutch LTA civil law contracts between the parties establish a legal based relation.

The legal form is not the only guarantee for compliance. Non-binding agreements can be as successful as binding ones. Many VA cases show that the lack of legal status does not automatically lead to non-compliance. That is mainly related to the aspects framing and monitoring. Framing means to take accompanying (policy) measures that actively support implementation, whereas monitoring is the control dimension of VA's.

##### 4.1.2.1 Incentives and sanctions

Incentives and sanctions can be used to frame the implementation of VA's. The metaphor of "carrots and sticks" outlines the underlying governance approach of helping industry to act on the one hand and requiring action on the other hand. In this context, it is not important whether these incentives and sanctions are built inside the VA's as a paragraph or whether they exist independently like (national or regional) subsidies for energy efficient technology. The Dutch LTA case is an example for in-built factors like the link to an environmental permit system. The existence of LTA working groups further supports awareness and compliance. Also other learning procedures like best practice information or consultant involvement are supportive LTA elements. Furthermore, the requirements of drawing up an energy efficiency improvement plan for each company as well as the phasing of measures to be taken are examples for framing implementation of the VA. Finally the LTA monitoring procedure can be understood as an internal framing.

The Dutch LTA is also a good example for external framing. The existence of a National Environmental Policy Plan and supportive subsidies push implementation of energy efficiency measures. Generally speaking, external framing means the integration in a policy

mix. That is important because various matters and policy instruments could address industry and support each other (cross-fertilisation).

To sum up, success factors are the design of in-built incentives and sanctions as well as external framing through the integration of the VA in a policy mix.

#### 4.1.2.2 Monitoring and reporting

Monitoring and reporting is very important in order to control the efforts made by industry. In this task, there are very few differences to command-and-control approaches. The existence of a regular evaluation and supervision of results is a crucial element to make industry comply with the agreed targets. Without monitoring the danger of non-compliance and free riding is relatively high. Therefore the progress of both the environmental situation and implementation of measures should be observed and reported. For a properly working and effective monitoring scheme, a comprehensive methodology is needed like the EEI-monitoring system that is used for the Dutch LTA's. Also the Dutch Benchmark covenant requires annual monitoring and reporting. Furthermore an independent (benchmark verification) authority controls compliance. This is an important factor as the data are provided by the companies themselves.

Generally speaking, success factors with regard to monitoring and reporting are clear and transparent procedures (at least aggregated data should be published), a uniform methodology to secure standards and the incorporation of an independent verifier.

#### 4.1.2.3 Overview of compliance success factors

Compliance is a critical VA task. Especially the Dutch LTA's show an ambitious and highly evolved system of incentives to participate and take action as well as sanctions to push companies. Success factors for compliance are:

- legally binding VA's;
- responsibility and accountability of individual companies;
- independent actor for VA process facilitation and organisation;
- internal and external incentives and sanctions;
- clear and transparent monitoring and reporting procedures;
- independent verification of VA results.

### **4.1.3 Soft VA effects towards learning**

Last but not least, soft effects towards learning are a further element of the problem solving capacity of VA's. However, soft effects do neither support ambitious targets nor compliance. Soft effects do not directly affect environmental effectiveness but contribute indirectly to an improvement of the environment in a long-term perspective.

Firstly, the agreement itself and the monitoring reports support information dissemination and transfer of knowledge. In the Dutch LTA's contracts were signed with business associations that serve as an intermediate actor between the companies. In addition, the fact that companies have to react on the VA's makes them think about solutions and therefore supports innovation. Furthermore LTA's demonstrate that information exchange in working groups or visits through external consultants promote awareness.

The success factors for soft VA effects towards learning are dissemination of information, institutionalisation of working groups and incorporation of intermediate organisations.

## **4.2 Success factors for legitimacy and costs**

Legitimacy and costs are also important for the design and evaluation of VA's. VA's are only feasible, if they are in line with democratic norms and the VA costs do not exceed the costs of regulation including enforcement.

### **4.2.1 Legitimacy**

The (theoretical) problem of VA's is that the addressed actors of this policy instrument such as industrial sectors or individual companies might be able to influence the objectives and avoid independent control. If industrial actors succeed in avoiding measures that would have been obligatory by introducing regulation, the function of the government to act along public interests fails. As mentioned with regards to targets, political goals and the public opinion must be dominant to guarantee legitimacy.

As a consequence the VA acceptance in society is important for legitimacy. If there is a public debate about the environmental problem and the possible measures as well as the outcome is accepted broadly, there are no democratic problems with using VA's. Success factors that refer to such broad acceptance are twofold:

1. Transparency and information available to the public (or public representatives like NGO's).
2. Involvement of public interests (e.g. multi stakeholder dialogue).

While the first success factor is closely related to monitoring, the second one points at participation and involvement of independent actors. As mentioned before, monitoring is a basic VA requirement. Problems like the publication of company specific (confidential) data were solved by publishing aggregated information. Regarding involvement of independent actors it can be stated that the Dutch LTA's do not involve independent actors. An intermediate independent organisation is used in order to guarantee objectiveness. Also a number of individual LTA companies invite NGO's to discuss and report progress on implemented measures.

### **4.2.2 Costs**

One of the main arguments for VA's is the assumed cost-effectiveness. There is only limited information available about the total costs of VA implementation. Cost calculation in advance could be helpful to achieve overall VA cost-effectiveness, The basic principle is to avoid a disproportionate burden for the public authorities and/or companies. In this perspective it can be seen from Dutch LTA case that especially the framing of a VA towards compliance leads to significant costs for the public actors. In target setting, (independent) studies will be responsible for a high share in the VA costs. The negotiation itself does not require major expenditures. Furthermore, implementation of VA's implies investments in new or revamped process equipment, especially if the VA targets are ambitious.

On the basis of costs information available the Dutch LTA seems to be the most expensive and also most cost-effective VA. The overall VA costs are significantly outweighed by the annual

cost savings as a result of improved energy efficiency improvement. From the perspective of price-performance ratio LTA might therefore even be the overall cheapest solution.

Bulgarian LTA framing costs might be much lower than Dutch LTA framing costs without undermining the success of this policy instrument. This could be achieved by a Bulgarian-specific LTA with only energy-intensive companies, creation of revolving funds and a number of other creative solutions to reduce costs without eliminating crucial LTA incentives.

### 4.3 Context of and preconditions for voluntary agreements

VA's cannot be examined without having a closer look to their cultural and political context as it may have a strong influence on their design and performance. Furthermore, it is also important to consider the circumstances and preconditions that contributed to the implementation of VA's. This can shed light on the probability whether new VA's can be developed in other circumstances and also whether the Dutch LTA can be adopted into Bulgarian conditions. Therefore the concept of governance capacity is used for addressing some basic principles with respect to VA implementation. For a more detailed picture the role of the political context is also highlighted for deriving success factors in this area.

#### 4.3.1 Governance capacity

One reason for the success of VA's is related to the context of the problem structure and the governance capacity of public and private actors to solve environmental problems. Nowadays these problems are highly complex and persisting, which restrict the governance capacity of public actors. Governance capacity is defined as the possibility to design a certain policy towards a policy goal and to implement this policy. In many cases environmental problems cannot be solved by regulation alone and a more comprehensive approach including regulation, VA's and other policy instruments are needed (see figure 7). The aspect of governance capacity with a view on public-private interaction has been analysed more in detail by Knill and Lehmkuhl (2002).

A precondition for VA is the fact that the governance capacity of industry is high as it takes over responsibility to carry out parts of environmental policy. This high capability to contribute to policy solutions can be used by public authorities in order to implement environmental policies.

**Figure 7: Ideal-type constellations of public and private interactions**

		Governance capacity of public actors	
		<i>Low</i>	<i>High</i>
Governance capacity of private actors	<i>low</i>	Interfering regulation	Interventionist regulation
	<i>high</i>	Private self-regulation	Regulated self-regulation

Source: Knill, Lehmkuhl 2002

If the governance capacity of the public actors is low, e.g. due to a lack of information on the problem, this constellation is likely to result in self-regulation or unilateral commitments. If the governance capacity of both the public and private actors is high, both actors are able to contribute to special policy measures. This constellation can lead to regulated self-regulation and thus, VA's signed by the public authority and industry. The policy style of these VA's is more cooperative like for the Dutch LTA's. Both the government and industrial sectors were able to contribute to a policy leading to significantly improved energy efficiency. Also the Dutch energy-intensive companies participating in the Benchmark covenant have taken over certain obligations. Furthermore, both covenants are embedded into a framework of other policy measures such as the provincial permits system. This indicates a high governance capacity of the Dutch government.

#### **4.3.2 Role of the political context**

Another important VA precondition is a suitable cultural and political context in which VA's have to be developed. Some contexts are quite supportive for VA's, whereas other circumstances can hinder their development. Mol and Liefferink (2000) and De Clercq (2002) have developed three supportive or success factors related to the context that can lead to the implementation of VA's:

- Firstly, VA's can better be developed in a climate of trust and consensus where public authorities and industry avoid conflict and are willing to co-operate closely in order to solve existing problems. The Netherlands has such a tradition and a policy style of mutual trust between public authorities and industry. Also a problem solving mode of decision-making still prevails.
- Secondly, the existence of a credible threat is another important precondition for VA's. If such a threat does not exist, there is no incentive for industry to take action and abate pollution (as this is often linked to additional costs). In the Dutch LTA case there was a threat of more stringent and less flexible legislation and/or energy taxes that would disturb level playing field.
- Thirdly, another condition supporting implementation of VA's concerns the characteristics of industry sectors participating in VA's. If these sectors are homogeneous and therefore a limited amount of industrial parties takes part in the VA negotiations, this is supportive for attaining successful VA results. For VA's it is also important that a high level of organisation exists in branch associations. This will make it possible that they conduct negotiations with the public authorities and at the same time they enforce the decisions made under its members. This is valid for the Dutch LTA's and benchmark covenant where negotiations were conducted with the branch associations.

It has to be kept in mind, that differences in political context might substantially affect the design of VA's in terms of more or less framing. Some European VA's can be considered as a stand-alone policy measure, whereas the Dutch LTA's and Benchmark covenant have been well integrated in a policy mix.

#### **4.3.3 Initiation of a voluntary agreement and company participation**

VA's can be initiated by public authorities as well as by industry. The actor that makes the first step has to convince the potential partner regarding the benefits of a VA. The

government normally does not reject environmental initiatives of industry. However, if VA's are initiated by public actors, they must show industry the advantages of participating voluntarily.

The Dutch LTA's show the importance of (preferably pro-active) company participation. Branch associations as well as individual companies commit themselves to participate in the LTA's. The evolved system of incentives and sanctions towards compliance is also used to push company participation by providing incentives and the threat of sanctions. The threat of stronger permit requirements and the incentives of access to LTA subsidies and a positive environmental image are highly supportive to LTA participation. For (informal) communication of these LTA benefits the role of branch associations is also important.

From the combination of above-mentioned success factors it can be easily derived that the management of the whole VA process is crucial for active participation of companies. Therefore a robust VA process management strategy is of utmost importance to integrate as much as possible success factors in the design and implementation phases of VA's.

With respect to the adaptation of the Dutch LTA instrument to Bulgarian conditions it will therefore be crucial to develop and establish a framework of incentives and sanctions that support active participation of at least large Bulgarian companies. This framing is expected to take at least one year taking into account that the Dutch comprehensive LTA framework has been built up and optimized over a period of several years after the signing of the first LTA's.

In conclusion it is noted the above-mentioned success factors as well as contextual (cultural and/or political) factors should be seriously taken into account at the design, development and implementation of VA's. Therefore it is important that the Bulgarian situation has to be analysed and reported carefully in order to be able to construct a robust Bulgarian specific LTA that leads to improvement of the energy-efficiency far beyond business-as-usual.



## 5 Process management of voluntary agreements

This chapter provides some further suggestions and recommendations in order to support the transfer of European VA experiences towards the Bulgarian situation. Therefore, it highlights the importance of process management in all subsequent phases of the VA and outlines some general elements to be included in a Bulgarian-specific LTA. Nine steps towards successful VA's summarise the main findings as reported in this overview.

### 5.1 Overview of VA success factors

The following table 2 summarises the main success factors as described in chapter 4.

**Table 2: Overview of VA success factors**

Substantive dimension		Success factors
<i>Problem solving capacity</i> <i>(environmental effectiveness)</i>	- Ambitious targets leading to an improvement of the environmental situation	- Independent analysis of the problem - Related to politically defined targets - Going beyond business-as-usual-trends - Quantified targets - Time horizon and interim targets
	- Compliance with agreed objectives	- Legally binding VA's - Responsibility and accountability of individual companies - Independent actor for VA process facilitation and organisation - Internal and external incentives and sanctions - Clear and transparent monitoring and reporting procedures - Independent verification of VA results
	- Long term policy learning and other soft effects	- Dissemination of information, transfer of knowledge - Institutionalisation of working groups - Incorporation of intermediate organisations
<i>Legitimacy</i>	- Broad acceptance in society	- Transparency and information available to the public or NGO's - Involvement of public interests (e.g. multi stakeholder dialogue)
<i>Costs</i>	- Cost-effectiveness of voluntary agreement	- Cost calculation in advance - No disproportionate burden for public authorities and/or companies

Source: Wuppertal Institute (partly revised)

## 5.2 Importance of VA process management

Based on the European VA experiences it is clear that the success of VA's depends to a large extent on a well-structured process management. The VA cannot be seen as a single document but is a part of a policy implementation process. Within that process three main phases can be identified: the launching, negotiation and implementation phase. The first two VA phases are strongly related to "voluntariness". The VA implementation phase includes a number of some compulsory (agreed) elements within restricted degrees of freedom and flexibility.

During the launching phase the emphasis needs to be placed on the procedures for target setting and on the establishment of relevant conditions for successful VA negotiations. This phase is characterized by the recognition and definition of the environmental challenges as well as its setting on the agenda. Subsequently, it is essential to identify responsible actors, to establish a cooperative climate and to start the joint discourse on problem solving. Preferably at that stage possible stakeholders are attracted through creating incentives and threat of sanctions.

The second phase consists of conducting negotiations. In a consensual manner, all parties have to identify pragmatic fields of intervention and develop strategies and measures for significantly reducing the environmental problem. In this negotiation phase concrete aspects like time frames and (intermediate) targets have to be fixed.

The transition from the negotiation to the implementation phase will be expressed by the definite decision to tackle the problem and the signing of the VA. In the implementation phase participants have to take measures and ensure compliance. Thereby the process management focuses on the development of a collaboration strategy that is characterised by support mechanisms (working groups etc.), monitoring and reporting of VA progress.

Table 3 gives an overview of the three VA phases. Taking into account the success factors this table also summarizes suggestions and recommendations for successful actions in each stage.

**Table 3: The phases of VA process management**

<p>Launching phase</p>	<p>Set up an action strategy (e.g. AIDA<sup>1</sup> concept)                      Consider options for target setting                      Organize a co-operative process                      Convince all participants of win-win situation                      Start with homogeneous sectors                      Show threats of alternatives (regulation, sanctions)                      Create incentives to participate</p>
<p>Negotiation phase</p>	<p>Define a clear time horizon                      Analyse the potential for environmental improvement                      Define "business as usual" trend in order to set both ambitious and realistic targets                      Set intermediate targets to allow earlier measurement of progress                      Integrate measures, monitoring, incentives and sanctions</p>

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<sup>1</sup> AIDA is an acronym for a marketing concept and means Awareness, Interest, Desire and Action.

Implementation phase	Create a pragmatic, clear and transparent monitoring procedure Monitor and report VA progress on a regular basis Set up working groups for information exchange and peer pressure Adapt and improve the measures with increasing knowledge on options
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Source: Wuppertal Institute (partly revised)

The existence of robust VA process management prevents also risks like targets that are not ambitious, free riding and non-compliance.

### 5.3 Elements of a “best practice” voluntary agreement

For ensuring successful implementation of VA's it is not desirable to elaborate rather long and comprehensive documents for signing and reporting of the VA progress. Preferably the VA text to be signed is concise and clearly structured. In this agreement only decisive aspects need to be summarized. Furthermore the VA text includes the main results elaborated during the launching and negotiation phase. This official starting document is crucial for the successful implementation of the VA's. Therefore it is recommended to include the following elements in the VA to be signed by all participants and/or their representatives.

- Purpose of the environmental VA  
The VA should contain its purpose through specifying the concerned environmental challenges that are addressed. Also the environmental policies and policy targets should be mentioned.
- VA scope and its environmental targets  
The scope of the VA should also include the fields of intervention with other policy measures. Furthermore the overall and intermediate targets should be clearly defined including time frame.
- Actions by the parties in pursuit of the environmental targets  
The declaration of intent and definition of environmental targets are of limited value, if no action follows after the signing of the VA. The process from policy intentions towards concrete actions is crucial. Therefore it is essential to describe supporting actions and categories of measures and projects for reaching the targets. The institutionalisation of working groups and other VA tools like energy management could also be helpful.
- Monitoring and reporting of the VA progress including monitoring indicators  
The VA document should set the framework for the requirements with respect to at least annual monitoring and reporting methodologies and procedures including definition of the monitoring indicators (e.g. Energy-Efficiency Index for LTA). The VA should also specify (annual) deadlines for reporting progress and the independent monitoring agency. These VA elements are crucial, as the monitoring results serve as a crucial information base for the management of the VA progress during the implementation phase.
- Incentives and sanctions

Incentives and sanctions specified and inbuilt in the VA instrument contribute to active VA participation. This will avoid as much as possible failures like free-riding. On the other hand it will ensure ambitious actions, measures and projects that alleviate the environmental problem. The mix of incentives and sanctions has to be adequate for the specific situation.

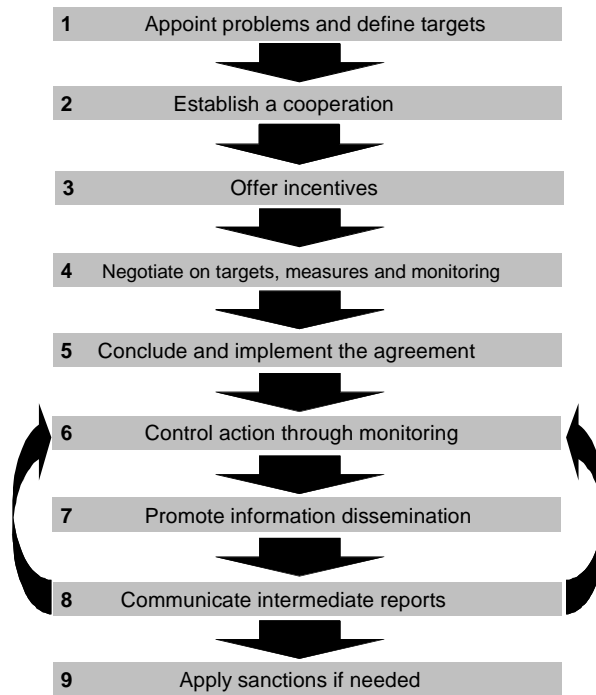
- **Joining criteria for VA's and grounds for termination**  
The formal criteria like the requirements and date of joining, the validity of the VA and the grounds for termination are further important elements to be included. They belong to the operating framework of the VA process.
- **Access to information**  
An adequate access to information on VA progress including implemented measures and projects is highly desirable for transparency and ensurance of the legitimacy of the VA. Confidential and/or sensible data do not need to be published fully, but should be published in aggregated form. Therefore it is highly recommended to incorporate obligations for giving access to relevant information on VA progress.

The relevance of a well-structured VA text is obvious, as the three phases of the VA process have partly opposite characters. Voluntariness dominates in the launching and negotiation phases, whereas an increasing number of obligations has to be fulfilled in the implementation phase. Therefore a good balance between flexibility and obligations for realising ambitious targets has to be guaranteed for succesful design and implementation of VA's.

#### **5.4 Nine steps towards a successful voluntary agreement**

An integrated view on success factors is possible by designing a VA process management strategy. In the following nine decisive VA steps the success factors have been integrated as much as possible. Figure 8 shows how a properly functioning VA process management can be implemented. It is emphasized that many steps recur and need to be accompanied by further activities. These nine steps can also be used as a checklist for addressing relevant and crucial VA buildingstones. Therefore these steps have to be regarded as suggestions and recommendations for successful design and implementation of VA's.

**Figure 8: Nine steps towards a successful voluntary agreement process**



Source: Wuppertal Institute

At the beginning of the VA process, awareness concerning a specific environmental problem should be raised, followed by the declaration of intent formulating the overall environmental objectives and targets (1). The raising of interest, mainly caused by naming and sharing the environmental problem, leads to the set-up of a cooperation between involved stakeholders (2). This cooperation is accompanied and followed by the offering of VA incentives to attract active and broad participation of companies (3). In the fourth step the negotiation process takes place with respect to VA issues like targets, measures and monitoring. Thereby it is recommended to define (intermediate) ambitious targets and to set up a clear time horizon to prevent a business-as-usual trend. The organisational structure of VA should also be agreed upon, e.g. to involve an independent agency for the monitoring process (4). In the next step the VA's should be concluded and implemented (5). The sixth step constitutes the very important control of actions and overall VA progress through regular monitoring by means of an independent agency (6). The monitoring should be accompanied by the promotion of information dissemination, as it supports transparency and multiplication of successful measures (7). The monitoring results should be aggregated in (intermediate) VA progress reports including assessment of the VA efforts and evaluation of the effectiveness of VA after a number of years (8). The application of sanctions marks the last step and should be carried out in case of non-compliance with agreed targets.

## **6 Conclusions, lessons learnt and recommendations for implementation of successful Bulgarian LTA's on energy-efficiency improvement**

### **6.1 Conclusions**

In the European Union successful voluntary agreements appear to be integrated in the environmental policy mix. In most European countries VA's have become a flexible policy instrument to tackle pollution and climate change.

This overview report provides information about European VA with focus on Dutch LTA experiences in order to provide a solid basis for implementation of LTA's in Bulgaria. It is important to recognise that there is no "one and only" successful VA model in Europe.

The European VA's vary significantly from unilateral commitments to legally binding negotiated agreements addressing a wide range of environmental problems. This variation is also related to differences in cultural, political and institutional context between EU member states.

In the Netherlands the issue of climate change led to comprehensive framed long-term agreements on energy-efficiency improvement that created win-win situations between environment and sustainable economic growth.

In most European VA's public authorities and industrial parties (individual companies and/or branch associations) work together to achieve better results than business-as-usual.

The use of VA's is reasoned by efficient policy-making in terms of no need for regulation on the side of public authorities and reduction of transaction costs on the side of industry. Also industry can achieve environmental targets more effectively, as the companies can choose their own preferred combination of measures to comply with VA objectives.

In contrast to conventional command and control regulation, VA's are more flexible and have a long-term perspective. Also industry is more prone to innovative solutions.

The implementation of LTA's as developed in the Netherlands appears to work out well. Energy efficiency developed much better than expectations (business-as-usual) and no industrial LTA contract has been terminated.

Dutch industry continues to improve its performance and has become more competitive as a result of LTA's. Energy cost savings outweigh significantly the funds that the government has made available within the framework of the first generation of LTA's.

Participation in LTA's generates more management attention for the energy situation in companies. As a result companies become more aware of existing and new opportunities for energy saving.

LTA1 has been effective in enhancing the rate of energy efficiency improvement significantly.

The effectiveness of LTA1 can be explained by its robust design consistent with the cultural and political context in the Netherlands.

A basis of mutual trust must exist between LTA partners, dialogue instead of confrontation.

Participating LTA sectors must be homogeneous and well organised.

Monitoring results on the actual progress must be made available, without jeopardising the confidentiality of company sensitive data.

In summary, the Dutch covenants on energy-efficiency improvement are successful examples of European VA's. As a result of the comprehensive scheme and the extensive process management these covenants illustrate well how the complex problem of climate change and energy efficiency can be addressed in a win-win situation. The Dutch LTA1, LTA2 and benchmarking covenant scheme represent highly developed systems of co-ordinated action for environmental industrial management and cleaner production.

## **6.2 Lessons learnt**

This overview provides a broad range of information regarding European experiences with VA's agreements. The major VA success factors and implementation steps have been identified. There is no "one and only" VA. Successful VA's have taken into account the national (cultural and political) context. Also these VA's include a range of incentives and credible sanctions. Furthermore they have been integrated in a policy mix.

The future task is to reflect these lessons learnt together with the Bulgarian project partners and draw conclusions for the comparative study. The Bulgarian situation with respect to environmental and energy-related challenges, the political, cultural and institutional system as well as political traditions has to be mirrored with the VA experiences and starting situation in European countries. This will lead to a significantly increased understanding how LTA's on energy-efficiency improvement can be implemented successfully in Bulgaria.

## **6.3 Recommendations**

From the evaluation of the LTA experience in the Netherlands (including experiences with VA's in other European countries) "golden rules" have been set up by SenterNovem for the design of VA's. These recommendations have also to be taken into account for considering implementation of LTA's in Bulgaria.

1. VA's will only be effective when they are part of a total policy package, including fiscal regulations, subsidy schemes and support.
2. The number of companies and parties that sign the VA should be limited, so that companies feel individually addressed and free-rider behaviour is minimised.
3. The negotiation position of the government has to be good. Preferably the government should set binding targets and come up with offers and accompanying measures.
4. The VA targets must be ambitious as well as realistic and clearly defined within strict long-term time schedules.
5. There should be long-lasting government support (expertise, subsidies for feasibility studies, etc.).
6. VA's on energy efficiency improvement are preferably used only for energy-intensive companies. For small companies the monitoring and reporting efforts are not in balance with energy savings.

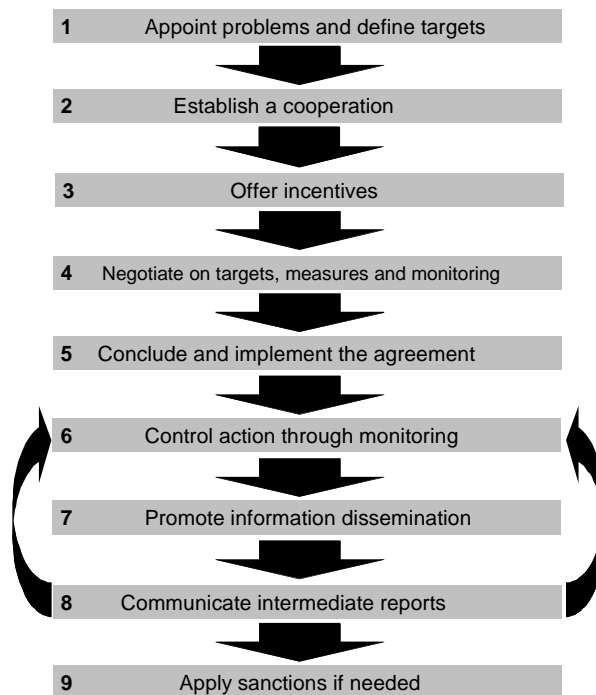
7. Experts prefer and advise physical energy efficiency monitoring (as applied in Dutch Energy Efficiency Index EEI).
8. There should be clear and transparent monitoring guidelines, both for company level and independent monitoring agency.
9. Independent verification of individual and aggregated results is required for trustworthiness of VA's.

In summary, especially the Dutch LTA1 illustrates well the essentials to be integrated in a suitable scheme for a successful VA. It is recommended that our Bulgarian project partners learn from these experiences and subsequently transform the Dutch LTA model into a Bulgarian-specific LTA scheme.

A concise and clear VA starting document to be signed by all participants and/or their representatives is crucial for the successful implementation of the VA's. It is recommended to include the following VA elements:

- Purpose of the environmental VA
- VA scope and its environmental targets
- Actions by the parties in pursuit of the environmental targets
- Monitoring and reporting of the VA progress including monitoring indicators
- Incentives and sanctions
- Joining criteria for VA's and grounds for termination
- Access to information

The following nine steps are recommended to be used as a VA process management checklist for addressing relevant and crucial buildingstones. These concise VA steps provide also the framework for more detailed suggestions and recommendations for successful design and implementation of VA's.





1. At the beginning of the VA process, awareness concerning a specific environmental problem should be raised, followed by the declaration of intent formulating the overall environmental objectives and targets.
2. The raising of interest, mainly caused by naming and sharing the environmental problem, leads to the set-up of a cooperation between involved stakeholders.
3. This cooperation is accompanied and followed by the offering of VA incentives to attract active and broad participation of companies.
4. In the fourth step the negotiation process takes place with respect to VA issues like targets, measures and monitoring. Thereby it is recommended to define (intermediate) ambitious targets and to set up a clear time horizon to prevent a business-as-usual trend. The organisational structure of VA should also be agreed upon, e.g. to involve an independent agency for the monitoring process.
5. In the next step the VA's should be concluded and implemented.
6. The sixth step constitutes the very important control of actions and overall VA progress through regular monitoring by means of an independent agency.
7. The monitoring should be accompanied by the promotion of information dissemination, as it supports transparency and multiplication of successful measures.
8. The monitoring results should be aggregated in (intermediate) VA progress reports including assessment of the VA efforts and evaluation of the effectiveness of VA after a number of years.
9. The application of sanctions marks the last step and should be carried out in case of non-compliance with agreed targets.

## References

- Dalkmann, Holger et al. (2005): Review of Voluntary Approaches in the European Union, Activity 4 of Asia Pro Eco Feasibility Study on Demonstration of Voluntary Approaches for Industrial Environmental Management in China. Wuppertal Institute for Climate, Environment and Energy, March 2005, Wuppertal.
- De Clercq, Marc/ Ameels, Bart (2002): The Belgian Agreement upon the Collection and Recycling of Batteries, in: Marc De Clercq (Ed.), Negotiating Environmental Agreements in Europe: Critical Factors for Success. Cheltenham, pp. 113-130.
- De Clercq, Marc/ Baeke, Steven/ Seyad, Akim (2002): The Belgian Electricity Agreement, in: Marc De Clercq (Ed.), Negotiating Environmental Agreements in Europe: Critical Factors for Success. Cheltenham, pp. 287-313.
- De Clercq, Marc (Ed.) (2002): Negotiating Environmental Agreements in Europe. Critical Factors for Success. Cheltenham.
- De Clercq, Marc et.al. (2001): National Patterns in the use of Voluntary Approaches Concerted Action on Voluntary Approaches (CAVA). International Policy Workshop on the use of Voluntary Approaches in Environmental Policy. Brussels, <http://www.cerna.ensmp.fr/Progeuropeens/CAVA/PolicyBrief.pdf> (08.12.2004).
- European Commission (2005): Green paper on energy efficiency or doing more with less. COM(2005) 265 final, June 22, 2005, Brussels.
- European Commission (2004): Communication from the Commission to the Council and the European Parliament. Implementing the Community Strategy to Reduce CO<sub>2</sub>-emissions from Cars: Fourth annual report on the effectiveness of the strategy (Reporting year 2002), Brussels.
- European Commission (2002a): Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of Regions: Environmental Agreements at Community Level, COM (2002) 412 final. Brussels.
- European Commission (2002b): Economic portrait of the European Union, Luxembourg: Office for Official Publications of the European Communities.
- European Commission (2001a): Communication from the Commission. A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development, COM (2001) 264 final. Brussels.
- European Commission (2001b): Governance in the EU. A White Paper, COM (2001) 428. Brussels.
- European Commission (2000): Communication from the Commission to the Council and the European Parliament on EU policies and measures to reduce greenhouse gas emissions: Towards a European Climate Change Programme (ECCP), COM (2000) 88 final. Brussels.
- European Commission (1997a): Study on voluntary agreements concluded between industries and public authorities in the field of the environment. Final report. Brussels.
- European Commission (1997b): Study on voluntary agreements concluded between industries and public authorities in the field of the environment. Final report - Annexes. Brussels.
- European Commission (1996): Communication from the Commission to the Council and the European Parliament on Environmental Agreements, COM (96) 561. Brussels.
- European Community (2001): Regulation (EEC) No 761/2001 of the European Parliament and the Council of 19 March 2001 allowing voluntary participation by organisations in a Community eco-management and audit scheme (EMAS), Official Journal L 114, 24/04/2001. Brussels.
- European Community (2000): Regulation (EC) No 1980/2000 of the European Parliament and the Council of 17 July 2000 on a revised Community eco-label award scheme, Official Journal L 237, 21/09/2000, pp 1-12. Brussels.
- EEA (European Environmental Agency) (1997): Environmental Agreements – Environmental Effectiveness. Copenhagen, <http://reports.eea.eu.int/92-9167-052-9/en> (08.12.2004).

- Glasbergen, Pieter (2004): The architecture and framing of Dutch Negotiated Agreements, in: Andrea Baranzini/ Philippe Thalmann (Eds.), *Voluntary Approaches in Climate Policy*. Cheltenham, pp. 170-188.
- Highley, Charles/ Convery, Frank/ Lévêque, Francois (2001): *Voluntary Approaches: An Introduction*. Presented at International Policy Workshop, Brussels, <http://www.cerna.ensmp.fr/Progeuropeens/CAVA/PolicyBrief.pdf> (08.12.2004).
- Immerzeel, Ellis (2002): *Covenant Regulation the Reduction of Sulphur Dioxide and Nitrogen Oxide Emissions by the Power Generation Industry*, in: Marc De Clercq, *Negotiating Environmental Agreements in Europe: Critical Factors for Success*. Cheltenham, pp. 267-286.
- Immerzeel-Brand, Ellis (2002): *Assessing the Performance of Negotiated Environmental Agreements in the Netherlands*, in: Patrick ten Brink (Ed.), *Voluntary Environmental Agreements: Process, Practice and Future Use*. Sheffield, pp. 384-398.
- Knill, Christoph/ Lehmkuhl, Dirk (2002): *Governance and Globalization: Conceptualizing the Role of Public and Private Actors*. In: Adrienne Héritier (Ed.), *Common Goods. Reinventing European and International Governance*. Oxford/ Boulder, pp. 85-104.
- Knill, Christoph/ Lehmkuhl, Dirk (2003): *Changing Governance conditions in the Context of Globalization: The Rise of Private Actors*, in: Adrienne Héritier (Ed.), *Common Goods Reinventing European and international Governance*. Oxford/ Boulder, pp. 85-104.
- Mol, Arthur/ Lauber, Volker/ Liefferink, Duncan. (2000). *The Voluntary Approach to Environmental Policy. Joint Environmental Policy-making in Europe*. Oxford.
- Mol, Arthur/ Liefferink, Duncan (2000): *A Comparative Analysis of Joint Environmental Policy-making*, in: Arthur Mol/ Volker Lauber/ Duncan Liefferink (Eds.), *The Voluntary Approach to Environmental Policy. Joint Environmental Policy-making in Europe*. Oxford, pp. 192-216.
- Nuijen, Wil/ Booij, Meindert (2002): *Experiences with Long Term Agreements on Energy Efficiency and an Outlook to Policy for the Next 10 years*, Utrecht: Netherlands Agency for Energy and the Environment (Novem).
- OECD (2003): *Voluntary Approaches for Environmental Policy: Effectiveness, Efficiency and Usage in Policy Mixes*. Paris.
- OECD (1999): *Voluntary Approaches for Environmental Policy: An Assessment*. Paris: OECD.
- OECD (1997): *Voluntary Agreements with Industry, Annex I Working Group on the United Nations Framework Convention on Climate Change, Working Paper No. 8*. Paris.
- Price, Lynn/ Worrell, Ernst/ Sinton, Jonathan (2003): *Voluntary Agreements in the Industrial sector in China*, Ernest Orlando Lawrence Berkeley National Laboratory. Berkeley, <http://eetd.lbl.gov/ea/IES/iespubs/52714.pdf> (08.12.2004).
- UNEP (2000): *Voluntary initiatives. Current status, lessons learned and next steps*, UNEP discussion papers. Paris, [http://www.unepie.org/outreach/vi/reports/voluntary\\_initiatives.pdf](http://www.unepie.org/outreach/vi/reports/voluntary_initiatives.pdf) (08.12.2004).

## **Appendices**

Appendix 1 : Dutch LTA1 results 2000

Appendix 2 : Dutch LTA2 results 2004