Can Long-Term Agreements Conquer the World?

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ABSTRACT

In the Energy End-Use Efficiency and Energy Services Directive of the EU (ESD), Long-Term Agreements (LTAs) are mentioned as a tool to achieve energy efficiency and CO_2 reduction. The Netherlands has 15 years experience with this instrument, which primarily targets industry. In order to promote energy efficiency beyond their borders, the Netherlands has and still is participating in a number of projects that introduce the agreements in other countries. Among them are the EU funded projects BESS, LTA Uptake, ExBess and VA-China.

The Netherlands also participate in a number of bilateral projects with European countries in transition to promote opportunities for LTAs. Up until now, only two projects have been completed. It will take some years before all projects are completed and evaluated. Meanwhile the call to act and deliver on energy efficiency is strong. We analyzed the experience of projects that are currently running by reviewing the status reports and other available data, and compared them with the results of completed projects (including the long running Dutch programs).

We will describe the areas that have to be developed to get maximum benefit from the LTA's. Data clearly indicates the remaining high potential for efficiency improvement. Recent experience also shows a growing number and variety of providers of energy services, meaning that the market is investing in efficiency improvement. Both analyses and conclusions are drawn from the scope of policy implementation.

1. Introduction

For those unfamiliar to the Long-Term Agreements (LTA), we start this article with a short overview of the LTA history in the Netherlands. In paragraph 4 we address the Dutch reasons to export LTA to neighboring countries and we give a list of programs and participating countries.

We then analyze the LTA with a model to get an explanation for the (preliminary) results of the programs outside the Netherlands. We do this, using the Green & Kreuter model to get a better understanding of the success and fail factors of these schemes. Some Dutch Energy Efficiency schemes have been analyzed successfully with Green & Kreuter.

Finally, we discuss the programs and opportunities in Europe. Although a more in depth analyses will have to be made after the running programs have been completed, we will end with the first recommendations for both use and improvement of the LTA.

2. The History of Long-Term Agreements in the Netherlands

The concept of Long-Term Agreements was introduced in the Netherlands in the early 90s. The initial agreements between governments and participating branches ended in the year 2000. Industry and Government decided to sign new agreements, the LTAII. This covenant spans from 2001-2012. When this process was documented in English, two terms were used: Voluntary Agreements and Long-Term Agreements. Voluntary was used to indicate that it was not a

legislative process. To those who are not involved in the process, "voluntary" had a "do-as-youplease" ring. This is certainly not the nature of the agreements. These are signed contracts between public and private partners. To underline LTA's are more than gentlemen agreements we use the expression Long-Term agreements in this publication.

The agreements were developed and implemented by the Netherlands agency for Sustainability and Innovation (SenterNovem). The LTA is used in the Netherlands to refund the Green Tax.

SenterNovem reports annually on the savings made by the industry (SenterNovem, 2008). Data for this report are derived from the mandatory progress reports of industry itself. An independent program evaluation, commissioned by the Ministry of Economic Affairs underlines findings of the annual reports.

In 2008 the private sector companies and sector associations that participated in earlier LTA programs signed the LTA3 covenant for the period 2001-2020. This covenant replaced earlier and existing covenants like the LTA2.

The main elements of the LTA3 are:

- An overall goal of 30 % energy efficiency improvement in the period 2005-2020;
- Trade branches will produce sector roadmaps aimed at long- term innovation in the field of energy efficiency; and
- The Dutch government will support the private sector with a number of instruments which are developed and maintained by the national agency SenterNovem. We will elaborate on this in the next paragraph.

As the LTA has has become a long-standing and appreciated approach, the design of the LTA3 was a careful process in which the Ministry of Economic Affairs, SenterNovem and representatives of industry negotiated the goals and the contributions of all parties involved in detail.

An important new element in LTA3 is the "chain" approach. It analyses the energy use in the whole product chain. As such it looks beyond the situation in single companies. Cooperation and thorough analyses lead to improvements that benefit the whole chain.

a. Example

Nursing homes produce tons of laundry. Storing, transporting and washing all use energy. A more in-depth study showed that towels were much too big. They are designed for non handicapped people to dry themselves. To do their work properly, nurses need smaller towels that are more efficient for them to use than the regular size. Smaller towels are cheaper for the simple reason that less material is used. Every next stage, specially the laundries, uses less energy.

SenterNovem registered a number of these chain linked opportunities as the LTA program started to look beyond the border of single enterprises. Within this approach much can be learned from the cradle to cradle approach.

A successful LTA improves the relation between public and private partners. Also the image of private partners grows better for the general public with the recognition of the environmental awareness of industry (DiFranco, 2009).



Figure 1: LTA Results 2001-2007 (SenterNovem 2008)

As the program developed over the year other incentives appeared. The program met an overall energy efficiency improvement of 2% per annum over the last 15 years. In the same period many improvements to the production processes have been the result of a process that started by looking at energy. The benefits were on average much higher than those that were directly related to energy efficiency. So for many participants the permanent improvement of their business became a decisive factor to join the covenant.

3. Exporting Long-Term Agreements

In 2004 the Netherlands decided to "export" the LTA knowledge after another evaluation that clearly indicated the program's success (Mosselvelde, 2004). This was done within the framework of the Intelligent Energy Europe (IEE) program of the European Union and Dutch subsidy programs.

There are a number of reasons for Dutch policy makers to export the LTA concept:

- Just like each Kyoto participant, the Netherlands has to reduce its CO_2 emissions. The main governmental driver in the Netherlands is the policy document "Clean and Efficient" of the Ministry of Housing, Spatial Planning and the Environment (VROM). As the Netherlands wishes to achieve not only to the Kyoto, but also the EU 2020 goals, an increase in the reduction pace is necessary. Given the actual size of the Netherlands and the fast number of multi-national companies, international cooperation is the logical way to contribute to an annual energy efficiency improvement of > 2%.
- Industry has learned to like the method, as it is both successful and it improves the relation with the public sector. In combination with the previous point there is a certain rational to involve other countries.
- As the EU is working on improving the plans for a more efficient Europe (the so- called 20/20/20 goals) getting a national system in the EU legislative framework is a secure way to smooth implementation.

- The LTA delivers the expected results, as the goals are realistically set by the Energy Potential Scan at the beginning of the process.
- The EU EE potential within industry is on average high.

This potential can be found in a number of publications. The 2009 Energy Efficiency Watch project is one of the latest (R.Schüle, D. Becker and all. - 2009). This study distinguishes a low potential and a high potential scenario. Even in the LP prediction a saving potential of 9.9% on average is found. In the HP the average is 13.1 by 2016 per Member State in percent of 2004 final energy consumption. Of course the range is wide (In the HP scenario 9.6 – 18.2 %).

An important reason to to simulate the LTA in this specific place in time is the reduction in the use of the so called co-operative measures compared to financial and market- based instruments as shown in the figure below (Source: Odysee/Mure database).

The declining role of cooperatives measures would not be a topic, if other instruments proved to be more effective. So far there is no evidence of other instruments that are more cost effective.

Figure 2: Energy Efficiency Measure Patterns Industry Sector: Development of Measures by Type over Time in the EU27 + Kro & No (Bosseboeuf, 2009)



4. The Programs

In this article we look at programs and projects, which are listed below. Participating countries of each program are indicated.

The LTA I-III programs were national Dutch programs in which the method was developed and implemented.

In other programs the instruments were continually adapted to be suitable for use in different cultural circumstances, but testing the concept became more important than developing them.

Participating countries



5. Choosing LTA as an Energy Efficiency Instrument for Industry

Selecting the right instruments to achieve governmental goals is far less easy than some people in government believe. On the other hand, good models to discuss instruments to be used are available.

Egmond (2005) showed the relevance of the Green and Kreuter model for energy efficiency on a number of Dutch Energy Efficiency programs.

Figure 3: The Precede – Proceed Model (Modified from Green & Kreuter, 1999)

Motto of the model: beginning at the end



According to this model we will have to focus on the decision makers to ensure we are heading for a lasting change in attitude and action when energy efficiency is a topic. This theory was supported by the Behave Project (2007, figure 3).

An often used reasoning is the following: if industry is aware of the necessity to save energy, one can simply force measures by either legislation or a cap and trade system. The Energy Trading Scheme (ETS)-Directive is an example of the latter. In the last paragraph we will discuss the pros and cons of this.

This line of thinking ignores elements in the model. The fact that entrepreneurs are aware of the necessity of energy efficiency is not enough. They need the tools and support structure to act. When given both instruments and awareness, the change they will perform is maximized.

Within the framework of the Dutch Long Term Agreements, the project started with two incentives. The first was quite simple: you save money if you save energy.

The second is environmental legislation. To get or keep a license, businesses have to produce environmental reports. Considering the energy part of these reports, participation in an LTA fulfills the requirements as the analyses and monitoring reports are part of the LTA approach.

To make the program work according to the model, in phase 3 the right instruments have to be in place. For LTA's this is a mix of instruments. Compliance with environmental legislation is the judicial part. Strong support by a national agency to reduce the administrative burden and secure confidentiality is an important structural provision. Energy management systems and a clear description of all elements available are elements of the communicative instruments. (See also the LTA-Uptake and Ex-Bess projects). Already the recognition by the general public of the environmental approach by the industry was mentioned in paragraph 2. This recognition leads to the reinforcement needed to keep industry on the sustainable route they have chosen.

6. The LTAs conquer the world?

The LTA export started with the BESS program (Benchmarking and Energy Management Schemes in small and medium-sized enterprises (SMEs)). This was followed by a number of other outreach programs. Eventually the LTA concept was mentioned in the EU *Directive* on *energy* end-use efficiency and *energy services* (ESD) as an option for the EU countries to implement measures.

a. BESS

The first project that aimed at disseminating the lessons learned from the LTA approach was the BESS, co-funded by the Intelligent Energy for Europe (EU IEE) program. It ran between 2005 and 2007 (B.Huegnes Wajer, 2007)

The primary objective of BESS was to develop and promote the widespread application of benchmarking and energy management in order to improve energy efficiency in industrial SMEs, with particular focus on the food and drink industry.

Participants from 11 EU member countries and Norway insured a broad base for the project and access to specific knowledge on energy management issues in various SMEs sectors.

The major task of the project was the development of an interactive tool to support SMEs promoting a systematic and persistent approach to energy management and benchmarking. The tool consists of an energy management implementation model and standards for adoption of energy management measures. The tool is covering a selection of appropriate measures, implementation and day-to-day management, an e-learning scheme, a monitoring and benchmarking system for the food & drink industry. The instruments were tested in 52 pilot companies throughout 11 participating countries. The pilot reports showed an energy (and cost) saving of 3 - 10%.

The conclusions made it clear that for a further outreach in Europe it was necessary to develop two toolkits to strengthen the enabling factors (in the Green & Kreuter model). The first factor being an expansion and improvement of the BESS application for all involved in LTA's, the second producing a toolkit for the major parties in LTAs: sector associations, governments and independent experts with focus on the LTA process.

For both topics an EU-IEE funded project was started.

b. Expanding BESS

Expanding BESS, which started in 2007, looks at the content of the LTA concept. An important goal is to improve the web-based tools. It also expands the

Figure 4: The BESS Dartboard in Spanish



number of branches and Member States involved compared to the BESS project. It aims at testing the LTA instruments in textile, dairies, bakeries, meat processing, various food (fish, fruit, pasta), breweries and laundries industries. Eight new Member States joined as participants.

The tools, which are now fully web- based and multi-language, were developed to support target groups of LTAs when implementing energy management and-efficiency measures.

The instruments were field tested. Over 120 SMEs are now involved in the next stage of developing e-learning and implementing the method roughly described as "the dartboard". A crucial step is the, yet not fully completed, translation of the material in a number of European languages. In figure 4 we see the dartboard in Spanish. The core of the dartboard is the "plan-do-check-act" quality improvement method, which divides the circle in 4 quadrants.

In the planning stage information is gathered on energy data, process etc. This can be compared with the first two phases of the precede-proceed model. The "do" step is the third phase of the Green & Kreuter model: chose the right instruments.

So far the project, closing in June 2009, led to the following "Big 6" tools recommended by the private participants: Self- assessment list, book-keeping, targeting & monitoring, measuring lists, energy action plan and benchmarking

The toolkit has recently been endorsed by representatives from government and branches on both national and European levels, and is generally seen as a comprehensive and practical tool to support companies in achieving the goals set by energy policies. It was officially launched at the European Sustainable Energy Week 2009. The national pilot projects will be evaluated in the coming months, providing more specific information.

c. The LTA Uptake Project

Whereas the ExBESS project develops and adapts the content of the LTA, the EU LTA Uptake structures the process of getting to a LTA. The project mainly aims at developing material to set up LTAs in other languages than Dutch, starting with English.

The project started in October 2007. The main goals are to:

- Develop a toolkit to help sector associations and governments draw up LTAs on energy efficiency.
- Gain mutual benefits: to save energy costs, produce less environmental legislation, reduce the administrative burden for the sector, improve the environmental image of the sector, and achieve national environmental targets.

The following countries and industry sectors are participating: the waste water treatment sector (NL), Confederation of Industry (Cz), Hotel and Catering Industry (Fin, Gr), Foundries (S), Glass production (Pl), Paper (B), Cold store (F, B), Plastic converters (Hu, Es), and the Chemical Industry (B, S, Pl).

The basic interface for the EU LTA Uptake Toolkit is listed in the figure below. Each step to an LTA from initiation to modification contains its own specific tasks. And all tasks are facilitated with a total number of 25 tools.



Early 2009 the LTA Uptake Toolkit, which is now web- based, publically assessable and fully operational, has been endorsed together with the Ex-BESS toolkit.

Within the toolkits most of the IEA recommendations towards industry are met on a more integrated level (IEA 2008).

d. Projects Financed by the Dutch Agency for Business and International Cooperation (EVD)

After looking at the projects that designed the framework of the LTAs we will look at a couple of projects under implementation.

The EVD runs a number of programs on behalf of the Dutch Government. The Government To Government Program (G2G) is a program that aims at fostering bilateral relations and government-to-government co-operation in the eligible countries. The projects financed by the program provide support through technical assistance in the economic or environmental domain. Previously to the G2G program, similar projects were run under the name Pre-Accession Program (PPA), and applications for projects were limited to candidate countries of the EU.

Projects focus mainly on institutional strengthening and transfer of knowledge. Projects are run by Dutch public and/or private parties. We will look at four projects in this paper.

1. Integrated Approach for Knowledge Transfer of LTA in Central and Eastern Europe (in short, LTA 5+1). This project had three phases. The first phase started a discussion between national stakeholders in Bulgaria, Czech Republic, Hungary, Poland & Romania. At the end of the first phase a signed Letter of Interest was expected. At the end of the first phase Hungary dropped out due to lack of political interest and institutional capacity on the public side.

The second phase looked at Financial Instruments, target setting, the intermediate /independent organization in LTAs and roles of government, businesses and branch associations.

The project concluded with a Multi-Country Event with participants from the countries within the project, with the Ukraine and Turkey as extra participants. In each country delegation members from government, industry and implementing organizations attended. The event aimed at the exchange of experiences on LTA among the four countries participating in this project. Based on the results each country could elaborate the potential benefits of starting a LTA in their own country. After the event, the Czech agency was closed down (for unrelated political reasons). So far Bulgaria, Romania and Turkey started a follow-up project in cooperation with SenterNovem.

A feasibility study by H.Gay and K Mirowska (2007) in Poland indicate that financial obligations and fear for LTA contracts with binding targets are the main obstacles to start LTA's.

2. Romania. The Romania G2G of 2008 looked at three elements of the LTA: Monitoring, Incentives and Target stetting. Special attention was paid to the Energy Potential Scan (EPS), a method by which the energy efficiency potential is determined. This knowledge can strengthen the energy audits that are carried out by Romanian experts. The EPS was discussed with the Romanian National Energy Agency ARCE and private consultants. It was added to the audit training programs that are run by Romanian universities. In the course of the G2G the Romanian government decided not to look at monitoring and incentives before the EU commission had given more direction to these topics within the scope of the ETS and the ESD directives. As such the project ended at this stage, although industry indicated their interest.

3. Bulgaria. The Second Phase PPA LTA in Bulgaria started in 2007 and ended in 2009. It had three tracks. Track A was setting targets for energy efficiency improvement in Bulgarian industry. Track B was providing government incentives to support energy efficiency measures in industry. Track C was establishing an administrative body for facilitation and monitoring.

The goal of the establishment of an administrative body was solved by assigning the national agency EEI to this task. As this was done without funding, it is no solution for further implementation of the LTA's. The project was not finished in time and within budget as tracks B & C took too much time. Especially the LTA/ETS discussion frustrated the process. On the upside is the fact that 5 LTA's were signed as result of the project. Three others followed later.

4. Turkey. The Turkish two year project started in January 2008. The project has the same goals as mentioned in the Romanian and Bulgarian projects. On top of that support of industry in the first phase of implementation is foreseen. So far it is the most successful project. The Turkish government plays a crucial role here. The Ministry EIE took legislative measures to start a pilot with 10 LTAs. In doing that an administrative body became responsible (EIE) and state budget was allocated. At the same time EIE started to create a market for consultants and probably ESCOs by offering training to these companies to fulfill the necessary LTA roles (audits, energy management, monitoring etc.) in present and future LTA's. Early 2009 the pilots have been signed by the partners and the (supported) implementation is in progress.

The project managers of these four G2G projects and the two EIE projects were interviewed and asked to evaluate the work with a helicopter view in support of this publication. The general responses were that the concept and the first phases of the LTA were well received.

At the same time, SenterNovem program managers face serious problems taking the step from pilot project to broad implementation. Industry is more eager to start the LTA than other partners.

The Dutch LTA's needed a couple of years before they reached their full potential. With this experience other countries can implement faster, but a starting period of 12 - 18 months is realistic and even then a growth model seems more realistic than massive implementation.

Looking at Europe there is certainly a potential. Under the ESD the EU nations are obliged to write a National Energy Efficency Action Plans (NEAAP's). These NEEAP have to be delivered in 2008, 2011 and 2016.

In the first NEEAP 21 countries mentioned the possibility of introducing LTAs. Eleven out of the 27 Member States started with an LTA, but so far only 3 came to a full implementation (Finland, Denmark and the Netherlands, all with over 10 years experience). Ten others planned to start a LTA (pilot) process within a year.

The LTA's differ in wording, measures and goals. It would be functional to analyze these differences. An attempt to undertake this work is carried out by the Concerted Action ESD, and will be available for EU national governments later this year (Nino DiFranco et.all. 2009). In this article we only conclude that LTAs are used for energy efficiency improvement or greenhouse gas reductions or the combination of both. As these topics are closely linked, it is more a linguistic or monitoring problem than a decisive element in the functionalities of the LTA.

A European problem for the LTAs is the allocation of the results. The EU Directives allocate EE results gained by industries that operate within the framework of the European Trading System Directive automatically to ETS and not to ESD. This is done to avoid double counting.

Some policy makers believe ETS is sufficient to achieve our energy efficiency goals. This is true if CO_2 has a low price elasticity and the caps are strong. There are no indicators that the price elasticity is low at the moment. In times of economical crisis governments will be very reluctant to force CO_2 prices to go up just by imposing rigorous caps. The use of hybrid instruments is more likely, especially if they have proven to be effective and stimulate not only EE, but also sustainable development and innovation.

7. Conclusions and Recommendations

Modeling by the EU shows that there is still a huge potential for energy efficiency improvement in industry. There is evidence to assume the pace of reduction of the use of energy can remain > 2% until 2030. Eventually this will lead to a much lower energy intensity of products. (Capros, P et al., 2008).

This potential obliges us to keep testing and promoting the best instruments to continue the improvement of energy efficiency in industry. Before starting an LTA the real interest and willingness of governments to invest time and money should be analyzed in the earliest stages of the project.

Limiting the administrative burden to parties involved is a key factor. A Ministry that negotiates the LTA with industry is too slow (or industry is too impatient). In a number of countries the LTA also stays completely in the political domain as long as Ministries are actively involved in all of the steps of the process. A national implementing agency simplifies the process considerably and can be the crucial factor between success and failure.

On a European scale the most successful approach is likely to be a hybrid policy approach with both ETS and LTAs. Due to accountability issues there is a strict line between the

ETS and Non-ETS part of industry on the moment: Industries are either eligible for the ETS or instruments within ESD like the LTA. We recommend solving the accountability problem in a different way, as the present situation frustrates the optimal use of instruments.

In the Netherlands LTAs are not only appreciated for the financial benefits delivered by energy efficiency, but also for the influence on innovation and over-all production improvement. Due to these facts, industry pushes for LTAs as instrument. They are willing to accept payback time in EE investment up to five years. This is consistent with the experiences of Denmark and Finland, to other countries with > 10 years experience on LTA's (oral conformation by program leaders).

The LTA is not the "natural" instrument for governments. They seem to prefer legislation and financial instruments. Although upfront financing can contribute considerably, these instruments are less powerful. Industry (both heavy industry and SME) diver too much and the total of processes is too complex to realize transparent and enforceable legislative texts. Governments should look more at LTA's as a public private partnership projects to reduce energy, as most countries have good experience on PPP's.

Especially the web- based toolkits of LTA-Uptake and ExBess offer interested parties the crucial material to start the process. The fact that the tools are used in different cultures and different industries asks for a clear vision of partners involved for elements that have to be added, adapted or left out. A light version for small SME's has to be developed further.

Looking at the Green & Kreuter model, it is clear that the first steps of the model have been met. The partners are aware of the problem and are willing to act. The decision makers in the model are the representatives of industry. They can only act if they have the right tools. Financing is one of them. More innovative ways have to be explored. Revolving funds for upfront financing, ESCO's and White Certificates (Oikonomou et al. 2009) are possibilities. Corporation with other private partners like energy companies has to be part of this exploration as well.

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