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**EXPERIENCES WITH LONG TERM AGREEMENTS ON ENERGY EFFICIENCY AND AN OUTLOOK TO POLICY FOR THE NEXT 10 YEARS**

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**Biography**

Wil Nuijen gained his Masters degree in electronics from Delft University of Technology in the year 1975. Since then he has been active for 15 years in product development in high-tech industries. His experience ranges from medical electronics and semiconductor industry to electronic point of sale systems.
In 1990 he entered Novem and started a totally different career path. Novem stands for 'Netherlands Agency for Energy and the Environment". Within Novem Wil first set up a new department for energy programs in the services sectors. In this period he became involved in municipal energy savings programs and utility subsidies on energy efficient lighting.
In 1995 he moved to the industry department, where he became responsible for the program strategy of industry programs. He became deeply involved in the 'Long Term Agreements on Energy Efficiency", coordinating the LTA efforts within Novem. In June 1999 he was appointed 'clustermanager', responsible for programs on industrial technologies for energy efficiency improvement.

Meindert Booij is a chemical engineer with an M.Sc. from the University of Amsterdam (1972). He obtained a Ph.D. from the University of Calgary, Canada. He did research at the University of Kent, Canterbury, England, the Max-Planck Institut für Biophysikalische Chemie, Göttingen, Germany and the Free University of Amsterdam.
He is employed by Novem since 1984. As account manager he managed for 10 years the program Environmental Technology that Novem operated for the Department of Housing, Spatial Planning and the Environment. He also was involved with programs on Coal Technology, Radiation and Chlorofluorocarbons. Now he is coordinating within Novem the

Long Term Agreements on Energy Efficiency in Industry that Novem facilitates on behalf of the Ministry of Economic Affairs.

# EXPERIENCES WITH LONG TERM AGREEMENTS ON ENERGY EFFICIENCY AND AN OUTLOOK TO POLICY FOR THE NEXT 10 YEARS

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## Abstract

*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. They are called "Long Term Agreements on Energy Efficiency" (LTA's) and are strictly monitored.*
*These agreements were first applied in sectors of industry. Later on they also were practized in the services and commercial sectors.*
*LTA's are primarily agreements between the government (Ministry of Economic Affairs) and representatives from sectors in the national economy. Usually it takes 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, they are (in content) highly dedicated to the characteristics of the sectors.*
*In this program 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 primarily is 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 1989. From the monitoring process the result turned out at 22.3 %. This meets the expectations of the program. The related $CO_2$ 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 are anticipated. This implies that the Dutch industry improves its performance compared with international competition.*
*The LTA's offer a framework that will be continued as LTA2 for the medium energy users in industry for the period 2001 – 2012. As the most obvious measures for energy improvement have been taken, new themes will probably also be addressed. They focus on product design and other energy related areas (e.g. transportation and renewable energy). This topic will play a qualitative role in the first phase of LTA2, 2001 – 2004. In the next phase, 2005 – 2008, the new themes will also be included quantitatively in the target.*
*The energy intensive industry sectors meanwhile pursue a different type of agreement for the coming period, called "International Benchmarking". In this type of agreement the target will be to become the "best in the world" in terms of energy efficiency, per product class.*

*So, two types of agreements have been established for the period 2001-2012: for the energy intensive sectors "International Benchmarking" and for the remaining industry sectors "LTA2". In addition to these agreements, that address energy efficiency, the industry will also focus on other ways to reduce national energy consumption by means of non-process efficiency measures.*

## 1 Policy background

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 1980s 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.

Advantages for sectors in economy 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.

Benefits for the government are:

- A pro-active attitude in sectors, which guarantees a 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 appears that the benefits as anticipated by both sides, are being realised in many cases.
A special version of sector agreements is worked out concerning targets on energy efficiency improvement. Particularly in this case one can speak of a successful approach. One of the reasons for this is that the results (made visible objectively through an intensive monitoring process) meet the expectations.

One can recognise a hierarchy in types of sector commitments. In all cases there is a commitment from a sector in society to take responsibility for certain activities. The generic term could be "sector commitments". A sub-division can be made between sector declarations (unilateral) and sector agreements (bilateral). The agreements can be distinguished in those that are non-binding (gentleman's agreements) and those that are binding (sanctions apply). The Long Term Agreements on Energy Efficiency (LTA’s) as worked out in the Netherlands are considered to be of the type "sector, binding agreements".
This hierarchy in commitments is illustrated in the scheme below. More to the bottom, the commitments are stronger and more specific.

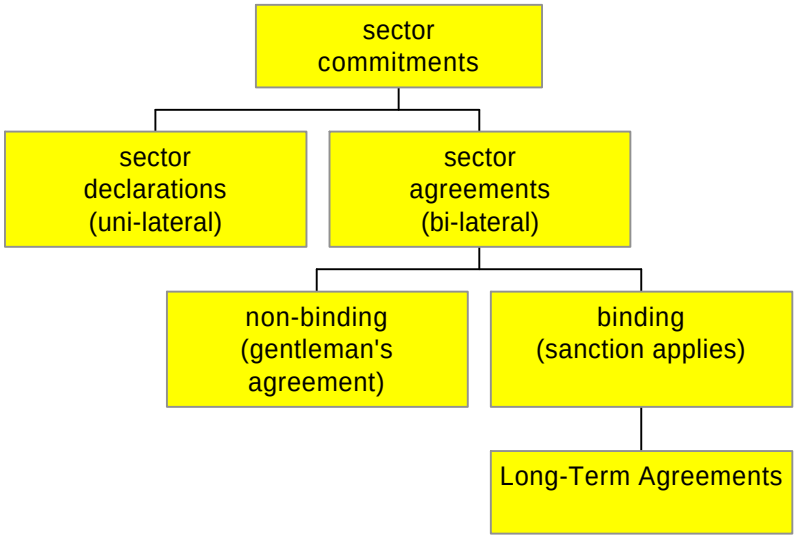


FIGURE 1 Hierarchy of sector commitments

## 2 Introduction

Sector Agreements (SA's) are a powerful instrument to stimulate developments in national societies into a socially desirable direction. An environmental SA may broadly be defined as:

> *An 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 SA's has been developed over the past years: Long Term Agreements on Energy Efficiency (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 e.g. in the year 2000.
In this case the Ministry of Economic Affairs usually represents the government. Novem -as a Government Agency- supports the process, assists the sectors and controls the monitoring.

### 2.1 Background

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 $CO_2$ emissions by 3 percent, in the year 2000, compared to the 1989 level. One of the means to that goal are the Long Term Agreements on Energy (LTA's). Reduction of energy consumption is seen to be largely congruent with reduction of $CO_2$ 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 beyond existing trends, in a context of low energy prices, without resorting to new regulations.

## 2.2 Scope

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;
- target for energy efficiency improvement over the period 1989-2000 is 20 %;
- 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 Methodology

*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. The government agency (Novem) 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. Novem 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 Novem. 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". This plan is the basis for the LTA. It is flexible to allow for unexpected developments in market economics and technology.

A Long Term Plan started with a description of the concerned sector and the role of energy within that sector. It included:

- assessment of energy consumption in 1989, as "reference year"[1];
- 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.

1 For LTA2 1998 is used as the reference year

*Commitments/Targets*
The target of LTA's was on average a 20% increase 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 how measures can be implemented. The government agreed not to introduce other regulations on energy efficiency in industry, and the industry voluntary 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 $CO_2$ 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[2].

*Defining energy efficiency*
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 volume and not to energy efficiency. Furthermore feedstock usually does not directly contribute to $CO_2$ 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, combined heat and power, improved power generation, heat integration and modernisation of processes.

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[2] Target based LTA's comprise negotiated targets that are legally binding and which pre-empt future regulatory requirements, or are tied to a strong regulatory threat.

*Commitments of the signatories and termination*
The commitments of the signatory parties vary from one agreement to another, depending on the specifics of the sector. All companies agree to work out an energy efficiency improvement plan, and improve energy efficiency as far as practically and economically viable, to contribute to the industry 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 to obtain operation permits, including energy efficiency requirements. Signatories to an LTA are considered to be in compliance with permit requirements concerning energy efficiency.

An energy savings 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.

*Government commitments/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 to improve 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 parties may consider revision of the agreement. Either party may terminate the contract if no consensus is achieved.

*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 agreements 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 (effective since January 1, 1997).

*Time period*
Work on LTA's started in 1990, with the first agreement signed in May 1992 (iron and steel industry). Negotiation of an agreement typically takes one to two years, 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 an agreement. 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 partly explains why an agreement on absolute $CO_2$ 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 $CO_2$ emissions is of course that industry is not prepared to restrict the production volume when market demand grows.

*Monitoring and reporting*
Each year, companies report to government on the previous year's energy efficiency index, 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 calculation if specified in the LTA and agreed by all parties.
Actually these corrections vary considerably between sectors: some sectors do not include corrections, while in other sector the 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. Novem supports this process as an independent agency, and assures quality and objectivity of the figures produced.

*Conditions for successful implementation*
In an earlier European Conference (Zeist, 1997) the conditions for the successful implementation of LTA’s were established. These are:

- Between partners a basis of mutual trust must exist.
- 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.

## 4 Results

As of January 1, 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.
The figure below shows how the EEI develops over the years.

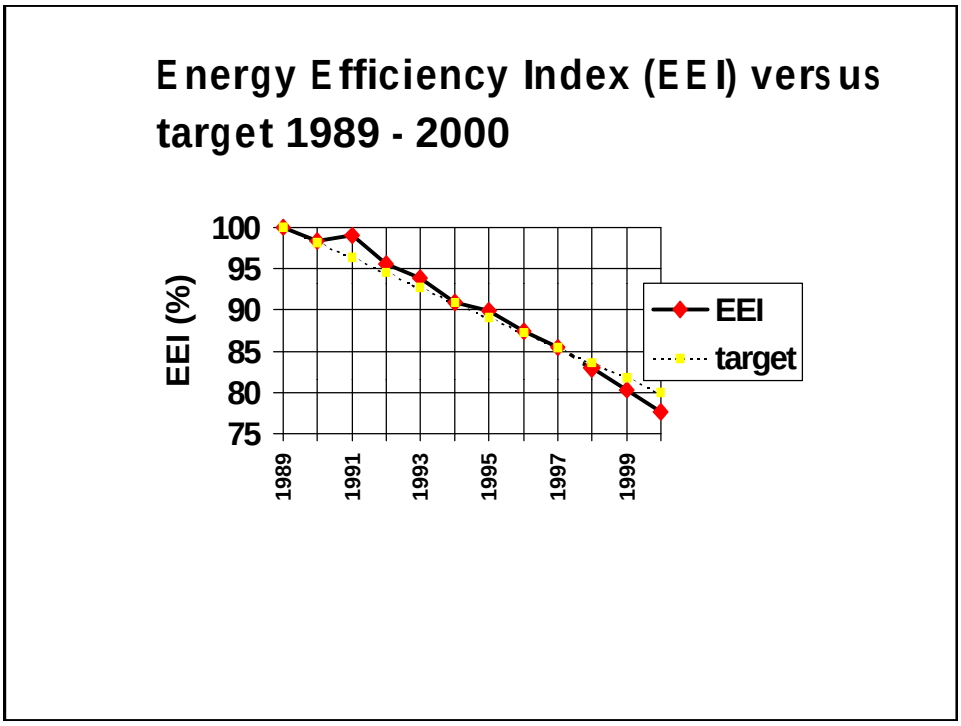


FIGURE 2 Energy-efficiency Index (EEI) over past years, actual value (from monitoring) versus target.

In terms of $CO_2$-reduction however, the target is missed. Instead of a reduction in $CO_2$-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 until now no sector stepped out of an agreement.
This opens the perspective to continue this approach after the original target date (the year 2000) expires. The contents of the agreements can be adapted; the basic mechanism stays the same.

The impact on 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 present price levels for energy, this represents a value of about 700 million Euro. 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. The figure below shows a rough input/output model, in terms of costs/benefits.

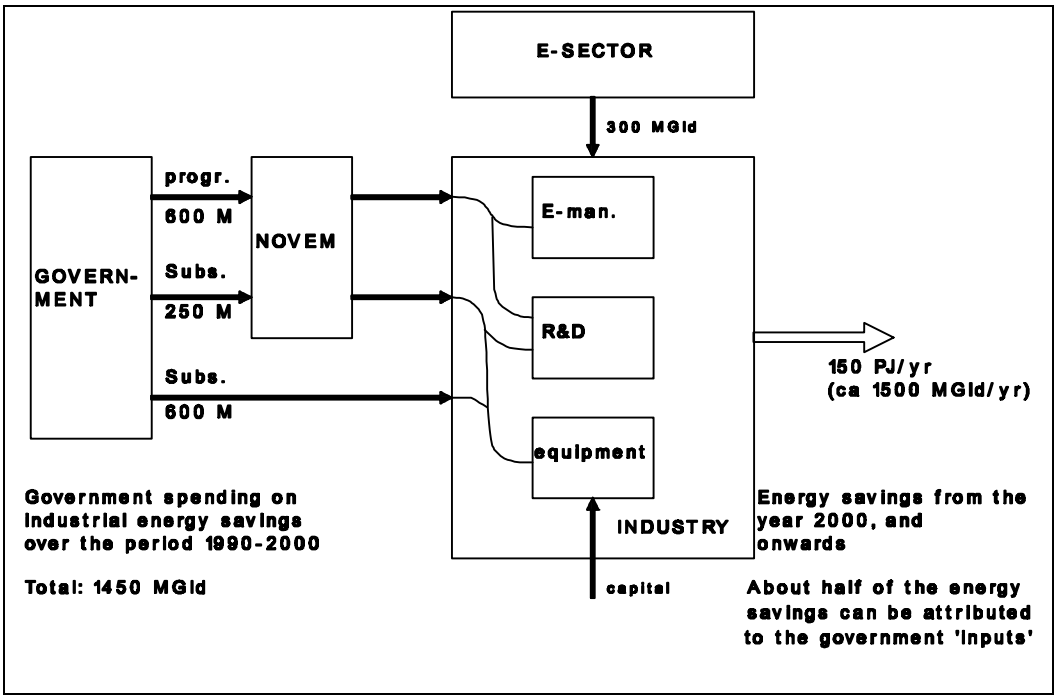


FIGURE 3 The LTA process seen as an input/output box

The table in chapter 8 (at the end of this paper) shows an overview of all the sectors participating in LTA's in the Netherlands.

## 5 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 have been more ambitious
- More focus on long term developments
- Impact of subsidies not to be overestimated
- Room for extension with other themes (more indirectly related to energy)

Based upon the positive assessment of the LTA's 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.

# 6 Next generation LTA's

According to recent changes in the Law of Environmental Management all companies have to take the profitable measures that conserve energy. A profitable measure is interpreted as having a 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)

## 6.1 Second generation of LTA's

As the most obvious measures for energy efficiency have been taken in the first period, the range of themes is extended with new ones. They 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

They 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
- Optiisation 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 reveals that over all industry sectors a total saving of more than 300 PJ is possible, on a total of roughly 1400 PJ (in the year 2000).

Each sector is 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 monitoring process will be substantially complicated. The voluntary period 2001 –2004 for the new themes gives an opportunity to test methods that are at this moment, January 2002, still being developed.

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

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

## 6.2 Benchmarking

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 Ministers of 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 and power generation)

About 250 individual companies joined the agreement later.

These agreements will be worked out between the Netherlands Government and about 150 individual, major companies and cover about 80% of the total industrial energy consumption in the Netherlands.

It is difficult to assess what energy savings can be expected from the Bench Marking agreements. Studies are under way to determine what the position is of Dutch companies, with respect to international competition. Once this has been determined, companies will know what the gap is 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.

The impact of the second generation of LTA’s is reduced however, as they will not include the majority of industrial energy consumption. On the other hand many of the mechanisms (e.g. monitoring process) of the LTA will be maintained in the Bench Marking agreements.

## 7 Conclusions

The implementation of "Long Term Agreements on Energy Efficiency", as developed in the Netherlands, appears to work out well. Energy efficiency develops according to expectations and no contract has been terminated.
$CO_2$ 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. Volume growth however leads to a growth in absolute $CO_2$ emissions.

Dutch industry continues to improve its performance and becomes more competitive. Energy cost savings outweigh the funds that the government makes available within the framework of LTA's.

Energy conservation plays an increasingly important role in environmental permits.

The intention from most parties involved is to extend this approach into the period 2001 - 2012. New themes to be addressed are indicated and industry is challenged to indicate which themes they address in that period and what savings can be expected.

Introduction of the new type of Benchmark agreements on the one hand maintains much of the mechanisms developed in the LTA’s, on the other hand reduces the impact of next generation LTA’s substantially.

Table
Sectors participating in Dutch LTA's

| INDUSTRY | PRIMARY ENERGY CONS.(PJ) (CBS '89) | REALISATION 2000 | % TARGET EN.EFF.IMPR. (year 2000) | DATE LTA CONCLUDED (yr/mnth) | NR LTA SETTLE-MENTS |
|---|---|---|---|---|---|
| LARGE ENERGY USERS | | | | | |
| 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 |
| Subtotal Large | 602,0 | | | | 184 |
| MEDIUM SIZED ENERGY USERS | | | | | |
| 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 |
| Subtotal Medium | 104,3 | | | | 460 |
| SMALL ENERGY USERS | | | | | |
| 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 |
| Subtotal Small | 48,3 | | | | 657 |
| TOTAL INDUSTRY | 754,6 | | | | 1301 |

| NON INDUSTRIAL SECTORS | PRIM. ENERGY CONS.(PJ) (CBS '89) | REALISATION 2000 | % TARGET EN.EFF.IMPR. (year 2000) | DATE LTA CONCLUDED (yr/mnth) | NR LTA 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 |
| TOTAL | 64,2 | | | | 725 |