Government of the Netherlands

Long-Term Agreements on energy efficiency in the Netherlands

Results of 2008

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LTA3: an energetic start

Results in 2008

In 2008, energy efficiency improved by 2.6 percent. This is less than the improvement achieved in 2007 (3.9 percent), but is above the long-term average of 2.4 percent. Of the improvement in 2008, 28 percent was attributable to process efficiency, 42 percent to the use of sustainable energy and 30 percent to energy-efficient product development. Another achievement of LTA3, the third generation of Long Term Agreement on energy efficiency improvement, is that the number of companies that incorporated energy management into their operations rose by 2 percent to 95 percent.

In November 2007, the national government of the Netherlands signed a Sustainability Agreement with the Confederation of Netherlands Industry and Employers (VNO-NCW), the association for small and medium-sized enterprises in the Netherlands (MKB Nederland) and the Dutch Organisation for Agriculture and Horticulture (LTO). This agreement includes arrangements for the improvement of energy efficiency. Signing the LTA3 on 1 July 2008 corroborated these arrangements. LTA will be one of the most important instruments for attaining the goals set in the Sustainability Agreement. In recent years, LTA has led to an average total energy efficiency improvement of more than 2 percent a year. Thirty-one sectors participate in LTA, with more than 1,000 companies. Every sector and company that participated in LTA2 also signed LTA3. In 2008, two new sectors joined LTA3. The water boards, which are responsible for wastewater purification, joined with approximately 350 water treatment plants. The second new participant is the ICT sector. Given the growth of the vast number of ICT applications, energy consumption is still increasing in this sector every year. Several other sectors will join LTA3 in 2009.

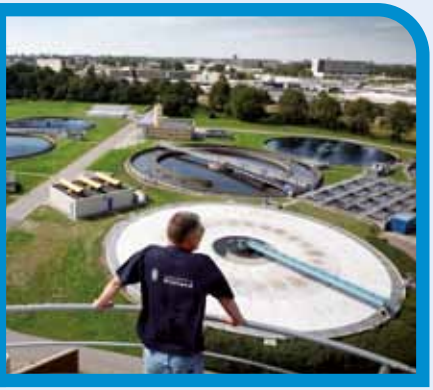
Ambitious targets for LTA3

LTA3 is the third version of this very successful instrument. The first agreements focused primarily on process efficiency. The second generation added energy savings outside of the immediate production processes, that is to say throughout the entire product chain. LTA3 presents an expansion, intensification and broadening of the LTA2 agreement. While LTA2 ran until 2012, the conversion to LTA3 implied an extension of the term until 2020. The aim of LTA3 is an average total efficiency improvement of 2 percent up to and including 2020: a very ambitious target. As a result, energy savings demand even more attention than before. In order to keep up this pace in the long run, preliminary studies and road maps were introduced into LTA3. These studies involve the formulation of a strategic outlook in which the sectors show which (non-)technological aspects are important to be able to meet the working hypothesis of a 50 percent improvement in energy efficiency in 2030 compared to 2005. The preliminary studies form the guidelines for the companies' energy efficiency plans. In the work programme Clean and Efficient: New Energy for the Climate, the government invites the energy-intensive industry to transfer to an LTA working method as well.

After signing LTA3, companies started formulating energy efficiency plans (EEP). This process will be completed in 2009. Most sector organisations have also begun to draw up preliminary studies. Several sectors completed draft studies and two sectors have already conducted a preliminary study.

‘Increased energy consumption is just not on anymore.’

PETER KNAAPEN



Fresh air for hard workers

FOR TWO OF THE NEW PARTICIPANTS IN LTA3, THE POSSIBILITIES FOR ENERGY EFFICIENCY ARE LITERALLY UP IN THE AIR. WASTEWATER PURIFICATION PLANTS CAN SAVE A SUBSTANTIAL AMOUNT OF ENERGY IF THEY USE BUBBLE AERATION TO OXYGENATE THE BACTERIA THAT DO THE DIRTY WORK. AND THE ICT SECTOR CAN SAVE A GREAT DEAL OF ENERGY BY COOLING ITS DATA CENTRES WITH THE HELP OF FRESH AIR.

Since 1999, the 26 managers of wastewater purification plants in the Netherlands have conducted a company comparison once every three years. ‘The 2006 comparison revealed that energy consumption was particularly high and still rising’, says Peter Knaapen, head of the *Purification Operations* department of the Rhineland Water Board. ‘We all agreed that in this day and age, this was just not on anymore. That is why we all signed LTA3.’ The substantial consumption of energy was largely accounted for by the supply of oxygen to the bacteria that purify the wastewater. ‘50 to 70 percent of our sector’s energy consumption is due to aeration’, explains Knaapen. There is a bubble aeration system on the market that consumes less energy, but it demands higher investments. Until now, decisions on building a purification plant were based on costs rather than energy consumption, but Knaapen expects that to change. ‘We are working on the first round of energy efficiency plans. As a sector, we have the advantage that we are not competing with one another. That makes it easier to observe what our colleagues are doing and to learn from one another – and that is something we are definitely planning to do!’

Electronic service provision

‘ICT consists of hardware, software and service provision’, says Michiel Cuijpers, ICT and Sustainability manager at sector organisation ICT-Office. Since February 2009, Cuijpers has been busy propagating LTA to the 550 affiliated companies, as well as to those that are not (yet) participants. A reduction in total energy consumption within the sector is a key aspect of the target. ‘ICT consumes a lot of energy’, says Cuijpers. ‘Take, for instance, the 20 largest data centres in the Netherlands. A large proportion of their energy bill concerns cooling, which is where a great deal can be gained, for example, with Kyoto cooling. This cooling concept dissipates the warmth from the servers via a condenser to the outside air and then uses that air to cool the servers. Our customers can also make significant savings in the choice of hardware and in the use of software. Our aim is that, by April 2010, at least 80 percent of energy consumption in data centres and large ICT and telecom companies is governed by the agreement, so that we can issue the first reports next year.’

The impact of the financial crisis

The economic crisis has affected almost every LTA participant. Very few sectors were confronted with anything other than a dramatic fall in demand in the second half of 2008. The good economic conditions during the first six months account for 2008 being not as bad as it might have been in the various sectors. Declining demand has a short-term and a long-term impact. Companies are forced to lower their prices and the crisis is having an unfavourable effect on profitability and financial position. It is not surprising that at present, businesses are hardly, if at all, investing in product capacity, energy management or improving energy efficiency. It is unclear by when demand and investments will recover again and opportunities for specific energy investments will improve. The developments vary from sector to sector.

Formulating an energy efficiency plan

In 2008, LTA2 was converted to LTA3, which is valid until 2020. LTAs are long-term agreements and, as such, the current economic circumstances do not mean that participants will not adhere to their objectives. The crisis need not have a long-term effect on the energy efficiency improvement of all LTA companies. However, it will have an impact on the energy efficiency plan (EEP) that companies submit once every four years. The EEP comprises an overview of all efforts to improve energy efficiency. This plan outlines the expected energy efficiency improvement and the CO_2 emissions that, as a consequence, will be avoided. If companies are unable to meet the objective, they will explain this in their EEP. These energy efficiency plans will then be assessed by the provinces and municipal councils, which are authorized to deal with energy according to the Environmental Act. The majority of LTA participants submitted an EEP for 2009-2012 before 1 September 2009. Given the uncertainty concerning investments in energy measures, companies are struggling to decide which measures to include in their EEP. In view of the economic situation it is to be expected that a greater number of measures will be classified as 'conditional' or 'uncertain'.

‘In the product chain in particular, there still are opportunities for energy savings.’

BERT DUIT

‘All our attention is now focused on surviving’

UNTIL SEPTEMBER 2008, THE ECONOMY WAS DOING SO WELL THAT THE AUTOMOBILE, PACKAGING AND CONSTRUCTION INDUSTRIES HELD EXTRA LARGE STOCKS TO BE ABLE TO MEET DEMAND QUICKLY. AS A RESULT, THE ECONOMIC CRISIS HIT THEIR SUPPLIERS IN THE METAL INDUSTRY EVEN HARDER. ORDERS HAVE FALLEN SHARPLY AND THE REST OF THE PRODUCT CHAIN IS EATING INTO THE STOCK. DESPITE ALL ADVERSITY, THE ASSOCIATION OF DUTCH FOUNDRIES (AVNEG) AND THE ASSOCIATION OF THE DUTCH METALLURGICAL INDUSTRY (VNMI) SIGNED LTA3 AT THE END OF LAST YEAR.

According to Bert Duit, chairman of the AVNEG, 2008 was an extraordinary year for the foundries. ‘During the first three quarters of the year, productivity was higher than ever, but since October, production has fallen so dramatically that entire production lines had to be temporarily shut down. The decline averaged 30-40 percent, but some companies were confronted with as much as 70 percent reduction in work. All our attention is now focused on surviving.’

Wim Hamers, chairman of the VNMI is also worried about the continuity of the base metal sector, but says that the economic foundations of the sector are still good for the long term. ‘Demand will continue to grow steadily, due to the massive rise of developing economies, and the Netherlands have a good reputation in this market for quality and innovation, particularly in the field of sustainability.’

Road map to 2030

These may be economically difficult times, but both Wim Hamers and Bert Duit still demonstrate their full support of LTA. The LTA approach extends over a long period of time, so they keep looking for measures that can be taken right away or as soon as the financial situation improves. The two sectors conducted a joint preliminary study for a road map to 2030, which should lead to 50 percent improvement in energy efficiency. ‘I think that sustainability will be principal topic after the crisis’, emphasises Hamers. ‘And the base metal industry will play a significant role. Metals are unique because they can be re-used endlessly without loss of quality. Recycling in this sector could even lead to higher quality products.’

With innovative materials, the metal industry contributes to the development of energy-efficient end products. Examples include thinner, stronger steel plates for the automobile industry and metal roof and wall sections for the construction industry that can be fitted with energy-absorbent materials. For his part, Duit still sees opportunities for foundries in the product chain in particular to achieve energy savings. ‘It would be good, for example, if lorries were built that could transport more than 25 tonnes. Our products are so heavy that this limit is reached when a lorry is still half empty.’

Participation in LTA (monitoring)

LTA participants: sectors and companies

At the end of 2008, 31 sectors were participating in LTA. Of these, 29 participate in LTA3: 18 industrial sectors, 8 sectors in the food industry and 3 services sectors. In the monitoring year 2008, water boards responsible for wastewater purification and the ICT sector signed LTA3. The former sector consists of 25 water boards. The ICT sector is represented by 5 enterprises. Both sectors are part of the industrial sector. The new participants will not report until their EEP is submitted. In 2008, the higher professional education (HBO) institutions and the universities switched to the LTA3 service sectors.

Two sectors – the transport sector (represented by 3 companies of the Netherlands Railways) and the supermarkets (24 enterprises) – are not participating in LTA3, but in an earlier version. A number of financial service providers – banks and insurance companies – also signed LTA3. Participation of the remaining banks and insurance companies is still under consideration.

Companies being monitored

Every year, the efforts of each company and their consequent results are monitored. In addition to the 27 LTA3 sectors that took part in this monitoring for 2008, both LTA1 sectors also supplied their monitoring figures.

Companies being analysed

The LTA3 sectors use the total energy efficiency index (TEEI) to express the results they achieved. The service sectors also employ the savings index, which is the only index used by the HBO institutions.

The general analyses are based on the LTA3 sectors and the transport sector that report on the TEEI. Technically, the transport sector is an LTA1 sector, but it uses the same monitoring methodology as the LTA3 companies and is, therefore, included in the analyses of the LTA3 sectors. Whenever possible, the results of the HBO institutions are included in the consideration of the results of the service sectors. The supermarkets are disregarded in these analyses.

Energy consumption of participants being monitored

In 2008, all LTA sectors participating in the monitoring process plus the wastewater treatment plants consumed 194 PJ of energy. The national industrial energy consumption in 2007 was 1,322 PJ. The LTA sectors' share in this was 15 percent.

By the end of 2008, all LTA3 sectors participating in the monitoring process plus the Nederlandse Spoorwegen (Netherlands Railways) consumed 178 PJ of energy. The supermarkets consumed another 11 PJ and the wastewater treatment plants used a further 5 PJ; for the ICT sector it is yet to be determined which organisations will participate in LTA3 and what their energy consumption amounts to.

Key figures LTA

The LTA sectors are subdivided into five clusters: the industrial sectors, the food industry, the service sectors, the transport sector (three organisations of the Netherlands Railways) and the supermarkets. **Table 1** contains the key figures for the monitoring from 2008.

The results are primarily expressed in terms of energy efficiency improvement and in terms of the effects of energy savings through measures. Generally, the brochure provides the results in 2008 in comparison to 2007. Sometimes the results are presented from the reference year (mostly 1998) up to and including 2008, and sometimes the results are related to the agreement period (from 2001 to 2008).

Methodology is important for the presentation of results. In the case of sustainable energy and energy-efficient product development, energy savings immediately impact on energy efficiency. For process efficiency, it is not only energy savings that are important in the production process, but other effects as well. Sometimes they reinforce the favourable effect of the energy savings and sometimes they neutralise the effect partly or even completely. This is a case of 'dissaving'.

In 2008 companies reported energy savings and, also and especially, dis-saving effects on the production process. Efficiency improvement was also achieved in 2008, albeit less than 2007, but in this respect explanations were far from conclusive. The effects of dissaving outweigh not only the energy savings, but even the process efficiency improvement. Possibly this was (in part) because companies did not report every energy saving that was put into practice. This question requires further analysis.

Agricultural sectors

As of 2008 (the monitoring year), the agricultural sectors – including the greenhouse horticulture, bulb and bulb flower cultivation and mushroom cultivation – no longer present their monitoring results in this brochure. Instead they use the following websites:

http://www.senternovem.nl/LTA/deelnemers/sectoren/bloembollen/

http://www.senternovem.nl/LTA/deelnemers/sectoren/paddenstoelenteelt/

http://www.lei.wur.nl/NL/onderzoek/Werkvelden/Sectoren+en+bedrijven/glastuinbouw/

Table 1. Key figures LTA: energy consumption, savings through measures, energy efficiency improvement, avoided CO_2-emission (in 2008)

	PRIMARY ENERGY CONSUMPTION (TJ)	MEASURES (TJ)	TEEI (%)	AVOIDED CO_2 (KTONNES)
Asphalt industry	2,899	49	-1.34	33
Chemical industry	10,219	367	1.67	208
Fine ceramics industry	1,459	20	5.95	16
Foundries	2,704	318	8.34	126
Coarse ceramics industry	9,621	140	1.00	24
Laundry industry	1,579	68	3.50	31
Sand-limestone and cellular concrete industry	1,363	36	1.80	6
Refrigeration and cold-storage industry	2,385	38	-0.50	37
Non-ferrous metal industry	3,741	-98	-6.23	44
Oil and Gas production industry	40,830	785	0.13	802
Surface treatment industry	1,562	49	2.05	18
Other industry	14,228	1,917	8.40	454
Rubber and plastic industry	9,635	2,004	15.42	437
Tank storage companies	2,306	79	2.18	40
Carpet industry	838	44	1.00	32
Textiles industry	1,786	44	1.05	12
Total Industrial sectors[1]	**107,155**	**5,860**	**4.22**	**2,320**
Potato processing industry	8,705	281	3.88	60
Cocoa industry	2,277	7	-1.93	17
Vegetable and fruit processing industry	2,893	59	0.50	27
Coffee roasting industry	943	89	8.50	32
Margarine, Fats and Oil production industry	7,575	-15	-3.71	28
Flour manufacturers	1,272	45	1.85	-5
Meat processing industry	4,289	109	-0.08	38
Dairy industry	18,020	568	1.98	101
Total food industry	**45,974**	**1,143**	**0.54**	**298**
Netherlands Railways	13,377	73	2.38	366
Total transport sector	**13,377**	**73**	**2.38**	**366**
Higher Professional Education	1,045	210	n/a	n/a
University Medical Centres	5,197	199	1.55	-26
Universities	5.639	490	7.00	96
Total service sectors	**11,881**	**899**	**4.92**	**70**
LTA3 sectors	**178,387**	**7,975**	**2.64**	**3,054**
Supermarkets	10,880	218	3.90	66

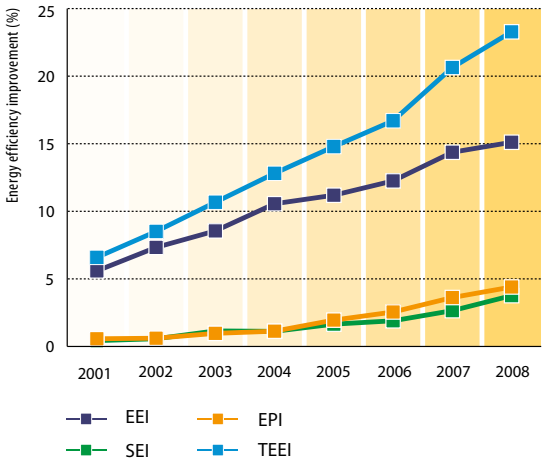
[1] Excluding energy consumption of wastewater purification water boards of 5,200 TJ.

Results of LTA

Energy efficiency improvement

In 2008, energy efficiency improved by 2.6 percent in comparison to 2007. From the reference year (usually 1998) up to and including 2007, energy efficiency has been improved by 20.6 percent; at the end of 2008, the total improvement was 23.2 percent. The long-term average improvement in energy efficiency during the agreement period, which is to say from 2001, amounts to 2.4 percent. **Figure 1** provides a graphic representation of the energy efficiency improvement – both the total improvement and the improvement in each of the underlying indices.

Figure 1. Energy efficiency improvement per index for LTA3 sectors for 2001-2008 (in percent)



In 2008, there was a total saving of 7.6 PJ thanks to measures taken by companies. Of this, 2.8 PJ was achieved in the production process. Compared to 2007, the use of sustainable energy and energy-efficient product development resulted in extra savings of 2.3 PJ and 2.5 PJ respectively. The purchase of sustainable electricity amounts to 1.9 PJ of sustainable energy.

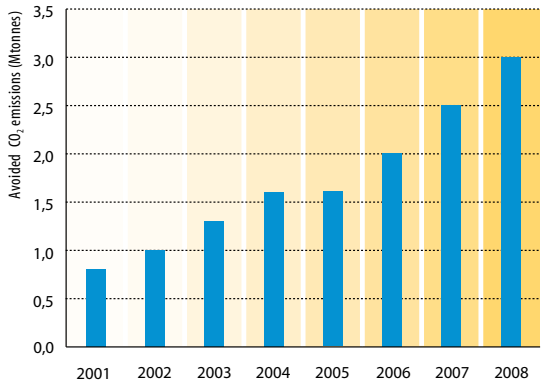
Energy savings are not the only factors that influence process efficiency. Other influences also play a role, such as the use of capacity, which on balance had a dissaving effect. In addition, dissaving effects caused by climatic influences and 'other internal factors' were frequently reported in 2008. The total amount of dissaving influences on the production process is greater than the savings effects. In spite of this, there was an improvement in efficiency, which cannot be quantifiably substantiated in full.

The use of sustainable energy and energy efficient product development contribute directly to the total energy efficiency improvement (TEEI). The savings achieved by all the activities that took place in 2008 in the field of sustainable energy led to an improvement of 1.1 percent. At the end of 2007, this was 2.6 percent, rising to 3.7 percent at the end of 2008.

The savings of all projects on energy efficient product development implemented in 2008 also increased in comparison to 2007. At the end of 2007, they resulted in an energy efficiency improvement of 3.6 percent, rising by 0.8 percent to 4.4 percent in 2008.

In 2008, the total energy efficiency improved by 2.6 percent compared to 2007. Of the improvement in 2008, 28 percent was due to process efficiency, 42 percent to the use of sustainable energy and 30 percent to energy-efficient product development.
Compared to 2007, the CO_2 emissions avoided in 2008 amounted to 3.1 Mtonnes. In total, this amounts to 13.8 Mtonnes of CO_2-emissions having been avoided since the agreement period began. **Figure 2** shows this development.

Figure 2. Annual avoided CO_2 emissions as a result of the TEEI 2001-2008 (in Mtonnes)



‘We involved the employees in the calculations. As a result, everyone understood the situation.’

ROBERT VAN HOUTEN

Incorporating energy efficiency into the business organisation

LAST YEAR, THE INDUSTRIAL LAUNDRY NEWASCO VAN HOUTEN IN HEEMSTEDE WON THE 2008 ENERGY AWARD FROM THE DUTCH TEXTILES FEDERATION. DIRECTOR ROBERT VAN HOUTEN IS UNFAZED: ‘OF COURSE, SUCH AN AWARD IS A WONDERFUL BOOST. IN RECENT YEARS, WE HAVE DONE OUR BEST TO BE MORE EFFICIENT WITH THE ENERGY WE USE BUT SO DO OUR COLLEAGUES. WE’RE SIMPLY PERFORMING WELL AS A SECTOR.’

Newasco Van Houten serves as a model for the development that laundries have been facing in recent decades. The quantity of washing from large customers such as hospitals, residential care homes and nursing homes was outgrowing the facility in the city centre. In 2004, a new facility was built on an industrial estate. ‘That was the perfect opportunity for us to renew the technical installations all at once and to set up our operation in a more energy efficient manner’, says Robert van Houten. ‘Because our sector had been participating in an LTA since 2001, we could rely on the experiences of our colleagues.’

Laundy dry? Take it out!

Walking along the modern washing installation, Van Houten explains how the company is now recovering heat from washing water and rinsing water. ‘The new drying barrels yield substantial savings because they are directly heated by gas burning. Previously they were heated indirectly using steam, a method that involved considerable heat losses. Infrared meters ensure that the humidity level is measured directly on the textile, which means that the laundry never stays in the dryer longer than necessary.’ Another example of more efficient operations can be seen in the hall where the washing is selected on arrival. Van Houten: ‘By simply looking closely, we discovered that the loading level of the washing installation was about 20 percent below the machine’s capacity. A few simple measures improved the load, which had an immediate effect on productivity as well as on energy consumption and on the amount of water per kilogram of washing.’

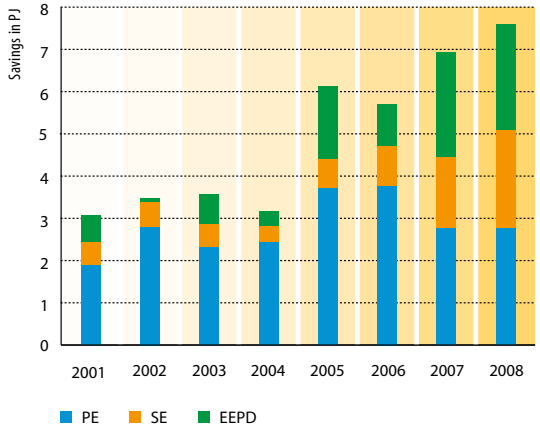
Energy efficiency should not be imposed

Perhaps Van Houten could have improved the efficiency of his machines by giving a few simple instructions, but he chose another way instead. ‘You shouldn’t impose energy efficiency; it should be incorporated into the business organisation! It is not only a matter of technology but also of attitude and behaviour. So we involved the employees with the calculations. As a result, everyone understood the situation. Plus everyone felt that they were responsible for helping to reduce energy consumption. Now, some employees are registering meter readings every week and the head of Technical Services displays the readings in an Excel file. This keeps everyone on their toes.’

Energy savings

Figure 3 shows the development of the savings volume for the measures reported. This relates to the newly achieved annual savings. Overall, 2008 shows an increase. The savings volumes as a result of process efficiency and energy-efficient product development were roughly equivalent to that of 2007. The sustainable energy share increased in 2008 again, primarily because more sustainable energy was purchased. Of the sustainable energy purchased, 75 percent concerned sustainable electricity.

Figure 3. Scale of savings through measures for LTA3 sectors per year for 2001-2008 (in PJ)



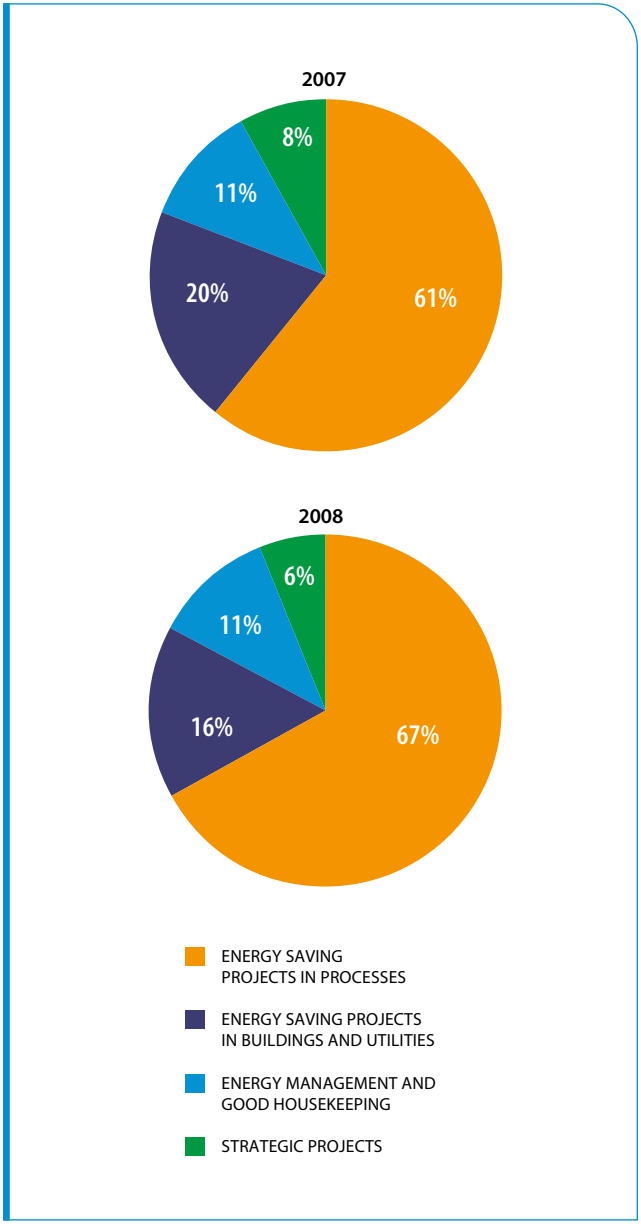
These results are compared to the targets the companies set themselves in their energy savings plans for the period 2005-2008. At the end of this planning period, however, it turned out that the result had exceeded the ambition by far.

Process efficiency

The LTA3 sectors achieved collective savings of 22.4 PJ through the introduction of **new** measures for process efficiency from 2001 up to and including 2008. The savings in 2008 was 2.8 PJ, as it was in 2007.

Measures for process efficiency relate not only to the production process, but also to savings in buildings and utilities, as well as good housekeeping and strategic activities. **Figure 4** shows that, in 2008, there were no significant changes in the distribution of measures between the various categories. Energy savings projects in production processes still had the largest share in energy efficiency improvement, even more so than in 2007.

Figure 4. Energy savings in production processes in percent of the total (PJ) subdivided into categories

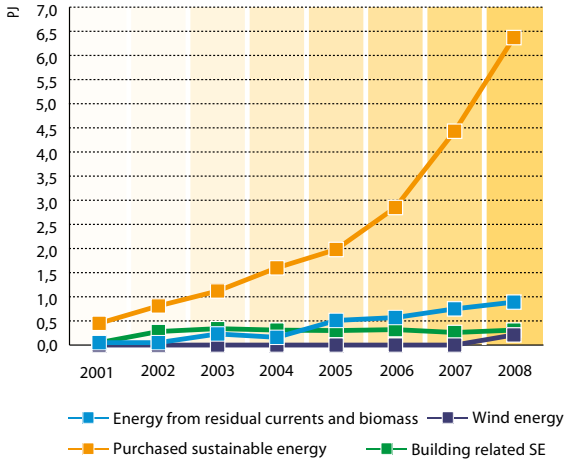


Sustainable energy

In 2008, the LTA sector achieved collective savings of 7.8 PJ through the use of sustainable energy (171 measures). This constitutes an increase of 2.3 PJ compared to 2007. Of this, 1.9 PJ comes from the purchase of sustainable electricity. At the end of 2008, efficiency as a result of sustainable energy had improved by 3.7 percent compared to the reference year (1998). Of this, 1.1 percent was achieved in 2008. The average annual improvement in energy efficiency through the use of sustainable energy was 0.5 percent.

The purchase of sustainable electricity was the principal cause of the increase in the use of sustainable energy in 2008. The food industry presents a sharp increase in the proportion of sustainable energy it purchased: from 28 percent in 2007 to 55 percent in 2008. This was primarily down to one company. In the industrial sectors, the proportion of sustainable energy purchased increased slightly. **Figure 5** shows the development over the years.

Figure 5. Development of sustainable energy (in PJ)

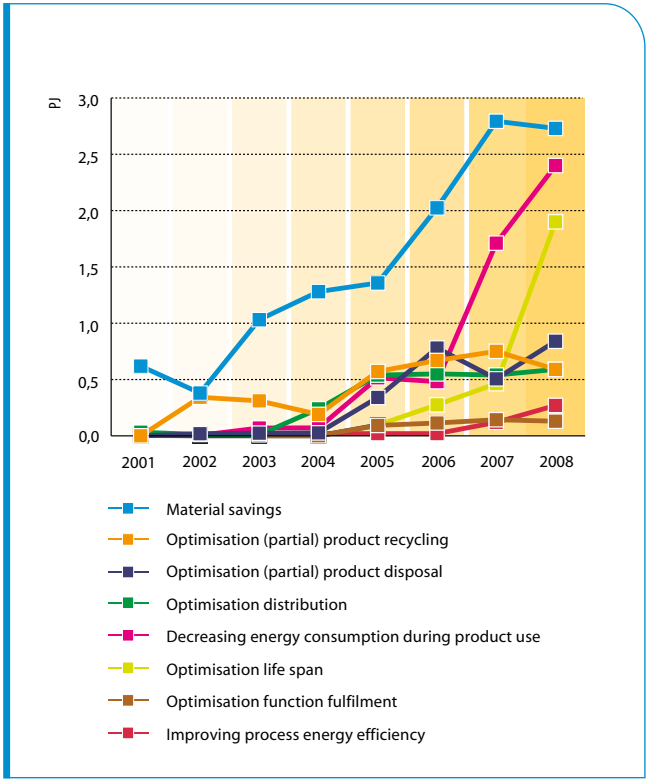


Energy-efficient product development

Companies can also reduce energy consumption outside of their direct production processes. This is why LTA pays attention to energy-efficient product development, which yielded savings of 9.5 PJ at the end of 2008 (465 measures), an increase of 2.5 PJ compared to 2007. Every sector contributed to this growth, with the exception of the transport sector. At the end of 2008, the index for energy efficient product development had improved by 4.4 percent compared to the reference year (1998). Of this, 0.8 percent was achieved in the year 2008. The average annual improvement in energy efficiency was 0.6 percent. The savings per measure continued to increase, from 16.4 TJ in 2007 to 20.5 TJ in 2008.

Figure 6 shows that savings increased in most categories. The savings due to the *optimisation of the lifecycle* grew sharply in 2008 thanks to one measure implemented by one industrial company. The strong growth of savings due to *reduction of energy consumption during product use* is entirely down to measures implemented earlier by two companies. Savings increased due to the sale of these products in 2008. Savings due to *production recycling* decreased and savings due to the *optimisation of product disposal* increased. It can be inferred from the descriptions of the individual measures that *optimisation of product recycling* accounts for the majority of the savings. The aggregate savings in both categories increased in 2008. Within every sector, there was a small increase in the *optimisation of distribution* in 2008.

Figure 6. Development of energy efficient product development (in PJ)



‘There are only a certain number of acres for every world citizen to live on. In the Netherlands, we use twice that amount.’

ARIE DE BRUIN

Training raises the environmental awareness of employees

NOW THAT HE IS NEARLY RETIRING, ARIE DE BRUIN, SUPPORT MANAGER AT THE HEINZ FACTORY IN ELST, IS USING THE SPARE TIME THAT IS BECOMING AVAILABLE TO HIM TO INFORM STAFF ABOUT WASTE OF ENERGY AND BASE MATERIALS. IT HELPS. OF COURSE, IT ALSO HELPS THAT CORPORATE SOCIAL RESPONSIBILITY IS IMPORTANT TO THE HEAD OFFICE OF HEINZ. THE SWITCH-OVER TO PET BOTTLES IS A RECENT EXAMPLE OF THE COMPANIES ENVIRONMENTAL AWARENESS.

‘Heinz Elst is part of an international company that sets great store by sustainability’, says Arie de Bruin, explaining why the factory in Elst has been engaged in environmental issues and energy efficiency for years now.

Interesting discussions

To make sure that staff on the work floor understand the importance of energy efficiency and the environment, a training project was set up called Employee Engagement. De Bruin: ‘We started the course in November 2008 and since then 140 out of 425 employees have attended, either with their department or with their shift group. This teamwork is crucial because everyone working with colleagues has to have the same information.’ In the training course, De Bruin shows the participants how wasteful Western countries are. ‘There are only a certain number of acres for every world citizen to live on. In the Netherlands, we use twice the amount of base materials and energy we are entitled to, and in the United States, they use five times that amount. We talk about this, which leads to interesting discussions. Many participants learn to think about what they are doing, not just the people on the production line, but also the engineers who have to consider the environment when they design a production line.’

As part of the project De Bruin, together with other managers, checks the facility to identify opportunities for practical environmental improvements. The awareness project is a resounding success. According to Arie de Bruin, energy consumption is decreasing significantly in the company, for instance because the lights are switched off sooner and machines are not left on unnecessarily and are only switched on when necessary. ‘In May and June, we used 5 percent less energy than in the same months last year, even though production was slightly higher.’

Buying bottles from the neighbours

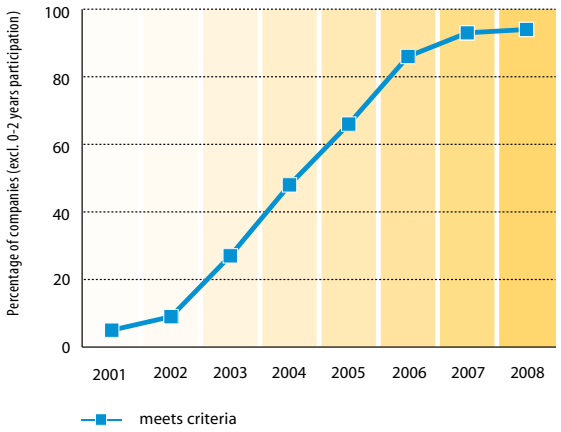
The second project that De Bruin proudly refers to is a packaging project. Since last year, the famous Heinz Tomato Ketchup has been bottled in lightweight, transparent PET bottles. The supplier of the PET bottles had a factory built specially in Elst to move the production of these bottles close to the Heinz factory. De Bruin: ‘We used to get our bottles from all over Europe. Now we get them from our neighbours and that saves thousands of transport kilometres. We can also keep much lower stock levels now and the light weight of the bottles helps us save another 9 percent or so on the amount of waste.’

Energy management

State of affairs at the end of 2008

The implementation of an energy management system is a compulsory part of the LTA2 agreement. Companies with an energy management system are better equipped to manage their energy consumption systematically. 95 Percent of the LTA2 companies that had participated for two years or more in 2008 have now introduced energy management. This is a slight increase compared to 2007. These companies meet the criteria for the Basic Check on energy management. **Figure 7** shows the increase in the percentage of companies that meet these criteria. The companies that do not yet meet (several of) these criteria are supported in solving the bottlenecks they encounter.

Figure 7. Percentage of companies that meet the energy management criteria for 2001-2008 (in percent)



Sample provides companies with support for improvement

Random checks are carried out annually to see whether companies have filled in the Basic Check on energy management properly. In 2008, the focus of these random checks shifted from checking to identifying opportunities for improvement of the energy management system in place. The number of companies in the random check was raised to 50 and the aim of this new approach was to provide companies with practical means to improve their energy management system. The companies reacted positively to this new approach.

While the companies examined scored highly on the core elements of energy management such as know-how of the key users, aims and terms of reference, and monitoring, they turned out to have difficulties upholding the energy management system in the event of organisational or personnel changes. They also find it difficult to carry out the annual company audit and management evaluation of the energy management system.

EN 16001, the European standard for Energy Management

In May 2009, the member states of the CEN (European Committee for Standardisation) adopted the European Standard for Energy Management Systems (EN 16001) by a vast majority. During the development of this standard, the Netherlands contributed the experiences of LTA companies that were consulted on this matter.

New developments

'The Chinese model is not only concerned with energy efficiency but with sustainability in the wider sense.'

ERIK TER AVEST

International developments

LTA approach is working well in China

THE LTA APPROACH IS EXCEEDING EXPECTATIONS IN CHINA. A SIGNIFICANT DIFFERENCE WITH LTA IN THE NETHERLANDS IS THAT IN CHINA, IT IS NOT ONLY ABOUT ENERGY EFFICIENCY, BUT ABOUT SUSTAINABILITY IN GENERAL.

For five years now, SenterNovem, on behalf of the Ministry of Economic Affairs, has been working hard with European and Chinese partners to introduce an adapted LTA model in China. 'The Chinese public-private collaborative project is a great success', says project coordinator Erik ter Avest. 'The goals are being achieved far quicker than we expected.' Pilot projects were started in late 2006 in Nanjing, Xian and Kelamayi, cities with different cultural and industrial backgrounds. Ter Avest: 'The LTA model is working well in all three cities and we are now incorporating these experiences into a handbook for other Chinese cities. The emphasis is on the phases that need to be organised. And there is, of course, a toolkit included.'

Fourteen companies are involved in the pilot project. The aim of the EU-Asia Pro Eco-project is to achieve 3 to 5 percent energy savings annually and to reduce the quantity of wastewater and solid waste by 3.5 percent. The energy savings target for 2009 is 18 PJ. Ter Avest: 'This was reached in Nanjing alone within two years, so in the third year we'll far exceed our target.'

Reliable data

The LTA agreement provides practically free access to reliable energy figures, which provides significant added value. The Chinese model is not only concerned with energy efficiency but with sustainability in the wider sense, including improvements in the efficient use of base materials and the introduction of environmental management with ambitious targets for the reduction of energy consumption. Another significant difference with the Netherlands is the speed with which the Chinese get things done. 'They can build sustainable installations five times more quickly than we can.'

Enthusiastic ministry

At the end of this year the pilot project will end with a large conference in Beijing. It is already clear that there will be a follow-up, which will be more extensive, involve many more companies and industry sectors and exert more influence on policies that will be laid down in the Twelfth Five-Year Plan. The most important ministry, the National Development and Reform Committee (NDRC), which is responsible for energy policy and economic affairs, is enthusiastic about the approach and the results. Ter Avest: 'We have much to offer one another in the coming years. Our Chinese LTAs have contributed to an MoU Energy between the Ministry of Economic Affairs and the National Energy Agency of the NDRC.'

Heat

Work programme for 'Warmte op Stoom' [Heat gathering steam]

The environmental goals set by the government in *Schoon & Zuinig* [Clean & Efficient] are very ambitious. The achievement of these goals demands both a coherent policy and a consistent heat policy, because 60 percent of the final energy consumption is attributable to heat. This policy was formulated in 2008 and the instrumentation was laid down in a work programme entitled *Warmte op Stoom*. In terms of the industrial heat policy, a decision was made to join the LTA system. After all, the question of heat also plays a key role in this agreement. To provide maximum support to industrial companies in this respect, four programme components from Warmte op Stoom have been specified: the Heat Card, the integrated approach, the National Centre for Expertise on Heat (NEW) and the residual heat/sustainable heat Unique Opportunities Programme (UKP).

Programme components explained

The Heat Card is a planning tool for every sector, including the industrial sector. The instrument ensures synergy between spatial planning and energy planning. It identifies opportunities to make heat supplies sustainable and/or to reuse residual heat.

Companies are supported in optimising their processes by way of an integrated approach, which increases the energy efficiency of the production processes and reveals any possibilities for recycling residual heat inside or outside the organisation.

Companies can contact the NEW for specific questions on heat-related issues. If the NEW does not have an immediate answer, the question is put to the network, which includes the participants of the LTA programme.

These activities all aim at creating healthy business cases. However, sometimes profitability is just too low and it is just too big a step for a company. To encourage development nonetheless, the UKP can provide the company with financial support.

Roadmaps

Aim of road maps

Road maps provide a strategic outlook for 2030. Sector organisations and companies can use them to indicate how they will improve energy efficiency in the organisation and in the product chain by 50 percent compared to 2005 by the year 2030. In other words, formulating a road map enables LTA companies and sectors to identify which steps they need to take in order to be ready for 2030, and how they can achieve maximum energy efficiency.

Preliminary study and road map

The road map approach is useful for sectors that want to know what customers and other relevant stakeholders expect from their products and services. Furthermore, the sectors can use the road map to develop a shared vision of the sector's future and to formulate (long-term) objectives. This creates the extra clout necessary to gain international competitive advantages.

The development of a road map demands a great deal of time and effort from sector organisations, companies and other relevant stakeholders. Sectors will only decide to do this if they expect the road map to provide them with greater insight into the long-term steps they will have to take and if they know what support is available. This is why the preliminary study was introduced. It is primarily used to investigate whether a road map project would be useful and necessary. Once a sector has established its ambitions, a follow-up process can be determined. The preliminary study is also designed to create support and enthusiasm for the road map project.

State of affairs concerning the road map

By developing preliminary studies and road maps in collaboration, the sector companies combine scarce (R&D) expertise and means, and use them effectively. This enables them to reach goals that are unattainable for individual companies. The government can use the results of preliminary studies and road maps for a targeted and more stringent energy and innovation policy.

Several sectors have already completed draft versions of these studies. Two sectors that conducted a collective preliminary study completed it recently.

Methodology for defining energy efficiency

Reviewing current methodology

After eight years of experience with LTA, it is time to review the 'methodology for energy efficiency'. The reasons for this include the advent of the international Energy Services Directive (ESD) and of the 'LTA on Energy Efficiency for ETS businesses'.

Cornerstones of the methodology

Using the current methodology, energy savings in the production process does not automatically lead to improved efficiency, although it does contribute to it. Other factors, such as higher or lower line capacity utilisation, alternative base materials and altered product specifications, also influence the energy efficiency of the production process. In addition, economic and cyclical developments frequently are of importance.

By including projects in the entire product chain, energy savings in the product chain are taken into account in the calculation of energy efficiency. Such projects constitute alterations of a structural nature, causing a mix of savings and structural effects. Finally, sustainable energy also leads to efficiency improvement. However, while generated sustainable energy does indeed reduce the purchase of energy, it does not reduce energy consumption.

All these elements of the methodology are to be reconsidered. Where possible, a link is sought with methodologies already in use elsewhere, both nationally and internationally. Expertise of other institutions is used as well.

Co-ordination with other methodologies

Not only the LTA-methodology is to be reviewed in 2009. In the course of the year, the national Protocol on Monitoring Energy Savings (PME) and the Sustainable Energy Protocol (PDE) will also be revised. These revisions are necessary to be in line with the Energy Services Directive (ESD)[1], which is embedded in Dutch legislation by means of the 'Implementation of EU Directives on Energy Efficiency Act'.

Both agreements are geared towards a collective 'methodology for energy efficiency', which is developed in cooperation with representatives of the agreement parties. Apart from the core elements of the methodology, substantial attention also is paid to the confidentiality of business data, which is governed by the Public Data Access Act (Wob) and the Personal Data Protection Act (Wbp).

[1] The Dutch name for this directive is 'Richtlijn 2006/32/EG van 5 april 2006 betreffende energie-efficiency bij het eindgebruik en energiediensten' [Guideline 2006/32/EG of 5 April 2006 concerning energy efficiency in end use and energy services].

LTA with ETS companies

Energy-intensive industries have participated in the *Covenant Benchmarking Energy Efficiency* since 1999. The aim of this covenant is that by 2012, as many facilities of the participating organisations as possible belong to the top of the world in terms of energy efficiency. Almost all organisations that participate in the benchmark must also reduce their CO_2 emissions. In recent years, they have been able to use the system of CO_2 emissions trading (*Emissions Trading Scheme* (ETS)) to achieve this goal. With the arrival of the ETS, companies shifted their priorities from energy efficiency to CO_2 reduction.

The agreement between government parties states that, by 2020, greenhouse gas emissions must be 30 percent less than in 1990. It would be preferable if this reduction were achieved in a European context. The government agreement also states that in 2020, one fifth of all energy must be sustainable and that an average energy efficiency improvement of 2 percent must be achieved in the period 2011-2020.

VNO-NCW, MKB Nederland and the LTO have made arrangements with the national government about how these aims can be achieved. These arrangements resulted in the Sustainability Agreement, which was elaborated in various sector agreements, including that with the industry.
LTA3 provides a framework for this industry sector agreement. Small and medium-sized enterprises step up energy savings with the help of the Energy Centre. For facilities that participate in ETS, the *Covenant Benchmarking Energy Efficiency* is amended to be able to achieve the objectives of the government agreement.

In addition to their participation in ETS, these organisations also have an obligation to make an effort to substantially improve their energy efficiency up to and including 2020, not only in their own processes, but also in the product chain as a whole. In order to get insight into the long-term opportunities for energy efficiency improvement, companies formulate energy efficiency plans and participate in annual monitoring programmes. The sector organisations take the initiative to develop preliminary studies and road maps. The ETS organisations will sign the LTA-ETS after the summer.

As the *Covenant Benchmarking Energy Efficiency* is focussed on ETS businesses, participation of non-ETS-businesses will be discontinued. These businesses have been advised to join LTA3, which will enable them to continue working towards the same objectives.

Results per cluster of sectors

Total overview

The order of presentation of the results for each cluster of LTA sectors is: industrial sectors, food industry, service sectors, transport sector and LTA1. **Table 2** shows the efficiency improvements of all indices in 2008 compared to 2007 and to the reference year (1998). There are two sectors with a different reference year: Netherlands Railways (1997) and supermarkets (1995).

Table 2. Efficiency improvement per index: 2007-2008 and 1998-2008 in %

SECTOR	EEI		DEI		EPI		TEEI	
	2007-2008	1998-2008	2007-2008	1998-2008	2007-2008	1998-2008	2007-2008	1998-2008
Asphalt industry	-2.79	6.89	0.76	0.94	0.69	7.69	-1.34	15.52
Chemical industry	-0.23	16.25	1.48	9.78	0.42	0.83	1.67	26.86
Fine ceramic industry	5.95	15.11	0.00	0.00	0.00	0.00	5.95	15.11
Foundries	-1.06	16.92	0.00	0.00	9.40	29.22	8.34	46.14
Coarse ceramic industry	0.61	12.79	0.00	0.00	0.50	4.32	1.00	17.11
Laundry industry	2.51	22.04	-0.02	0.00	1.08	2.41	3.50	24.45
Sand-limestone and cellular concrete industry	1.80	7.25	0.00	0.00	0.00	0.00	1.80	7.25
Refrigeration and cold-storage industry	-0.50	17.47	0.01	0.29	0.00	0.00	-0.50	17.77
Non-ferrous metal industry	-3.22	4.73	-0.33	2.92	-2.68	8.76	-6.23	16.40
Oil and Gas production industry	0.20	23.44	0.00	0.02	-0.07	0.03	0.13	23.49
Surface treatment industry	1.66	14.86	0.45	0.45	-0.06	0.46	2.05	15.77
Other industry	-1.20	11.85	7.76	15.71	1.84	10.55	8.40	38.12
Rubber and plastics industry	2.19	12.85	1.38	4.54	11.86	42.38	15.42	59.78
Tank storage companies	2.12	21.60	0.00	0.00	0.07	0.09	2.18	21.69
Carpet industry	-3.50	17.89	3.47	10.98	1.00	18.42	1.00	47.29
Textiles industry	1.05	9.12	-0.17	0.37	0.17	0.18	1.05	9.67
Total industrial sectors	**1.42**	**17.58**	**1.29**	**3.52**	**1.50**	**6.77**	**4.22**	**27.88**
Potato processing industry	3.73	7.35	0.15	3.22	0.00	0.00	3.88	10.57
Cocoa industry	-1.93	16.37	0.00	0.00	0.00	0.00	-1.93	16.37
Vegetable and fruit processing industry	0.26	12.30	0.11	0.61	0.13	0.77	0.50	13.69
Coffee roasting industry	2.02	12.74	6.22	19.36	0.26	3.27	8.50	35.37
Margarine, Fats and Oil production industry	-3.05	5.74	-0.66	0.00	0.00	0.13	-3.71	5.87
Flour manufacturers	-0.66	-8.59	2.51	2.51	0.00	0.00	1.85	-6.09
Meat processing industry	-0.34	10.05	0.23	0.68	0.03	0.65	-0.08	11.38
Dairy industry	-0.06	8.21	1.40	2.38	0.64	1.23	1.98	11.82
Total food industry	**-0.42**	**8.25**	**0.69**	**2.11**	**0.27**	**0.68**	**0.54**	**11.04**
Netherlands Railways	2.49	19.74	-0.12	9.68	0.00	0.00	2.38	29.42
Transport sector	**2.49**	**19.74**	**-0.12**	**9.68**	**0.00**	**0.00**	**2.38**	**29.42**
University Medical Centres	0.55	-7.38	0.31	0.52	0.71	0.71	1.55	-6.15
Universities	0.60	5.10	6.00	7.80	0.40	0.40	7.00	13.30
Service sectors	**0.30**	**-0.83**	**4.06**	**5.18**	**0.55**	**0.55**	**4.92**	**4.90**
LTA3 sectors	**0.74**	**15.11**	**1.11**	**3.76**	**0.78**	**4.40**	**2.64**	**23.28**
Supermarkets	0.90	5.10	3.00	6.10	0.00	0.00	3.90	11.20

‘The result of the practical test has exceeded expectations.’

HUB HUYNEN

Renovated crash barriers are as good as new ones

RENOVATION OF GALVANISED STEEL LEADS TO SUBSTANTIAL ENERGY SAVINGS IN THE PRODUCT CHAIN AND THE RESULT IS JUST AS GOOD AS NEW GALVANISED STEEL. THIS WAS THE OUTCOME OF A PRACTICAL TEST ON DEGALVANISATION AND REGALVANISATION OF CRASH BARRIERS, WHICH WAS SET UP WITH SUPPORT FROM SENTERNOVEM BY A COMPANY ESTABLISHED SPECIALLY FOR THIS PURPOSE, ARROSSO B.V. IN NEDERWEERT.

Every year, Rijkswaterstaat (the Directorate-General for Public Works and Water Management) has to replace some 650 kilometres of crash barriers along roads and motorways due to erosion of the zinc layer and subsequent corrosion. Greenhouses and stables also regularly generate large amounts of galvanised steel. Recycling this steel is not possible because the residual zinc makes the steel unsuitable for renovation, recycling or even scrap. The solution, therefore, is to remove the zinc. To this end, Fred van Hest, owner of Verzinkerij Van Aert B.V. in Nederweert, launched the ARROSSO project years ago. ARROSSO is short for *Algemene Recycling Renovatie Ontzinken Schoon Schroot Organisatie* (General Recycling Renovation Degalvanisation Clean Scrap Organisation).

Potential benefits to the environment

‘The potential benefits to the environment are enormous’, says Hub Huynen, general manager at ARROSSO. ‘Compared to new crash barriers, renovating 15,000 tonnes of galvanised steel saves 8.5 million kWh of energy and reduces CO_2 emissions by 19,500 tonnes. In itself, the degalvanisation technique is nothing new, but if you want to scale up the process, you run into problems. Where, for example, do you leave the waste that the process generates?’

The project received a boost when, in 2006, the Ministry of VROM asked SenterNovem to draw up a product chain approach for the recovery of primary base materials including zinc. With financial support from SenterNovem, ARROSSO is now conducting a practical test with the degalvanisation and regalvanisation of 3.7 kilometres of crash barriers, representing 130 tonnes of steel. Companies throughout the product chain are involved, from the contractor who disassembles and reassembles the barriers and the manufacturer of the new barriers, to the company that processes the waste material.

Quality standards

Renovated crash barriers must meet the same European quality standards as new ones and must have a CE-mark. This means that ARROSSO has to check whether the incoming barriers are distorted or damaged and repair them if possible. Huynen: ‘SenterNovem helped us to overcome this hurdle. We are supported in the practical test by two metallurgists and a laboratory that can analyse metal.’ The first six tonnes of crash barriers have since been degalvanised and regalvanised. According to Huynen, the result has exceeded expectations: ‘I’ll bet that nine out of ten people in the world of galvanisation will not be able to tell the difference between renovated and new barriers.’

Industrial sectors

Energy consumption

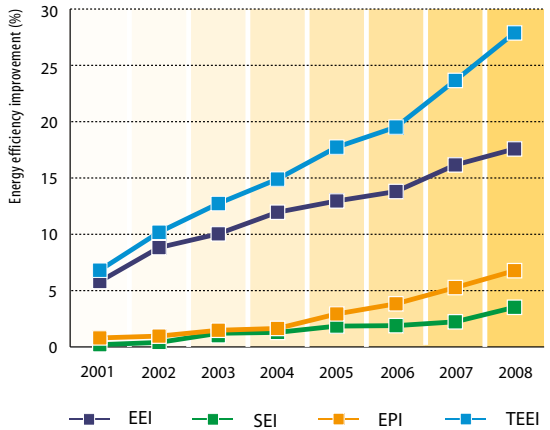
The wastewater purification water boards and ICT sectors joined the LTA in 2008. The University Medical Centre sector was transferred to the service sector as of 2008. Energy consumption in the 18 industrial sectors, with the exception of the ICT sector, amounted to 112 PJ in 2008. These sectors account for 58 percent of the energy consumption in the LTA sectors.

Energy efficiency improvement

For the industrial sectors, the TEEI showed a 27.9 percent improvement at the end of 2008 compared to the reference year (1998), 4.2 percent of which was achieved last year. During the agreement period, an average annual TEEI of 3.0 percent was achieved.

Process efficiency improved by 1.4 percent in 2008 compared to 2007; the use of sustainable energy is responsible for an improvement of 1.3 percent and energy efficient product development caused an improvement of 1.5 percent. **Figure 8** shows the development of index improvements over the years.

Figure 8. Energy efficiency improvements per index for industrial sectors 2001-2008 (in percent)



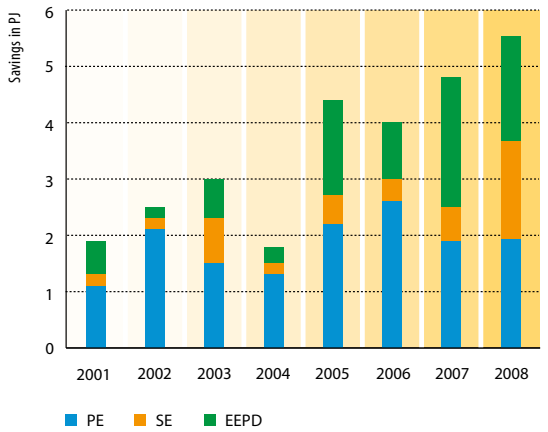
Measures introduced in the production process in 2008 yielded savings of 1.9 PJ. Furthermore, favourable process influences of 3.5 PJ have been reported. The negative process influences that were reported amounted to -6.0 PJ. These exceed the effects of savings and other favourable influences. The explanations given for the efficiency improvement are not conclusive. It is possible that some companies do not enter every measure they have taken in the production process into the monitoring process.

In 2008, the amount of avoided CO_2 emissions rose by 2.3 Mtonnes. From 2001, improvements in the total energy efficiency have resulted in an 11.0 Mtonnes reduction in CO_2 emissions. This constitutes an average of almost 1.4 Mtonnes a year.

Energy savings through measures

In 2008, the savings volume due to process measures remained largely the same. Savings as a result of investments in sustainable energy increased in particular in comparison to 2007, while savings due to energy efficient product development decreased slightly. **Figure 9** shows how the savings volumes in the industrial sectors developed in the course of the agreement period. This relates to the **newly** achieved savings per year.

Figure 9. Scale of savings measures for industrial sectors for 2001-2008 (in PJ)



‘You have to appeal to the ambition and commitment of individuals and companies.’

ERIK DE RUYTER

‘Real support at the practical level’

ON THE INITIATIVE OF THE DUTCH RUBBER AND PLASTICS FEDERATION (NRK), THE EUROPEAN UNION RECENTLY LAUNCHED THE EUPLAST-VOLTAGE PROJECT. THIS AMBITIOUS PROJECT IS AIMED AT ENABLING COMPANIES THROUGHOUT EUROPE TO SAVE 20 PERCENT ON ENERGY IN THE COMING 10 YEARS, AND IS BASED ON THE LTA APPROACH OF THE PLASTICS PROCESSING INDUSTRY IN THE NETHERLANDS. THE NRK HAS ALREADY EXCEEDED THIS OBJECTIVE BY A LARGE MARGIN.

‘The Dutch rubber and plastics industry was supposed to improve energy efficiency by 20 percent over the last ten years’, says Erik de Ruijter, general manager of the sector organisation NRK. ‘And we did. But that’s putting it mildly, we’re already at 32 percent!’

De Ruijter attributes this success to the approach they took. ‘Participation was voluntary; we only encouraged the companies. Once companies discover that energy measures are not only good for the environment, but also for their own operations, they are happy to take part. This makes sense, because they save on costs, stimulate innovation and strengthen their own competitive position.’

De Ruijter is convinced that LTA experiences in the Netherlands could be extremely useful throughout Europe. ‘But the situation is different in every country, so it would be impossible to transfer the Dutch model as it is. We are thinking in terms of a triple system: first, a European framework, second, the possibility for sectors and companies in each country to choose an approach that suits their own situation. And third, there should be agreements in place between the respective government and the various sectors to support companies in achieving their energy-related objectives.’

Benchmark

Eleven organisations from eight countries are actively involved in the project. They will develop the concept and offer it to every country in Europe. ‘Many countries already stimulate energy savings. What is often missing is real support at the practical level’, De Ruijter explains. ‘In the Netherlands, companies get support from SenterNovem and their sector organisation about what they have to do, how they should do it and what the outcome will be. This is important because companies have to be sure that their investments are sound. This is why the European project contains a benchmark module, which will include the details and experiences of the Dutch plastics processing industry. In this way, companies in other countries can learn about our experiences and choose the measures that are best suited to their needs.’

Now it’s waiting for the MKB to follow suit

The European benchmark module will also benefit small and medium-sized enterprises in the Netherlands, because they will now also have access to a wealth of knowledge and experience in the field of energy efficiency improvement. The NRK has taken the initiative to help small and medium-sized enterprises to set up an energy efficiency plan. In addition, companies can use the MKB Energy Centre’s helpdesk.

Food industry

Energy consumption

In 2008, the energy consumption of the eight sectors in the food industry amounted to 46 PJ. This is 24 percent of the consumption of all LTA sectors.

Energy efficiency improvement

At the end of 2008, the TEEI of the food industry had improved by 11.0 percent in comparison to the reference year (1998). The improvement in 2008 was 0.5 percent. This amounts to an average annual improvement of more than 1.0 percent since 1998.

Process efficiency accounts for -0.4 percent of this improvement, sustainable energy for 0.7 percent and energy efficient product development for 0.2 percent. **Figure 10** shows the index improvement over the course of the agreement period.

Figure 10. Energy efficiency improvement per index for the food industry for 2001-2008 (in percent)

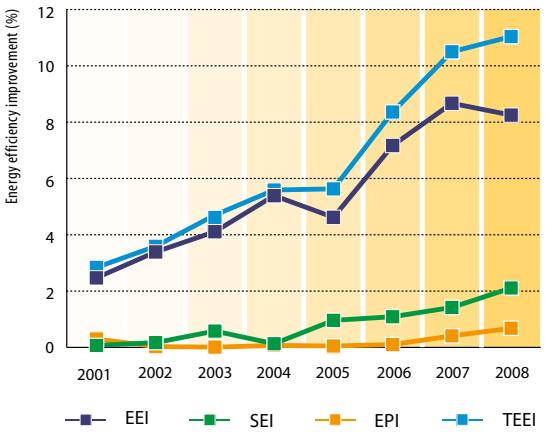
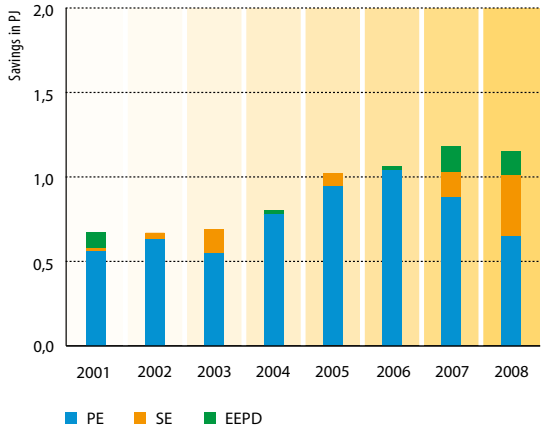


Figure 11. Scale of savings measures for food industry for 2001-2008 (in PJ)



The decrease in process efficiency is primarily attributable to the effect of other influences on the production process. In a number of sectors in 2008, the line and capacity utilisation deteriorated. A small number of sectors also saw a reduction in the quality of base materials.

The impact of the other influences comprises a savings component (909 TJ) and a dissaving component (1,754 TJ). The total impact of other influences is negative (845 TJ) and this is, in absolute terms, greater than the effect of the savings measures taken in 2008 (653 TJ).

In 2008, the amount of avoided CO_2 emissions rose by 0.3 Mtonnes. From 2001, improvements in total energy efficiency have resulted in a 1.0 Mtonnes reduction in CO_2 emissions, representing an average of almost 0.1 Mtonnes a year. This is largely (approx. 80 percent) down to improvements in process efficiency.

Energy savings through measures

Figure 11 shows the development of the savings volume achieved by measures in the food industry. This relates to the **newly** achieved savings each year.

‘In recent years we have started looking at our production processes in a different way.’

RENÉ DECKERS

A matter of structured and systematic consideration

MEASURES TO IMPROVE ENERGY EFFICIENCY CAN VARY FROM SMALL BEHAVIOURAL CHANGES TO ENORMOUS INVESTMENTS. FLOUR MANUFACTURER MENEBA IN WEERT USED A CHECKLIST TO REDUCE ITS ENERGY CONSUMPTION DURING WEEKENDS BY 75 PERCENT, WHILE KOOPMANS MEEL BUILT THE MOST MODERN FLOURMILL IN EUROPE ON THE EXISTING FACTORY SITE IN LEEUWARDEN. THE BASIS IN BOTH CASES WAS STRUCTURED AND SYSTEMATIC CONSIDERATION OF ENERGY EFFICIENCY.

Meneba is one of Europe’s largest grain processing companies with a milling capacity of 1.2 millions tonnes of grain a year. Participation in the LTA has enabled the company to improve its energy efficiency by more than 11 percent since 2005, a proportion of which was achieved during the weekends. ‘Our production company in Weert is usually closed during part of the weekend’, says René Deckers, head of process development and engineering. ‘Yet, we still noticed that energy was being used during these days. We set about looking for the causes in a structured and systematic way.’ It turned out, for example, that machines were still running, lights were still on, compressed air compressors had not been switched off and steam pipes were still pressurised. All these items were recorded in a list, which is now checked by the person who is last to leave the premises. As a result, energy consumption has been reduced by approximately 75 percent every weekend.

Various technical measures have also improved energy efficiency on working days. A flue gas condenser was installed to increase the efficiency of the steam boiler. And that will not be all, for Deckers sees plenty of new opportunities: ‘We are investigating if we can reuse residual heat, for example.’

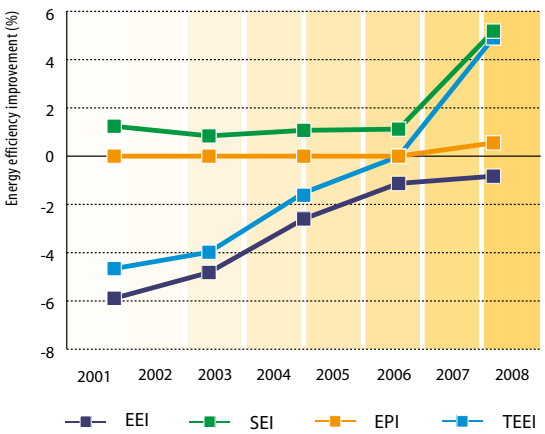
Ideal situation

For Koopmans Meel, building a new company was one of the options to make the 160-year-old family business more efficient. However, a new start in new premises proved to be too expensive. Therefore, a plan was drawn up in 2003 for the renovation of the existing factory. ‘First of all, we imagined how the entire concept would ideally look in 2014. Then we relocated installations, adapted buildings, demolished and rebuilt facilities to arrange the production phases in a more logical way’, says project manager Rien Koopman.

Saving energy was a key criterion in the refurbishment of the factory. ‘Because our main flow of grain and flour now goes only in one direction, we save 30 percent of energy on receipt, storage and transport’, says technical engineer Geert Oosting, who ensures that Koopmans Meel complies with the LTA. ‘In the milling process, we also improved energy efficiency by 25-30 percent, in close consultation with the mill manufacturer Bühler, whose customers now come from all over the world to see the most modern flourmill in Europe.’

Service sectors

Figure 12. Energy efficiency improvement per index for the service sectors for 2001-2008 (in percent)



Energy consumption

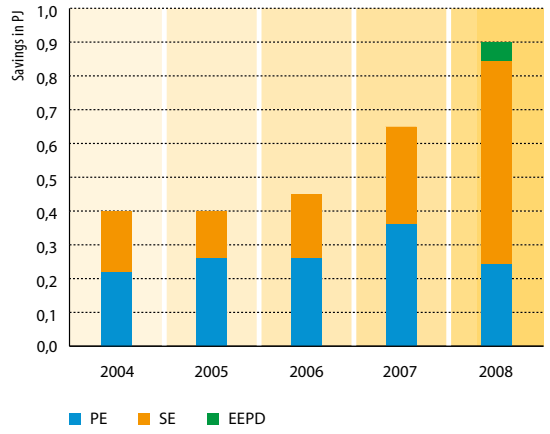
The service sectors are represented by two educational and two financial sectors: university education (WO), higher professional education (HBO), banks and insurance companies. University Medical Centres (UMC) also took part in the service sector monitoring process in 2008. Several banks and insurance companies joined LTA3 in 2008, but there are still a number of institutions in the financial services sector that have yet to join. Energy consumption in the service sector (without the financial service providers) was 12 PJ, which is 6 percent of the energy consumed by all LTA participants.

Energy efficiency improvement

The service sectors use the savings index as their monitoring index. It shows the savings achieved by a number of measures in comparison to the energy consumption in the year of reference. The HBO institutions only report by way of the savings index and not the (T)EEI. The universities and UMCs use both, taking the total number of square metres as a performance measure. Figure 12 shows this improvement in efficiency.

The disadvantage of using the (T)EEI with the total number of square metres as a performance measure is that this index does not take autonomous developments into account, such as growth in student numbers, increased digitisation and expansion of the cooling capacity due to global warming. As a result, the EEI in **figure 12** shows a small increase, despite the fact that energy savings through measures had been taken.

Figure 13. Scale of savings measures for service sectors for 2001-2008 (in PJ)



Energy savings through measures

Figure 13 shows the amount of energy saved as a result of the measures taken by the UMCs and both education sectors. This includes new measures. The figure shows a sharp increase in sustainable energy in 2008, which is the result of the purchase and production of sustainable electricity.

‘Make sure that the staff and the students take the lead themselves.’

WIM VAN PELT

The rise of the sustainable student

IN THE SERVICE SECTOR, ENERGY EFFICIENCY IS LARGELY DEPENDENT ON THE BEHAVIOUR OF INDIVIDUAL EMPLOYEES. WIM VAN PELT, ENERGY AND SUSTAINABILITY PROJECT MANAGER AT THE HOGESCHOOL ARNHEM NIJMEGEN (HAN), DEVELOPED A METHOD THAT MAKES EMPLOYEES AND STUDENTS CARE ABOUT THE ENVIRONMENT PERMANENTLY. ‘OUR AIM IS TO ENSURE THAT PEOPLE START THINKING IN TERMS OF SUSTAINABILITY.’

Last year, the HAN signed the LTA3. The agreement deals with far more than just the purchase of sustainable energy and sustainable waste management. It also focuses on commuting and transport. ‘Research has shown that at least 65 percent of CO_2 emissions are caused by the transport movements of students and staff’, says Wim van Pelt. While there is much to be gained in this respect, it will require a change in attitude.

Sustainability teams

By long experience, Van Pelt knows what can bring about such a change: sustainability teams. These teams represent a cross-section of the college: management, teaching staff, administration, janitor, catering, cleaning company and students. ‘Every team develops its own plans, selecting the themes the team wants to focus on.’ This method works in education units of 1,000 to 1,500 students. Van Pelt’s role is limited to that of coach. ‘It is up to the teams to brainstorm about potential improvement measures. They also have to come up with actions and PR campaigns to get their message across within the unit.’

The method has even caught on among science students. Moreover, it turned out that many years later the ideas were still very much alive to them. Van Pelt: ‘This method makes a lasting impression because, instead of a top-down approach, the staff and students take the lead themselves.’

Changes in awareness

Most sustainability teams start with specific operational themes, which have an immediate effect on energy management at the HAN. However, Van Pelt thinks that a permanent change of awareness among students is more important. ‘Our students will one day occupy prominent positions in society and it is important that they continue to propagate the concept of sustainability.’

Extra savings

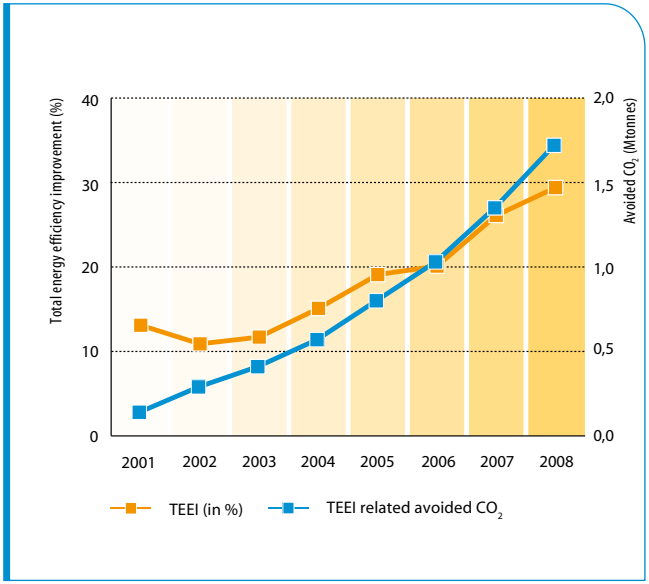
According to the LTA agreements, the HAN will have to save an extra 2 percent per year over the coming period. Van Pelt sees plenty of opportunities: from distance learning and building student accommodation on campus to futuristic bicycle stalls with solar collectors, where students can charge their electric bicycles and scooters. And there will be no lack of management support: ‘In the institute plan for 2008-2012, the Board has included sustainability as a core value in operations, education, research and services.’

Transport sector (NS)

With 13 PJ, the transport sector represents 7 percent of the energy consumption of the LTA participants.

The transport sector is represented solely by Netherlands Railways (NS). **Figure 14** shows the relationship between energy efficiency improvement and the avoided CO_2 emissions of the three participating NS organisations.

Figure 14. Avoided CO_2 emissions related to the TEEI for the transport sector

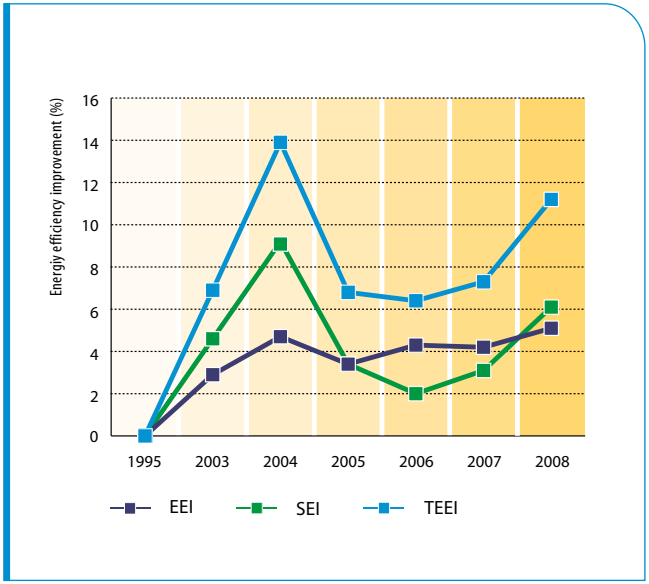


LTA1 (Supermarkets)

Supermarkets use 11 PJ of energy, which is 5 percent of the collective energy consumption of the LTA participants.

The supermarkets are the only remaining sector that operates fully in accordance with LTA1. The agreement with this sector ends in 2010. **Figure 15** shows the developments in energy efficiency improvements up to and including 2008.

Figure 15. Energy efficiency improvement per index for supermarkets (LTA1) for 1995-2008 (in percent)



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