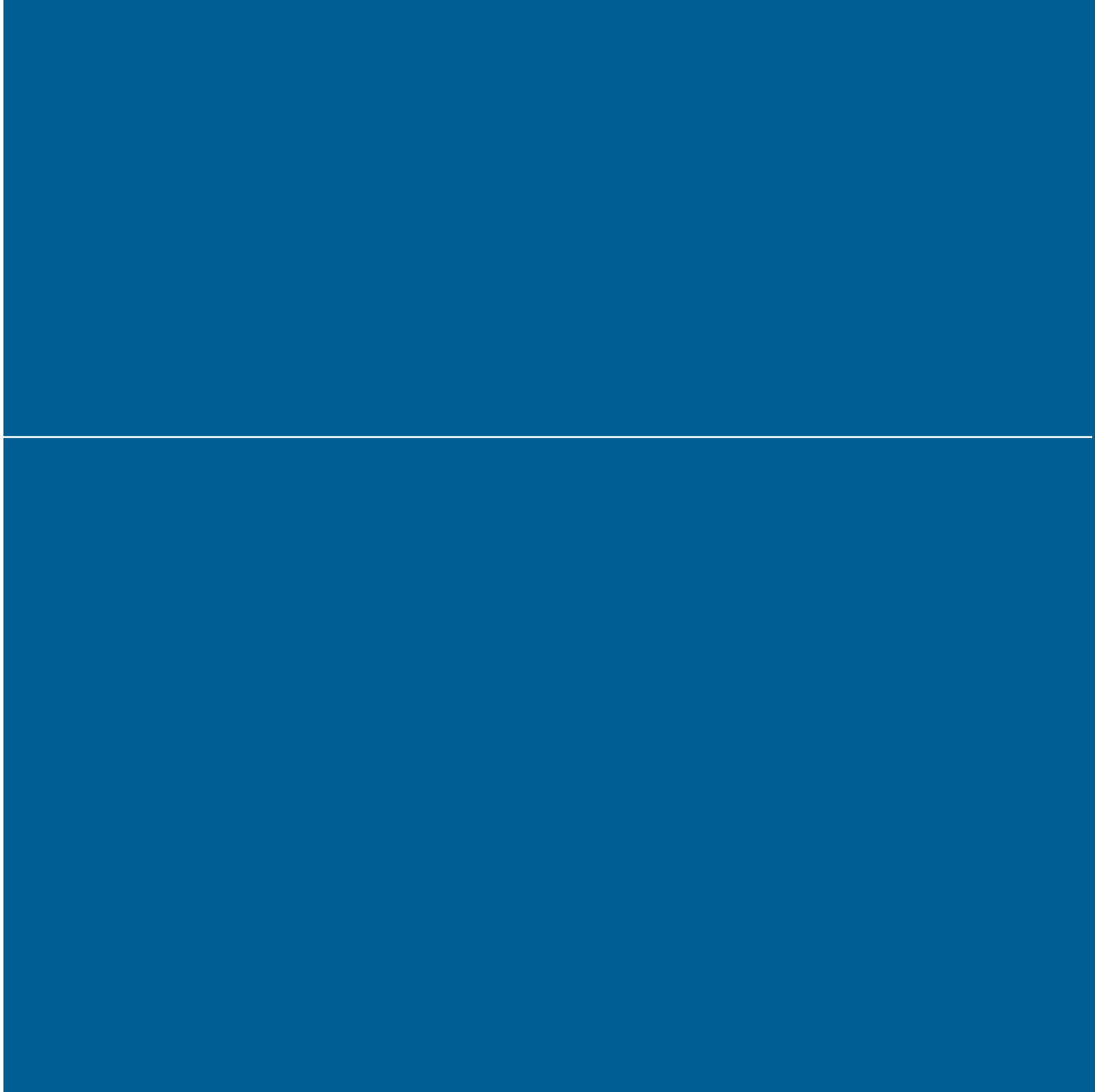
Long-Term Agreements on energy efficiency in the Netherlands

Results for 2004



Long-Term Agreements on energy efficiency in the Netherlands

Results for 2004

Contents

This brochure contains the results of the Long-Term Agreements (LTAs) for energy efficiency for the year 2004. The report provides an overview of the energy-saving measures taken by Dutch companies and the results they have achieved.

Desso Waalwijk
carpet tile manufacturer

Biggest gains in the chain

At Desso, saving energy isn't only limited to what the company can do. Pierre Maas, project manager and energy coordinator: 'The biggest gains are realized in the chain. Our most substantial saving over recent years was achieved by changing the composition of the raw materials. We replaced a raw material that was energy-intensive to produce by one produced by more energy efficient methods. And we naturally make every effort to restrict our waste production wherever possible, for instance by ensuring that tufting, coating and hole-punch machines are at the optimal settings. Less waste means gains all round: raw materials aren't wasted and energy isn't being used to transport and process the waste.'

Introduction

Since the early 1990s, the Ministry of Economic Affairs has been making long-term agreements (or covenants) with various energy-intensive sectors as part of Dutch energy policy. The voluntary agreements, or LTAs, are aimed at promoting energy savings in the Netherlands. The education sector, healthcare institutions and a number of agricultural sectors followed suit a few years later, and joined the LTA scheme. The initial agreements with industry ended in 2000. However, due to the success of these so called first-generation LTAs, the government and industry decided to sign new agreements, known as LTA2. This covenant spans 2001 to 2012.

The larger energy-intensive companies have not signed LTA2 but are instead participating in the Benchmark Covenant. Medium-sized (and sometimes smaller) enterprises are taking part in LTA2. To qualify for participation in LTA2, a sector must use at least 1 PJ of energy annually, 80% of which should be consumed by the sector's constituent companies. This report presents the results of LTA1, LTA2 and the GLAMI Covenant (which covers glasshouse horticulture and the environment).

LTA2 is signed by three Government Ministers (Economic Affairs; Agriculture, Nature and Food Quality; and Spatial Planning, Housing and the Environment), the provincial authorities, the Association of Dutch Local Authorities (VNG), the participating companies and relevant trade organizations.

On 1 January 2005 there were 988 companies taking part in the Long-Term Agreements, and the number of LTA2 companies is increasing on a yearly basis. In addition, some ten thousand companies in the agricultural sector are also participating in agreements where energy plays an important role. The total energy consumption of the participating companies in the industrial sectors totals 93 PJ in 2004, while that of the service sectors amounts to 40 PJ; the food sector consumes 35 PJ.

LTA2 explained

What is required of LTA2 companies?

1. Every four years, companies must draft an *energy conservation plan* (ECP) setting out their energy efficiency goals, the measures they intend to employ, and a schedule for reaching their goals.

2. Companies practice *good housekeeping measures*; these are process efficiency measures that are cost effective for companies. In other words, the costs can be recouped in less than five years.

3. Participants practice systematic *energy care* in the company. This should encourage companies to remain consistently focused on their energy consumption. To check that LTA2 companies are sufficiently implementing energy care measures, a system for uniformly assessing this has been developed. Companies are asked to answer a comprehensive questionnaire. The greater the number of affirmative answers, the higher the number of points awarded. The agreement is that, after two years of joining LTA2, companies should have at least 50 points.

4. Companies strive to put the so-called *expansion themes* into practice. The goal is to increase the use of sustainable energy and to save energy through energy-efficient product development.

5. Participants submit yearly *reports* on the progress they have made with implementing the Long-Term Agreements.

Evaluating LTA

In 2004, the Ministry of Economic Affairs and the LTA platform evaluated the implementation and efficacy of the LTA scheme. LTA2 proved to have had positive impact on energy efficiency and an added value when compared to other instruments such as energy taxes or CO_2 emissions trading. In addition, LTA2 has positive side effects such as making companies aware of structural energy savings and forging better working relations between government and industry. Companies acquire more knowledge of the potential of realizing ambitious energy efficiency targets which results in above average product and process innovation. The participants in LTA2 conserve more energy than companies that don't take part. The majority of companies expect to achieve their intended goal.

Of course, a number of factors could be improved upon, which is why the platform devised an action plan outlining the following key points:

- Structural financial support of LTA participants is required to ensure proper compliance with the covenant.
- New ways of improving process efficiency are developing all the time, so this topic should receive continuous attention.
- The monitoring system and checklist should be simplified. In the meantime the parties to the LTA have agreed a new system.
- It is important that the LTA participants are assisted in substantiating and realizing projects in the framework of the expansion themes. And in monitoring these projects.
- Cooperation between companies and the relevant Competent Authority should be improved.
- Research is currently being conducted to ascertain whether putting LTA into practice can be simplified, especially for small businesses. This would reduce the administrative burden and render the LTA process more efficient.

The efficiency of concluding covenants to promote energy saving is also recognized internationally. The International Energy Agency refers to Dutch industry one of the most energy-efficient in the world. The Green Book published by the European Union arrives at the same conclusion. The Long-Term Agreements are an important facet of Dutch energy conservation policy and make an essential contribution to the high level of energy efficiency. Even now, in the face of an economic downturn, companies seem prepared to take measures to reduce energy consumption.

Supporting LTA

SenterNovem supports LTA participants in putting their covenant agreements into practice. For instance, companies can benefit from the expertise and experience of advisers in the form of help to companies and trade associations in drawing up energy conservation plans, and monitoring the energy savings that have been realized. Another example is the advice SenterNovem, as independent expert, provides to provinces and local authorities (Competent Authorities) on the quality of the energy saving plans.

Instruments

Specific instruments have been developed within the framework of the LTAs:

- Lists of measures
- Extensive energy studies
- Software package LESS (Life-cycle Energy System Scan)
- Various 'quick scans' regarding product innovation, technology and sustainable energy.
- Various aids have also been developed for implementing energy care.

These instruments facilitate companies in actually shaping their efficiency improvements.

Digital information

LTA participants receive information from a central information source, the LTA website (www.senternovem.nl/LTA) and electronic newsletters on LTA in general and specific topics such as energy care and expansion themes. There is also a dedicated newsletter for local authority personnel. (All newsletters are available in Dutch only.)

With various trade associations, SenterNovem also organizes user groups, knowledge network meetings and workshops for companies. Finally, SenterNovem organizes various consultation structures involving companies, trade associations, Competent Authorities and ministries.

Each year, SenterNovem carries out an audit, determining and presenting LTA results per sector. The current report contains the results of the 2004 audit.

Laurus
food organization, runs a number of supermarket chains

Little things make the difference

Thomas Wählisch, manager of Laurus' control, maintenance and energy affairs, regularly receives energy efficiency ideas from colleagues. 'Our company employs a lot of young people, and you can tell that, in many cases, they've been taught to use energy efficiently at home. And they do the same at work. A member of staff noticed that the edge of the deep-freeze section always feels warm, even when the shop is closed. We warm the edges for our customers' comfort. That is of course pointless after closing time, as my colleague rightly pointed out. So we've stopped doing it. It may seem like a relatively minor change, but in supermarkets it's the little things that make the difference.'

Energy efficiency improvements per sector

LTA results for 2004

In 2004 there were 35 sectors (and 45 branch organizations) participating in LTA covenants. Eight of those were participants in LTA1, 24 in LTA2 and there were three separate covenants (glass horticulture, higher professional education (HBO) and large sports complexes). In 2004, the flour industry, potato processing industry and the sand-lime industry all joined LTA2.

118 companies signed up to LTA2 in 2004. This includes 36 Philips branches (all but one) that, as a group, joined the LTA 'non branch related industries' category. 23 joined the LTA surface treatment industry and 19 joined the rubber and plastics processing industry. In the brewery sector, the major companies are participating in the Benchmark Covenant. The smaller breweries take part in LTA2 and fall into the 'non branch related industries' category. This brings the total number of participants in 2004 to 988. In 2003 this was 870.

The tables on pages 12 and 13 show which sectors joined LTA2, which participate in LTA1 and which sectors and companies have joined the Benchmark Covenant. The overview includes all former LTA1 participants (industrial sectors) that, after LTA1 ended, signed LTA2, began benchmarking or signed another covenant. Consequently, the overview is a reflection of the developments and shifts. The sectors that showed an interest (marked as B) in participating in LTA2 in 2004 are also included.

The higher professional education sector and glass horticulture branch each signed a separate covenant: the Sustainable Higher Education Charter and the Glass Horticulture and the Environment Covenant (GLAMI), respectively. The Energy and Environmental Covenant for Swimming Pools, Sports Halls and Ice Rinks (Sport Covenant) – which has not been reported on before – was terminated by the steering group on 31 December 2004. Keeping all the sports facilities in the Netherlands sufficiently actively involved in the covenant proved impossible. This has been written up in a separate evaluation.

The Minister notified the Lower House of the termination in 2004.

One company was disqualified from LTA for failing to meet LTA agreements. The Competent Authority has been notified.

PARTICIPATING SECTOR	LTA1	LTA2	BENCHMARK-COVENANT	NO COVENANT	OTHER
Services					
University hospitals		■			
Banks (Netherlands Assoc. of Banks)	■				
Higher professional education					■
NS (Netherlands Railway)	■				
Sport en recreation					terminated
Supermarkets	■				
Insurance companies	■				
Universities	■				
Industrial					
Oil refineries			■		
Asphalt industry		■			
Cement industry			■		
Chemical industry		■	■		
Fine ceramics industry		■			
Foundries		■			
Glass industry			■		
Coarse ceramics industry		■			
Iron and steel industry			■		
Laundry industry		■			
Sand-limestone industry		■			
Refrigeration and cold-storage		■			
Non-ferrous metal industry		■	■		

(situation as per 31 December 2004)

Legend to tabel: ■ = joined B = interested in joining

PARTICIPATING SECTOR	LTA1	LTA2	BENCHMARK-COVENANT	NO COVENANT	OTHER
Oil and gas production industry					
Surface treatment industry					
Non branch related industry					
Paper industry					
Philips		*			
Surface-treatment industry		B			
Rubber and plastics processing					
Tank storage industry					
Carpet industry					
Textile industry					
Agricultural					
Flower bulb growers					
Glasshouse horticulture					
Mushroom growers					
Food					
Potato processing industry					
Breweries		*			
Cocoa industry					
Vegetable and fruit processing					
Coffee roasting industry					
Margarines, fats and oils					
Flourmills					
Sugar industry					
Meat processing industry					
Dairy industry					

(situation as per 31 December 2004)

Legend to tabel: = joined B = interested in joining * = joined the non branch related industries

Monitoring participation

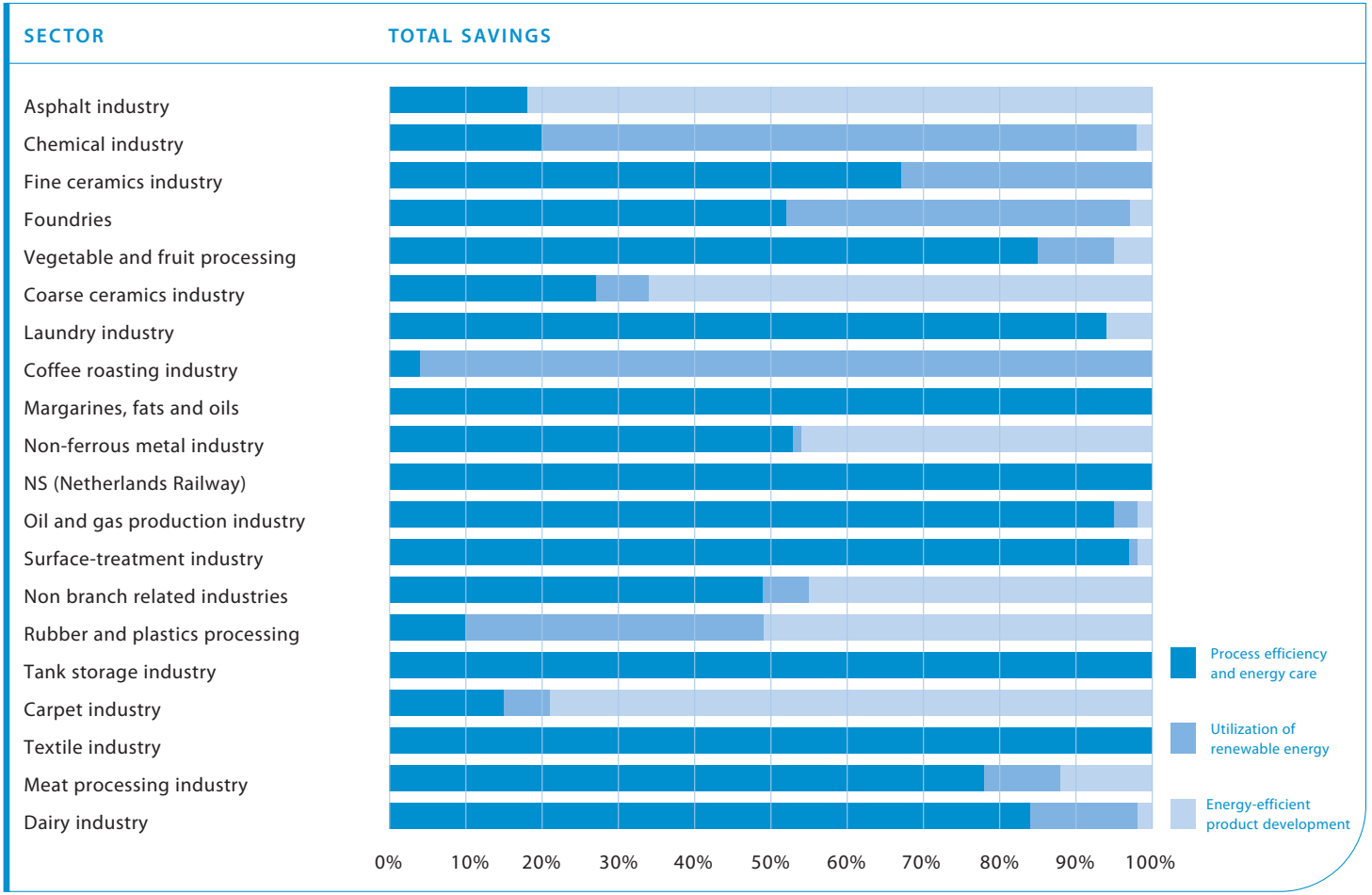
The LTA agreements state that every year, before 1 April or 1 May at the latest, companies must provide SenterNovem with monitoring data. This information provides the basis for the branch reports that are discussed each year with the members of the Dutch energy-saving consultative body, the OGE. The list of participants in the OGE is included in the first table of every text per sector. Sectors that joined LTA2 as a whole in 2004 (the sand-limestone industry, potato processing industry and flour manufacturers) and a number of major companies that joined in that year (like Philips and Amsterdam Schiphol Airport) were of course unable to take part in the 2004 audit. This report does not contain monitoring information on higher professional education. The sector provided no details that could serve as a basis for energy efficiency. The institutions chose a 'savings index' or SI as a relative measure (on page 18). No new statistics could be published on the glass horticulture branch in 2004. The figures provided display considerable differences compared to previous years. Given that no satisfactory explanation could be found for these shifts, the monitoring commission that represents the sector decided to take a closer look at the figures before they were published. 94% of the LTA participants took part in the 2004 audit. Participation was only under 90% in the banking and refrigeration and cold-storage sectors. Banks are often unable to provide the data on many branches in time. For smaller refrigeration and cold-storage businesses (often one-man enterprises), providing monitoring information is often (too much of) a burden. Calculated in terms of the energy consumed by the participating companies in the sector, participation is well above 90%.

LTA results

The graph on page 17 offers a total overview of the results per sector. This shows the percentage of total energy efficiency improvement (TEEV) for 2004 and 2003, compared to the previous year. The total energy efficiency improvement as a result of energy saving measures is the sum of the savings for the monitoring year through:

1. energy efficiency measures taken by companies and their (internal and external) corporate influences (process efficiency);
2. the use of renewable energy (expansion theme);
3. measures taken by companies regarding energy-efficient product development (expansion theme).

DISTRIBUTION OF MEASURES PER SECTOR IN 2004



The graph above indicates how, for each sector, the number of reported energy saving measures are distributed over the categories process efficiency and energy care, renewable energy, and energy-efficient product development.

In six sectors, of the energy conservation measures that were reported, over 70% were applied in the framework of 'expansion themes' (sustainable energy and energy-efficient product development).

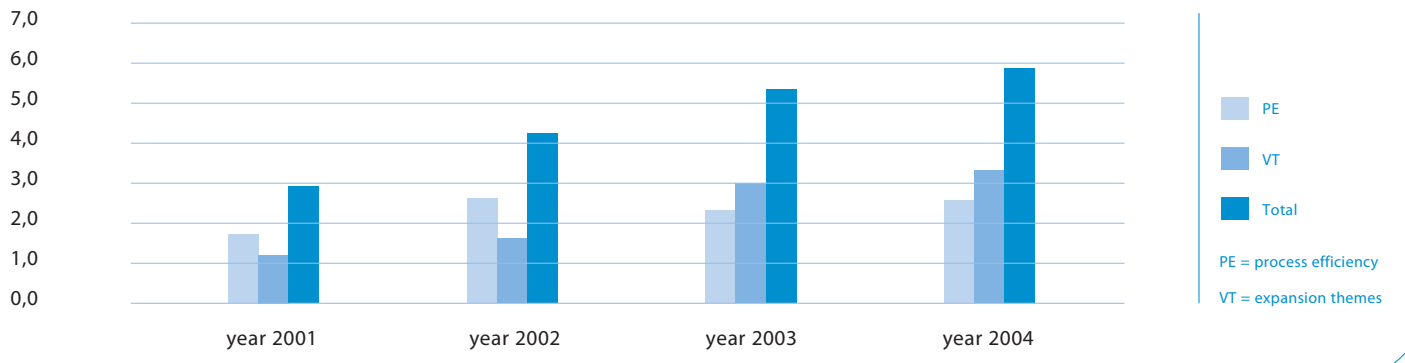
WHAT DOES TOTAL ENERGY EFFICIENCY IMPROVEMENT CONSIST OF?

Process efficiency is expressed as the energy efficiency improvement (EEV) that is reported annually by both LTA1 and LTA2 participating companies. LTA2 companies report not only the EEV but also the current situation regarding implementation of their systematic energy care regime, use of sustainable energy (sustainable energy improvement or DEV) and the savings produced by energy-efficient product development (EPV). The total energy efficiency improvement (TEEV) can be calculated for LTA2 companies by simply adding together the EEV, DEV and EPV.

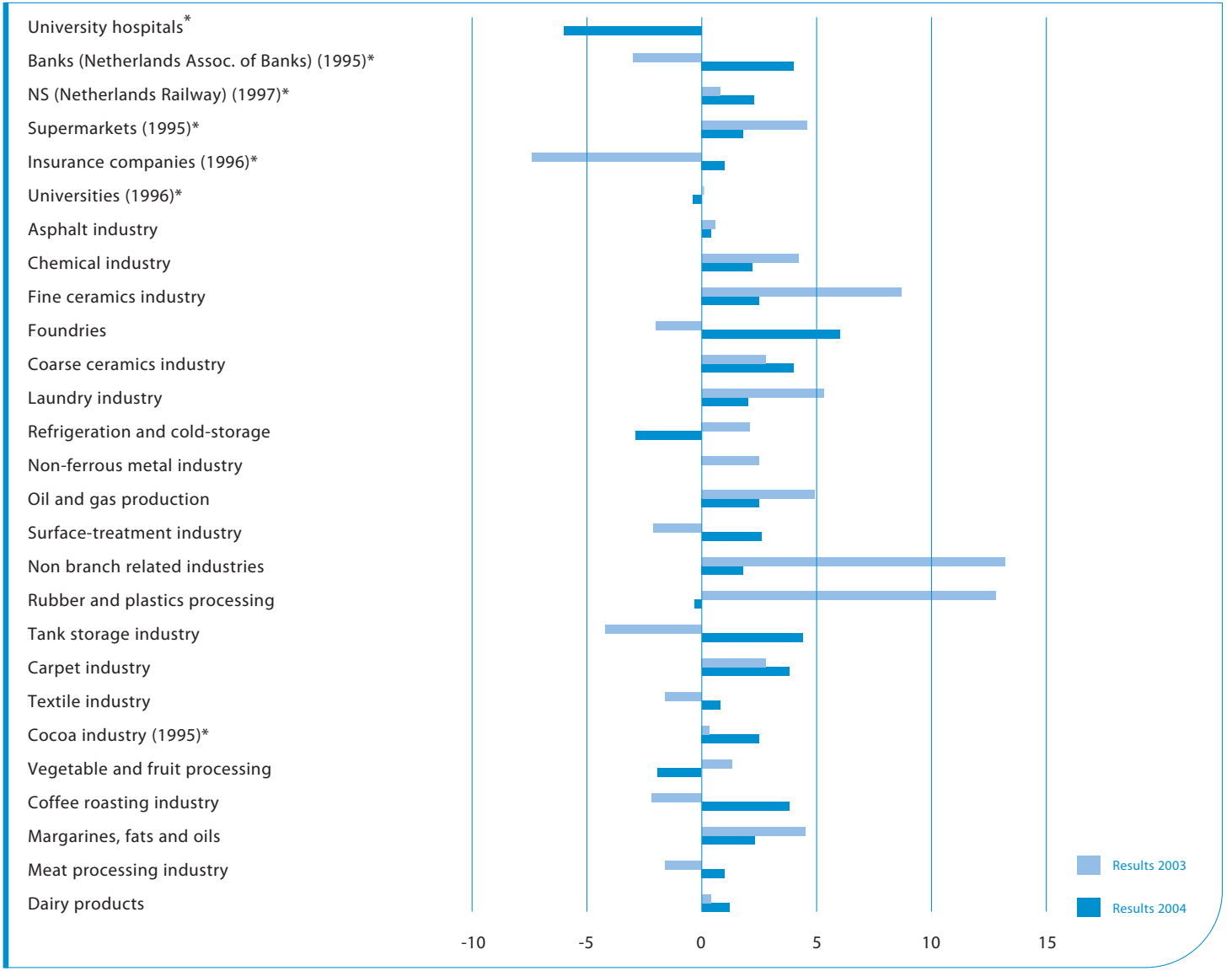
Below is an overview of the results of LTA in 2004 for the various groups of sectors: services, industry, agriculture and food. Most sectors have seen an improvement in total energy efficiency compared to 2003. When taken as a whole, the efficiency adjustments realized by all the sectors translates into an emissions reduction of 2.8 Mton CO_2 in 2001-2004. This involves the total energy efficiency improvement.

The following pages describe the energy efficiency improvement results achieved by the individual sectors.

SAVINGS BY COMPANIES IN TYPE OF MEASURES TAKEN (PJ)



RESULTS PER SECTOR



* no results for 2003.

Service sectors

Participants: university hospitals, banks, Nederlandse Spoorwegen (Netherlands Railway), supermarkets, insurance companies, universities, higher professional education

The service sectors exhibit an efficiency improvement of 7.7% in 2004 compared to the reference years of the separate sectors. With which these sectors realize an efficiency improvement that is 1.4% higher than 2003. This corresponds with a CO_2 emission reduction of 1 Mton with regard to the reference year. Besides insight into changes in energy efficiency in 2004 compared to 2003, it is also interesting to review the extent to which institutions can attribute the cause of this adjustment. In the service sectors, 68% of the shift in energy efficiency can be explained. The banks in particular lag behind with a basis of 6%. The energy savings that correspond to these percentages can also be expressed in PJ. The energy efficiency improvement for the services sector in 2004 amounts to 1 PJ (12,000 households). The most sizeable savings can be ascribed to the Netherlands Railway and scientific education institutes. Although the sectors have not undertaken a sustainable energy obligation, they source an amount of renewably generated electricity that exceeds that of industry and the food industry put together: 2.2 PJ (26,000 households). The supermarkets and banks in particular buy a considerable amount of sustainable electricity, and the Netherlands Railway and the universities also make a considerable effort. Over the last four years, the service sectors realized an annual efficiency improvement of an average of 0.3%. The cause of this slight yearly improvement is predominantly due to worsening efficiency in 2002, which can almost entirely be ascribed to the Nederlandse Spoorwegen.

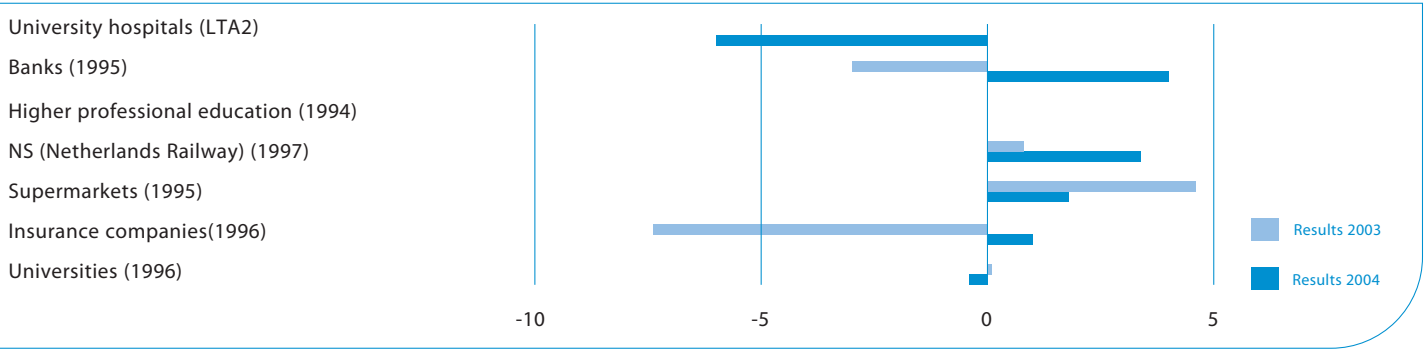
SAVINGS INDEX

Determining energy efficiency in buildings (particularly in service sectors with a LTA1) originally occurred on the grounds of energy efficiency improvements, the same method used in industry. This relates energy use to the gross surface area of the buildings. The better institutions monitored energy use, the clearer it became that changes in the way buildings are used (such as flexi workstations in offices, more patients per m^2 (in hospitals), new privacy needs and the multiple uses of school buildings) the energy efficiency improvement did not provide an accurate picture of the energy saving. So, alongside the energy efficiency improvement report, experiments began with a different reporting method, a 'savings index improvement'. This is the absolute saving in the monitoring year, divided by actual energy consumption in the sector in the reference year. The savings index is calculated and reported for the following sectors: banks, teaching hospitals, higher professional education institutes, universities and insurance companies.

Results in more detail

The total energy efficiency measured over the volume of the *university hospitals* improved in 2004 by 36% compared to the reference year 1998. The total energy efficiency measured over the gross floor surface area dropped by 12% compared to 1998. The savings index was introduced because energy efficiency related to volume offers an entirely different picture than that related to the gross floor surface area (on page 18). Two of the eight participating hospitals calculated their energy efficiency on the basis of this savings index and together arrived at an energy efficiency improvement of 2% compared to 1998. Because in most teaching hospitals energy care is secured by their

SERVICES SECTORS



existing environmental care system, one or two adjustments are often sufficient to meet the requirements for energy care. Despite the fact that the teaching hospitals did not join LTA2 until 2003, various energy saving options are being examined in the context of the expansion themes.

In 2004, the total energy efficiency of the *banks* improved by 12% with regard to the reference year 1995. The savings index for the sector shows a 15% energy efficiency improvement compared to 1995. Although energy care is not mandatory in LTA1, most participants have introduced some form of energy care. The share of renewably generated energy rose to 15% in 2004.

In 2004, the energy efficiency of the Nederlandse spoorwegen (NS) improves by 12.9% when contrasted to the reference year 1997, which amply achieves the goal of an 11% energy efficiency improvement in 2010. Compared with 2003, the improvement is 3.4%. NS has improved its use of sustainable energy sources by 2.6% with regard to 1997. This can be attributed to buying in sustainable energy.

Supermarkets have achieved an energy efficiency improvement in 2004 of 4.7% compared to the reference year 1995. This is an increase of 1.8% compared to 2003. Energy care is not compulsory in LTA1, but has been introduced in a broad form by a number of supermarket chains. The expansion themes are also a focus for this sector. The amount of sourced 'green' energy shows a substantial upswing compared to 2003.

The *insurance companies* show a decline of 3% in 2004 in contrast to the reference year 1996. In comparison with 2003 there is a 1% improvement. The various participating companies are constantly refining their energy care systems.

In the *universities* sector, total energy efficiency declines in 2004 by 0.3% compared to the reference year 1996. Compared to 2003, however, this is an improvement of 1.1%. In 2004, nine universities commence introduction of an energy care system. Two universities had already started applying this system. Expansion themes are not an integral part of LTA1 but a number of universities will nevertheless start using sustainable (wind) energy.

In the *higher professional education* sector it was agreed that energy performance would only be measured using the savings index. The savings index improvement in 2004 stands at 6% compared to 2003. Ten of the participating institutions begin to apply energy care in 2004. The first steps have also been taken in the direction of the expansion themes.

BN International
manufacturer of bookbinding materials and wallcoverings

Taking the environment seriously

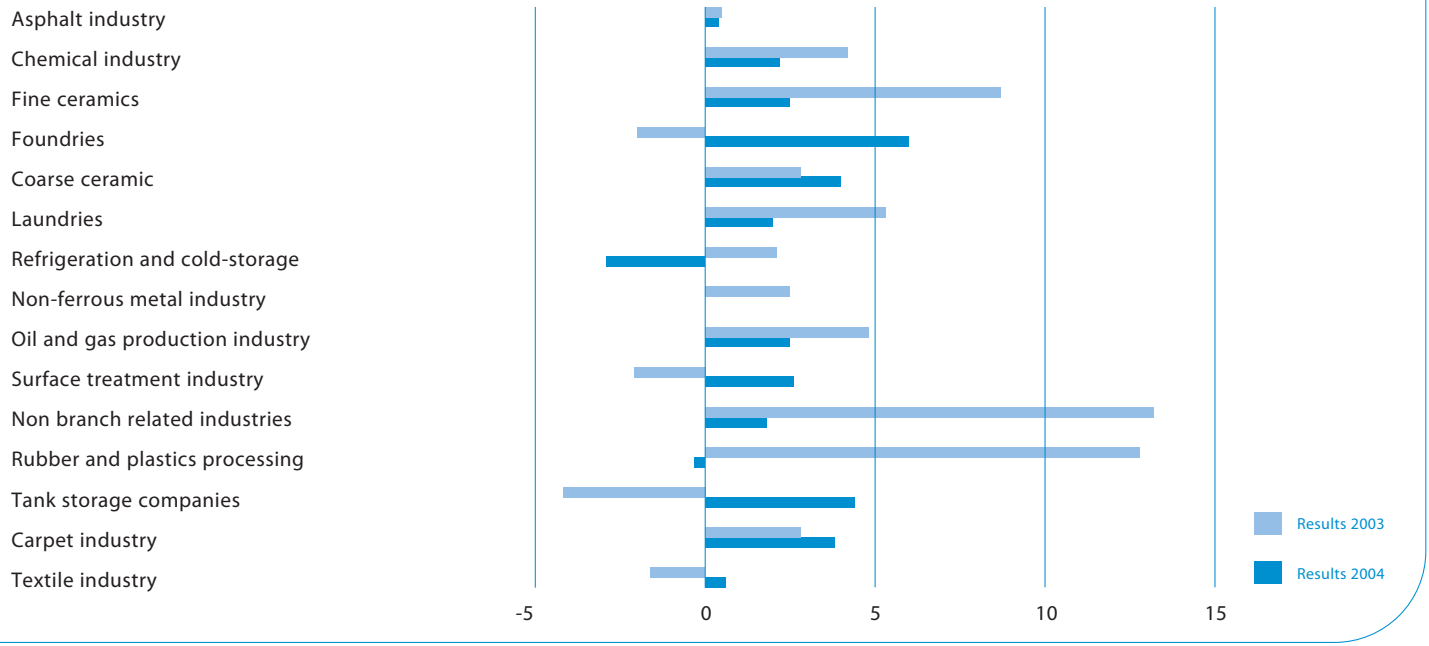
BN International is working to cut back on waste. And with success: in 2004, the company sent 650 tons of material left over from paste production to a factory in Germany. In 2005, Director Veerman expects to have cut this back to just 100 to 125 tons of waste. 'As a company you shouldn't ever accept transporting what was once 650 tons of good raw materials, as waste. Transportation alone is expensive. Slashing our waste levels nets us a gain of € 500.000. But apart from that: everything leaving our premises as waste consumes energy. So if you take the environment seriously and are committed to running your business responsibly, you have to take action in such situations.'

Industrial sectors

Participants: Asphalt industry, chemical industry, fine ceramics, foundries, coarse ceramics, laundries, refrigeration and cold-storage facilities, non-ferrous metal industry, oil and gas production industry, surface-treatment industry, non branch related industries, rubber and plastics processing, tank storage companies, carpet industry and textile industry

The industrial sectors have accomplished a total efficiency improvement of 16.1% compared to the reference year. This includes sustainable energy and energy-efficient product development. The industry has achieved 2.2% more than 2003. In the industrial sectors, 76% of the total efficiency improvement is due to process efficiency, 8% to renewable energy and 16% to energy-efficient product development. A distinct improvement in process efficiency through applying energy conservation measures in 2004 was achieved by the sectors that consume the most energy: the chemical industry, metal industry,

INDUSTRIAL SECTORS



oil and gas production industry and rubber and plastics processing sector. The chemical and rubber and plastics processing industries demonstrate substantial use of renewable energy in 2004. Due to price increases, in 2004, the use of renewable energy showed a sharp decline in the 'non branch related industries' sector. The coarse ceramics industry and the rubber and plastics processing sectors demonstrate savings on a substantial scale, achieved by applying energy-efficient product development. 85% of all industrial sectors can explain the shift in process efficiency. The chemical and tank storage companies are lagging sharply behind the desired score, with only 50% able to explain the decrease, while almost 100% of the fine ceramics industry, the refrigeration and cold-storage facilities, non branch related industries and textile companies can account for their dramatic drop in efficiency levels in 2004.

Results in more detail

Without an exception, the industrial sectors have suffered from the impact of the economic slow-down. This has led to adjustments to products, semi-finished products and raw materials received from suppliers, and in the sale of these processed goods to customers. Both developments affect energy use and, with this, energy efficiency. Despite the negative pressure this exerts on energy efficiency, only two sectors present a deterioration of their total energy efficiency compared to 2003. The scale of the energy conservation measures, other beneficial developments in the sectors and their efforts to prevent or limit negative influences wherever possible ultimately result in a 2.2% increase in energy efficiency in the industry compared to 2003. The developments per sector that also influence energy efficiency are summarised below. This influence can prove positive or negative.

The uncertain economic climate and the expensive euro raise the prices of raw materials for the chemical industry (higher oil price), the rubber and plastics processing sector and the carpets industry. Increased prices of bulk products also affect the tank storage companies because suppliers are unwilling to have their goods put into storage.

Industrial laundries, rubber and plastics processing companies and a number of large companies in non branch related industries are seeing some production facilities move to other countries. Increased production in low wage countries and steep competition is forcing a number of sectors to downsize. If the shift involves less efficient elements of the production process, this will benefit energy efficiency. Companies in many sectors are also suffering under the increased pressure of imports.

The *dependence of markets* is another much-heard problem. The coarse ceramic industry, surface treatment industry, laundries and carpet manufacturers are dependent on the construction sector. Next to this, laundries are discovering that the hospitals, cafe and restaurant and industry market seems to be shrinking. Tank storage companies seem extremely sensitive to a changing situation in the chemical sector. The worsening economic situation forces companies to sometimes exercise strict cost management, in some cases leading to more investments (also energy efficiency measures) the costs of which can generally be recouped in the short term. However, this also results in fewer investments, also in energy efficiency.

Scale and manpower are factors that frequently cited as explanations of altered energy use. The fine ceramics industry is under-manned

because of reduced demand, which results in increased energy use per product unit. Refrigeration and cool-storage facilities are faced with shorter storage periods for goods, which increases energy use. The carpet industry is manufacturing in smaller quantities, resulting in more start and stop losses. And companies in non branch related industries and laundries are reducing their batch size. The carpet sector is also suffering from international over-capacity.

The chemical companies are affected by price pressures, which necessitate them to accept variations in the *composition of raw materials*. For refrigeration and cold-storage facilities, the stored products have a varied influence on energy use: for some companies this entails an increase in energy consumption, for others a decline.

Changes in product specifications is a key factor in changing energy use. Requiring products to meet higher standards steps up energy consumption. This is an aspect that affects sectors such as the fine and coarse ceramic industry. The same is true for more complex products, such as those manufactured by the foundries and surface-treatment industries. Other products also involve higher energy use: products with different laying in and storage temperatures in the refrigeration and cold-storage facilities, thicker carpet manufactured by the carpet industry and technical textiles produced by textile companies. Legislation (largely occupational health and safety regulations) also brings about greater energy consumption. Monitoring companies that did not take part in previous audits affects a sector's total energy efficiency. The rubber and plastics processing in-dustry claims that the expansion of the market territory and relaxation of export requirements benefits energy efficiency.

In the *asphalt industry* total energy efficiency improvement is 9.5% compared to the reference year 1998. As regards 2003 this is an improvement of 0.4%. 100% of companies meets the required level of energy care. Recycling asphalt results in an energy efficiency improvement in the chain of 2.4%. This corresponds to 0.081 PJ (969 households).

The *chemical industry* achieved a total energy efficiency improvement of 14.5% compared to the reference year 1998. In contrast to 2003, there is an improvement of 2.2%. All companies within the chemical sector meet the required energy care norm. A substantial saving of 0.465 PJ is realized in the expansion themes. The application of renewable energy has improved by 3.7% compared to 2003. The application of energy-efficient product development results in a savings increase: from 0.003 PJ in 2003 to 0.01 PJ in 2004.

In the *fine ceramics industry* total energy efficiency improves by 1.8% in contrast to the reference year 1998. In comparison with 2003, a 2.5% improvement is realized. The level of energy care in the branch is tested for the first time in 2004, and shows that 92% of companies meets the required level. To further improve the level within the sector, an energy care project is introduced in 2005. 2004 also sees the first step towards the expansion themes: a number of companies purchase renewable energy.

In 2004, the *foundries* achieve a total energy efficiency improvement of 12.9% compared to the reference year 1998. This is a 6% increase with regard to 2003. All the branch companies satisfy the stipulated energy care level. In the context of the expansion themes, one

company is applying the lost-foam technique. The company also sources a considerable volume of its electricity in the form of green energy.

The *coarse ceramics industry* increases energy efficiency by 11.1% compared to the reference year 1998. Compared to 2003 this is an improvement of 4%. In 2004, the branch undergoes its first energy care level test. Forty companies (87%) meet the required minimum level. The expansion themes are quantified for the first time during the 2004 audit. Gradual dematerialization (due to, among other things, thinner or smaller products) and transport savings play a significant part.

The *laundries* improve their energy efficiency with 16.8% compared to the reference year 1998. In comparison with 2003 this is an improvement of 2.1%. In the meantime, 93% of companies satisfies the required energy care level, which is an enormous leap compared to 2003. Application of the expansion themes yields a total saving of 0.003 PJ in 2004, which is the same as the 2003 level.

In the *refrigeration and cold-storage facilities*, an energy efficiency gain of 10.5% is achieved, compared to the reference year 1998. Contrasted with 2003, this signals a deterioration of 2.9%. Of the 86 participating companies in the branch, 58 (67%) meet the required level of energy care. Using heat pumps accounts for savings of 0.008 PJ. Nevertheless, sustainable energy efficiency drops by 0.3% thanks to less purchase of renewable electricity.

In 2004, the *metal industry*'s energy efficiency improvements remain at the 2003 level. Consequently, compared to the reference year 1998, the result is unchanged at 12.5%. All companies satisfy the stipulated energy care level. The number of measures realized in the context of the expansion themes decreases in 2004.

In 2004 the *oil and gas production industry* steps up energy efficiency with 2.5%. Compared to the reference year 1998, there is an energy efficiency improvement of 19%. The energy care level of all nine companies in the branch meets the required energy care norms. In 2004, the branch implements a number of projects aimed at sustainable energy and energy-efficient product development.

The *surface-treatment industry* improves its energy efficiency in 2004 by 3.8% compared to the reference year 1998. In comparison with 2003, this is an upswing of 2.7%. Energy care in this sector is tested for the first time this year. Only 40 of the 66 participating companies complete the checklist. 70% of these enterprises satisfies the required level of energy care. In 2004 two measures are applied in the context of the expansion themes: one involves renewable electricity, the other waste recycling.

In *non branch related industries* the total energy efficiency rises by 10.4%, balanced against reference year 1998. Contrasted with 2003 this is an improvement of 1.9%. In 2004, the percentage of companies that meets the energy care level dramatically increased to 93. The share of sustainable energy in total energy consumption dropped in 2004 from 5.6% to 0.2%. The decline can be explained by the increased price of green energy which prompted companies to purchase grey energy.

The total energy efficiency of the *rubber and plastics processing industry* is up 27.7% compared to the reference year 1998. Compared to 2003,

there is a deterioration of 0.3%. Two thirds of the companies meet the specified energy care norm, which is an improvement compared to 2003. The branch achieved a saving of 0.071 PJ (849 households) by applying the expansion themes. More efficient use of materials accounts for the bulk of the savings.

The *tank storage companies* deliver a total energy efficiency improvement of 8.8% compared to the reference year 1998. Contrasted to 2003, this is a rise of 4.3%. All the terminals satisfy the stipulated energy care level. Most of the terminals carry out All-In LTA Strategy scans (AIMS scans) as part of the expansion themes, which demonstrate that there are opportunities, albeit limited, for achieving savings in this sector.

The *carpet industry* enhances its total energy efficiency with 30.9% compared to the reference year 1998. In comparison with 2003 this is a gain of 3.8%. All companies except two meet the required level of energy care. The expansion themes comprise a key aspect of LTA2 for the branch. In 2004, a saving of 0.026 PJ is realized thanks to the application of new measures.

The total energy efficiency of the *textile industry* shows an improvement of 3.6% in 2004 when compared to the reference year 1998. When compared with 2003 this is a gain of 0.6%. All companies satisfy the minimum level of energy care required. No measures resulting in savings relating to the expansion themes were taken.

Karel Bolbloemen B.V.
producer of flowers for the retail sector and bulbs for the consumer market

Resounding results

In 2004, Karel Bolbloemen B.V. produced 20% more flowers than in 2003 without increasing energy consumption, thanks to Bert Karel's investments in each phase of the production process. Like Karel's idea to introduce water cultivation in the cooler unit. It is a technique in which bulbs, in water, are then placed in cold storage to take root. Bulbs that are forced in water take up less space in cold storage than the traditional approach to forcing, using pots of compost. And bulbs in water take root faster than in compost. So that's another energy gain. Karel: 'I'm open to anything, as long as quality doesn't suffer'.

Agricultural sectors

Participants: Flower bulb growers, mushroom growers, glasshouse horticulture

Of all three agricultural sectors that are dealt with in this report, glasshouse horticulture is the largest energy consumer. This sector is covered by a special covenant known as GLAMI (glasshouse horticulture and the environment), which combines energy-efficiency and environmental targets.

Renewable Energy Policy Agenda has been developed for all three sectors to promote the use of sustainable energy. There is still a long way to go if these targets are to be achieved. The agenda includes five potential energy options:

- using green electricity;
- a combination of heat pump/aquifer;
- using bio fuels;
- drying with warm glasshouse air;
- using pipes laying in the ground.

Licensing regimes on aquifer use, and the mounting price of green electricity have curbed usage of both.

In 2004, the *glasshouse horticulture* sector intensified its methods. 'Lit acreage' has increased. The sector also applies the CO_2 target value policy and emissions trading. No new figures for 2004 can be published on glasshouse horticulture. The figures provided differ quite considerably from those of previous years. Given that no satisfactory explanation can be found for this, the monitoring commission which represents the sector decided that, before being published, the data needed to be subjected to closer scrutiny. This analysis was still ongoing at the time this brochure went to press. The results will be available within the next six months.

A selected group of *flower bulb growers* was monitored because it is considered most representative of the sector. This group steps up energy efficiency in 2004 with 18.3 compared to the reference year 1995. The stagnating market and lower prices reduce investments in new construction. Investing in new construction also means applying

Agricultural Sectors	Reference year	Energy consumption reference year (PJ)	Total energy consumption (PJ)	Energy efficiency improvement reference year 2004	Share of sustainable energy %	Total energy efficiency improvement (TEEV in %) reference year 2004
Glasshouse horticulture	1980	108,9	*	*		-
Flower bulb growers	1995	3,0	3,8	18,3	4,18	-
Mushroom growers	1995	1,05	0,96	25,1	4,10	-

* = data not yet available

energy-efficient techniques. Despite these unfavourable developments, the sector manages to achieve the aforementioned positive (monitoring) result. The application of sustainable energy by this same selected group of growers was 4.18% in 2004, with which the sector's target of 4% in 2005 has already been realized.

The *mushroom growers* improve energy efficiency in 2004 with 25.1% compared to the reference year 1995, which means that the goal of 20% has already been met. Compared to 2003, savings total 4.5%. The rising energy efficiency improvement trend continues. Efforts to optimize climate control systems and enhance their energy efficiency bear fruit. The share of renewable energy within the sector amounts to 4.1% in 2004. This is 0.2% less than in 2003.

Food industry

Participants: cocoa industry, vegetable and fruit processing, coffee roasting industry, margarine, oils and fats, meat processing, dairy industry

In the food industry, compared to the reference year 1998 the total energy efficiency improvement is 5.6%. This includes renewable energy and energy-efficient product development and represents a 0.9% increase in contrast with 2003.
51% of the total energy efficiency improvement in the food industry is achieved through process efficiency, 36% is due to sustainable energy and 13% to energy-efficient product development. The revision of the efficiency improvement correction for the margarine, oils and fats industry in 2003 was crucial for the results. One sector that stands out is the coffee roasting branch, which made extensive use of sustainable energy. 87% of companies in the food sectors can account for the efficiency change. Apart from the coffee roasting industry, all the sectors score around 90%.

Results in more detail

From 2001-2004 confronted the food industry with a series of crises (foot-and-mouth disease, BSE, swine fever and bird flu), which exerted pressure on energy-efficiency results. External influencing factors such as altered product specifications, higher staffing levels and sectoral reforms resulted in a savings. Developments responsible for increased energy consumption include low staffing levels, altered product specifications, small food packaging and price drops due to international competition.

In the *cocoa industry*, energy efficiency increases in 2004 by 24.1% compared to the reference year 1995. This is a gain of 2% compared to 2003. No measures were taken to produce savings relating to the expansion themes because this is a LTA1 sector.

The *vegetable and fruit processing industry* achieves an energy efficiency improvement of 6.3% compared to the reference year 1998 and 1.9% compared with 2003. 96% of companies satisfies the

FOOD INDUSTRY

required energy care level but intends to raise its standards even higher. The part played by the expansion themes is still limited: 0.2% point of the energy efficiency improvement can be attributed to sustainable energy and 0.1% point to energy-efficient product development.

In 2004, the *coffee roasting industry* shows a decline in energy efficiency of 1.7% compared to the reference year 1998. In comparison with 2003 this means a drop of 3.8%. Seven of the eight companies meet the highest level of energy care. The coffee roasting industry applies four sustainable energy measures that result in 0.134 PJ renewable energy.

In the *margarine, oils and fats industry*, the total energy efficiency in 2004 has increased by 1.3% compared to the reference year 1998. This is an improvement of 2.4% when balanced against 2003. All participating companies meet the required level of energy care. No further activities on the expansion themes are reported in 2004. Sustainable energy is used, although applied by third parties, rather than company locations.

Total energy efficiency in the *meat processing industry* improved by 4.6% compared to the reference year 1998. Compared to 2003 this is an improvement of 1%. 80% of participating companies meets the required level of energy care. Energy efficiency improvement with regard to sustainable energy is 0.3% compared to 1998. Energy-efficient product development has also improved by 0.3% in contrast to 1998.

In the *dairy industry* total energy efficiency rises by 4.6% in 2004 compared to the reference year 1998. Compared to 2003 this shows a gain of 1.2%. 98% of participating companies satisfies the stipulated energy care standard. In 2004 the sector applies nine expansion theme measures that jointly account for a saving of 0.033 PJ.

Unimills
manufacturer of vegetable oils and fats

Moral obligation

Unimills is planning to build a biodiesel factory, which will go a long way towards reducing CO_2 emissions. Biodiesel culled from vegetable oil is a biofuel that contains practically no CO_2. The technology needed to produce biodiesel is in place, it simply needs to be a commercially attractive investment. Jan van Driel, general director: 'The new factory entails stepping up our energy consumption as a company. In other words, we'll be less energy efficient. But that energy will be harnessed entirely in the production of renewable energy. It's going to be an interesting point to raise within the LTA scheme.'

Example to others

The new Hogeschool Arnhem-Nijmegen college building is a fine example of sustainable construction. Bert Schutte, project director of the Sustainable Higher Education Charter: 'An impressive number of energy saving measures have been applied. Air conditioning systems, lights that automatically switch on and off, special sunblinds, temperature control at weekends and low-energy computer networks. The latter are extremely energy-intensive, especially in college buildings. Altering behaviour is another focal point. A website has been developed about saving energy in the building, and students and personnel are informed about ways of saving energy. Together, these measures are expected to generate an estimated 20% energy saving in the short term. It's a wonderful example for others in the sector.'

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For questions and advice about LTA, please contact SenterNovem:
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