



Long-Term Agreement on energy efficiency in the Netherlands LTA3

Results of 2009

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LTA3: relatively
good result for
a difficult year

This report contains the results of the Long-Term Agreement on Energy Efficiency (LTA) for 2009. This document is first of all intended for members of the Dutch House of Representatives, participating companies and everyone involved or interested in the information presented here.

In the pursuit of a sustainable energy supply, energy savings play a very important role. After all, energy not used does not have to be generated in the first place. The Long-Term Agreements are an important instrument in this regard, designed to stimulate energy savings in the Dutch industry. LTA3, the agreement signed in 2008, represents the continuation of LTA2. It documents the objectives and agreements concerning energy savings and improvements in energy efficiency set by government and the business sector. LTA3 spans the period to 2020.

A new methodology for monitoring the LTA3 results was established in February 2010. The core element of the new methodology is that the result will be solely based on the implementation of measures. This provides greater consistency with national and European guidelines. In the LTA2 methodology, the result was based on energy-saving measures and other influences. Depending on the trends in a specific sector this had either a positive or negative effect on the results. By basing the methodology solely on energy savings achieved through measures, the efforts made by companies become more evident.

The LTA3 results can be subdivided into measures in the area of process efficiency (PE), chain efficiency (CE) and the generation and purchase of sustainable energy (SE). The difficult economic situation in 2009 has had an impact on the results related to chain efficiency. The lower production here leads to a dissaving in comparison to 2008, because the savings in the chain in many cases are related to the size of production.

1.8 percent in 2009

In 2009, the total primary energy use of LTA3 companies was 164.5 PJ. The results in 2009 represent a saving of 3.0 PJ in process efficiency, a dissaving of 0.7 PJ in chain efficiency, a decline in the generation of sustainable energy by 0.1 PJ and an increase in the purchase of sustainable energy by 2.3 PJ. With these results, total energy performance in 2009 exceeds the agreed objective in the covenant.

Only a portion of the total LTA3 results counts in terms of comparison with the national objectives. This concerns the contribution to process efficiency (saving of 3.0 PJ) and the portion of chain efficiency that pertains to the production chain (dissaving of 0.1 PJ). The contribution to the national objective for 2009 therefore is 2.9 PJ, which represents 1.8 percent of the primary energy consumption. The LTA3 companies, in spite of the difficult economic conditions in 2009, are therefore close to the national objective of 2 percent per year.

In comparison to the 2005 reference year, the results represent a saving of 12.7 PJ in process efficiency, a saving of 4.7 PJ in chain efficiency, an increase in the generation of sustainable energy of 0.6 PJ and an increase in the purchase of sustainable energy of 5.4 PJ.

The energy efficiency of the production process (7.4 percent improvement since 2005) and in the production chain (1.1 percent improvement since 2005) improved by 8.5 percent over the last four years. Cumulatively this is in line with the national objective of a 2 percent improvement in energy efficiency per year. The LTA3 participants achieved this result in spite of the difficult economic years during this period.

New developments

On 2 October 2009, the VNO-NCW (Confederation of Netherlands Industry and Employers) signed the Long-term Agreement on Energy Efficiency for ETS companies with the sector associations of the beer breweries, chemical industry, glass industry, paper and cardboard industry, refineries, steel industries and sugar industries, and the Ministry of Housing, Spatial Development and the Environment, the Ministry of Economic Affairs, the Ministry of Agriculture, Nature and Food Quality, and the Ministry of Finance. Because this long-term agreement is geared towards companies whose participation in ETS, the CO₂ Emissions Trading Scheme of the European Union, is mandatory, participation of non-ETS companies is halted. As a result of this change, approximately 50 companies have joined the LTA3.

LTA₃ results

2009 LTA3 results

To improve their energy performance, LTA3 companies can implement measures in the areas of process efficiency (PE), chain efficiency (CE) and sustainable energy (SE).

The improvement in energy performance is established on the basis of monitoring the effect of all measures implemented over the period 2006 – 2020 in comparison to the situation in the 2005 LTA3 reference year. This results brochure presents the covenant results for the 2009 monitoring year and for the period 2006 – 2009. Table 1 provides an overview of the results.

Tabel 1 Overview of LTA3 results in the 2009 monitoring year and the period 2006 - 2009

| | | 2009 Results in comparison to | | | |
|---------------------------|----------------------------------|-------------------------------|----------|-----------|----------|
| | | 2008 (PJ) | 2008 (%) | 2005 (PJ) | 2005 (%) |
| Efficiency improvement | Process efficiency (*) | 3.0 | 1.8% | 12.6 | 7.4% |
| | Production chain efficiency | -0.1 | 0.0% | 1.9 | 1.1% |
| | Product chain efficiency | -0.6 | | 2.7 | |
| Use of sustainable energy | Generation of sustainable energy | -0.1 | | 0.6 | |
| | Purchase of sustainable energy | 2.3 | | 5.4 | |

^(*) This sub-result counts towards the contribution to the national energy efficiency objectives.

LTA3 contribution is in line with the national energy efficiency objectives

Only a portion of the total LTA3 results is counted towards the contribution to the national energy efficiency objectives. This concerns energy efficiency improvements in the production process and in the production chain:

- Energy efficiency in the production process improved by 1.8 percent in 2009 (3.0 PJ energy saving through new PE measures in 2009). The total improvement since 2006 is 7.4 percent.
- The energy efficiency in the production chain remained stable in 2009 and improved by 1.1 percent in comparison to 2005 (1.9 PJ increase in energy savings on the basis of production chain projects compared to 2005).

The collective energy efficiency in the production process and production chain improved by 1.8 percent in 2009 and by 8.5 percent over the last four years. In comparison to 2005, this is in line with the national objective of a 2 percent improvement in energy efficiency per year. The result in 2009 is somewhat below this average due to the difficult economic situation.

Total energy performance

The total energy performance of LTA3 participants is the sum of the efficiency improvements (in the production process, the production chain and the product chain) and the use of sustainable energy (through in-house generation as well as through the purchase of sustainable energy).¹

The largest contribution to the improvement in energy performance is due to improvements in process efficiency. In spite of the difficult economic times, 2009 was a relatively good year for the LTA3. LTA3 participants collectively saved 3.0 PJ through new PE measures. This is comparable to the annual savings through new PE measures that varied between 2.8 PJ and 3.8 PJ per year during the period 2006 – 2009. This brings the cumulative savings to 12.6 PJ over four years.

In 2009, it was not possible to fully maintain the high level of savings in the chain achieved in 2008. The effect of the production chain projects roughly stayed at the same level as in 2008, but the effect of projects in the product chain was lower (0.6 PJ less energy savings than in 2008).

The chain efficiency projects produced an increase of 4.6 PJ in energy savings in comparison to 2005 (1.9 PJ in energy savings in the production chain and 2.7 PJ in the product chain).

The total use of sustainable energy by LTA3 companies amounted to 7.8 PJ in 2009 (almost 5 percent of their total energy use).² The generation of sustainable energy declined slightly in 2009 (0.1 PJ less sustainable energy generation), while the purchase of sustainable energy increased sharply (2.3 PJ increase in the purchase of sustainable energy).

The total use of sustainable energy increased by 6.0 PJ in comparison to 2005.

The largest contribution is due to the purchase of sustainable energy (83 percent in 2009). Starting in 2010, the purchase of sustainable energy will only be counted towards the LTA3 results if it is offset by effort. An analysis of this sort was not possible during the 2009 monitoring cycle, because the data required for this was lacking.

¹ The Chapter 'LTA3 results by pillar' provides additional information about the results achieved by type of measure.

² This result is exclusive of the still to be determined contribution to the generation and purchase of sustainable energy of the waste water purification district water boards sector that joined in 2009.

Overview of results per sector and pillar

The 28 LTA3 sectors that participated in the 2009 monitoring cycle are subdivided into industrial sectors, food and beverage

industry sectors, and service sectors. Table 2 illustrates the energy use by sector in 2009 and the effect of new or intensified measures in 2009, broken down by the various categories. Table 3 illustrates the cumulative effect of all measures in comparison to the LTA3 2005 reference year.

Table 2. Primary energy use in 2009 and LTA3 results in 2009 in comparison to 2008 (per sector, in TJ).

| Cluster | Sector | Primary energy use in 2009 | Process efficiency measures compared to 2008 | Production chain efficiency compared to 2008 | Product chain efficiency compared to 2008 | Generation of sustainable energy compared to 2008 | Purchase of sustainable energy compared to 2008 |
|---------|-----------------------------------------------|----------------------------|----------------------------------------------|----------------------------------------------|-------------------------------------------|---------------------------------------------------|-------------------------------------------------|
| | Waste water treatment (district water boards) | 7,498 | 57.8 | 38.7 | 0.0 | TBD | TBD |
| | Asphalt industry | 2,976 | 23.2 | -76.8 | -0.3 | 38.1 | 66.7 |
| | Chemical industry | 9,737 | 320.4 | 699.5 | 18.9 | -22.9 | -41.6 |
| | Fine ceramics industry | 1,098 | 13.1 | 0.0 | 0.0 | 0.0 | 263.7 |
| | Foundries | 1,765 | 21.0 | 1.5 | 182.4 | 0.0 | 0.0 |
| | Coarse ceramics industry | 8,370 | 79.0 | 615.0 | 0.0 | 114.5 | 120.7 |
| | Sand limestone and cellular concrete industry | 1,008 | 12.9 | 1.0 | 0.0 | 0.0 | 0.0 |
| | Refrigeration and cold storage industry | 2,357 | 17.0 | 0.0 | 0.0 | -8.4 | 0.0 |
| | Metallurgical industry | 2,992 | 42.7 | -84.9 | -45.5 | 0.0 | 246.8 |
| | Oil and Gas production industry | 38,413 | 528.8 | 33.2 | -0.4 | 0.1 | 0.0 |
| | Surface treatment industry | 1,398 | 45.8 | 78.7 | 0.0 | 0.0 | 4.7 |
| | Other industry | 13,999 | 444.1 | -133.2 | -323.1 | 24.6 | 1,067.1 |
| | Rubber, glue and plastics industry | 8,412 | 152.2 | -1,080.8 | -587.7 | -24.0 | -186.4 |
| | Tank storage companies | 2,277 | 54.6 | 29.1 | 0.0 | 0.1 | 0.0 |
| | Carpet industry | 808 | 9.5 | -153.6 | 0.0 | -0.1 | -72.5 |
| | Textiles industry | 1,251 | 34.9 | 8.9 | 0.0 | -7.2 | 38.4 |
| | Textile service companies | 1,556 | 45.0 | -33.6 | 11.1 | -0.1 | 44.0 |
| | Subtotal industry | 105,915 | 1,902.1 | -57.4 | -744.6 | 114.8 | 1,551.5 |
| | Potato processing industry | 8,395 | 123.6 | 134.0 | 0.0 | -118.0 | 3.0 |
| | Cocoa processing industry | 2,210 | 59.8 | 70.4 | 0.0 | 0.0 | 0.0 |
| | Vegetable and fruit processing industry | 2,631 | 51.5 | -2.7 | 36.4 | 7.7 | -8.0 |
| | Coffee roasting industry | 885 | 77.5 | -31.8 | 0.0 | -31.5 | -71.2 |
| | Margarine, Fats and Oil production industry | 7,951 | 70.8 | -2.5 | 0.0 | 0.0 | 0.0 |
| | Flour manufacturers | 1,262 | 17.2 | 6.1 | 0.0 | 0.0 | 1.1 |
| | Meat processing industry | 3,887 | 77.2 | -22.4 | 0.0 | -2.7 | -22.5 |
| | Dairy industry | 18,340 | 352.4 | -120.9 | 128.7 | -12.6 | -130.1 |
| | Subtotal food and beverage industry | 45,561 | 829.9 | 30.1 | 165.1 | -157.1 | -227.8 |
| | Higher Professional Education | 974 | 7.5 | 0.0 | 2.7 | 0.7 | 358.9 |
| | University Medical Centres | 5,354 | 248.5 | -33.4 | -1.0 | -1.8 | 648.7 |
| | Universities | 6,671 | 45.5 | -25.9 | 0.0 | -43.8 | -22.5 |
| | Subtotal services | 12,999 | 301.6 | -59.3 | 1.6 | -44.9 | 985.0 |
| | Totals | 164,475 | 3,033.5 | -86.6 | -577.9 | -87.2 | 2,308.7 |

Table 3. Primary energy use in 2009 and LTA3 results in 2009 in comparison to 2005 (per sector, in TJ).

| Cluster | Sector | Primary energy use in 2009 | Process efficiency measures compared to 2005 | Production chain efficiency compared to 2005 | Product chain efficiency compared to 2005 | Generation of sustainable energy compared to 2005 | Purchase of sustainable energy compared to 2005 |
|---------|-----------------------------------------------|----------------------------|----------------------------------------------|----------------------------------------------|-------------------------------------------|---------------------------------------------------|-------------------------------------------------|
| | Waste water treatment (district water boards) | 7,498 | 57.8 | 38.7 | 0.0 | TBD | TBD |
| | Asphalt industry | 2,976 | 200.0 | 53.8 | -0.3 | 16.8 | 89.0 |
| | Chemical industry | 9,737 | 810.7 | 782.5 | 18.9 | 231.2 | -6.4 |
| | Fine ceramics industry | 1,098 | 78.1 | 0.0 | 0.0 | 0.0 | 263.7 |
| | Foundries | 1,765 | 113.5 | 1.5 | 1,123.0 | 0.0 | 0.0 |
| | Coarse ceramics industry | 8,370 | 489.7 | 301.6 | 0.0 | 114.5 | 120.7 |
| | Sand limestone and cellular concrete industry | 1,008 | 140.4 | 1.0 | 0.0 | 0.0 | 0.0 |
| | Refrigeration and cold storage industry | 2,357 | 92.5 | 0.0 | 0.0 | -8.4 | 0.0 |
| | Metallurgical industry | 2,992 | 257.9 | -127.5 | -16.3 | -0.5 | 360.8 |
| | Oil and Gas production industry | 38,413 | 2,980.4 | 45.6 | 0.0 | 0.3 | 0.0 |
| | Surface treatment industry | 1,398 | 166.0 | 87.1 | 0.0 | 0.0 | 12.4 |
| | Other industry | 13,999 | 1,296.3 | 19.4 | 976.4 | 23.4 | 3,124.3 |
| | Rubber, glue and plastics industry | 8,412 | 682.8 | 513.5 | 407.1 | -20.1 | -103.5 |
| | Tank storage companies | 2,277 | 290.0 | 31.7 | 0.0 | 0.1 | 0.0 |
| | Carpet industry | 808 | 62.1 | -122.6 | 0.0 | -0.1 | -33.3 |
| | Textiles industry | 1,251 | 155.7 | 11.8 | 0.0 | -6.8 | -34.9 |
| | Textile service companies | 1,556 | 216.7 | -23.1 | 21.9 | 0.0 | 44.0 |
| | Subtotal industry | 105,915 | 8,090.7 | 1,614.9 | 2,530.6 | 350.3 | 3,836.7 |
| | Potato processing industry | 8,395 | 741.2 | 134.0 | 0.0 | 16.2 | 3.0 |
| | Cocoa processing industry | 2,210 | 77.3 | 70.4 | 0.0 | 0.0 | 0.0 |
| | Vegetable and fruit processing industry | 2,631 | 292.3 | 18.3 | 36.4 | 11.1 | -0.5 |
| | Coffee roasting industry | 885 | 113.1 | 3.4 | 0.0 | -22.4 | -4.4 |
| | Margarine, Fats and Oil production industry | 7,951 | 472.6 | 7.9 | 0.0 | -1.4 | 0.0 |
| | Flour manufacturers | 1,262 | 65.2 | 6.1 | 0.0 | 0.0 | 30.4 |
| | Meat processing industry | 3,887 | 287.4 | -4.1 | 0.0 | 2.9 | -23.3 |
| | Dairy industry | 18,340 | 1,337.9 | 76.9 | 157.4 | -4.5 | 302.1 |
| | Subtotal food and beverage industry | 45,561 | 3,387.1 | 312.9 | 193.8 | 1.9 | 307.3 |
| | Higher Professional Education | 974 | 227.5 | 0.0 | 2.7 | 0.7 | 457.9 |
| | University Medical Centres | 5,354 | 617.4 | 0.0 | 0.0 | 2.0 | 669.6 |
| | Universities | 6,671 | 321.2 | 3.1 | 0.0 | 240.8 | 170.1 |
| | Subtotal services | 12,999 | 1,166.1 | 3.1 | 2.7 | 243.5 | 1,297.6 |
| | Totals | 164,475 | 12,643.9 | 1,930.8 | 2,727.0 | 595.7 | 5,441.6 |

LTA3 participation

LTA3 participants: sectors and companies

In 2009, 31 sectors participated in the LTA3.

These are divided into three clusters:

- Industry (eighteen sectors)
- Food and beverage industry (nine sectors),
- Services (four sectors)

In the services cluster, the higher professional education institutions and the universities made the transition to the LTA3 in 2008 and the banks and insurance companies (with 18 participants) joined the LTA3 in 2009. In the industry cluster, the waste water treatment district water boards (with 25 district water boards) and ICT (with 5 concerns and 54 companies) joined the LTA3 in 2009. In the food and beverage industry, the soft drink industry sector, with eight companies joined the LTA3 in 2009.

28 sectors included in the analysis

Each year the companies' efforts and the results achieved on that basis are monitored. This year the results of 28 of the 31 LTA3 sectors are included in this results brochure.

The ICT sector and the soft drinks industry sector will provide data for the first time for the year 2010. For the banks and insurance companies it was not possible to collect the data for 2009 on time for inclusion in the analysis reflected in the 2009 results brochure.

The 28 sectors included in this brochure represent 1,001 LTA3 participants.

Energy use of monitored participants

In 2009, the 28 LTA3 sectors included in this results brochure consumed 164.5 PJ of energy. This is approximately 20 percent of the total industrial energy consumption in the Netherlands (approximately 750 PJ).

Of this 105.9 PJ was used by 17 sectors in the industry cluster, 45.6 PJ by 8 sectors in the food and beverage industry cluster and 13.0 PJ by 3 sectors in the services cluster.

New in LTA3

Energy goals further refined in LTA3

In 2009, the number of sectors that joined the LTA3 once again expanded. As such 31 sectors support the energy efficiency objectives that the government and business sector established in the covenant. This includes the ICT, soft drinks industry and the financial services sectors. As of 2009, the LTA3 covenant covers almost 1,100 companies. The industrial sectors and the food and beverage industry, that in 2009 reported an energy consumption of 151.5 PJ, represent approximately 20 percent of the national industrial energy use, excluding feedstock.³

The Long-Term Agreements already in force were intensified in various areas under the LTA3 in comparison to the LTA2. The key change is the establishment of the objective of saving an average of two percent per year on the use of conventional fuels used for energy consumption. This is accomplished by improving energy efficiency within processes and the chain, and by using sustainable energy. In addition, the parties have agreed to more closely assess what these improvements contribute to the national policy objectives. Furthermore, the preparation of roadmaps which lay out how the targeted savings are to be achieved in the period leading up to 2030 has been incorporated into the LTA3.

³ Non-energetic use of energy sources, such as for example in the chemical industry.

Renewed monitoring methodology

The LTA3 covenant contains three pillars to which the objective pertains: the production process, chains and sustainable energy. Although savings on the use of conventional energy sources are targeted for all three components, the level of effort expected from companies related to the three pillars differ from each other in terms of the underlying principles. In relation to the production process the principle involves energy efficiency improvements, for chains it concerns energy savings within the chain starting from raw materials to product disposal, and in case of sustainable energy it pertains to the greening of the energy supply. The monitoring methodology portrays the results for the three pillars.

The extension and the intensification of the covenant in 2008 presented a natural opportunity for adjusting the monitoring methodology and to improve it on the basis of the experiences gained in previous years. This has resulted in a renewed methodology that brings out the efforts on the part of companies more clearly, is more transparent and is consistent with national and European protocols. The new methodology was applied for the first time to the 2009 monitoring cycle.

Monitoring of the three pillars

The objective of the methodology is to identify the effort of companies in terms of the three pillars and in this way track to what extent companies meet the agreements contained in the covenant.

In terms of the production process the companies each year are asked to identify the new energy-saving measures and the size of the savings consequently realised. The size of the savings associated with these measures makes a one-on-one contribution to the change in energy consumption of the facility and therefore forms the basis for calculating the energy efficiency improvements in the production process.

Chain projects lead to energy savings in all segments of the chain: production phase (production chain) or user phase (product chain), within or outside the Netherlands. The projects counted as part of the production chain are projects that are for example focused on saving materials, optimising product disposal and recycling, or optimising product distribution. Projects focused on reducing energy use during product use and the optimisation of function fulfilment or lifespan are counted as part of the product chain. The idea underlying the distinction between the production chain and product chain is that improvements in the production chain lie within the company's direct sphere of influence. Consequently it is realistic to attribute the realised savings directly to the company itself. In the product chain, the producer, consumer, sales chain and

legislator all collectively have a role in the realisation of energy savings on the basis of products that are more energy efficient in the user phase.

Because the size of the savings of a chain project can vary from year to year, the companies during the monitoring process each year are asked to specify the size of the savings related to existing as well as new chain projects, within as well as outside the Netherlands.

Companies each year report the quantity of in-house generated or purchased sustainable energy. The use of sustainable energy does not contribute to energy efficiency improvements within the process, nor to energy savings within the chain, however, it does contribute to the greening of the energy supply. The use of sustainable energy is part of the LTA₃ agreements and is presented separately as such.

Variances with previous methodology

The new methodology introduces a sharper distinction within each of the three pillars:

- Between direct energy-saving measures and other influencing factors in determining the energy efficiency improvements within the production process;
- Between projects in the production chain and in the product chain with effects within and/or outside the Netherlands;
- Between energy efficiency improvements and creating a sustainable energy supply.

The variation in energy use in the production process from year to year can be explained on the basis of the effect of new energy-saving measures, changes in production volumes and a number of other influencing factors. These influencing factors are no longer taken into consideration in the new methodology in determining the energy efficiency improvements within the production process. This is because these influencing factors do not provide any information about the efforts put in by companies in the context of the covenant, although they are important for maintaining proper insight into total energy use and changes in total energy use.

The distinction between the production and product chain is important for determining the energy savings within the chain. Only savings in the production chain in the Netherlands are counted as contributing to the national energy efficiency objectives.

The use of sustainable energy makes a contribution to creating a sustainable energy supply, not to reducing energy consumption, such as energy-saving measures. The use of sustainable energy is therefore decoupled from the production process and chain and is reported separately.

Relationship with national objectives

All efforts put in by companies in support of the LTA₃ covenant are expressed in the form of an energy performance indicator. This energy performance indicator is the sum of all efforts related to all three pillars. It is therefore the sum of efficiency improvements in the production process and in the production chain and product chain, within as well as outside the Netherlands, supplemented by the greening share of the energy supply.

Parts of the energy performance indicator are used in order to establish the relationship with the national objective of achieving two percent in energy savings per year.

For the comparison with this objective, only the savings in the production process and in the production chain in the Netherlands are counted.

As a result of the modification of the LTA₃ covenant, 2005 is now the reference year. To do justice to all of the efforts put in by companies in the period 1998 - 2020, the LTA₃ also includes 1998 as an alternative reference year. The results in relation to this reference year will not be calculated each year, but – where relevant – can nevertheless be reported by sector.

Business sector collaborates on energy vision for 2030

The Balkenende IV Cabinet agreed on an energy efficiency improvement of 2 percent per year up to 2020.

This represents a doubling of the national average energy efficiency improvement of 1 percent per year. To achieve this new objective, a step by step improvement in energy efficiency alone is not sufficient: a major transition in material and energy use is then essential. A clear future vision is an important first step for the sectors to enable them to provide direction to this necessary change. In view of the fact that companies – certainly in times of crisis – primarily set their sights on operational and tactical matters, it was decided to opt for government support in completing the transition.

Roadmap: realising ambitions

The covenant includes an agreement that calls for the participating sectors to prepare a roadmap.

The preparation of a roadmap clarifies how a sector can realise its ambitions by 2030, including a view of how far-reaching efficiency improvements (working hypothesis: 50 percent in 2030 in comparison to 2005) can be achieved. The roadmaps therefore provide the sectors with insight into the directions to be pursued for realising the ambitions of a sector.

The road to achieving these ambitions is littered with technological and non-technological challenges. These challenges will sometimes require innovative breakthroughs. The sectors often cannot achieve these on their own. The roadmaps are therefore also focused on providing insight into how these breakthroughs can be achieved through collaboration among companies. In the non-technological domain, the challenges for example lie in the area of knowledge and the innovative capacity of companies, legislative adjustments, as well as the ability to influence the market. These challenges are also further worked out in preparing the roadmap.

Preliminary study identifies sector's energy goals

To investigate whether it is useful to prepare a roadmap for a sector, the sectors first conduct a preliminary study. The final result of a preliminary study is a joint sector vision for 2030 and an overview of the goals related to energy efficiency. In addition, the preparation of a preliminary study also identifies the support and enthusiasm that exists within a sector for undertaking an extensive roadmap project and the support that is required for this. If the preliminary study provides the required instigation, then the preliminary study is further expanded into a roadmap.

A preliminary study is prepared by the sector association and accompanied by a consulting agency. NL Agency provides support. In 2009, 25 LTA3 sectors initiated a preliminary study.

From preliminary study to roadmap

The metallurgical industry and foundries and the dairy industry were the first to complete their preliminary studies. The example of the metallurgical industry and the foundries is illustrative for the preliminary study phase. It was an excellent opportunity for these sectors to investigate which key trends in the market as well as in technology could strengthen their position in the future, and to make an important contribution to the targeted energy efficiency improvements.

Companies and various committees were actively involved throughout the entire preliminary study process. On the basis of the expected market trends and an analysis of the opportunities and threats, both sectors developed a vision designed to even further strengthen the competitive strength of Dutch companies within Europe. The vision is that metallurgical companies and foundries will supply products of high quality, geared to customer demand supported by a broad service package. Through advanced innovative strength in products and processes, production in 2030 will be based on maximum raw materials and energy efficiency, supported by a government that is responsible for ensuring a more continuous sustainable energy supply. The expectation is that on this basis an improvement in energy efficiency of at least 30% can be achieved by 2030. This vision will be worked out into a concrete action plan as part of the roadmap project.

It is expected that at least 12 LTA3 roadmap projects will be initiated in 2010. The rule that applies to all completed preliminary studies is that in addition to a focus on reduced energy use in the in-house processes and the use of sustainable energy, the focus is also on the use of other materials and a reduction in energy use during the user phase. Experiences with this approach in the sectors are in general very positive and are providing many new insights.

LTA3 results by pillar

Process efficiency

Overview of measures in the production process

Process efficiency measures are measures related to energy savings within the business operations. New process efficiency measures are reported one time, but have a lasting effect. This not only applies to technical measures with an extended lifespan, but also to good housekeeping measures whose continued existence is anchored in energy management. Figure 1 illustrates the cumulative effect of PE measures starting in 2006 (2006 is the first year of implementation following the 2005 LTA₃ reference year). In total, a saving of 12.6 PJ was realised over the period 2006 – 2009. This corresponds to a 7.4 percent improvement in energy efficiency in comparison to 2005.

Production process measures

Figure 2 illustrates the primary energy use trend (trend line with scale to the right) and the savings achieved on the basis of PE measures for all LTA sectors (bars with scale to the left).

A positive aspect is that in spite of almost equal primary energy consumption in 2009, the realised saving due to process efficiency measures is higher than it was in 2008 (3.0 PJ saving in 2009 versus 2.8 PJ in 2008).

PE measures broken down by category

Figure 3 illustrates the classification of all PE measures in 2009 by the following categories:

- Process measures
- Buildings and utilities
- Energy management and good housekeeping
- Strategic projects

In comparison to previous years, the mutual relationship among the categories has changed somewhat. The contribution of the 'Process measures' and 'Strategic projects' categories declined by 12 and 4 percentage points respectively in comparison to 2008.⁴ The 'Utilities and buildings' category rose by 9 percentage points. The 'Energy management and good housekeeping' category rose by 6 percentage points. The increase in the last category, primarily due to low-cost measures, is striking.

Figure 4 illustrates the savings per category for the industrial, food and beverage industry, and services clusters. Industry as yet still realises the largest saving (67 percent) in the production process. In the food and beverage industry, the measures are almost equally distributed across the 'Process measures', 'Utilities and buildings' and 'Energy management and good housekeeping' categories. The service sectors primarily achieve their savings on the basis of measures in the 'Utilities and buildings' and 'Energy management and good housekeeping' categories. Due to the nature of their activities, the service sectors barely have any 'Process measures'.

PE measures broken down by energy source

Figure 5 illustrates the effect of the PE measures in 2009 broken down by the most important sources of energy. The hydrocarbons segment reflects the share of the collection of LPG, gas/diesel fuel, heavy heating oil, etc fuels. The 'Other' segment for the most part includes energy sources that are released from the production process as by-products, do not appear on the list of fuels and are reused. An analysis will be conducted to determine how insight could be provided into this for the 2010 monitoring cycle.

Figure 6 identifies the energy sources to which the PE measures were applied by cluster. Natural gas is used for heating purposes. This is identified as a saving on natural gas or thermal energy in the reporting on measures. The expectation is that the thermal share in reality is higher than what is currently reported. An analysis will be conducted to determine how the reporting on measures can be adapted on this point for the 2010 monitoring cycle. The food and beverage industry primarily saved on natural gas, while the service sectors primarily saved on electricity. PE measures in the industry cluster show the widest distribution across the different energy sources.

⁴ For this comparison, the relationships between the PE categories in 2008 were recalculated for the 28 sectors included in the 2009 results brochure.

Figure 1 Cumulative savings due to process efficiency over the LTA3 period (in PJ)

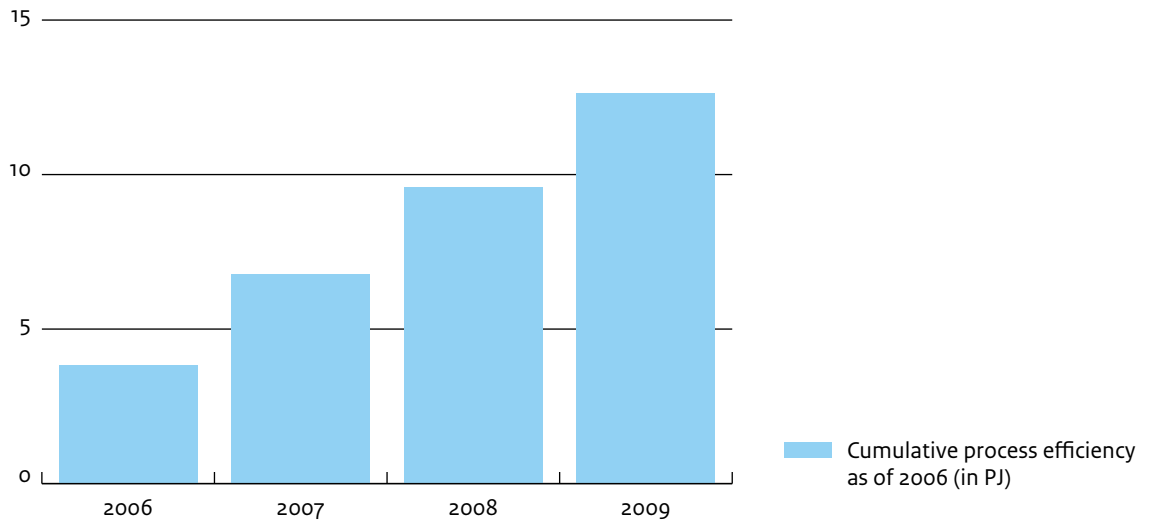


Figure 2 Energy consumption trend and yearly effect of new PE measures over the LTA3 period (in PJ)

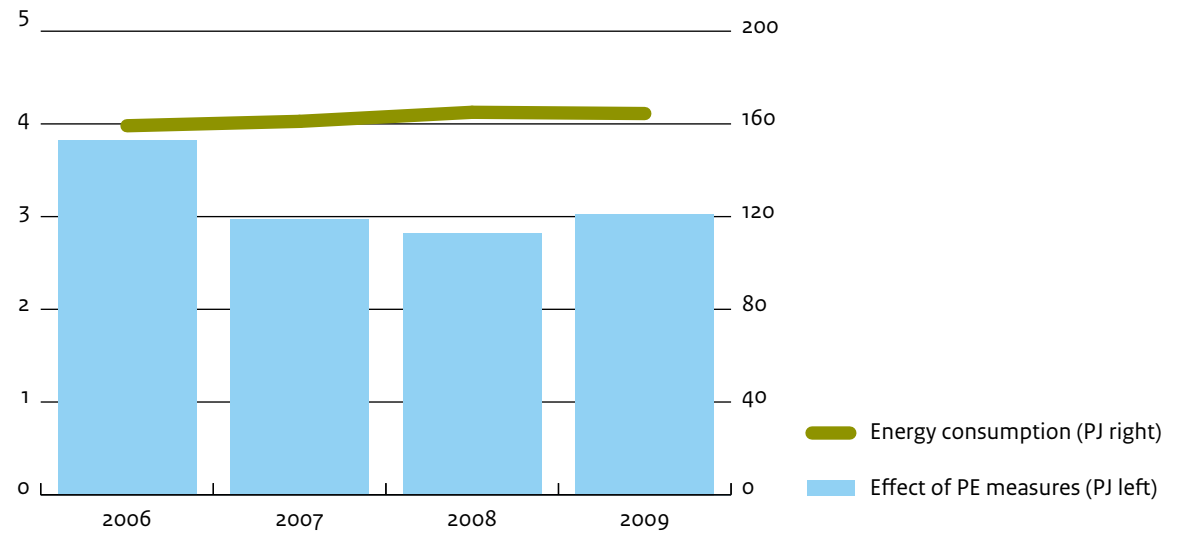


Figure 3 Breakdown of PE measures by category
(as a % of total saving)

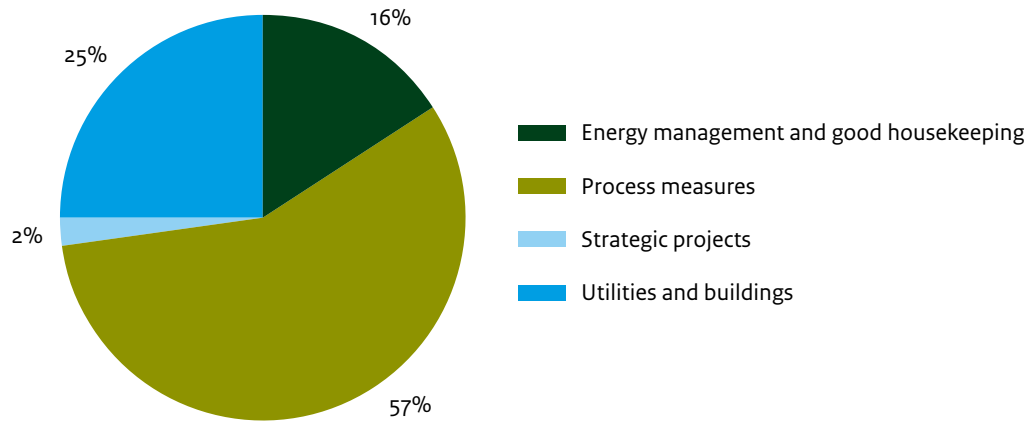


Figure 4 Breakdown of savings across clusters and categories by cluster (in PJ)

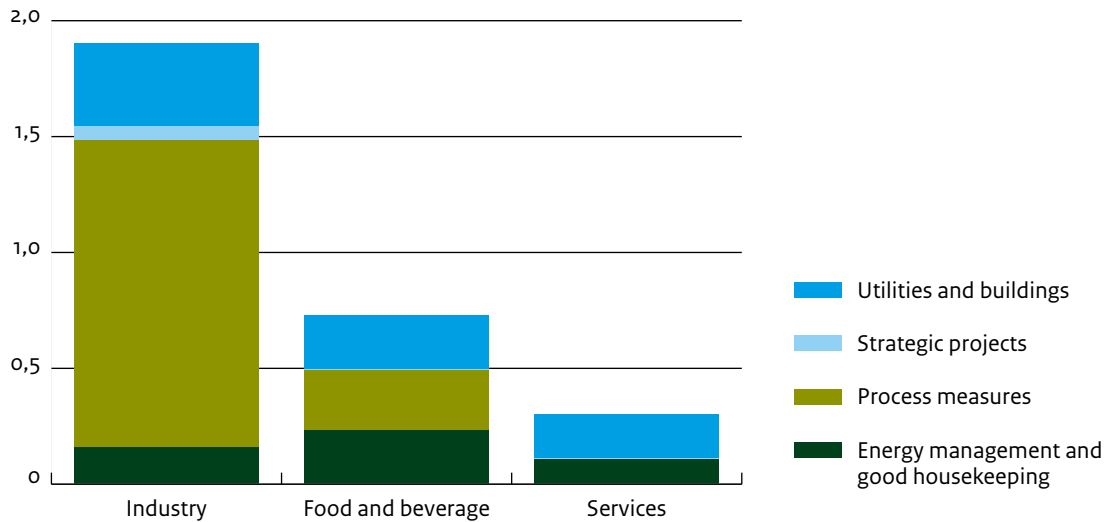


Figure 5 Breakdown of PE measures by energy source
(as a % of total saving)

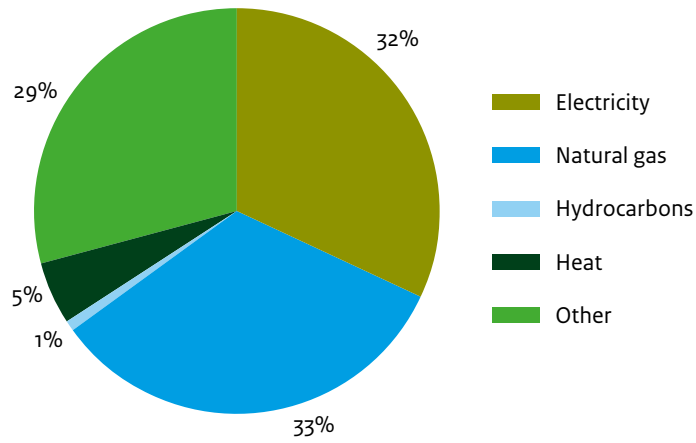
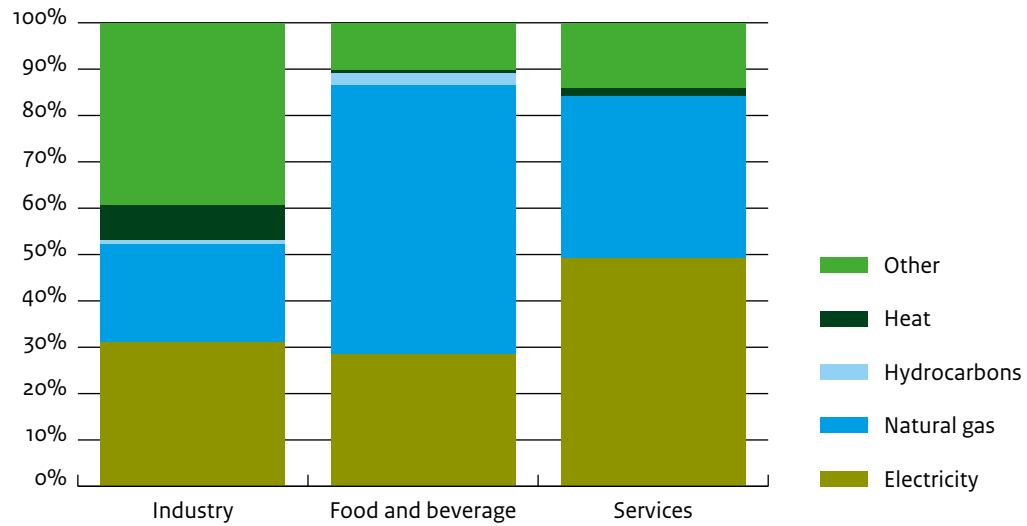


Figure 6 Distribution of saving across energy sources
in the three clusters (in %)



Chain efficiency

The new monitoring methodology makes a distinction between two segments of the chain: the production chain (from raw material to the product that leaves the LTA3 company) and the product chain (especially in the user phase). In contrast to the lasting effect of the PE measures, the effect of CE measures can vary significantly from year to year. This effect is consequently reported again each year. Figures 7 and 8 illustrate the yearly effect of production chain measures and product chain measures within the LTA3 period.

Chain efficiency measures in 2009

By focusing on an integral chain approach, increasingly more companies are realising savings within the chain: from 3.8 PJ in 2005 to 8.5 PJ in 2009 (sum of production chain and product chain). Chain measures as a result make an important contribution to the realisation of the covenant's objectives.

Production chain measures

Projects in the production chain are divided into the following categories:

- Material savings
- Optimising product disposal and recycling
- Optimising distribution
- Improving process energy efficiency (reported to 2008 inclusive)
- Onsite collaboration (new category effective 2009)

The effect of the production chain measures increased from 3.1 PJ in 2005 (at the zero line in Figure 9) to 5.0 PJ in 2009. The total effect in 2009 stayed at approximately the same level as in 2008. Figure 9 displays the effect by category.

The key trends by category for the period 2006 – 2009 are briefly described below.

Material savings

Projects in the 'Material savings' category make up 52 percent of the intensification of the effect within the production chain in comparison to 2005. The high level achieved in 2007 was maintained in 2008 and 2009. The rubber, glue and plastics industry traditionally is the sector that realises the highest savings in this category, especially through the use of recycled plastics. This year, however, this sector produced approximately 1 PJ less in energy savings due to a number of factors such as the decline in production. Various other sectors on the other hand achieved higher material savings in comparison to 2008. For example the coarse ceramics and chemical sector respectively saved 0.4 PJ and 0.1 PJ. The major increase in savings in the coarse ceramics industry is the result of dematerialisation measures (less raw material per product).

Optimising product disposal and recycling

0.5 PJ less energy was saved in the 'Optimising product disposal and recycling' category than in 2008. The company that last year had the largest share in this category, this year contributed 0.2 PJ less. A key reason for this decrease is once again the declining production in 2009. The decline was particularly evident in the rubber, glue and plastics industry and in the carpet industry.

Optimising distribution

Energy savings increased by 0.3 PJ in the 'Optimising distribution' category. This increase (0.2 PJ) is to a large extent explained by the fact that the coarse ceramics industry switched over to transportation by water.

Onsite collaboration

In this category, which was introduced for the first time in 2009, a saving within the production chain of 0.6 PJ was reported. The largest effect is due to the exchange of residual heat among neighbouring companies.

Figure 7 Effect of production chain measures in the LTA3 period (in PJ)

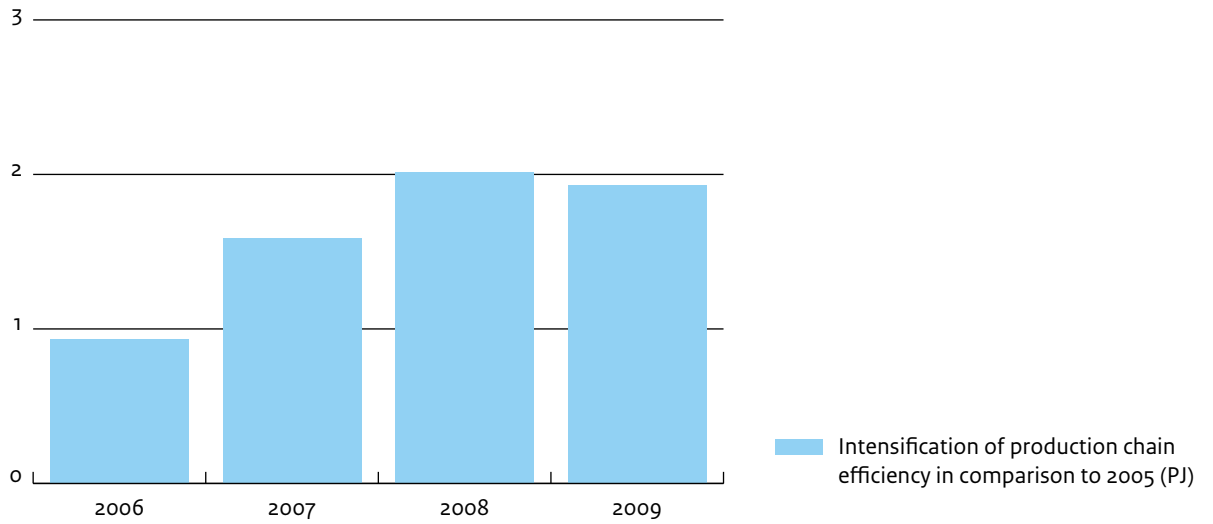


Figure 8 Effect of product chain measures in the LTA3 period (in PJ)

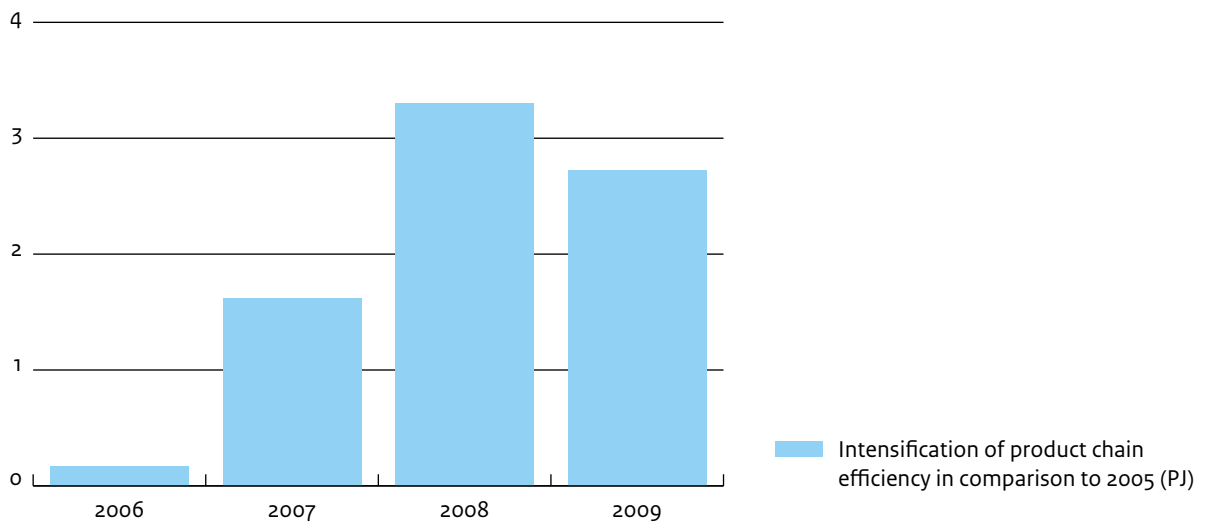


Figure 9 Effect of production chain measures by category (in PJ)

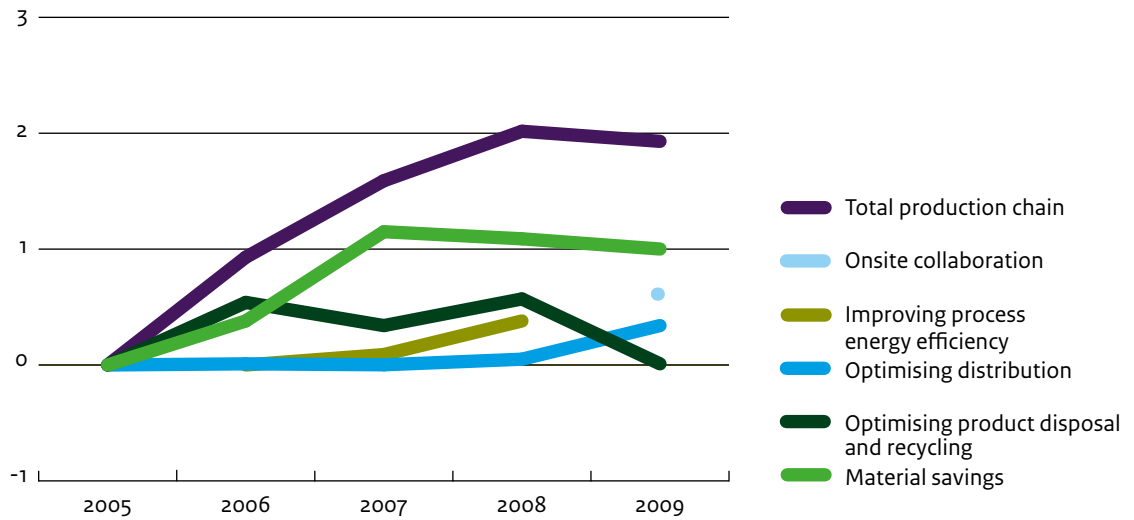


Figure 10 Breakdown of production chain efficiency by category (in %)

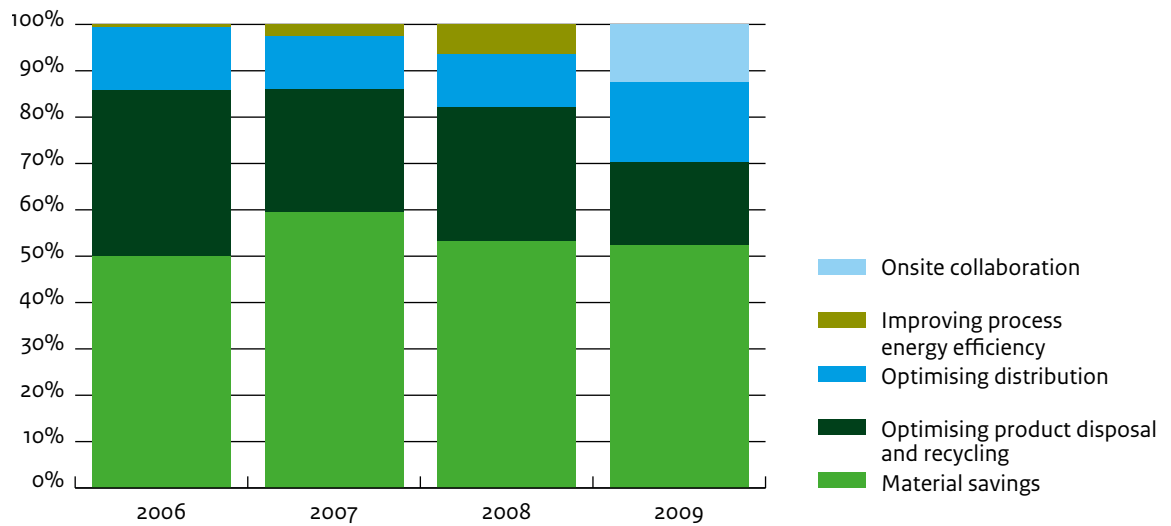
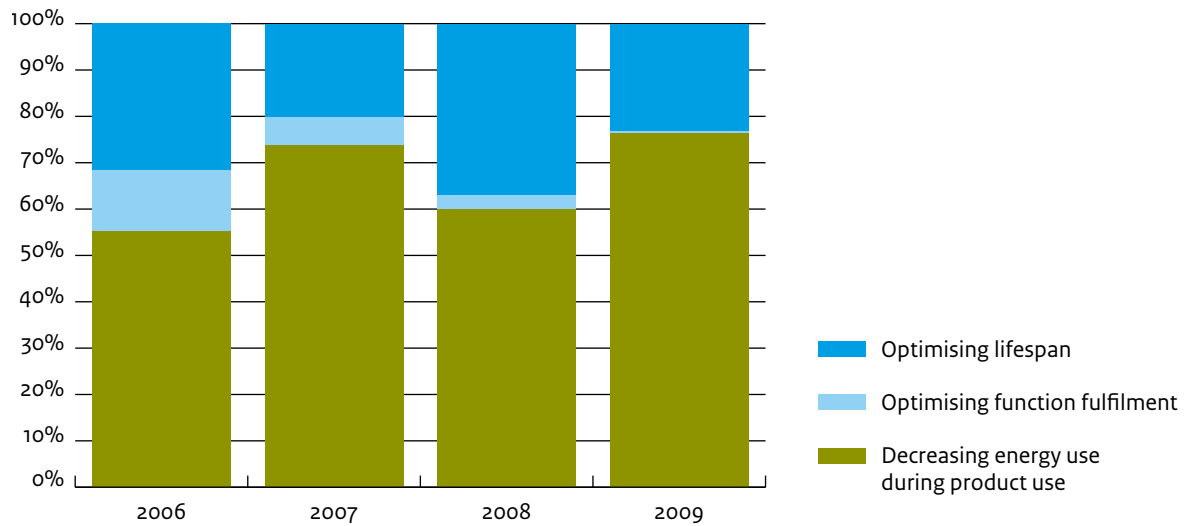


Figure 11 Effect of product chain measures by category (in PJ)



Figure 12 Breakdown of product chain efficiency by category (%)



Relationship of categories within the production chain

The relationship between categories within the production chain has changed during the period 2006 – 2009. Figure 10 indicates that since 2006 'Material savings' yields the greatest effect. The share of 'Optimising product disposal and recycling' has declined in favour of projects in the categories 'Optimising distribution' and 'Onsite collaboration'.

Product Chain

The effect of the product chain measures increased from 0.7 PJ in 2005 (at the zero line in Figure 11) to 3.4 PJ in 2009. However, the effect decreased from 4.0 PJ in 2008 to 3.4 PJ in 2009. Figure 11 displays the effect by category.

The reduced effect within the product chain in 2009 is primarily due to a single company in the 'Optimising lifespan' category. This company this year reports a saving that is 0.7 PJ lower than last year due to a halving of production in 2009.

The other two categories register limited variations in comparison to last year (0.2 PJ increase in the 'Decreasing energy use during product use' category and 0.1 PJ decline in the 'Optimising function fulfilment' category).

Relationship of categories within the product chain

Figure 12 shows that during the period 2006 – 2009, the category 'Decreasing energy use during product use' took up the major share within the product chain. The category 'Optimising lifespan' takes second place, with a varying share over time (on average almost 30 percent over the period 2006 – 2009). The share of the category 'Optimising function fulfilment' declined sharply since 2006. Over the period 2006 to 2008, the metallurgical industry and other industry sectors collectively report approximately 0.1 PJ in savings per year in this category. Due to the fact that the size of the reported chain measures increased over these years (particularly in the 'Optimising lifespan' and 'Decreasing energy use during product use' categories), the relative contribution of the 'Optimising function fulfilment' category decreased accordingly.

Sustainable energy

Overview of the use of sustainable energy

The LTA3 covenant encourages companies to generate increasingly more sustainable energy themselves or to purchase it. The total use of sustainable energy in 2009 was 7.8 PJ. This is 6.0 PJ more than in 2005. Figure 13 illustrates the use of sustainable energy trend over the LTA3 period.

Use of sustainable energy in 2009

The use of sustainable energy in 2009 rose by 2.2 PJ in comparison to 2008 (from 5.6 to 7.8 PJ). This rise is the result of the increase in the purchase of sustainable energy (from 4.2 to 6.5 PJ), particularly by the Other Industry sector (over 1 PJ increase), the University Medical Centres (0.6 PJ) and Higher Professional Education (0.4 PJ).

Generation of sustainable energy (from waste and biomass, wind energy and building installations) stayed at approximately the same level as in prior years.⁵ Figure 14 illustrates the sustainable energy trend by category.

Relationship between sustainable energy categories

The relationship between the different categories of sustainable energy is displayed in Figure 15.

⁵ This overview does not yet incorporate the results of the waste water purification district water boards sector. This sector makes an important contribution to the generation of sustainable energy (production of green gas from sludge processing).

Figure 13 Use of sustainable energy over the LTA3 period (in PJ)

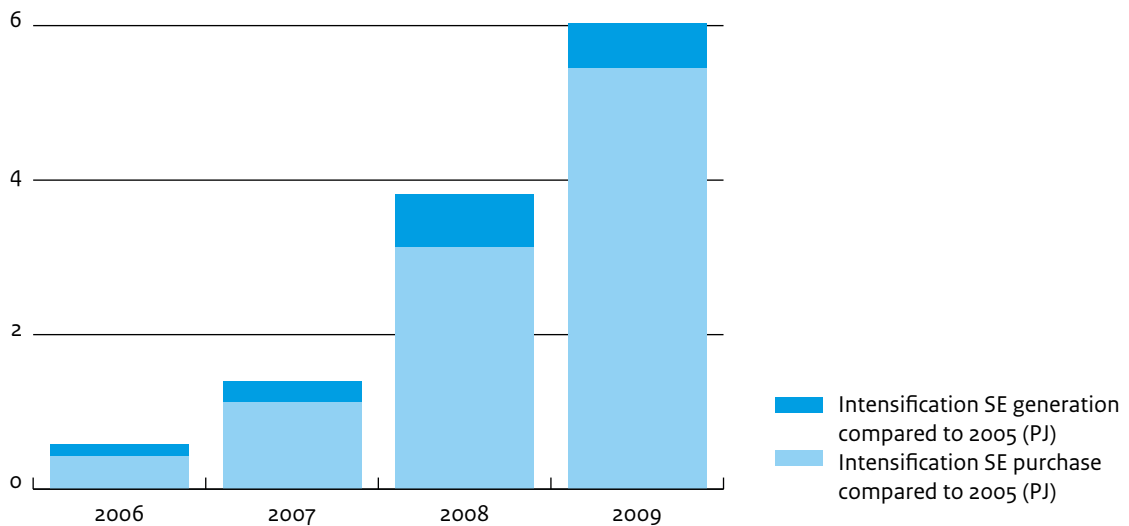


Figure 14 Sustainable energy trend over the LTA3 period (in PJ)

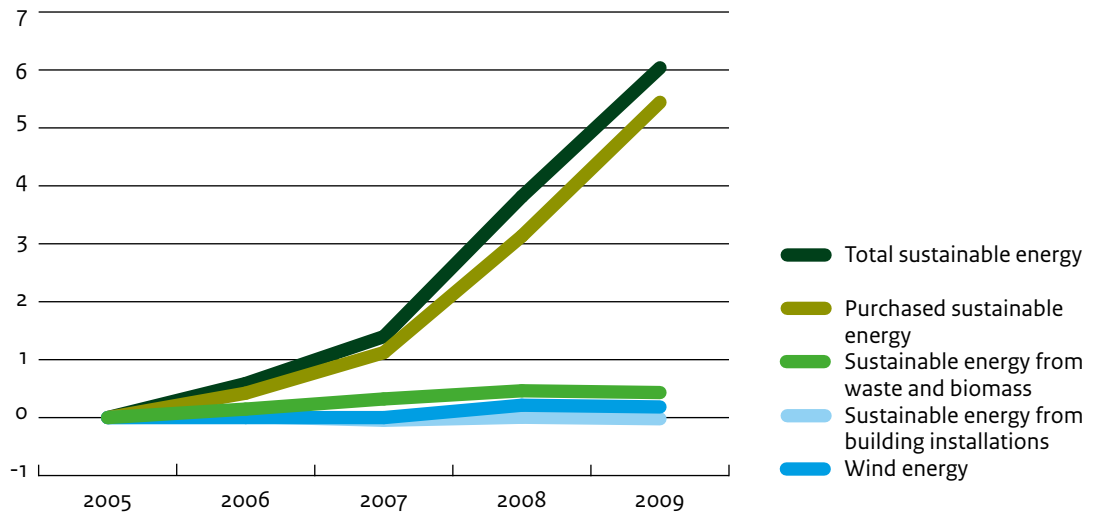
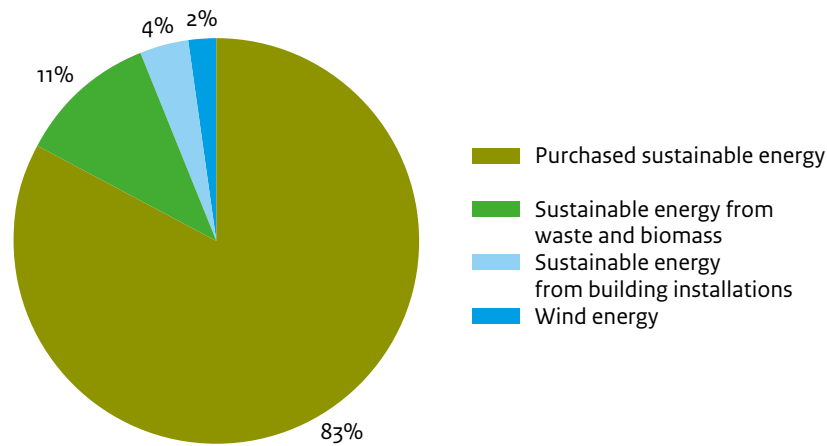


Figure 15 Breakdown of sustainable energy by category (%)



Progress on the energy management front

State of affairs at the end of 2009

Companies with access to an energy management system are in a position to better and structurally manage their energy consumption. The implementation of such an energy management system is a mandatory component of the LTA3 covenant. 96 Percent of the LTA3 companies that had participated three years or more in 2009, have implemented an energy management system that meets the criteria of the LTA Basic Check on Energy Management. This represents a slight increase compared to 2008. Of this, 51 percent of the companies implemented the energy management system on the basis of, and integrated into, other already present management systems, such as ISO 9001 or ISO 14001. Figure 16 illustrates the trend in the percentage of LTA3 companies that has implemented an energy management system.

Random audits: supporting companies in making improvements

Energy management audits are conducted every year to provide companies with practical pointers for improving their energy management system. In the context of the annual sample, a total of 45 LTA3 companies was visited in 2009.

Just as they did in 2008, the audited companies scored well on the core elements of energy management, such as knowledge of the key energy users, objectives and responsibilities, training and monitoring. The audits demonstrate that almost all companies (99 percent) have a good picture of the energy aspects within their operation and the

corresponding energy uses. The Energy Efficiency Plan (EEP) in most cases was identified as a key reason for this. In addition, 80 percent of the companies visited also demonstrably applied the knowledge of their own energy use to control the energy use of their processes. As in 2008, most of the issues are still experienced during the execution of the annual internal audit of the energy management system and during management reviews. Lack of familiarity with the subject matter is cited as the main cause for this. NL Agency therefore published the 'Internal Audits & Management Review of Energy Management Systems Guide' in 2009.

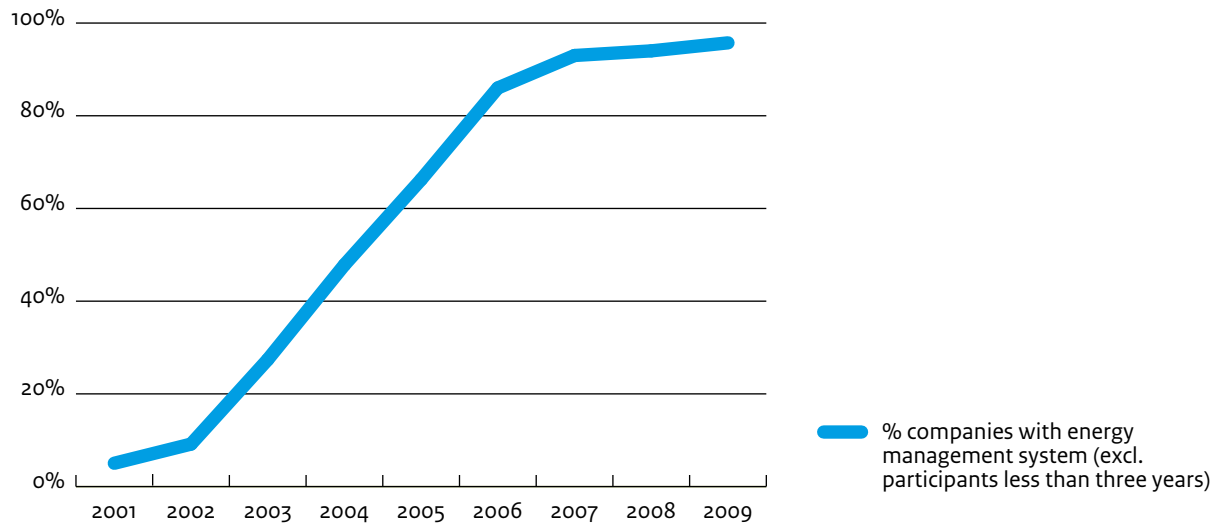
The European standard for Energy Management: EN 16001

In May 2009, the member states of the CEN (European Committee for Standardisation)⁶ 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 LTA3 companies that were consulted on this matter. By way of evaluation, a number of pilots were initiated at the end of 2009 by various LTA3 companies for the purpose of identifying how the EN 16001 and the LTA Basic Check on Energy Management relate to each other in actual practice.

⁶ The CEN (Comité Européen de Normalisation) is the European Committee for Standardisation. The standards of the CEN are published under the name European Norm (EN).

Figure 16 Percentage of companies that meet the energy management criteria (2001 – 2009)



Results by cluster of sectors

Industrial sectors

17 Industrial sectors participated in the 2009 monitoring cycle. At 106 PJ, the industry cluster represents approximately 64 percent of the total LTA3 energy consumption in 2009.

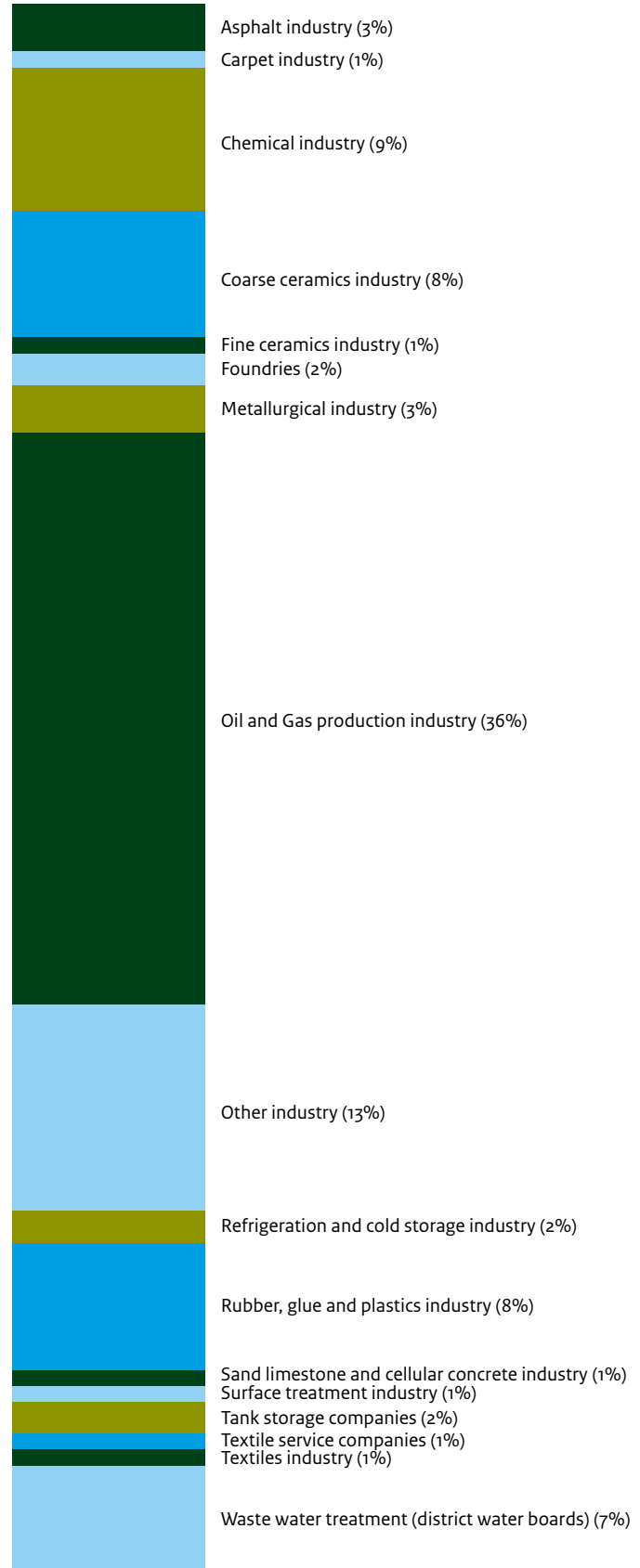
The sectors with the largest share of the industrial energy consumption are the oil and gas production industry (36 percent), the other industry (13 percent), the chemical industry (9 percent), the coarse ceramics industry and the rubber, glue and plastics industry (both 8 percent).

The waste water treatment (district water boards) sector, which reports for the first time this year in the LTA3 context, represent 7 percent of the energy consumption of the industrial sectors.

2009 LTA3 results in the industrial sectors

The industrial sectors, with almost two-thirds of the total LTA3 energy consumption, make the largest contribution to the LTA3 results. These sectors represent 64 percent of the effect of all PE measures, 89 percent of the effect of all CE measures and 69 percent of the use of sustainable energy (see details in Table 2 on page 9).

Figure 17 Breakdown of energy consumption by industrial sector (in %)



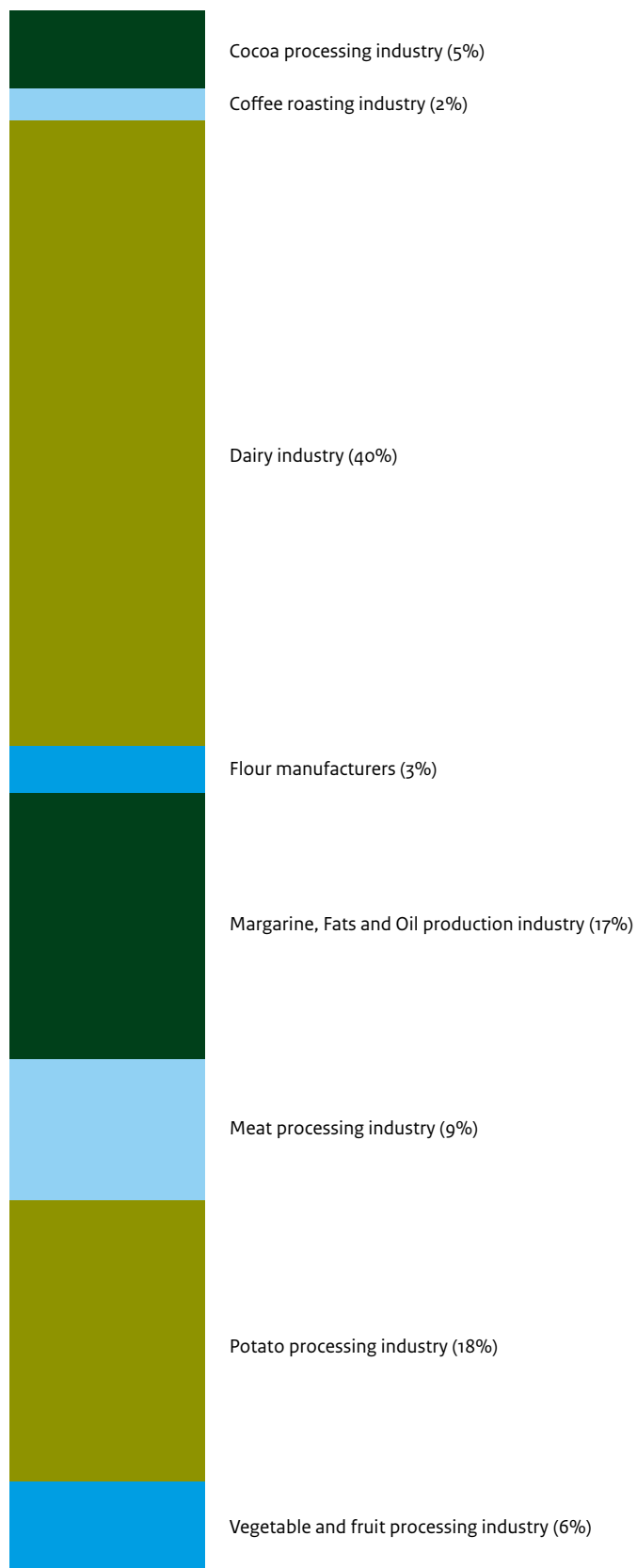
Food and beverage industry

The eight sectors in the food and beverage industry included in this brochure at 46 PJ represent approximately 28 percent of the total LTA3 energy consumption. The sectors with the largest share of the industrial energy consumption are the dairy industry (40 percent), the potato processing industry (18 percent) and the margarine, fats and oil industry (17 percent).

2009 LTA3 results for the food and beverage industry

The LTA3 results for the food and beverage industry related to the process efficiency pillar are approximately equal to the share of the total energy consumption (27 percent of the effect of PE measures compared to a 28 percent share of the total energy consumption). The share of this cluster is relatively low in the area of chain efficiency (11 percent) because attention has only recently been focused on this in the context of the LTA3 programme. In addition, the use of sustainable energy is still relatively limited (5 percent), but this component is a specific area for attention within the roadmap initiatives since it is an area that has potential.

Figure 18 Breakdown of energy consumption by food and beverage industry sector (in %)



Service sectors

The energy consumption of the three service sectors that participated in the 2009 monitoring cycle (13 PJ) corresponds to 8 percent of the total LTA3 energy consumption.

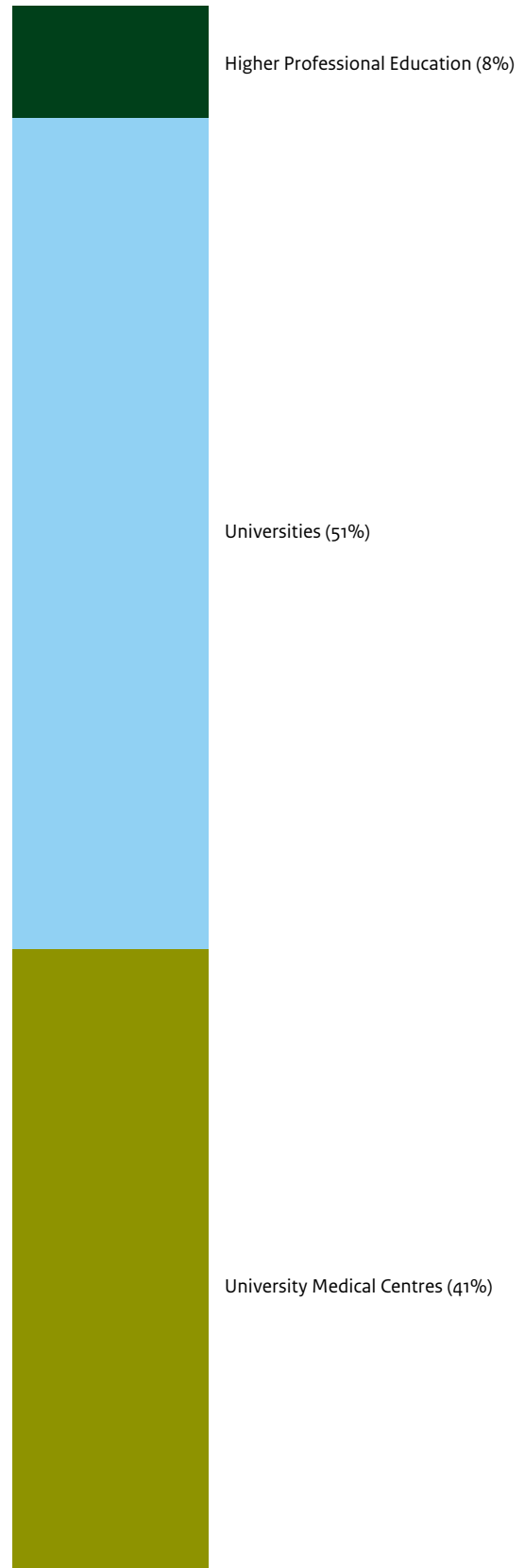
Universities are the largest sector with more than half of the energy consumption of the service sectors. The banks and insurance companies joined the LTA3 in 2009 and will participate in the 2010 monitoring cycle next year.

2009 LTA3 results for the service sectors

The service sectors represent 26 percent of the use of sustainable energy by all LTA3 participants. The use of sustainable energy in the service sectors is therefore exceptionally high in comparison to their energy consumption (8 percent of the total LTA3 energy consumption).

Due to the nature of activities in the service sectors, PE measures are primarily focused on energy savings in utilities and buildings and on good housekeeping (9 percent of the total effect of PE measures). The contribution of the service sectors to savings pursuant to CE measures (0.1 percent of the total) is still limited for the time being. Chain efficiency is still a relatively new approach among service sectors, which due to a lack of key figures is still difficult to quantify.

Figure 19 Breakdown of energy consumption by service sector (in %)



Industrial sector results

Waste water treatment (district water boards)

The waste water treatment (district water boards) were established in 2008 and comprise 24 water boards (including 364 sewage water purification installations and 2,000 sewage pumping stations). For years already, the sector has been producing biogas from energy-rich sludge. This is used to produce heat for the process itself (sludge dehydration) and for residential areas, in the production of green energy (for own use and for third parties) and in the production of green gas. The latest projects focus on greater efficiency in biogas production from sludge.

Energy efficiency measures

In 2009, 58 different measures were implemented in the field of process efficiency, which resulted in a saving of 50 TJ. The most important energy-saving measures in processes during 2009 were:

- Dry matter temperature variation
- Optimization of nitrogen removal
- Aeration coupled with ammonium and nitrate measurements

In addition, 12 energy-saving measures were implemented in connection with good housekeeping (8 TJ) and utilities and buildings (0.5 TJ). Chain efficiencies have been achieved through five measures in the field of optimization of product disposal and product recycling (25 TJ), one measure in the field of on-site cooperation (14 TJ) and one in the field of material savings (0.2 TJ). Furthermore, the sector produced 1,600 TJ of sustainable energy in 2009 and purchased 1,100 TJ of sustainable electricity.

Sector development and 2010

Substantial investments have been made in energy-saving measures and provisions for the production of biogas. In light of the financial crisis, some investments were brought forward (Green Agreement). At the beginning of 2010, the Union of Water Boards signed a climate agreement with the state on behalf of all water boards. The most important (energy) aims of this are: to become 30 percent more energy efficient and clean between 2005 and 2020, to produce 40 percent of its own sustainable energy in 2020, to produce 30 percent less greenhouse gases during the period from 1990 to 2020, and 100 percent sustainable purchasing in 2015. In 2010, the sector performed a study on whether and how sustainable energy can be produced through water- and wind-power, and solar energy. Thirteen water boards took part in the Energy Factory: an initiative aimed at making sewage water purification installations energy-neutral or even energy-producing.

Asphalt industry

The asphalt industry joined in 1995 and comprises 43 participants.

Energy efficiency measures

In 2009, participants implemented 46 new measures in the field of process efficiency, which resulted in a saving of 23 TJ. The most important energy saving measures in 2009 were:

- New operating system
- Limiting the number of start-stops
- Limiting air leakage from the drums

In addition, chain efficiencies were achieved during 2009, through the implementation of 48 measures in the production chain. A few measures that stand out include:

- The use of residues in the process
- Production of clean-energy asphalt types
- Re-use of existing asphalt

The most important sustainable energy measures implemented in 2009 were the purchase of green electricity (93.5 TJ) and the application of bio-oil to the heating of raw materials (40.5 TJ). In total, this led to an increase of 106 TJ in the use of sustainable energy, compared to 2005.

Sector development and 2010

Despite the decrease in building production volume in 2009, the amount of asphalt produced by LTA companies increased in comparison to 2008, partly due to several large-scale projects within the motorway network. On the technological side, the production and use of asphalt at lower temperatures was further developed and received further international attention. In 2009, asphalt producers broadened their experience by bringing the functional properties of asphalt in line with harmonized European norms and by developing asphalt mixtures with improved properties in terms of noise reduction (thin noise-reducing top layers).

Alongside the EEPs, there will also be a follow-up on the recently completed preliminary study. In the short-term, sector-wide opportunities have been identified for the drying of raw materials, the optimal use of burners and the optimization of heat management. From 2010 onwards, sustainable purchasing by governmental departments, such as Rijkswaterstaat (the national water board), will provide an important boost to the further implementation of innovations concerning energy efficiency among asphalt producers.



Process intensification improves efficiency and stimulates innovation

Dealing more efficiently with energy is a prerequisite for strengthening the competitive strength of the Netherlands chemical industry.

A successful way of achieving this is through process intensification (PI). By thoroughly reviewing the processes in factory installations, a chemical company not only saves on the costs of energy and raw materials, it also gains new insights into the various factory processes. The Netherlands Chemical Industry Association (VNCI) uses the PI quick scan and in depth scan to make companies aware of these benefits.

The objective of process intensification is to design a process that is more efficient, using an existing or new set of technologies,' says Nelo Emerencia, focal manager for Education and Innovation with the Netherlands Chemical Industry Association (VNCI). 'This is possible, for example by ensuring that the process steps take place under milder process conditions (lower pressure, lower temperature). Or by making use of different catalysts, circuits or smaller reactors. Or by adjusting the process sequence. A lot can often be accomplished by simple changes.'

PI has existed for years, but until recently was only applied on a small scale. In the Netherlands, Prof Andrzej Stankiewicz of the Delft University of Technology is an advocate promoting the spread of PI within the Netherlands (and Europe). He showed us what PI is and what you can achieve with it in terms of realising energy and raw material savings. From the Dutch Chemical Board we established the link to innovation and incorporated PI as an essential component of the reaction and process technology innovation line.

Quick and in-depth scans

'In 2007, we called on all of our members to participate in a PI quick scan. A quick scan has now been completed by approximately half of our VNCI members. A company pays approximately one third of the costs. The government pays the rest. During a scan, PI experts and a company's employees together analyse the composition of their operating processes. What are the inputs and expected outputs? And what are the conditions under which this takes place? A scan like that in general identifies a number of areas for attention where gains can probably be realised. However, you haven't done anything yet at that point.

You subsequently zoom in on a specific process using the in-depth scan. What are the catalysts, what is the quality of the product the process now produces and where do you want to end up? This ultimately provides the company's top management with two business cases on the basis of which the process could be redesigned or improved. Management makes a decision on the basis of the business cases after which a comprehensive project proposal complete with investments, costs, execution, etc must be prepared. Only then can one lay the first stone so to speak.'

'We are now in a pilot phase with the in-depth scan. There are approximately 20 VNCI members in the running for an in-depth scan. The start-up phase has been initiated for a number of members. One of the VNCI members who, after a number of quick scans, has initiated an in-depth scan is Chemtura.'

Chemtura Nederland produces crop protection products. The chemical portion comprises two processes that are unique in the world. This means that the company cannot fall back on the knowledge of other companies. 'While we are implementing efficiency improvements, we cannot afford to do everything ourselves with our small complement,' says Gerard Peereboom, Director Chemtura Nederland. 'Based on three quick scans we developed a number of ideas for the short, medium and long term. Some ideas are already producing gains. For example, in one process we installed a different pump which significantly reduces the pounding of the product. An entirely different process is a possibility over the long term. At the present time we use water to cool the product, but this need could perhaps be eliminated on the basis of gas cooling. This would also eliminate the need for removing water from the product afterwards. We will be exploring these types of ideas in an in-depth scan.'

Successful support

Emerencia: 'It is still too early to comment with precision on the extent to which the scans are successful. On the other hand, we believe that process intensification can to a large extent contribute to the objectives of the Long-term Agreement (LTA) on Energy Efficiency. This is why we are going back to the other 40 VNCI members who for various reasons have not yet completed a quick scan. We will be explaining the potential benefits once again in terms of space, resources, complements, maintenance costs, etc. After all, within the existing Dutch and European chemical industry there are still enough problem areas where investments can be recuperated very quickly. Sometimes within a period as short as two to three years.'

In addition to the PI quick scan and the in-depth scan, the LTA also focuses on providing other support, for example in the form of preliminary studies and roadmaps. These tools are used to identify what needs to be done on a sector by sector basis and the available opportunities that can be leveraged to ensure we continue to be well-established among the top worldwide in 2050. 'It all comes down to what you can do now and what do you need to be more efficient in the future? We are working all-out on this.'

Chemical industry

The chemical industry joined the LTA₃ covenant in 2009 and comprises 51 participants (63 concerns). The chemical industry is characterized by a huge diversity of processes, installations and products. The range of energy usage is also highly varied.

Energy efficiency measures

In 2009, participants implemented 147 different measures in the field of process efficiency, which produced a total saving of 320 TJ. The energy saving measures can be split into the following categories:

- Processes (214 TJ)
- Utilities and buildings (83 TJ)
- Energy management and good housekeeping (23 TJ)

In 2009, the participants realized extra chain savings of 718 TJ, compared to 2008. Of this, 700 TJ was produced by measures implemented in the production chain. The total chain savings at the end of 2009 amounted to 801 TJ, compared to 2005. The total use of sustainable energy at the end of 2009 amounted to 446 TJ, representing a 4.6 percent share of the total energy used. Of the total sustainable energy usage, 261 TJ was self-generated and 185 TJ purchased. The total usage of sustainable energy was 65 TJ lower compared to 2008, but 225 TJ higher compared to 2005.

Sector development and 2010

For many companies in the chemical sector, 2009 was a difficult year. The economic crisis that announced itself in 2008 continued throughout 2009. There was a slight recovery in a number of sub-sectors during the second half of the year but, overall, 2009 was a year of struggle. The construction industry, the automotive industry and the engineering industry were hit very hard and these are all important markets for the chemical industry. During 2009, a great deal of attention was devoted to the formulation and interpretation of both Long-term Agreements and also to the emissions trading system, given its great importance to the sector.

Fine ceramics industry

The fine ceramics industry has been an LTA participant since 1994 and comprises six companies (eight concerns). The highest energy users are the ovens and dryers. Large-scale preparation, design and internal transport accounts for most of the remaining energy usage.

Energy efficiency measures

Measures implemented in 2009 resulted in a total saving of 13 TJ. This is almost entirely accounted for by a single measure, namely better utilization of capacity through the expansion of biscuit capacity. No chain measures were implemented within the sector but 264 TJ of sustainable energy was purchased during 2009.

Sector development and 2010

The fine ceramics industry consists of a wide variety of companies. Since 2009, the sector no longer produces sanitary products. The range of products now comprises tiles, which are mainly intended for the construction industry, fireproof materials and vitrified clay pipes, which are sold almost exclusively internationally, and decorative pottery. Tourism is an important factor for companies involved in the latter.

The economic crisis has, therefore, affected the sector in many different ways. The situation within the construction industry remains depressed, while other markets have noticed a slight recovery or are hopeful of a speedy recovery. Trends do not apply to all companies within the sector, therefore, and can actually contradict each other. Developments in foreign markets for specific products are difficult to estimate, and the same applies to the construction and tourism industries in the Netherlands. The expectation is that the situation within the construction industry will not improve during 2010. Other markets are hoping for more of a recovery in the near future.

Foundries

This sector joined the LTA in 1995 and has been an LTA3 participant since 2008, with 15 companies (16 concerns). The sector uses natural gas, mainly for furnaces, and needs electricity for forming processes, such as extrusion and rolling. Supporting processes, such as internal transport, also use electricity.

Energy efficiency measures

In 2009, companies implemented 51 different measures in the field of process efficiency, which resulted in a saving of 21 TJ. The most important energy saving measures in 2009 were:

- Awareness, preventive maintenance and repairing leaks
- Controlling the quality of molding sand

In 2009, companies implemented five different measures to achieve savings within the production chain. Savings achieved during the production phase in the Netherlands amounted to 1,124 TJ, partly due to reduced transport. No sustainable energy was purchased by the companies during 2009.

Sector development and 2010

Production within the sector fell considerably, although there were noticeable differences from company to company. Some companies focused on cost savings, while others focused on energy savings. These were mostly measures that produced a direct return for little or no investment. The savings achieved were not very sizeable and the economic prognosis for 2010 is not particularly optimistic. This also applies to the possibilities for companies to make investments that contribute towards the improvement of energy efficiency. This does not mean that businesses will ignore energy saving measures in 2010; and certainly not if these can be made with little or no investment. During 2010, further consideration will be afforded to (mid- to) long-term possibilities; some individually and some collectively, but also with businesses outside the metallurgical sector that share similarities in their energy-consuming processes.

Coarse ceramics industry

This industry became an LTA participant in 1993 and includes 14 participating companies (43 concerns). The highest energy users are the ovens and dryers. Other activities requiring energy are clay preparation, presses and internal transport. The long durability of the products and the possibility of full reusability of ceramic road bricks and ceramic roof tiles are characteristics of sustainability.

Energy efficiency measures

In 2009, the participants implemented 32 different measures, which led to a saving of 79 TJ. The most important energy saving measures in 2009 were:

- New ovens and dryers (22 TJ)
- Savings on dryer co-firing (10 TJ)
- Adjusting the dryer controls (7 TJ)

Production chain efficiencies (saving of 165 TJ) were achieved entirely through transport optimization and dematerialization (saving of 137 TJ). Total savings in the production chain amounted to 302 TJ. In addition, 235 TJ of sustainable energy was generated and purchased during 2009. The use of solid biomass and sawdust generated 114 TJ and 121 TJ of sustainable energy was purchased.

Sector development and 2010

The Dutch brick industry produced a total of 1.237 million bricks in 2009, including masonry bricks and road bricks. The fall in sales of masonry bricks continued from the previous year. In 2009, 18 percent fewer masonry bricks were sold than in 2008. Sales of road bricks fell by six percent, while sales increased by six percent during 2008. Proportionally, more road bricks are being sold and these require more energy to produce than masonry bricks. The trend in sales of roof tiles is the same as for bricks. The slight recovery that will take place in other sectors during 2010 is not expected in this sector, due to the late-cycle character of the construction industry. Only in 2012 does the Economic Institute for Construction predict a slight improvement.



Government and the business sector jointly invest in district heating

Looking beyond your own interests and daring to jointly invest in a shared value. This is what the involved parties consider the most important success factor in the feasibility study into heat/residual heat exchange in the western mine region, initiated at the end of 2009. The results are decisive in terms of the decision of whether or not to proceed with the establishment, construction and operation of 't Groene Net (The Green Net) district heating network. The study is a joint initiative of the municipalities of Sittard-Geleen, Beek, Stein, Province of Limburg, Chemelot, BES, USG and ZO Wonen and is in part facilitated by NL Agency.

(l) Rogier Dieteren (municipality Sittard-Geleen)
and (r) Bert Bosman (USG)

The 't Groene Net project is a fine example of an effective and more sustainable energy chain. BES and USG supply the energy, the housing association, municipalities and companies are buyers of the energy and government monitors and stimulates the public interest, including its potential participation. A joint venture of the public and private sectors with common interests.

Immediate interest

Bert Bosman (USG): 'Various petrochemical companies are vested at the Chemelot industrial complex. DSM and Sabic have established a joint venture to manage the energy flows outside of the factories, the Utility Service Group (USG). Of our residual heat, approximately 10 percent is destroyed. This means that the temperature of this heat must first be reduced, before it can be discharged. This is not effective. Not from an efficiency perspective, not from an environmental perspective and not from the perspective of the costs involved in this process. This is why we were immediately interested in the plans put forth for 't Groene Net.'

Declaration of intent

As part of its sustainability policy, the municipality of Sittard-Geleen in 2009 developed a project plan referred as 't Groene Net. The plan is based on the Sittard Biomass Energy Plant (BES) which still has unused capacity, USG with its supply of large quantities of useable residual heat and the large number of potential buyers of heat in the region. As the project's initiator, Sittard-Geleen surveyed all parties to determine their interest in this project. The parties are the municipalities of Sittard-Geleen, Beek and Stein, the Province of Limburg, Chemelot, BES, USG and ZO Wonen. The response was positive. The parties subsequently signed a declaration of intent to undertake a feasibility study with the support of NL Agency. The objective is to assess whether it is possible to meet the wishes and requirements of all parties in the technical, economic and sustainability domains. Of special note is that none of the parties imposed any pre-conditions ahead of time.

High expectations

The expectations for 't Groene Net are high. 't Groene Net to an important extent assists municipalities, the province and companies in attaining their sustainability objectives. The initial survey points out that there is a demand for energy for approximately 5,000 homes and 40 companies and institutions (approximately 900,000 GJ per year). This is equivalent to the use of 28 million m³ of natural gas per year (this equates to the energy consumption of 8,000 to 12,000 homes). The savings on primary fuels translates into a reduction of CO₂ emissions amounting to 46,000 tonnes per year. This is comparable to the CO₂ absorption of 6,100 hectares of forest.

Successful public-private partnerships

Who are the parties to 't Groene Net? And what is their role?

- 't Groene Net: the planned energy distribution company for the sustainable heat produced by BES and the residual heat produced by USG. Also the owner of the underground pipeline network of approximately 30 km to be constructed.
- The municipalities of Sittard-Geleen, Stein and Beek, and the Province of Limburg: project owners and potential users of the heat distributed by 't Groene Net.
- Chemelot: industrial park near Sittard, housing petrochemical companies.
- Utility Service Group (USG): joint venture of the chemical concerns DSM and SABIC (both taking part in the LTA on Energy Efficiency for ETS companies) at Chemelot and supplier of the residual heat produced by these companies. USG invests in the technology needed to make the residual heat accessible.
- Sittard Biomass Energy Plant (BES): supplier of sustainable residual heat.
- ZO Wonen: housing association and buyer of heat for its homes in the western mining region of Limburg. ZO Wonen invests in technology for buying heat.
- Several dozen companies in the western mining region: they are interested in buying heat. Each of these is prepared to make investments for the purpose of being able to acquire heat.
- NL Agency: part of the Ministry of Economic Affairs which stimulates, facilitates and supervises energy efficiency and innovation policy in the Netherlands.

In addition, the involved parties hereby contribute to the implementation of the European climate objectives. Something else that is not insignificant is that this is financially beneficial for consumers: their energy bills will go down.

Unique partnership

Rogier Dieteren, the municipality of Sittard-Geleen's Energy Coordinator is pleased with the commitment shown by the involved parties. 'A partnership has emerged between the various levels of government and the business sector based on the premise that if we fairly share the pie there will only be winners and this therefore optimally guarantees the success of the project.'

He furthermore considers the role of NL Agency to be key. 'It is an independent party. It supports us in the preparation of the business case for 't Groene Net with specific knowledge, experience with other projects and a financial contribution. All in all it is a unique project. It would be thanks to the effort and commitment of the participating parties if 't Groene Net actually gets off the ground.'

Further decision-making process

At the end of September the feasibility study will be submitted to the management boards of the various parties for further decision-making. The key components of the report are the results of the business case, a recommendation on the entity's legal form, the role and contribution of the various parties and the corresponding results in the area of sustainability.

Information and Communication Technology (ICT)

The ICT sector joined LTA3 in 2008 and includes 28 participating companies, around 75 concerns, and thousands of transmitter masts. The ICT sector's share of total energy usage is two percent. Households and offices using ICT applications account for a further five percent. In parts of the ICT sector, energy is being used increasingly efficiently for services (copper to fiberglass, analogue to digital, etc.). Due to the shift of ICT services from other sectors to the ICT sector, the total energy usage of the ICT sector could grow even further.

Energy efficiency measures

In 2009, the sector implemented various measures but the results of these are not yet known; only in 2011 will the first monitoring be performed. In order to stimulate savings, a list of measures has been specially formulated for the sector. The results of chain efficiency measures will also only be known in 2011, following the first monitoring round. The 'Greening' of IT impact will be mapped through studies by a chain help desk. The first subjects covered by this are the energy benefits of e-billing, ICT recycling, cloud computing and new working methods. The nationwide savings potential of these applications will be used by the Ministry of Economic Affairs as the basis for a new governmental policy. The use of sustainable energy focuses on self-generation and purchasing, and on making the energy supply more sustainable. A number of participating companies purchase green electricity. Following the first monitoring round, it will become clear how much green energy is involved and whether the self-generation of sustainable energy is also taking place.

Sector development and 2010

All participants have made a start on their energy efficiency plans for the period from 2009 to 2012. These EEPs include measures in the field of Green IT (greening of the ICT infrastructure) and Greening by IT (greening of processes in other sectors due to extra ICT). Companies are also taking part in user groups, company days and expert sessions, in order to develop and share knowledge. In 2010, the number of participants will reach critical mass in terms of estimated electricity usage. In energy terms, this produces a complete LTA.

Sand limestone and cellular concrete industry

This industry joined the LTA in 2004 and includes two participating companies (10 concerns). The sector uses mainly natural gas and electricity. Natural gas is primarily needed for the production of steam for the autoclaves. The stones are hardened by steam and pressure in these boilers. Most electricity is consumed by processes such as grinding, mixing, pressing, sawing and internal transport. Diesel is used for the extraction and transport of sand. The larger decrease in energy usage, coupled with the lesser decrease in production volume, is explained by increasing energy efficiency during the same period.

Energy efficiency measures

In 2009, participants implemented 44 different measures, which resulted in a saving of 13 TJ. The most important energy saving measures in 2009 were:

- Avoiding unnecessary heating/cooling of autoclaves (4 TJ)
- Improved heat usage from condensation (3 TJ)

In addition, production chain efficiencies (1 TJ) were entirely achieved through transport optimization. No sustainable energy was purchased or generated during 2009.

Sector development and 2010

Production in this industry remained at roughly the same level up to 2008. Due to the economic crisis, production has fallen by around 20 percent, compared to 2008. The slight recovery seen in other sectors during 2010 will not extend to this sector, due to the late-cycle character of the construction industry. Only in 2011 does the Economic Institute for Construction predict a slight improvement.

The reduced occupancy of installations has had a negative effect on energy efficiency. The continuing automation of production has had a positive influence on working conditions but leads to an increase in electricity usage. This makes the improvement in energy efficiency even more impressive.

Chain measures will become increasingly important and will make a greater contribution to future results.

Refrigeration and cold storage industry

This sector joined the LTA in 1998 and includes 60 participating companies (79 concerns). A large proportion of total energy consumption, approximately 85 percent, is used for cooling/freezing. The energy required for cold storage is product-dependent, but also depends on the temperature at which the products arrive at the cold storage facility. If the product temperature is higher than required for storage, the cold storage facility must reduce its temperature. This can lead to companies using more energy one year than another.

Energy efficiency measures

In 2009, participants implemented 63 different measures in the field of process efficiency, which resulted in a saving of 17 TJ. The most important energy saving measures in 2009 were:

- Replacement of cooling compressor controls
- 100 percent shutdown during the winter months
- Newly built cooling/freezing facilities

Saving energy within the production chain is a difficult subject for this sector. The individual companies are predominantly driven by demand from the market. The client dictates and the sector follows. Wherever real opportunities for savings arise, such as discounts for more links in the chain, these subjects are actively taken up. As a volume user of energy, the sector strives to continually improve its sustainability. In 2009, the most important developments in the field of sustainable energy were the use of self-generation and purchasing, and making the energy supply more sustainable.

Sector development and 2010

The sector is focusing on energy saving measures, knowledge development and making knowledge available, monitoring and energy management.

Investments in replacement equipment are more difficult to finance in the current economic climate. Many companies are, therefore, not in a position to make the compulsory transition to HCFKs. One possible consequence of this situation is that fewer companies are choosing a sustainable solution in the form of natural refrigerants, since the investment involved is noticeably higher. The possibilities for sustainable energy are being researched emphatically, including self-generation of power. Furthermore, the sector is busy developing a new monitoring system with appropriate software.

Metallurgical industry

This industry has been an LTA participant since 1992 and joined LTA3 in 2008. It comprises 16 participating companies (20 concerns).

Energy efficiency measures

In 2009, companies implemented 43 different measures in the field of process efficiency, which resulted in a saving of 43 TJ.

The most important energy saving measures in 2009 were:

- Optimization of lighting
- A new emulsion for the hot rolling process
- Advanced monitoring

Six different measures to achieve production chain savings were also implemented in 2009. In the Netherlands, these measures resulted in a saving of 78 TJ compared to 2005.

In 2009, the sector as a whole implemented fewer measures than in 2005. Consequently, the sector total for 2009 was 144 TJ less than in 2005. The measures implemented in 2009 mainly concerned the production chain, such as dematerialization measures and increased usage of scrap metal.

Within the production chain (use of products), no measures were implemented by the companies.

In addition, 361 TJ of sustainable energy was purchased and used in 2009. No sustainable energy was generated by the companies themselves.

Sector development and 2010

In the automotive and construction sectors, which are important to the metallurgical industry, production slumped further during 2009 and this is apparent in the total energy usage, which fell by almost 19 percent. The drop in production was accompanied by cost reductions, including much attention for energy savings. With little room for financial maneuverability, few large investments were made during 2009 and these were limited to measures producing swift returns, although long-term possibilities are being intensively researched. Although it is expected that the economic situation will improve during 2010, this takes into account (limited) growth in production volume and higher energy usage. As investment possibilities improve among the companies, further savings measures can be expected. The sector's EEPs express high hopes for the period from 2009 to 2012. Alongside individual initiatives, potential improvements will also be sought collectively during 2010 and, together with the foundries sector, mid- to long-term solutions will be looked at.



Long-term Agreement (LTA) energy knowledge transfer to SMEs

The LTA stimulates and implements energy efficiency improvements for larger companies. To allow small companies to profit from the knowledge gained within LTA programmes as well, a partnership agreement has been signed with the Energiecentrum MKB (SME Energy Centre). The NL Agency makes the energy knowledge available and the Energiecentrum translates it into the daily practice of small(er) companies. The result: an efficient way of providing SMEs with new insights into the area of energy savings. One of the first joint projects is the Compressed Air pilot in collaboration with the Dutch Rubber and Plastics Federation (NRK).

In 2009, MKB Nederland, the association for small and medium sized enterprises in the Netherlands, signed a sustainability covenant with the Ministry of Economic Affairs. The target is to increase energy savings by 2 percent per year. At the present time it is still 1 percent. This provides an incentive for NL Agency and the Energiecentrum to intensify collaboration. The arrangement was officially established in the form of a partnership agreement in May 2009. A logical step. Indeed, both institutions have the same goal in mind: to enthuse, stimulate and support the Dutch business sector in realising energy savings. The target group partially overlaps as well. The Energiecentrum is focused on SMEs, while NL Agency focuses on large as well as small companies, via its various programmes. Information about grants, energy-saving opportunities, new technologies, etc will be streamlined. The sector organisation NRK also plays an important role in this regard.

Compressed air

The first pilot project in the context of this LTAsme was initiated in 2009. 'We opted for a sector-transcending theme that is attractive to large LTA, as well as small LTAsme companies,' says De Ruijter. 'Compressed air is the first theme that was put forward for consideration. This theme extends into 2010 as well. We established a user group comprising four major and four SME companies. All companies will be given an LTA scan and are coached by a consultant in the area of compressed air systems, the identification of opportunities, investment recovery times, etc. The eight companies are maintaining close contact among themselves, so that the knowledge gained by one company also ends up with another. The user group is perceived as very positive and practical by the companies. The companies are showing each other how they deploy compressed air as efficiently as possible and this in turn generates new ideas for them as well.'

Streamlined knowledge exchange

The knowledge and ideas gained in the user group are subsequently passed on to other companies within and outside the sector, via publications. These publications immediately provide small companies with practical pointers. The information is delivered via the networks of the sector associations. De Ruijter: 'The NRK is unsurpassed in its knowledge of how the SME network of companies works. And the information offered is therefore more than an exchange of knowledge. It provides the SME with an immediate perspective for taking action.'

Long-term Agreements for the SME sector

Jointly with NL Agency and the Energiecentrum, the NRK explored possibilities to as much as possible level the playing field for SMEs and LTA companies. 'As a sector association you look after the interests of all your members, large and small,' explains Erik de Ruijter, NRK's Director of Policy & Advice. 'However, LTA is only attractive to companies whose energy bill is approximately €100,000 or more, while NL Agency's energy knowledge and projects are attractive at any level. How do you ensure that smaller companies can also profit?' This is why an SME version has been developed: LTAsme. 'As is the case for larger companies, LTA participation is voluntary, but not without obligation,' says De Ruijter. 'You are required to sign a letter of intent.' The objective is to also allow SMEs to optimally profit from the knowledge and experience of knowledge institutions and larger companies in the area of energy savings.

Low-threshold information provision in 2010 as well

The three organisations will continue to strategically deploy sector-transcending themes together in 2010. This includes the deployment of user groups and the even more streamlined provision of information and knowledge via the communication networks of the sector associations. 'Low-threshold and practical. New themes that are in the pipeline include lighting, cooling and heating. The practical approach to these themes will be further defined in 2010. That is important, because you must ensure that you offer the SME knowledge that is really useful. In other words not: take a look at your lighting, because you can do better in that area. Rather: this energy-efficient lamp is the right choice, can be purchased there, produces the following savings and this sector colleague has already done it as well. Low-threshold advice with a clear message.'

In addition, a special issue dedicated to the energy theme will be jointly developed for the NRK Network's sector magazine. This issue will include elements such as examples of successful LTA projects and practical tips in the area of energy savings. This is also part of the programme for the butcher sector in 2010. Up to now this way of distributing information and knowledge appears very successful. It strengthens the network and improves the relationship among companies, sector associations and knowledge institutions.

Oil and Gas production industry

This industry joined LTA3 in 2009 and includes nine participating companies.

Energy efficiency measures

Total energy efficiency was improved by 24.9 percent during 2009, in comparison to 1998. Compared to 2008, a 1.4 percent improvement was achieved. In 2009, 14 new savings measures were implemented. Total savings during 2009 amounted to 7,015 TJ, including savings produced by previous measures that remained effective during 2009. Compared to 2005, this represents an increase of 2,980 TJ.

Also in 2009, new measures in the field of process efficiency and energy management resulted in additional savings of 21 TJ. The most important energy saving measures in 2009 were:

- Optimization of diesel generators
- Application of hydraulic (replacing pneumatic) control systems
- Energy efficiency E-generation

In addition, companies implemented a total of seven chain measures, resulting in a saving of 46 TJ. These concerned the use of mobile production skids, savings on materials due to the introduction of a Monotower, and the use of residual heat released during natural gas compression. Compared to 2005, the sector did not save any additional fossil-fuel energy due to the use of sustainable energy.

Sector development and 2010

In 2009, natural gas production from Dutch gas fields amounted to 73.7 billion m³. Land-based natural gas fields produced 50.3 billion m³, while the Netherlands Continental Plate produced 23.4 billion m³. Of the total production, 34 billion m³ was derived from small fields and 39.7 billion m³ from the Groningen gas field. Total gas production was 7.8 percent lower than in 2008. A total of 1.56 million m³ of oil was produced; 25.8 percent less than in 2008. Land-based oil deposits produced 0.26 million m³, an almost identical figure to 2008. Production on the Continental Plate fell by 29.6 percent to 1.30 million m³. Average oil production during 2009 amounted to approximately 4,273 m³ per day. In addition, a portion of the natural gas production was realized by four natural gas storage installations. In total, 2.7 billion m³ of gas was injected, while around 2.7 billion m³ of gas was produced from storage. In 2010, the energy saving measures already implemented will continue and through the drawing up of EEPs for 2011 to 2016, as well as brainstorming sessions, it is possible that new energy saving measures will be introduced.

Surface treatment industry

This industry joined the LTA in 1996 and includes 66 participating companies (66 concerns).

Energy efficiency measures

It is possible to raise energy efficiency by implementing energy saving measures. Up to now, savings have been achieved primarily through process measures. Through the use of these measures, LTA targets have been largely met. Chain measures within the production process delivered an additional contribution of 87 TJ to the 2009 results. It is anticipated that these chain measures will only increase in importance.

In 2009, participants implemented 159 different measures, resulting in a saving of 46 TJ. The most important energy saving measures during 2009 were:

- Adjusting boiler afterburner control (7.9 TJ)
- Adjusting furnace ventilation rate to suit the load (1.9 TJ)
- Re-introduction of the counter-flow system (1.3 TJ)

Chain efficiencies were achieved entirely within the production chain, through savings on materials (85.6 TJ), dematerialization or re-use (0.9 TJ), and transport (0.6 TJ). Total savings in the production chain amounted to 87.1 TJ. In addition, a total of 13 TJ of sustainable energy was purchased during 2009.

Sector development and 2010

The economic crisis has also affected the surface treatment industry, although each sub-branch is feeling the effects differently.

The situation within the construction industry is depressed, while other markets have noticed a slight recovery or are hopeful that this recovery will soon materialize.

Because a large portion of costs, including energy costs, are dependent upon the occupancy rate, energy efficiency paints only a limited picture of the companies' efforts.

The sector is focusing on process improvements and cost reductions in 2010. As well as improving energy efficiency in its own processes, attention is being paid to increasing longevity during the usage phase and closing the material chains. Through these themes, the ambitions detailed in the preliminary study will be made concrete for the roadmap.

Other Industry

This industry joined LTA₃ in 2008 and includes 34 participating companies (77 concerns). The share of energy costs in turnover varies widely, due to the heterogeneous nature of the companies. These include very high energy users (3,000 TJ), but also very small ones (6 TJ). Low usage such as this applies to SMBs.

Energy efficiency measures

In 2009, participants implemented 374 different measures in the field of process efficiency, which resulted in a saving of 444 TJ. Examples of important energy saving measures during 2009 were:

- Generation of electricity with engine test rigs
- Lowering the stand-by temperature of ovens
- Replacing old test rigs with more energy efficient ones
- Reducing time spent on pre-treatment

In addition, chain efficiencies were achieved during 2009 through 12 projects, which resulted in a 976 TJ saving in the product chain compared to 2005 (including more energy efficient chips and printers) and a 20 TJ saving in the production chain (13 projects). Distribution optimization measures include the logistical optimization of wet fertilizers. The sector has also implemented 39 measures concerning sustainable energy, compared to 2005. The use of sustainable energy includes self-generation and purchasing, as well as making the energy supply more sustainable. The self-generation of energy (from waste and biomass, ambient heat, wind and solar energy) resulted in a saving of 24 TJ (32 measures). The green electricity purchased amounted to 3,124 TJ (seven measures).

Sector development and 2010

From an economic viewpoint, 2009 was a very bad year for many of the other industries. Despite the crisis, companies continued to invest in energy saving measures, but also in energy management and research into energy savings. In general, large investments were postponed or deferred. In 2010, confidence in economic recovery and a healthy business economy are preconditions for investment in energy saving measures, for example. If these conditions are met, the market would demand more products, lines would expand and production could become more energy efficient once again. Postponed large investments could once again be made, resulting in additional energy savings.

Rubber, glue and plastics industry

This industry includes 95 concerns and joined the LTA in 1998.

Energy efficiency measures

In 2009, participants implemented 197 different measures, which resulted in a saving of 152 TJ. At 94 TJ, energy saving measures within companies' own production processes represented more than half of the total savings. The other savings were achieved through energy management and good housekeeping (29 TJ), and through measures implemented in utilities and buildings (30 TJ).

Eighty-one measures chain measures were implemented which, together with other measures implemented since 2006, resulted in a saving of 921 TJ. Material savings accounted for a further saving of 462 TJ, compared to 2005. Other measures within the production chain produced a saving of 52 TJ. Measures in the field of life-cycle optimization resulted in an additional saving of 674 TJ, compared to 2005. Measures in the usage phase delivered fewer savings (267 TJ). Savings related to sustainable energy were achieved through ambient heat, in the form of heat-cold storage (170 TJ), the purchasing of sustainable energy (71 TJ), one measure concerning energy from waste and biomass (46 TJ) and the use of solar heat (5 TJ). The use of sustainable energy was 124 TJ lower than in 2005 (416 TJ).

Sector development and 2010

In 2009, sales fell by an average of 10-15 percent, although some individual companies did experience growth. This had consequences for the number of LTA participants. Nevertheless, the sector strengthened its positive image and leading position in the field of innovation. Plastics are increasingly being re-used and remain highly suitable for social solutions and sustainable developments. The use of plastics made from biological material is also rising, with customer requirements an important factor in this. This has led to more plastics being used in packaging and to an increasing use of plastic products. Rubber and plastic building materials are also contributing towards the sustainable construction of residential and utility buildings. The eco-profile of products and businesses is growing, as is attention for cradle-to-cradle product development. Over the coming decade, important niche markets will emerge. In 2010, the NRK will focus on five themes, including bio-based economy and closing the chain within its own production process.



IR drying: enormous potential energy savings in the carpet industry

Following earlier initiatives related to the use of infrared radiation for drying purposes in the textile and paper industry, the carpet industry in January 2009 became the focus for realising energy efficiency gains. And with success. 'Participants are currently heavily involved in further developing their production machines, based on infrared (IR) drying technology,' says innovator Aike Wypkema of TNO (Netherlands Organisation for Applied Scientific Research), who led the process.

Many energy-saving measures were implemented in the carpet industry in recent years. The sector is well ahead of the 2 percent agreements struck in the Long-term Agreement. Additional projects to take an even more critical look at energy use therefore do not really appear necessary. 'That is not entirely true, there is always room for improvement,' says Jaap van Hensbergen of the Modint-VNTF sector association. 'In this sector too, new technologies are sometimes not leveraged to the maximum possible extent. How do you ensure that a sector is aware of the latest technical opportunities? And how do you stimulate their use? With user groups.'

Knowledge sharing yields benefits

A user group provides participants with a platform for investigating new and existing opportunities inherent in the technologies for their specific sector. Potential participants for the group are approached by the sector association. A facilitator directs the process and ensures that participants and relevant technology suppliers come together and share their knowledge. 'The interaction that emerges among companies is very important. People share their experiences with test environments and the problems they run into. This improves and accelerates the acceptance of technologies. Ten people may say to you that you should use a certain type of equipment more often, but when a competitor or colleague says that they tried out that equipment and it works, then this is far more convincing.'

Positive results of user group pilots

Two types of experiments were conducted with IR drying. The integration of gas-fired IR radiators into existing production lines was investigated at two participants. For example, it is possible to integrate IR technology in front or after the production line. On average this increases production from existing setups by 10 to 20 percent and results in a potential saving of 5 to 10 percent of the total energy consumed by this installation.

The trial installations installed at one participant demonstrated that in principle it is possible to use IR radiators to supply all of the heat required by the production process, without it being at the expense of production quantities and quality. Due to the direct, contactless heat transfer and the ability to quickly control the IR radiators, this yielded major efficiency gains. The potential energy savings were relatively high in this specific pilot: between 30 to 50 percent. To be able to generalise these results still requires a scaling up project, because a similar application of IR radiators on a large scale has not yet been previously demonstrated.

In summary, three reasons why IR radiators are of interest emerged from the pilots. First, the high energy intensity in small spaces can provide an enormous boost in heat. Second, the heat is transferred more quickly and directly to

In the period January to December 2009, the IR drying user group tested the application of IR drying with five participating carpet companies and with the assistance of two suppliers of gas-fired IR radiators. The companies process synthetic and natural materials into carpets for end-users. The most energy-intensive part of the production process is the so-called backing process, the gluing and drying of a rubber layer onto the bottom of the carpet. Backing on average consumes 40 percent of a company's energy needs.

'The user group provided a great deal of insight into the possibilities of infrared technology,' says Harm Hiddink, head responsible for Quality, Occupational Health & Safety and the Environment at Intercarpet, one of the participating companies. 'And how you can apply these possibilities to your own production process. You are not alone in investigating these possibilities. You achieve far more results in a group. We are considering using IR in the future as a 'booster'. Glue is then heated using IR technology. This means that the glue only needs to dry in the oven.'

the product via the direct, contactless heat transfer. Finally, due to the rapid warming and cooling of the radiators it is possible to manufacture flexible machines that can be used to rapidly respond to customer demand.

IR drying in the future

'In any case, three participants are working on the further development of machines and are busily involved in setting up new lines based on infrared radiators. It will take a few years before companies can really put the new production lines into use. Lines will have to be changed around, scale trials will have to be conducted and everything will need to be properly checked out.'

The challenge now is to bring IR drying to the attention of other sectors. There was a successful user group in the textile sector before and relevant practical experience has since been gained in parts of the paper and printing industry. An increasingly higher percentage of recycled paper is being used in paper and cardboard factories. As a result homogeneous drying, a specific added value provided by IR, becomes increasingly more relevant for improving production efficiency. A trend towards IR drying is also evident in the printing industry for heatset/offset printers. There is a great deal of interest in IR drying technology trends via the sector associations. The food sector recently also started working with IR. And manufacturers of building and construction materials and asphalt production companies are also casting an eye towards IR. At the same time IR technology is improving. 'For example, a technology was recently developed to manufacture gas-fired IR units using foam ceramics, which are even more energy efficient burners. This type of development will increasingly further reduce energy consumption in various production processes in the near future,' concludes Wypkema.

Tank storage companies

This sector includes seven participating companies (16 concerns) and joined the LTA in 2002.

Energy efficiency measures

In 2009, participants implemented 27 different measures in the field of process efficiency, resulting in a saving of 54.6 TJ. The most important energy saving measures in 2009 were:

- Replacing existing tanks with new, better-insulated tanks
- Decreasing steam pressure

In addition, chain efficiency was improved through energy generation from captured vapors. The savings achieved in this way amounted to 31.7 TJ. Two companies generated 0.1 TJ of electricity by installing their own solar panels.

Sector development and 2010

The demand for storage services remained at a high level during 2009, based on economic growth in China and the rest of Asia. Bio-fuels are becoming increasingly important in this sector, while the demand for product storage by the European chemical sector is decreasing. Due to positive developments in the storage of (bio) fuels, storage capacity among the 14 Votob members is growing once again, by 1 million m³ in 2009. An end to this type of growth is not yet in sight. The strengthening position of Amsterdam in the storage and transfer of gasoline is also notable.

Among companies' energy efficiency plans, a trend for re-using vapors to generate electricity is apparent. In the long term (2030), due to decreasing possibilities for further process efficiency improvements, the sector will take drastic steps to reduce demand for heat and energy through the use of water pumps and solar cells. In 2010, there will be a follow-up on the preliminary study performed during 2009. A technological study will take place into a far-reaching plan to reduce heat and energy usage. This will include research into the feasibility of industrial heat pumps and centralized or decentralized electricity generation, aided by solar panels. The aforementioned growth in storage capacity is expected to continue and new companies are emerging in this sector.

Carpet industry

This industry includes 13 participating companies (14 concerns) and joined the LTA in 2001. In carpet production, most energy is used in dyeing (27 percent) and in 'backing': the application of the carpets' under layer (39 percent). Heating and lighting workspaces (21 percent) is also an important source of energy consumption.

Energy efficiency measures

In 2009, participants implemented 26 different measures in the field of process efficiency, which led to a saving of 9.5 TJ. The most important energy saving measures in 2009 were:

- Improved heat recovery
- Use of variable speed drivers for circulation motors
- Backing oven temperature control

Chain efficiencies were achieved by recycling carpet remnants and more efficient 'tufting' (a technique used in the manufacturing of the carpets' top layer), reducing the amount of raw materials required. There were fewer chain measures implemented than in previous years. A number of companies purchased sustainable energy. In 2009, this amounted to 33 TJ less than in 2005.

Sector development and 2010

2009 was an extremely weak year: production fell by 20 percent, although the sector appears robust enough to absorb this. Artificial grass is an important factor in this. In certain market segments there is even talk of a turnaround, such as in the carpet segment's share of the total floor coverings market. The important UK market has not yet rejuvenated and the rise in raw material prices is also a concern. Nevertheless, in 2009 the sector set its sights on the future by carrying out a preliminary study, in which a vision for the future was formed, along with a plan for an innovation roadmap for 2030. In connection with an Innovation Performance Contract, sustainable and energy saving projects were initiated.

Market demand will be limited in 2010 and the hope is that it will not shrink further. Coupled with rising raw material prices, business results have been under pressure for a long time and investment potential remains limited. This takes into account the new EEPs formulated in 2009, which take effect in 2010. Nevertheless, 2010 is also a year for actively looking to the future with the drawing up of an innovation roadmap.

Textile industry

This sector includes 24 participating companies (25 concerns) and joined the LTA in 2001. Energy usage has fallen considerably in recent years due to company closures and a significant drop in production. The sector boasts an extremely diverse product range and is becoming increasingly specialized.

Energy efficiency measures

In 2009, participants implemented various measures in the field of process efficiency, which resulted in a saving of 35 TJ. The number of measures implemented in 2009 fell drastically, as a result of the turbulent developments in the sector. The most important energy saving measures in 2009 were:

- Optimization of machine settings
- Optimization of internal transport
- Good housekeeping

Various measures were also implemented in the textile chain in 2009, resulting in a saving of 12 TJ. These measures chiefly concerned savings on materials and better disposal of waste products. In 2009, part of the sector signed a joint-contract for the purchase of sustainable energy, involving 34 TJ, which is higher than in 2008. In total, 31 TJ of sustainable energy was generated or purchased in 2009, but this is 42 TJ less than in 2005.

Sector development and 2010

In 2009, sales fell by 11 percent, resulting in a lower investment level, although staffing levels remained virtually the same. The downturn was felt most severely in the technical textile segment, which is responsible for around 40 percent of turnover. Products from this segment are used in the automotive industry, road and water engineering, and the protective clothing market, for example. Segments such as clothing textiles and interior fabrics were not greatly affected.

The textile industry is highly specialized and mainly focuses on niche markets. This concerns products to which certain properties are added, through specific treatments that often involve increased energy usage. No structural progress is expected in 2010 and the market remains under pressure. In general, orders are dropping and often only cover the next few weeks. Rapidly rising raw material prices, both natural and artificial, are a cause for concern. These price rises cannot usually be absorbed directly, which has a detrimental effect on profit margins and investment levels.

Textile service companies

This sector includes 16 participating companies (55 concerns) and joined the LTA in 2001.

Energy efficiency measures

In 2009, participants implemented 99 different measures, resulting in a saving of 45 TJ. The most important energy saving measures in 2009 were:

- Energy saving projects within processes (33.4 TJ)
 - Replacing steam-heated equipment with gas-heated equipment (1.9 TJ)
 - Heat recovery from waste water (1.1 TJ)
 - Shutting down machinery outside working hours (1.2 TJ)
 - HotWaterLoop (2.6 TJ)
- Energy saving projects within utilities and buildings (7.5 TJ)
 - Optimization of compressed air system (0.4 TJ)
- Energy management and good housekeeping (4.1 TJ)
 - Expanded monitoring (0.9 TJ)

Chain efficiencies were primarily achieved through savings in the production chain (usage phase products). Total chain savings halved compared to 2008 and are now at the same level as 2005. In comparison to 2008, the amount of sustainable energy used has risen considerably and a saving of 44 TJ was achieved through purchasing. The equivalent figure in 2008 was only 0.1 TJ.

Sector development and 2010

Developments vary according to market segment and production volume rose by 1.1 percent in 2009. The sector is shifting its focus from process to chain orientation. Process solutions continue to be sought but there are many gains to be made in terms of sustainability in the total textile usage phase. The 'Refunctionalize' project elaborates on this. New textile functionalities must be checked and maintained by the textile service sector, thereby extending their shelf life. Among other things, this calls for new techniques. Other projects carried out include Cycle (research into and optimization of the water cycle within laundries), Energy Balance (research into energy usage and savings in business processes), and Wet Wash Process Improvement (research into improving the sustainability of the wet wash process without reducing performance requirements). Economic uncertainty will continue in 2010, depending upon the political course taken. Among others, the sector has various research projects underway, which should contribute towards sustainability and energy savings. Networks will expand further and synergies will be sought with chain partners. The importance of this is evident, since two thirds of the entire life cycle's effects on sustainability and the environment derive from the usage phase.

Food and beverage industry results

Potato processing industry

This sector includes seven participating companies (15 concerns) and joined the LTA in 2008.

Energy efficiency measures

In 2009, companies implemented a total of 50 measures in the field of process efficiency, which resulted in a saving of 124 TJ. The most important energy saving measures in 2009 were:

- Optimization of cooling and freezing equipment
- Heat recovery and re-use
- Optimization of process controls
- Process and equipment optimization
- Good housekeeping

In 2009, companies implemented a total of seven chain measures, resulting in a saving of 134 TJ. Several companies, together with chain partners, implemented optimizations in their distribution chains. Furthermore, packaging was optimized, material savings were achieved, and logistical processes were also optimized. The combined usage of sustainable energy by the participating companies amounted to around 19 TJ more than in 2005. This was entirely based on the use of biogas from companies' own fermentation installations.

Sector development and 2010

In 2009, the global market was characterized by strong competition on prices, due to overcapacity and the economic crisis. This market situation put prices under pressure. The quality of potatoes was worse than the previous year, meaning that relatively greater energy input was needed to achieve the desired end-product specifications.

The increasing shift of consumer demand towards more convenience foods led to further intensification of the production process, smaller quantities and greater variation in packaging. Consequently, the industry used relatively higher amounts of energy.

The potato harvesting season was delayed by several weeks, due to the cold winter. This was followed by a relatively poor spring and a hot summer with extreme temperatures. This undoubtedly had consequences for the quality of potatoes for consumption and so, too, for the industry's energy usage.

The drop in value of the euro currency improved export possibilities to countries outside the EU. This provided the space needed to utilize production capacity, which had a positive influence on the energy balance. Nonetheless, post-manufacturer prices (the price that retailers pay for energy) remain under pressure. Among others, this is a result of the strong expansion in production capacity and and increase in potato sown area in Belgium.

Cocoa processing industry

This sector includes three participating companies (6 concerns) and joined the LTA in 2008.

Energy efficiency measures


In 2009, participants implements 33 different measures, resulting in a saving of 59.8 TJ. The most important energy saving measures in 2009 were:

- Raising cooling water temperature and increasing heat recovery during fine grinding
- Intermediate shut-down of the ejector steamer
- Reducing humidity during product processing

Chain efficiencies were achieved through the re-processing of cocoa shells, resulting in a saving of 70.4 TJ. There was no use of sustainable energy in the sector in 2009, either from self-generation or from purchasing green electricity.

Sector development and 2010

Together, the participants account for 95 percent of energy consumption within the sector. The quality of the cocoa beans, which has a strong influence on energy usage per tonne of cocoa beans, has remained virtually constant compared to 2008. The sector has been active in the field of sustainability for a number of years. Countless initiatives have been implemented (certification, quality labels, etc.), involving cooperation between various companies and other (international) parties. In 2010, research will be carried out into how energy efficiency can be linked to a sustainable policy for the various organizations. Furthermore, 2010 is the year in which an LTA will be drawn up for the industry's sectors and in which previously detailed savings measures will be achieved.

A close-up portrait of Eugène van 't Hoofd, a man with dark, wavy hair, wearing a dark pinstriped suit jacket, a light blue striped shirt, and a dark tie. He is looking slightly upwards and to the right with a thoughtful expression. The background is blurred, showing hints of blue and white.

Energy savings through improved collaboration within the chain

The Dutch soft drink sector is giving sustainability high priority. A large number of energy-saving measures have consequently been implemented within the sector in recent years. Nevertheless the Netherlands Association for Soft Drinks, Water and Juices (FWS) consciously decided not to join up with the Long-term Agreements (LTA) 2. The sector has, however, once again joined the LTA3. Why? Eugène van 't Hoofd, Sustainability Coordinator for the FWS as well as the Netherlands Central Brewers Office (CBK) explains.

Eugène van 't Hoofd (FWS and CBK)

We gave serious consideration to joining the agreement earlier. A complicating factor was that at the time of the LTA2 we were just involved in a major reorganisation. This does not take away the fact that we are pursuing the same objective, which is one of the reasons why in May 2009 we did join the LTA3. Our members are highly focused on costs, particularly in this time of crisis. By reducing your energy consumption, you realise cost savings and furthermore you give something back to the environment. In addition, we view the long-term agreements as an excellent vehicle to show the outside world that we are highly focused on sustainability as a sector. Especially the government.'

Future scenarios

'Another reason for joining the agreement is that in coming years we perceive a lot of challenges in the area of energy efficiency. The preliminary study that we will be conducting in the context of the LTA3, offers our sector the opportunity of developing scenarios for the period leading up to 2030. Where can we further reduce energy consumption as a sector? This is a challenge that we look forward to taking on. In the preliminary study we will assess what the sector will more or less look like in 2030. That goes beyond just energy. We will be asking questions such as: Will we still be drinking soft drinks in 2030? What innovations are on the agenda? And what is required to ensure that these innovations succeed? What will marketing be like? Will we be faced with a heavily regulating government, or rather just the opposite? One of the scenarios will be related to energy consumption in 2030. We may decide to prepare a roadmap on the basis of the scenarios. The roadmap will contain tangible measures designed to achieve actual energy reductions.'

What have we done to date?

'A lot has happened in the beverage sector in the area of energy efficiency over the past ten years. Water consumption is still being further reduced. By way of illustration: Coca-Cola Nederland has one of the lowest water footprints worldwide. The expectation is that the quantity of water required to produce Coca-Cola will decline even further over the coming years. Packaging is becoming increasingly environmentally friendly and lighter, while its production involves increasingly lower CO₂ emissions. Lighter materials in turn translate into lower transportation costs. Packaging is also becoming increasingly easier to recycle. In addition, smarter technologies are also being applied, for example, in the area of energy management. Until recently, the retail sector kept coolers running day and night; this is no longer happening. We have by no means arrived, but we are moving in the right direction.'

Ambition?

'Energy savings were primarily realised within companies in recent years. We think that there is not much flexibility left in that area, although some things are still possible with smart applications. The expectation is that a great deal can still be accomplished especially through improved collaboration within the chain. Think of logistics, the way in which our products are cooled by the catering industry. If you could have a meaningful impact in that area, perhaps through collaboration with organisations in the catering industry, you could have a tremendous impact. At the same time this is difficult, because chain partners often have other interests. However, we will be focusing our thinking in that direction.'

Energy Efficiency Plan (EEP)

'We are not yet able to say a great deal about LTA3 progress. Our members are currently working hard on preparing Energy Efficiency Plans that are to be submitted prior to 1 August. However, these will only be monitored starting next year. Many different meetings are being held in the context of the EEPs to give members an opportunity to share how they deal with energy savings. There are meetings for the purpose of preparing a sector-specific list of measures. Companies have an opportunity to learn from each other during these meetings. A major added value of the LTA agreement for our members is that the agreements are voluntary. We can determine our own measures designed to meet the LTA's goals and the requirements of the Netherlands Environmental Management Act. One of the major fears on the part of our members is that there will eventually be a climate act that prescribes exactly what each company is required to do.'

Vegetable and fruit processing industry

This sector includes 19 participating companies (23 concerns) and joined the LTA in 2008.

Energy efficiency measures

In 2009, companies implemented a total of 41 measures in the field of process efficiency and energy management, which resulted in a saving of 51 TJ. The most important energy saving measures in 2009 were:

- Optimization of cooling and heating systems
- Reducing water usage
- Optimization of line efficiency
- Utility optimizations (compressed air, steam)
- Good housekeeping

The companies also implemented a total of 11 chain measures, resulting in a saving of 55 TJ. Several companies, together with their chain partners, implemented optimizations in their distribution chains. Furthermore, they achieved material savings and optimized product disposal and reprocessing. The combined usage of sustainable energy by the participating companies amounted to around 11 TJ more than in 2005. Various measures in the field of fermentation were intensified.

Sector development and 2010

The health agenda is of great importance to the vegetable and fruit processing industry. Several years ago, the VIGEF made the image of processed fruit and vegetables one of its policy spearheads. Higher consumption of processed products can be achieved through image improvement, for example. The image campaign for processed vegetables increases awareness of the nutritional value of processed products. In the VIGEF Platform Technology & Theme, health (nutritional value) is linked with technique, mainly through new or improved processes that preserve the well-known qualities of fruit and vegetables, such as valuable nutrients, color, aroma and flavor.

The most important developments in 2010 are focused on a number of themes. If consumption remains stable, the expected growth will not be realized. Increased attention will be paid to added value and innovation. The availability of raw materials remains a challenge. The number of (retail) clients will fall but their scope will increase. There is talk of consolidation within the industry and of increased regulatory pressure. The VIGEF continues to invest in promoting innovation, health and responsible weight, securing raw material supplies, and the creation of equal opportunities for competition within Europe.

Coffee roasting industry

This sector includes 10 concerns and joined the LTA in 2008. Improvements in assortments and the increase in small packagings (single portions) have led to a rise in the share of electricity used, while the co-firing of coffee grounds has led to an increase in the share of sustainable energy used.

Energy efficiency measures

In 2009, the participants implemented 37 different measures in the field of process efficiency, which resulted in a saving of 77.5 TJ. The most important energy saving measures in 2009 were:

- New freeze-drying facility
- Optimization of the coffee line in the overall process line
- Optimization of production line controls

In 2009, chain efficiencies (3.5 TJ) were largely achieved through optimizing distribution and material savings. In 2008, energy saving measures implemented within the chain produced around 35 TJ more savings. In addition, 1.8 TJ of green electricity was purchased in 2009. The use of biogas and coffee grounds amounted to 105 TJ. This is 27 TJ less than in 2005, when 133 TJ of sustainable energy was used.

Sector development and 2010

Consumers want to make a fresh cup of coffee quickly and easily, as a result of which the demand for one-cup options, such as bean-to-cup machines, coffee cup machines and coffee pad machines, continues to grow. Dutch consumers are making ever greater demands on their coffee. Diversity within the product range is growing. Alongside the introduction of innovative and flavorful products, for several years the Dutch coffee sector has played a leading role in the sustainability of its products, trade relations and production processes. Coffee roasters' responsibility for sustainable production is not limited to the cultivation and so-called 'primary processing' in the countries of origin, but also applies to the further processing in the Netherlands. Reducing the environmental impact of packaging and energy savings play an important part in this.

In 2009, the sector carried out a preliminary study for a roadmap. Various themes were highlighted in the study which, in the long term, will contribute towards the sustainability and increasing energy efficiency of coffee products. In terms of making these themes concrete, 2010 will be an important year. Furthermore, a decision will be made on whether a roadmap is the appropriate direction to take.

Margarine, Fats and Oils industry

This sector includes 10 participating companies (15 concerns) and joined the LTA in 2008. The vast majority of energy is consumed in the production of crude edible oil from oil-bearing raw materials, crushing (seeds and beans) and oil refining. Margarine and sauce production, along with the processing of animal fats, take up a relatively smaller share of energy consumption.

Energy efficiency measures

In 2009, companies implemented a total of 33 measures in the field of process efficiency and energy management, which resulted in a saving of 71 TJ. The most important energy saving measures in 2009 were:

- Replacement of old ammonia compressors for cooling
- Optimization of the degumming process
- Installation of a vacuum pump instead of steam ejectors
- Good housekeeping/process alignment
- Optimizations of compressor air

In addition, the companies implemented a total of six chain measures, resulting in an 8 TJ saving. Several companies, together with chain partners, implemented optimizations in their distribution chains. No measures were implemented in the field of sustainable energy.

Sector development and 2010

Compared to 2008, the processing of sunflower seeds doubled in 2009. Processing of rape seed rose by 34.5 percent, while processing of soya beans fell by 17.8 percent. The total oilseed crush rose slightly by 1.4 percent and Dutch production of crude vegetable oils rose by 13.8 percent. The rise in production of crude vegetable oils was higher than that of oil seed processing, because more rape seed and sunflower seeds were processed (oil content approximately 42 percent). There was a fall in the processing of soya beans, which were mainly processed in the Netherlands to extract protein for animal feed, due to their relatively low oil content (approximately 19.5 percent). Dutch production of rendered animal fats rose by 3.4 percent, margarine by 1.5 percent and light margarine by 17 percent. The production of edible fats (such as cooking products, deep frying fats and oils, and baking/mixing fat) rose by 33.3 percent in 2009. This increase was due to rising demand from abroad and higher domestic use of baking/mixing fats.

Flour manufacturers

This sector includes four participating companies (7 concerns) and joined the LTA in 2008. Most electricity is consumed by the flour mills, while the remainder of usage consists of natural gas (19 percent).

Energy efficiency measures

In 2009, participants implemented 18 different measures in the field of process efficiency, which resulted in a saving of 17.2 TJ. The most important energy saving measures in 2009 were:

- Increasing mill capacity
- Installing high-efficiency driving motors
- Installing a new burner on the boiler

Chain efficiencies were achieved through optimization of wholemeal distribution, resulting in a saving of 6.1 TJ. In addition, the sector purchased 30.4 TJ of sustainable energy.

Sector development and 2010

The same developments took place in 2009 as in the previous year. Under-utilization of production capacity remains a problem. The main causes of this are the prevailing over-capacity and lower exports to countries outside the EU. The total energy usage of the sector fell by 9 percent, to 1,262 TJ, compared to the reference year of 2005. The total savings produced by measures implemented were mainly achieved through process efficiencies and, to a lesser extent, chain efficiencies.

Due to global economic developments, it is expected that production will fall even further, having a detrimental effect on energy efficiency improvements. The restructuring of production locations will also have a negative effect on energy efficiency improvements in the coming years.



Towards an energy-neutral dairy chain with solar and wind energy and biogas

Fully 100 percent energy-neutral production; that is the ultimate goal for which the Dutch Dairy Association (NZO) and the Dutch Organisation for Agriculture and Horticulture (LTO) have joined forces. The opportunities are certainly there for dairy farmers and the dairy processing industry with solar and wind energy and biogas, according to Catharinus Wierda, Process Manager for the Duurzame Zuivelketen (Sustainable Dairy Chain) project and Kees Pette, Director of the NZO: 'The issue centres on establishing the right relationships between knowledge, technology and regulations.'

Energy-neutral means nothing less and nothing more than that the dairy farmers and the dairy processing industry strive to generate as much energy as they consume. 'A healthy ambition, but not unrealistic,' suggests Catharinus Wierda. He is the Process Manager for the Duurzame Zuivelketen initiative that the NZO and the LTO have initiated as the catalyst underlying this objective.

Energy-neutral operations

'Just figure it out,' he says. 'What does the sector need to operate energy-neutral in 2020? Three things. We need biogas installations, 50 of which are currently already in operation. Furthermore, many farms could apply a small-scale fermenter. However, this is an emerging technology. It has a great deal of potential, but many uncertainties still as well. The good thing about biogas installations is that they not only produce sustainable energy, they also prevent greenhouse gases such as methane from being released. They therefore yield a double benefit. This is also attractive in terms of the government's incentive programmes because it promotes the objective of achieving sustainable energy generation, as well as the objective of reducing greenhouse gas emissions. In addition, a smaller portion of the sustainable energy must then be generated using solar and wind energy. And then of course there are the energy savings realised by the dairy processing industry and the dairy farmers. We are assuming an increase of 2 percent per year in energy efficiency gains.'

Solar and wind energy

The readiness to apply this technology certainly exists. Pette: 'Research demonstrates that over 20 percent of farmers is interested in installing solar panels and in the technology used for generating wind energy. I therefore expect that the target percentage of 15 percent will certainly be achieved. A trial is currently underway in the Achterhoek region involving a dairy farmer who with the help of solar cells is supplying all of his own energy needs. If this turns out to be successful, we can then deploy this application on a larger scale. You can subsequently even conceive of the construction of regional networks of agricultural farmers who supply themselves and each other with power generated by solar energy. Unfortunately our calculations show that the contribution of solar energy to our goal of creating an energy-neutral dairy chain is not all that great. This is primarily due to the low yield of current solar panels. We expect this yield to improve over the coming years, however.'

Roadmaps

At this point in time, the Duurzame Zuivelketen initiative is developing a roadmap designed to achieve the energy objectives. The roadmap is a key instrument that gives substance to the ambition that the NZO together with the LTO has expressed for the energy-neutral dairy chain and the LTA3. Wierda: 'This requires effort on the part of the dairy industry and on the part of individual agricultural entrepreneurs, as well as from other involved parties, such as energy companies and government. The energy policy that the government wants to pursue of course will to a high degree determine the preconditions for developing these initiatives. Biogas has the highest priority for us, but solar and wind energy absolutely offer opportunities as well. However, success is also dependent on preconditions such as the availability of technology, costs -where applicable in combination with grants - and permits and other government regulations.'

Biogas

Aside from this, there is a great deal of interest in biogas, Pette says. 'The development of this technology is still in the pioneering phase. We do think it has a great deal of potential, however. This is an important source of energy for the dairy farmer. The major advantage is that the production of biogas from materials that are a by product of dairy farming operations has a high CO₂ efficiency, even higher than wind energy. Furthermore, biogas contributes to sustainability in various ways. Not only due to energy production, but also because the methane is captured from the manure, thereby producing better fertiliser. And this means that less artificial fertilisers are required, which in turn produces savings in terms of the reduced consumption of minerals and energy. Another not insignificant benefit is that the farm's surroundings often also benefit from the production of biogas.'

To illustrate, Wierda refers to two appealing examples of biogas production. 'In one case it involves a biogas plant installed for a dairy farmer in which the manure produced by the farm and several by-products are fermented. This generates biogas that the farmer uses to a minor extent for his own operations and for the rest sells to the public net. In the other instance, the dairy farmer also produces energy for himself and for nearby households. The digester's sludge, a valuable residual fertiliser that remains behind in the fermenter, is used to reduce the use of artificial fertiliser.'

Meat processing industry

This sector includes 42 participating companies (61 concerns) and joined the LTA in 2008.

Energy efficiency measures

In 2009, participants implemented 137 measures in the field of process efficiency, which resulted in a saving of 77.2 TJ.

The most important energy saving measures in 2009 were:

- Installing a speed control on the compressor
- Increasing capacity
- Installing automatic (fast-closing) doors

In 2009, chain efficiencies were achieved through 18 measures in the production chain which, together, resulted in a saving of 8.5 TJ. In addition, 7.3 TJ of sustainable energy was generated from organic residues and biomass. The purchasing of sustainable energy fell dramatically in 2009, in comparison to the previous year. In comparison to 2008, 15 TJ less sustainable energy was used and 20 TJ less in comparison to 2005. The decline in energy savings and the use of sustainable energy compared to previous years can be largely explained by economic developments. As a result, companies are purchasing less green electricity and certain chain measures scheduled for 2009 were not implemented.

Sector development and 2010

In 2009, the position of the Dutch meat sector was dictated, among other factors, by the supply of livestock from the Netherlands and neighboring countries, and increased attention for animal welfare and the environment. Developments in production and processing costs had an influence on competitive strength. Production volume rose in cattle slaughterhouses (15 percent)⁷, veal slaughterhouses (2 percent) and poultry slaughterhouses (2 percent), but fell in pig slaughterhouses (3 percent) and in the meat processing sector. Monitoring revealed a decline in production of three percent. The meat sector experienced cost and technical pressure on meat production. Due to rising grain prices, this situation will continue in 2010. Reducing energy consumption is one way in which the meat industry can make cost savings.

The sector will expand upon its preliminary study in 2010, in order to make the themes contained concrete.

The companies will also be supported in achieving the savings measures included in their EEPs.

⁷ One-off effect due to a combination of factors.

Dairy industry

This sector includes 19 participating companies (52 concerns) and joined the LTA in 2008.

Energy efficiency measures

In 2009, a total of 139 measures were implemented in the field of process efficiency and energy management, which resulted in a saving of 352 TJ. The most important energy saving measures in 2009 were:

- Conversion of gas and steam turbines
- Replacement of boilers
- Heat recovery
- Optimization of cooling and heating processes
- Improving equipment functionality
- Good housekeeping

A total of 12 chain measures were also implemented, resulting in a 234 TJ saving compared to 2005. Several companies optimized their distribution chain and reduced the amount of packaging material used. By purchasing waste heat, certain chains were able to make significant energy savings. In 2008, one company persuaded all of its dairy farmer suppliers to switch to green electricity. This also contributed towards a significant reduction in environmental impact in 2010.

In addition, six measures were implemented that resulted in the use of 298 TJ more sustainable energy, compared to 2005. This was entirely achieved through the purchasing of green electricity. One company purchased entirely carbon-neutral energy and was, therefore, responsible for a significant portion of the overall use of sustainable energy.

Sector development and 2010

Dairy prices fell sharply in 2008 and the first half of 2009, due to the international economic crisis. This resulted in reduced demand from both consumers and the food and beverage industry. Halfway through 2009, demand began to rise due to signs of economic recovery in Asia. At the same time, the milk supply began to stagnate in important dairy-producing countries and prices gradually recovered. At the end of 2009, the price of butter began to rise, which proved to be a precursor for rapidly rising milk prices.

The dairy industry is placing the highest priority on the further development of a sustainable dairy chain, as set out in the Covenant for Clean and Efficient Agrisectors. Furthermore, it has been agreed that potential growth in dairy farming, following the abolishment of the milk quota in 2015, must be on a carbon-neutral basis.

It remains to be seen whether dairy product prices can be maintained, depending on whether the recovery of market demand continues after the credit crisis.

Service sector results

Higher Professional Education

This sector includes 26 participating organizations (including 14 in monitoring) and joined the LTA in 2002. The decrease in natural gas usage continued in 2009, despite the strong annual rise in student numbers. The substantial rise in electricity consumption of recent years came to a halt in 2009. Savings measures in this respect appear to have borne fruit.

Energy efficiency measures

In 2009, participants implemented 30 different measures in the field of process efficiency, which resulted in a saving of 8 TJ. The most important energy saving measures in 2009 were:

- Reduction in PCs during office hours
- Closing of buildings during evenings/nights
- Optimization of central heating timing

The implementation of four chain projects delivered a saving of almost 3 TJ.

The projects concerned measures in the field of commuting and reducing the amount of paper used in business operations. The use of sustainable energy in the sector is accounted for by three projects: the introduction of heat-cold storage, the use of a heat pump and the purchase of green electricity. The increase in the usage of sustainable energy in comparison to 2005 amounted to 459 TJ, of which 458 TJ took the form of purchased green electricity.

Sector development and 2010

In 2009, a large number of colleges joined LTA₃. Sustainability ambitions translated into high demands for energy efficient new buildings and the structural embedding of sustainability in curricula. The strong growth in student numbers put pressure on accommodation arrangements, which required trade-offs between the optimal usage of existing buildings and the realization of new buildings. A further increase is expected in the number of colleges participating in LTA₃. Connections between LTA implementations and primary processes are also expected to increase, by involving students in energy research in their own buildings. Institutions must invest further in the introduction of energy management and the implementation of EEPs developed in 2009. There will be increased attention for ICT-related energy consumption, due to its sharply increased share of total energy demand. The first projects in this respect are already underway.

University Medical Centers

This sector includes eight participating organizations and joined the LTA in 2003/2004. Air conditioning consumes the most energy. The ventilation rate of fresh air is increasing due to higher comfort and safety demands. The amount of treatment and support equipment used is also rising. The energy supply for this equipment must be 100 percent reliable.

This requirement dictates the choice of power generation and emergency power requirements. In addition, the transportation of patients, visitors and goods consumes a great deal of energy.

Energy efficiency measures

In 2009, 38 different measures were implemented in the field of process efficiency, which resulted in a saving of 249 TJ. Examples of energy saving measures implemented in 2009 include:

- Replacement of TWIN-COIL by heat wheel
- Application of free-cooling building
- Higher efficiency cogeneration
- Replacement of cooling machines with variable-speed centrifugal cooling machines

No savings were reported in connection with chain measures. The sector has done everything necessary in the field of patient logistics, for example through the development of so-called 'care paths'. It has not yet proved possible to quantify the energy effects of certain measures. In comparison to 2005, 670 TJ of additional green electricity was purchased. During this period, the sector generated 2 TJ of additional sustainable energy through the application of heat and cold storage.

Sector development

The digitization of patient information streams has resulted in an increase in computer systems, energy consumption, and server/storage centers, but also to savings on paper and chain efficiencies in patient care and logistics.

In terms of accommodation, work is underway on the optimization of existing buildings. In addition, various UMCs have plenty of new construction plans in the pipeline. Within these, there are ample opportunities for sustainability. The application of sustainable construction and 'healing environment' concepts appear high on the agenda.

The dynamic in the field of education and research has benefited from the division of education and research budgets. This means that large sums can be assigned at short notice and for limited periods of time. This complicates the management of long-term investments and planning, meaning that optimization is not being sufficiently addressed, due to the short time horizon.

A photograph of two men in business suits standing outdoors in front of a large, moss-covered tree. The man on the left is wearing a dark suit, a light blue shirt, and a pink tie. The man on the right is wearing a light blue suit, a white shirt, and a purple patterned tie. Both are smiling and looking slightly to the right of the camera.

Financial sector wants to generate power

Banks and insurance companies are assigning high priority to sustainability. It is a natural part of their corporate social responsibility.

They consequently already have made major progress in the area of energy efficiency. This is not holding the sector back from subscribing to the LTA3. 'We view the signing of the agreement as an official proclamation on behalf of the management board that we believe in the LTA's objectives. This helps us make decisions in terms of doing certain things or just the opposite, avoid doing them.

The non-commitment disappears.'

(l) Dick Lussing (ABN AMRO) and
(r) John van der Lans (Goudse Verzekeringen)

Sustainability is fully embedded within our organisation,' says Dick Lussing, Manager Facility Services with ABN AMRO. 'As soon as something needs to be replaced, even something as small as a tiny lamp, we assess the most energy-efficient application at that point.' John van der Lans, Manager Facilities and Payments with the De Goudse Verzekeringen insurance company: 'This applies to the De Goudse as well. We were already participants to the agreements when NL Agency was still known as Novem and drove up with their Energy Bus. This is why it is becoming increasingly more difficult to introduce major energy savings. It is a question of shaving a little here and there. We are therefore primarily looking at optimally adjusting and synchronising all installation components. After all, when you don't turn something on it doesn't cost anything.' Lussing: 'In our headquarters we make use of, for example cold storage in the soil, heat storage and district heating. By regulating this optimally, in simple terms by avoiding heating and cooling at the same time, you can still achieve gains.'

Practical support

Lussing: 'The support provided by LTA remains very important. External consultants conduct an extensive review of everything that is to be seen in and around a building related to energy and provide recommendations on the things that can be improved. Consulting support is also available for the preparation of Energy Efficiency Plans. The LTA programme will support us in 2010/2011 with the introduction of energy management systems. This will be approached very professionally and will help us get certain things even better on track. A business often selects a money counting machine on the basis of functionality alone. This is not the case with an energy management system. The sustainability questions always comes to the fore.'

Lussing: 'User groups and workshops are also being organised. In 2009, a behavioural change user group was initiated. It was really a kind of programme to learn how to set up an initiative for promoting behavioural change related to sustainability among employees.' Van der Lans: 'Getting together with various parties from the same sector has a very stimulating effect. You always learn something from one another.'

CO₂-neutral

Lussing: 'If you want to go beyond this you have to look at power generation. This is still quite far off, but it is already now a recurring topic in our energy efficiency plans. The roof of our office along the Foppingadreef in Amsterdam South-East will be covered with solar panels, combined with white roofing. These are not conventional solar panels, but actually a sort of striplight, as a result of which you can cover the entire roof with them. But we can't make it with solar panels alone, the yield is too low. Over time we want to be CO₂-neutral. As such, since a short time ago, our waste is being collected and processed CO₂-neutral. However, we will also have to look at alternatives. For example, how could you, in a district such as Amsterdam South-East, with all the offices that are there, jointly generate power?' Van der Lans: 'We are currently operating CO₂-neutral by limiting the emission of CO₂ to the maximum possible extent and by compensating for the remaining CO₂ emissions by transferring money to windmill parks.'

ICT and facilities better aligned

Lussing: 'LTA and the energy management systems also ensure that Facilities and ICT work more together. Very important, because ICT is an enormous energy consumer. Furthermore, there are many interfaces between building management and ICT. More servers means greater energy consumption. But is it always necessary to deploy more servers? The capacity of some servers is currently underused. This could be more efficient.' Van der Lans: 'The cooling of server rooms in the past was 16 to 17 degrees. Today it is 23 degrees. Turning PCs off remotely. All things that can be easily controlled with software, but that significantly reduce the electricity bill. LTA stimulates and enthuses in this area as well. A 'captains dinner' was organised in this context in 2010, during which the 'leaders' of the financial services and the data centres were updated on the future of ICT in the area of energy use.' Lussing: 'Still another example: The introduction of flexible workplaces combined with flexible ICT and the more efficient use of space means that the ABN AMRO can make do with fewer buildings. Due to flexiwork, holidays, other types of leave, etc it turns out that we only need 70 desks for 100 FTEs. In terms of absolute energy consumption that will save 20 percent by 2012 in comparison to 2009.'

Universities

This sector includes 14 participating organizations and joined the LTA in 1999.

Energy efficiency measures

In 2009, 69 different measures were implemented in the field of process efficiency, which resulted in a saving of 46 TJ. The most important energy saving measures in 2009 were:

- Decentralization of heat generation
- Optimization of heat-cold storage system
- Refurbishment of boilers

Chain efficiencies were achieved through a single measure in the field of sustainable commuting. This measure resulted in an additional saving of 3 TJ, compared to 2005. The operation of a wind park by one participant produced around 184 TJ of self-generated green electricity, while a further 160 TJ of green electricity was purchased. The use of heat pumps and heat-cold storage systems in 10 different projects led to more sustainable heat demands, to the tune of 156 TJ. These measures resulted in an increase of 411 TJ in the use of sustainable energy during 2009, compared to 2005.

Sector development and 2010

Despite the increase in overall floor space and students (in the academic year 2008-2009, six percent more students enrolled than in the previous year), energy consumption for the heating of buildings remained virtually stable. This is largely due to the replacement of older buildings with new buildings, together with a large number of energy saving measures. Construction of new buildings is taking place on a large scale, to replace existing buildings that no longer fulfill current usage requirements, but also because themes such as sustainability and energy efficiency have assumed a far more important role in long-term accommodation plans. Recently, the sector also developed a vision for the future for a sustainable campus.

The need for technical equipment for research purposes is increasing. This equipment often consumes large amounts of electricity. The longer opening times of buildings in the evening also requires increasing amounts of energy for lighting.

Energy savings in the use of ICT equipment will also be investigated and this requires close cooperation with the ICT sector, which recently joined LTA3. The groundwork for this has already been laid.

Glossary

Energy consumption

Final or secondary energy consumption is the energy - for example, electricity, gas, thermal, oil - used by companies, expressed in Joules (J).

Primary energy consumption is the quantity of energy required to produce the required secondary energy (for example, the quantity of coal, oil and/or gas required to produce electricity).

TJ (Terajoules) is a unit of measure for energy consumption:

1 TJ = 10^{12} Joules.

PJ (Petajoules) is a unit of measure for energy consumption:

1 PJ = 10^{15} Joules.

Production process

Fossil and other energy savings within internal business processes that make an important contribution to improving energy efficiency. Together with changes in production volume and the other influences on the production process (see Influencing factors), the energy-saving measures explain the change in energy consumption.

In the new methodology, efficiency improvements to the production process are based on energy saving measures. That means that energy-saving measures one-on-one contribute to the change in energy consumption and also to the change in energy efficiency.

Chain projects

Chain projects lead to energy savings in all segments of the chain: production phase (production chain) or user phase (product chain), within or outside the Netherlands (see table below for clarification). Projects involving savings in materials, optimising distribution and optimising the discarding and reprocessing of products are part of the production chain. Projects involving a reduction in energy consumption during product use, optimisation of functional performance and the optimisation of life expectancy are part of the user phase.

Energy efficiency improvement

The efficiency improvements in the production process and in the production chain in the Netherlands together result in energy efficiency improvements at the agreement level.

Sustainable energy

The use of sustainable energy is no longer presented as energy savings and energy efficiency and consequently is decoupled from the production process and chain.

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