

# [NETHERLANDS] Long-Term Agreements on Energy Efficiency for the non-ETS sector (LTA3)

## (Meerjarenafpraak Energie Efficiëntie (MJA3))

### About the measure

Policy instrument	Sector	Starting date and status
Cooperative (Voluntary Agreements)	Industry, agriculture and services	[2001] – [on-going]

The objective of the Long-Term Agreements (LTAs) on Energy Efficiency for the non-ETS sector is to improve energy efficiency and promote the use of renewable energy in large and medium-sized companies in the industry, agriculture and service sectors.

The LTAs have been part of Dutch energy policy **since 1992**. The first agreements (LTA1) ended in 2000 and focused primarily on the efficiency of production process for energy-intensive sectors. Since then, different routes have been followed for the energy intensive companies and the less energy intensive sectors. Since 2005, a large share of the energy-intensive companies (energy consumption > 0.5 PJ/yr) are covered by the EU-ETS. The less energy-intensive companies (<0.5 PJ/yr), medium-sized and small industrial companies and companies in the service and agricultural sector, agreed on a 2nd generation of LTA (LTA2). **LTA2** (2001-2007) added energy savings throughout the entire product chain and also covered renewable energy (own production as well as purchase of green energy). In **2008**, the **LTA3** covenant was signed, expanding the scheme to 2020.

**More than 1,000 companies in more than 30 sectors** have joined LTA3. Sector organizations can decide to participate in the LTA3 covenant on a voluntary basis. If they decide to join, they are obliged to make a **long-term energy efficiency plan (LTEEP)**. These plans are to be updated every four years. The sector

organizations determine on the basis of the energy efficiency plans (EEPs) of their affiliated companies, which further actions they will take to improve energy efficiency and record this in the LTEEP.

In the LTA3 covenant, the LTEEP contains the qualitative and quantitative targets for the introduction of systematic energy management and improvement of process efficiency, chain efficiency and renewable energy of the companies that are affiliated with the sector organization.

Companies acting under the covenant are largely exempted from the generic energy/carbon tax and are automatically granted compliance with the energy-related provisions of their permits under the Environmental Management Act. The Netherlands Enterprise Agency (hereafter referred to as the NL Agency) is in charge of monitoring the voluntary agreements under the scheme, and provides yearly reports on the results in the different sectors that are participating.

Ex-post evaluations are used by NL Agency to improve the schemes to promote energy efficiency. For example, the conditions to comply with the LTA (and thus get the tax exemptions) were tightened in 2015.



Expected energy savings in 2020	Benchmark
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As part of the LTA3, industry has agreed to improve energy efficiency by 2% per year. Overall, the aim of the LTA3 covenant is to support the businesses that signed the agreement (1,160 by 2012) to reach a **30% improvement in energy efficiency from 2005-2020**. Official sources (NEEAPs, notification of EED article 7) include expected results for 2014-2020, but aggregated per sector (due to interactions between policy measures). They do not include an estimate of the expected energy savings for LTA3.

Final energy savings in industry, services and agriculture represent about 56% of the expected savings for EED article 7 (NL notification for EED article 7, 2013). The **946 companies** that reported their results for LTA3 (non-ETS) in 2016 consumed **247 PJ** (primary energy) in 2016. They represented about 23% of the total energy consumption in industry, and about **7% of the total primary energy consumption** in the Netherlands (Agentschap NL, 2018).

Means and outputs
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The LTA3 is a voluntary - non-committal - agreement between government, companies and institutions to improve the energy efficiency of products, services and processes while reducing the use of fossil fuels. In 2012, a total of 33 sectors took part in the LTA3 covenant, representing around 1000 companies. The sectors are clustered into four main sector categories: industry (18 sectors); food and beverage (10 sectors); service (4 sectors); and transport (1 sector). In 2016, the number of sectors remained the same, however, with slightly fewer companies than in 2012. In 2016, the number of participating companies was 946. As of April 2018, there are 1067 companies participating in 37 different sectors.

The LTA3 relates to three aspects; (1) energy efficiency activities within each company, (2) energy efficiency activities within each company's product and supply chain, and (3) use of renewable energy within each company. Companies participating in the programme are committed to:

- Drawing up an energy efficiency plan (EEP) every four years, which maps out the company's energy efficiency goals, a list of cost-effective actions and a schedule for reaching the goals. This is done in consultation with the NL Agency. The ultimate goal of an EEP is a list of energy-saving projects that the company intends to implement in the next 4 years.
- Carrying out cost-effective actions from the list included in the EEP.
- At sectoral level the objectives of the EEPs in the sector are aggregated ('added up to') into a long - term plan, in which the objective for the sector has been formulated.
- Within three years of joining the LTA3 programme, companies must have an energy management system (EMS). Larger companies should execute an energy audit or include this audit in their EMS.
- Providing the NL Agency with monitoring data before 1st April each year. This information – on progress they have made with implementing their EEP and their practice of systematic energy management – provides the basis for the sector reports that are discussed each year with the members of the Dutch energy-saving consultative body (OGE) of the sector.

The use of energy audits in industry is promoted by the LTA3, through the obligation to carry out energy audits, once companies have committed to the LTA3 scheme. The energy audits are evaluated by the NL Agency, providing the independent implementation and review required by the EED. Based on data reported by 904 companies, about 11500 projects were planned in the EEPs for 2009-2012, and about 9015 projects were implemented (see table 4 in Abeelen et al., 2016a). More details about the types of projects planned can be found in Abeelen et al. (2016a, table 2 and figure 1).

## Data about energy savings

Unit	Main source of data
Annual primary energy savings (in PJ/y) compared to a reference year	Annual report published by the NL Agency, based on the reporting of the participating companies

The total energy efficiency improvement per sector, as a result of energy saving actions, is the sum of primary annual energy savings, within the monitoring period, with regard to:

- (1) Energy efficiency measures taken by companies (process efficiency); and
- (2) Actions taken by companies regarding product and supply chain efficiency (chain efficiency).

In addition, companies also report on the use of renewable energy.

All actions that are undertaken under the voluntary agreements are registered. Supply chain efficiency can be divided into two categories, i.e. part chain production and sub-chain product. For renewable energy, a split is made between purchased and (own) generation.

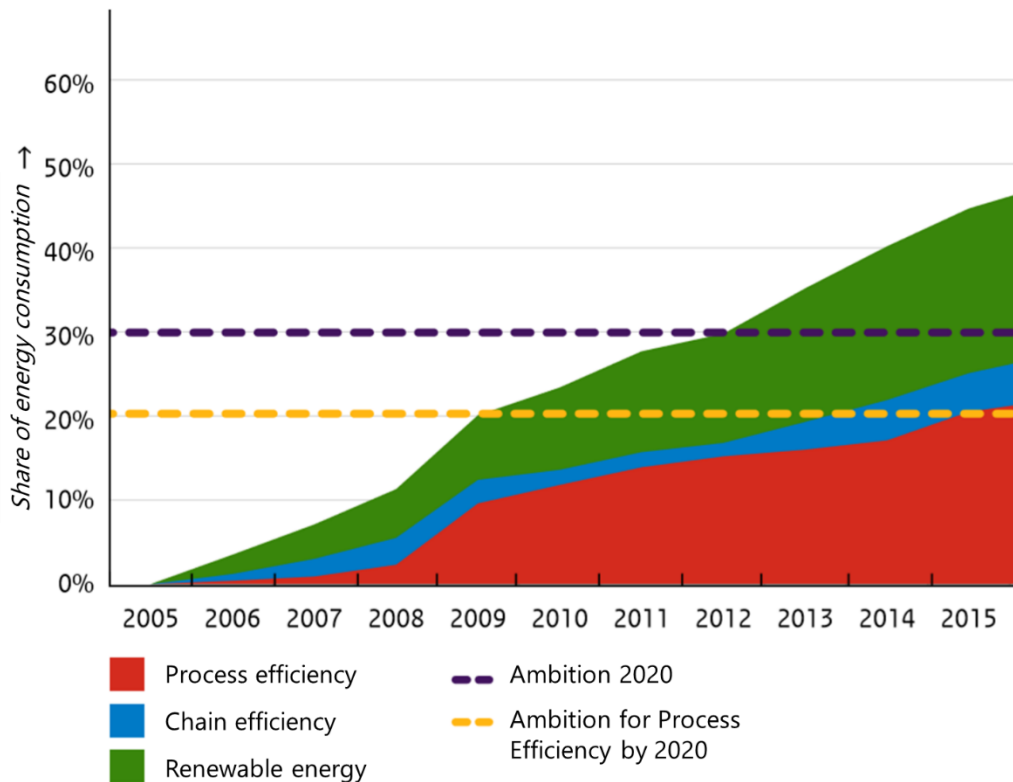
Annual monitoring reports are prepared by the NL Agency. Table 1 provides an overview of reported energy savings in the LTA scheme, as achieved in year 2011 compared to the reference year 2005. These are based on annual reporting by companies. In January each year, companies that take part in the monitoring receive a letter containing instructions on how to submit the reporting information. The information that must be completed for the annual monitoring relates in particular to the energy consumption and the energy-saving measures that were implemented in that year.

Table 1: Reported energy savings in the LTA scheme in 2011 and in 2016, compared to 2005

		Result in 2011 compared to 2005		Result in 2016 compared to 2005	
		PJ		PJ	
Efficiency	Process efficiency	23,7*	1,7%	49,3	20,4%
	Production chain efficiency	2,6		8,8	3,0%
	• Domestic	2,0*	1,2%	8,0	2,8%
	• Foreign	0,6		0,8	0,3%
Total efficiency improvement	Product chain efficiency	2,6		5,3	2,2%
	• Domestic	2,5		2,6	1,1%
	• Foreign	0,1		2,7	1,1%
Renewable energy	Generation of renewable energy	0,9		2,3	
	Purchase renewable energy	30,2		50,3	
Total results		60		116,1	

\*For the total efficiency improvement (25.8 PJ), NL Agency only counts the partial results with an asterisk (\*). The product chain includes the improvements in the product itself, which are not counted in the first addition.

Source: Ecorys, 2013 (for 2011 comparison with 2005); RVO, 2018 (for 2016 comparison with 2005).



Source: NL Agency, 2018.

Figure 1: Result of the LTA3, 2005-2016.

### Sources of uncertainties about energy savings

A major source of uncertainty about the energy savings reported relates to the fact that the savings are self-assessed/monitored by the companies themselves. Although monitoring reports submitted by the companies are checked for completeness and correctness by external consultants, the check is more of a probability check.

### Evaluation of the energy savings

#### Calculation method(s) and key methodological choices

A new methodology for monitoring the LTA3 results was presented in February 2010. The core element of the new methodology was that the result would be solely based on the implementation of actions (monitoring energy savings per project, bottom-up approach), whereby the LTA3 results are subdivided into measures in the area of process efficiency (PE), chain efficiency (CE) and the generation and purchase of renewable energy (SE). Whereas before, the energy efficiency improvements were monitored in terms of energy use per unit of production (energy efficiency indicators, top-down approach). As pointed out by Abeelen (2016), “Advocates of the new method claim that it gives a better view of the companies’ efforts to save energy, as it shows their deliberate changes in production processes, whereas opponents emphasise that the relation with ‘real’ energy efficiency is lost.” Furthermore, he points out that “by applying the two methods on the same group of companies, the results can be compared and show to what extent the choice of monitoring method affects the key message to policy makers. Of special interest is the relation between energy and production in the period 2008–2012, a period with large fluctuations in the level of production and energy use as a result of the economic crisis. The data show that energy-saving projects made a significant impact on energy use in the analysis period, although their effect is smaller than that of other factors such as fluctuations in production and in the number of participating companies.”

In the new method, other influences on energy consumption, such as changes in the production volume or changes in the ambient temperature, are not taken into account in the measurement of the results achieved. Instead, the information from these structural effects is used to explain the increase or decrease in primary energy consumption. Volume effects, such as an increase the capacity of a production plant, have to be accounted for in the company's reporting on energy savings. The same applies to structural and other non-explained effects.

The most important starting points for the new method introduced in 2010 are:

- The three covenant pillars: improvement of process efficiency, improvement of the chain efficiency and the application of renewable energy.
- The pillars for improvement of process efficiency and chain efficiency focus on improving efficiency in energy consumption.
- The results of companies on each of the pillars are presented in absolute energy units (Joule)
- Efficiency improvement is based on actual energy-saving actions and not on other factors that influence energy consumption;
- All efforts of companies aimed at realizing energy savings in the production process and in the chain, but also at the use of renewable energy, are counted: they are converted to primary energy (expressed in TJ) and reported in this way.
- Only the energy savings achieved in the production process and in the production chain count as efficiency improvement in the comparison of the covenant results and the national savings target.
- The energy that the companies need must be renewable as much as possible. This can both be generated and purchased energy.
- The use of renewable energy is not presented as efficiency improvement, but separately included as 'application of renewable energy'.

The objective of the new method was to be pragmatic, easy to implement, verifiable and testable. For a more detailed discussion about the changes in the methodology and their consequences in terms of reported energy savings, see Abeelen et al. (2016b).

The methods used to calculate the energy savings can be described as follows

- The main type of calculation method(s) used is **deemed savings (methods 3 or 4)**
- the baseline is equivalent to the energy consumption before the action is implemented ("actual before"). For MJA3, 2005 is the reference year. Only new energy-saving measures newly affected or intensified from 2005 onwards count towards the efforts and indexation.;
- a decomposition analysis is done to show, among others, the changes in energy consumption due to factors other than the energy savings project, such as changes in factory design and product specifications changes in the production volume, changes in the ambient temperature, etc.
- the energy savings in the annual reports are **gross** energy savings: they do not include any causality assessment (i.e. possible free-rider or spill-over effects are not taken into account).

## Ex-post verifications and evaluations

The monitoring reports submitted by the companies to the NL agency are checked for completeness and correctness by external consultants. This corresponds to a probability check, by comparing the development of energy use with production and project data (Abeelen, 2016b).

The NL Agency uses the data reported by the companies to inform the Energy Efficiency Consultative Group (OGE) and the Dutch House of Representatives about the progress of the scheme.

In addition to NL Agency’s annual monitoring report, an ex-post evaluation of the LTA3 scheme for the period 2008-2012 was performed in 2012. This evaluation was commissioned by the NL Agency and executed by Ecorys and the University of Amsterdam (Ecorys, 2013).

### Other indicators monitored and/or evaluated

Indicator	Explanations
Energy efficiency improvements – production process	<p>In the LTA3 monitoring methodology, energy efficiency improvements are calculated as follows: energy savings, changes in energy consumption due to changes in production volume and environmental factors (e.g., ambient temperature) are reported in TJ at all levels (project, company, sector as well as covenant level). Only at covenant level are these results indexed, i.e. expressed in terms of energy efficiency (% of improvement).</p> <p>In reality, the difference in energy consumption from year to year is due to a number of factors, with energy-saving projects reflecting significantly the efforts of companies. The efficiency improvement in the production process is based on the energy-saving projects. This means that energy-saving projects contribute 1-to-1 to the change in energy consumption and also to energy efficiency. The formula used to calculate efficiency improvement in the production process at the covenant level is:</p> <p>Energy efficiency improvement (in %, all the data in the equation are presented for the same year) =</p> $\frac{\text{energy savings in production process in year } i}{\text{actual energy consumption in year } i + \text{energy savings in production process}}$ <p>Quantification of energy-saving projects is necessary to contribute to the energy efficiency of the production process, companies will have to make more effort to also take stock of and implement small projects. Companies themselves are looking for an optimum for reporting small projects. In addition to energy-saving projects, other factors also influence energy consumption in the production process. These other influences no longer contribute to energy efficiency, but serve as the basis for analysing the change in energy consumption from year to year.</p>
Energy efficiency improvements – production chain	<p>Chain projects lead to energy savings in all parts of the chain: production phase (production chain) or use phase (product chain), in or outside the Netherlands (lifecycle approach). For the calculation of the energy savings of chain measures, use should be made of a life cycle analysis (LCA), with preference given to methods that comply with the international LCA guidelines NEN-EN-ISO 14040 and 14044. The production chain includes projects such as material saving, optimization of distribution and optimization of product disposal and re-processing. Part of the use phase are projects in the field of reducing energy consumption during product use, optimization of function fulfilment and optimization of lifespan. The idea behind this distinction is that producers, consumers and legislators have a joint responsibility to achieve energy savings in products that are more energy-efficient in the use phase.</p>

All chain savings are savings that take place somewhere else and are therefore – by definition - a double counting can occur when adding up all savings in the world. Also, chain savings have no relation to the actual energy use of the company where this project takes place. Therefore, chain savings should not be added to process efficiency savings. On a smaller scale it depends on the scope whether there is double counting or not. For example: in the case of a steel factory making lighter steel, which saves fuel in the transport sector, if you consider all savings in the country, there would be a double counting if the steel sector claims part of the savings that take place in the transport sector. However, if the scope is focused on industry alone there would be no double counting. However, it is necessary to be aware that these chain savings have no relation to the actual energy use of the sector industry.

The formula for indexing energy savings in the chain is as follows, for comparison with the LTA3 objective at covenant level:

Energy efficiency improvement (in %) =

$$\frac{\text{energy savings in the chain}}{\text{actual energy consumption} + \text{energy savings in the production process}}$$

The efficiency improvements in the production process and in the production chain in the Netherlands together lead to the energy efficiency improvement at covenant level, according to the formula:

Total energy efficiency improvement (in %) =

$$\frac{\text{energy savings in the production process} + \text{in the production chain (Netherlands)}}{\text{actual energy consumption} + \text{energy savings in the production process}}$$

In the denominator of the formulas, the energy saving in the production process is always added to the actual energy consumption, just like the energy efficiency improvement takes place in the production process.

In order to be able to calculate whether a saving measure leads to a decrease in the energy consumption over the entire product life cycle, it is necessary to determine the essential energy consumption of a material or (semi) product. This is the primary energy required for the production of this material or (semi) product during the whole life cycle, the so-called Gross Energy Requirement (GER) value.

Renewable energy	According to the LTA3 methodology, a distinction is made between own generation and purchasing of renewable generated energy. The purchase of renewable energy may only be counted if a company can demonstrate that it has made an extra effort to purchase renewable energy. This effort should be visible, e.g. in the form of a higher price for “green” compared to “grey” energy. The use of renewable energy is no longer presented as energy saving and energy efficiency and is therefore disconnected from the production process and the chain. The formula for the “green” share of the energy supply at covenant level, whereby own generation and purchasing are included, is as follows:
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$$\text{Share of renewable energy use} = \frac{\text{renewable energy consumption}}{\text{actual energy consumption}}$$

These results in terms of energy efficiency improvements and shares of renewable energy use are included in the NL Agency’s annual monitoring report. The results presented include the total results for LTA3 and the disaggregated results per sector. See for example (Agentschap NL, 2018).



### Other aspects evaluated

In addition to evaluating to what extent the LTA3 has contributed to extra energy savings, the 2008-2012 ex-post evaluation commissioned by the NL Agency for the period 2008-2012 also aimed to address the question: what were the implementation costs for government and industry in relation to the benefits. The ex-post evaluation report summarises the following:

- The implementation costs show a downward trend.
- Over the period 2008-2012, the average execution costs were around € 15.3 million per year, with significant differences between the years due to the 'rhythm' of the LTA3. The execution costs refer partly to the costs for the NL Agency (i.e. the hours worked by NL Agency staff), part costs for consultants that executed studies for the participants (scans, efficiency plans etc.) and for a small percentage direct subsidies to companies. The costs that are mentioned in the ex-post evaluation report (Ecorys, 2013) are however not representative for the current period. Current costs are presumed to be less than €5 million.
- In 2008/2009, a (re) start was made with the covenant, in which NL Agency in particular provided support for the preliminary studies, route maps and the setting up of the EEPs.
- In 2012, the EEPs were subsequently updated again, of which the costs for the (external) EEP guidance were budgeted in 2011.
- In 2012 and 2013, austerity measures were implemented. This clear 'trend break', both in terms of budget and in realized implementation costs, was caused by a regular cutback for the national government as a whole, which was also imposed upon NL Agency. For NL Agency as a whole this meant a shrinkage of approximately 2,500 Full-Time Employee (FTE)s to approximately 1,400 (more than 40%).
- For the implementation of the LTA3 (and the LEE covenants, i.e. the Long term agreement on Energy Efficiency ETS companies) this includes a reduction from almost 60 FTE in 2010, to 50 FTE in 2012 and approximately 43 FTE in 2013.

### Focus on the ex-post evaluation

Some important aspects of the evaluation method used in the ex-post evaluation include:

- During the evaluation relatively little hard data of good quality was available. In order to answer the research questions, the evaluators used various other research methods, such as a literature study, approximately 20 interviews and a large survey among LTA3 participants (with a response of approximately 30%) in addition to collecting and analyzing the available
- Regarding reported savings data for LTA3 sectors, almost constant savings were observed over the period 2001-2011. The evaluators concluded that there trend break over the LTA3 period (2008-2011). Furthermore, the reported savings figures for the LTA3 sectors are higher than the long-term trends for energy saving indicated by ECN and NL Agency in the industrial and service sectors as a whole.

Recommendations made by the evaluators included:

- When setting targets for energy saving in the Netherlands, the potential in individual sectors and the relative score (benchmark) in relation to other comparable sectors in Europe should be explicitly taken into account. Furthermore, such a savings potential (benchmark) should be determined by an independent party. However, available data sources for such a benchmark seem so far to be deficient.



Two key conclusions from the ex-post evaluation for the 2005-2011 period are:

- The foreseen improvement in energy efficiency has been realised by Dutch companies. During the period 2005-2011 total energy savings of approximately 60 TJ were realised. Without the use of renewable energy, the energy savings would have been equal to 26 TJ<sup>1</sup>. Hence, the actual energy savings achieved in this period amount to 13%, or 2.1% per year.
- The contribution of the LTA3 to the improvement in energy efficiency is limited as the Dutch LTA3 industrial sectors hardly perform better in terms of achieved energy savings than their competitors in the rest of Europe.

## Experience feedback from stakeholders

### Interview with Lars Meindert and Robert Haffner (Ecorys, evaluators)

#### 1. What is the role of evaluation in the management of the scheme?

The ex-post evaluation of the LTA3 aimed at investigating if the scheme meets its objectives and to identify how the scheme could be improved. Earlier ex-post evaluations, i.e. for LTA1 and LTA2, were done for two main reasons, namely: (i) development of new insights and (ii) the connection to European directives.

#### 2. What were the main lessons learnt from the evaluations (about the impacts of the scheme and what could be improved)?

Whilst the NL Agency has put in place a monitoring system for the LTA scheme, a major weakness is the fact that there are no benchmarks or counterfactual differences, this makes the ex-post evaluation difficult. Benchmarks allow evaluators to better judge

what is efficient. Since the government aims to minimise the reporting burden on companies, reporting requirements are kept simple. This has implications for the reliability of the data available from the monitoring of the scheme, e.g. for the 2008-2012 ex-post evaluation. It is difficult to cross-check the energy savings claims made by the companies and sectors as a whole. Additionally, the 2008-2012 ex-post evaluation carried out by external parties, under the leadership of Ecorys, was challenged by lack of approach on how to take into account endogenous technology development in the assessment methodology as well as difficulties in assessing where in the chain the efficiency is realised, i.e. disentangling and assigning the energy efficiency to the different parts of the chain. For example, some energy savings are the result of regular replacement of equipment, since newer equipment is almost always more efficient than the old equipment. This is not a policy effect but an “autonomous savings” effect.

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<sup>1</sup> Hence, the new method introduced in 2010, whereby “The use of sustainable renewable energy is not presented as efficiency improvement, but separately included as ‘application of renewable energy’” was not applied in this ex-post evaluation.

### 3. What were the lessons learnt in terms of evaluation practices?

Better incentives are needed to ensure that companies provide reliable data. A good set-up of an energy efficiency instrumentation requires that one thinks thoroughly through how it will be evaluated. Benchmarks are essential for an evaluation. An improved methodology to assign where in the process and supply chain energy efficiency/savings are achieved is still needed for the LTA scheme.

### 4. In parallel of the ex-post evaluations, are there other evaluations or studies that provided insights about the impacts of the scheme and/or possible interactions with other policies or drivers (or barriers) for energy efficiency?

Ex-post evaluations have been carried out on the EIA (Energy Investment Allowance)-scheme, which provides tax benefits related to energy efficiency projects carried out by the companies participating in the LTA3 covenant. The EIA-scheme differs from the LTA3 in that it has no clear goals, whereas the LTA3 scheme does have. Additionally, the EIA-scheme has benchmarks whereas the LTA3 does not have.

## To go further

### About the measure

- Official webpage about the LTA scheme on the NL Agency website (in Dutch): <https://www.rvo.nl/onderwerpen/duurzaam-ondernemen/energie-besparen/meerjarenafspraken-energie-effici%C3%ABntie>
- NEEAP 2014. Third National Energy Efficiency Action for the Netherlands [https://ec.europa.eu/energy/sites/ener/files/documents/2014\\_neeap\\_en\\_netherlands.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_netherlands.pdf)
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Annual report about the energy efficiency results of the long-term agreements (see: <https://www.rvo.nl/onderwerpen/duurzaam-ondernemen/energie-besparen/meerjarenafspraken-energie-effici%C3%ABntie/publicaties/resultatenbrochures>):

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Ex-post evaluation of the energy efficiency results of the long-term agreements for the period 2008-2012:

- Ecorys, 2013. Evaluatie Meerjarenafspraak Energie-efficiency 2008-2020 (LTA3), April 10<sup>th</sup> 2013

<https://www.rijksoverheid.nl/documenten/kamerstukken/2013/04/19/aanbiedingsbrief-evaluatie-meerjarenafspraak-energie-efficientie-2008-2020-mja3>

Guidebook maintained by the NL Agency for the companies to calculate energy savings per project:

- Agentschap NL, 2015c. Handreiking Monitoring MJA3-convenant. Version 4.3, December 2015.

<https://www.rvo.nl/onderwerpen/duurzaam-ondernemen/energie-besparen/meerjarenafspraken-energie-effici%C3%ABntie/verplichtingen-mja3/mee/monitoring/mja3-monitoring>

## Other useful references

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- Abeelen, C., Harmsen, R. and Worrell, E., 2016b. Counting project savings—an alternative way to monitor the results of a voluntary agreement on industrial energy savings', *Energy Efficiency*, 9(3), 755–770. doi: [10.1007/s12053-015-9398-3](https://doi.org/10.1007/s12053-015-9398-3).

Ex-post evaluation of the Energy Investment Allowance:

- Official webpage concerning the 2012 ex-post evaluation of the Energy Investment Allowance on the NL Agency website (in Dutch)

<https://www.rijksoverheid.nl/documenten/kamerstukken/2013/09/17/evaluatie-mia-vamil-eindrapport-ecorys>

Implementation of EED Article 7 in the Netherlands:

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