Snapshot of Alternative Measures for the Article 7 of the Energy Efficiency Directive 2012/27/EU (as of end 2019)

Provisional version

ENSMOV Report

Project Coordinator: INSTITUTE FOR EUROPEAN ENERGY AND CLIMATE POLICY STICHTING - IEECP

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With thanks to all the interviewees (cf. Table of contents)

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Foreword

This snapshot presents an overview of a selection of **Alternative Measures** reported to the Article 7 of the Energy Efficiency Directive (EED), for the obligation period 2014-2020.

Alternative Measures are policy measures implemented by Member States to meet the energy savings obligation set in the Article 7, as alternative or complementary measures to an Energy Efficiency Obligation Scheme (EEOS). The map below provides an overview of the choices made by Member States to answer Article 7 for the obligation period 2014-2020:

- using an **EEOS alone** (**4 Member States**): Denmark, France, Luxembourg and Poland;
- **combining an EEOS and Alternative Measures** (**12 Member States**): Austria, Bulgaria, Croatia, Cyprus, France, Greece, Ireland, Italy, Latvia, Malta, Poland, Slovenia, Spain, and the UK; or
- using **Alternative Measures alone** (i.e. without an EEOS) (**12 Member States**, in green in the map below): Belgium, Czech Republic, Estonia, Finland, Germany, Hungary, Lithuania, the Netherlands, Portugal, Romania, Slovakia and Sweden.

Figure 1. Choices of the Member States to answer EED Article 7 for the obligation period 2014-2020.

This snapshot deals with the 12 Member States who chose to answer EED Article 7 with Alternative Measures alone. The Member States implementing an EEOS (alone or together with Alternative Measures) are presented in the other ENSMOV snapshot report about EEOS.

This snapshot aims at providing an overview of the policy mix used by each country concise, as most of the Member States included in this report have made use of a set of alternative measures to answer EED Article 7. The description of each country also includes a focus on one policy measure that was found interesting for experience sharing. These fact-sheets are complemented by interviews with national experts. These interviews offer a direct feedback about recent changes and lessons learned, in view of experience sharing among countries.

About more detailed analysis and the history of alternative measures, see (ENSPOL 2016). About energy efficiency policies beyond the scope of Article 7, see also the MURE database.

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Czech Republic: Pilot calls for financial instruments

Responsible authority: Ministry of Industry and Trade

Managing authority: Czech-Moravian Guarantee and Development Bank

General information regarding the measure

Within the scope of the ENERG programme and the Operational Programme Enterprise and Innovation for Competitiveness (OPEIC), pilot calls for financial instruments to support the development of energy saving actions started in 2017.

Within the pilot calls, the MIT grants interest-free loans for energy saving projects in businesses. The loan is supplemented by financial contributions to assure the achievement of the energy savings and the energy assessment. The necessary energy assessment is an eligible expenditure within the programme.

Organization and MRV for the measure

The responsible Ministry for both programmes is the Czech Ministry of Industry and Trade (MIT). The pilot calls are administrated by the Czech-Moravian Guarantee and Development Bank.

For the calculation of the energy savings, the method of scaled savings based on engineering estimates and on-site measurement is used. The calculation of energy savings is carried out ex-ante by certified experts authorized to perform these estimates pursuant to Act No. 406/2000 Coll., on energy management. As a simplification for the calculation of energy efficiency measures in buildings the Energy Performance Certificate (EPC) is used, comparing the final energy consumption before and after the implementation of the measure.

Every energy efficiency project is reviewed during the assessment by the programme administrator. The energy savings are verified by an ex-post energy assessment carried out with the same method.

Sectoral coverage of the measure

Eligible are actions that are carried out in the industry and services sector such as increasing the energy efficiency of technology processes, the renovation of buildings (building envelope and technical equipment), the reconstruction and replacement of boilers, the reconstruction of electricity, gas and heat distribution systems, the use of waste heat in the production processes, the implementation of monitoring, automation and energy management features in the building, and the implementation of energy management systems.

Costs and benefits of the measure

The ENERG programme is financed by national funds (revenues from the sale of emission allowances from 2014) and has a total budget of EUR 5 million. The OPEIC Programme disposes of a budget of EUR 680 million (2014-2020) and is funded by the European Structural and Investment Funds.

For the administration of the programmes, the Czech-Moravian Guarantee Bank charges a percentage-based fee which is based on the sum of granted loans per year.

The repaid loans are returned to the programmes ENERG and are used for the financing of the further energy efficiency projects within the programme.

The programmes aim to establish financial instruments as the main support measure in the business sector as they are more sustainable and cost-effective and attractive support schemes compared to grant-aid programmes.

Overview of the policy mix reported for Article 7 in 2017

The Czech Republic uses alternative measures to achieve the national energy saving targets. The grants cover financial incentives from loans with favourable interest rates to direct subsidies. A large part of the subsidies relates to energy efficiency measures in the buildings sector.

The implementation of an EEO scheme in the Czech Republic has been discussed in the past years nevertheless there is no change in the current alternative scheme foreseeable.

Transversal / cross-cutting	2017 [TJ]
Operational Programme Environment 2014–2020 (Axis: energy savings)	35.2
State programmes to promote energy savings and the use of renewable energy sources (EFEKT)	1.3
State programme to promote energy savings (EFEKT 2)	378.2
Alternative measures for increasing energy efficiency in Czech industry and in municipalities and regions	61.3
Sustainable Development Strategic Framework	2,554.8

Residential	2017 [TJ]
Regeneration of pre-fabricated concrete buildings – PANEL, NEW PANEL and PANEL 2013+ Programmes	17.9
New Green Savings Programme 2014-2020	926.0
Integrated Regional Operational Programme	67.5
Operational Programme Environment 2014–2020 (Boiler replacement)	178.8

Transport	2017 [TJ]
Operational Programme Prague Growth Pole – Buildings section (City of Prague)	12.8

Industry	2017 [TJ]
Operational Programme Enterprise and Innovation for Competitiveness (OPEIC) 2014–2020	451.2

The following programmes and policy instruments were launched in 2017:

- The State programme to promote energy savings (EFEKT 2) (as development of the EFEKT programme),
- Financial instruments for increasing energy efficiency such as the first (pilot) calls for a financial instrument – 'Energy savings for OPEIC`,
- the first (pilot) calls for the ENERG programme.

Interview with Ján Čiampor, Energy Efficiency Policy Officer, Ministry of Industry and Trade

What have been the main changes in the policy in the recent years?

At the beginning of the support scheme within the programme ENERG, the target group were SMEs but there were not enough projects in preparation. In order to change that we opened the programme to large enterprises as well.

Furthermore we broadened the technical assistance in the programmes, added new eligible energy efficiency measures and improved the project documentation, preparation and energy assessment.

What about MRV?

Regarding MRV we streamlined the energy assessment through adding an option to use Energy Performance Certificates ex-ante and ex-post for projects aimed at building renovation without measures on industrial processes. Before that there was a requirement in place to carry out an energy assessment (a type of simplified Energy Audit for a proposed individual measure) for all projects.

What success factors have you identified?

We have identified two crucial success factors.

First to include the project preparation expenditures for the applying company in the eligible actions for the programme.

And secondly to combine soft loans with a grant in the form of a performance fee for reaching the required energy savings.

Are there interactions with other policies?

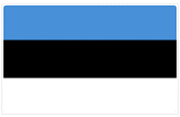
There are interactions with the EFEKT programme which provides support for the preparation of feasibility studies for complex energy efficiency projects in order to increase the awareness about feasible energy efficiency measures, their impacts and available support schemes for those measures.

Are there any expected modifications under discussion?

At the moment we are discussing possible changes in the programme design for the next programme period (2021-2027), such as guarantee schemes with interest rates, subsidies etc.

If you could go back in time, what would you do differently?

I would simplify the administration process for the programme and put an emphasis on the technical assistance for the energy efficiency projects.



Estonia: Energy and CO_2 taxes

Responsible authority: Ministry of Economic Affairs and Communications

Managing authority: Tax and Customs Board (energy), Environmental Board (CO_2)

General information

Energy and CO_2 taxes: during the last year, the Estonian tax policy has centrally followed the principle that tax burden from taxation of income should be transferred to taxation of consumption, use of natural resources and pollution of the environment. In Estonia, the excise duty is imposed on the following energy carriers: electricity, natural gas, common and aviation gasoline, kerosene, diesel fuel, light and heavy fuel oil, oil shale heating oil, liquefied gas, oil shale, coal, lignite and coke. Aim of the excise duty is to reduce energy consumption and mitigate climate change.

In addition, a thermal energy generator pays the pollution charge for the CO_2 emission based on the quantity of CO_2 emitted (rate of 2 euros per tCO_2). The aim is to motivate thermal energy generators to use less CO_2 intensive fuels.

This is implemented via Alcohol, Tobacco, Fuel and Electricity Excise Duty Act, Environmental Charges Act and Taxation Act of 2013. Results are measured in annual end-use savings (ktoe).

New annual savings achieved in 2016: 76.47 ktoe. Total annual end-use savings achieved in 2016: 178.47 ktoe. Expected savings by 2020: 533 ktoe. Estonia will extend these excise duties after 2020.

Organization and MRV for the measure

Institution responsible for achieving 2020 energy efficiency targets and reporting to the European Commission is the Ministry of Economic Affairs and Communications (hereafter – the Ministry). The Ministry is also responsible for preparing and adopting the required legislation. Since the energy efficiency targets are largely met through alternative measures, the State ensures that reports on the impact of these measures are submitted by authorities engaged in implementing them. For the energy and CO_2 taxes: the Tax and Customs Board and the Environmental Board, who is also responsible for collecting CO_2 pollution charge.

Data for impact evaluation is collected by authorities implementing the alternative measures. They ascertain the impact of the measures using their chosen evaluation methodologies, and forward the information to the Ministry. Reporting is done by submitting annual progress reports. Progress reports include energy savings achieved annually and their expected savings by 2020 for all alternative measures.

Making a number of assumptions about the price of energy, final energy consumption, tax rates and the temporal constancy of the price elasticity coefficient, the potential energy savings in the final consumption of energy are calculated for the period 2014–2020.

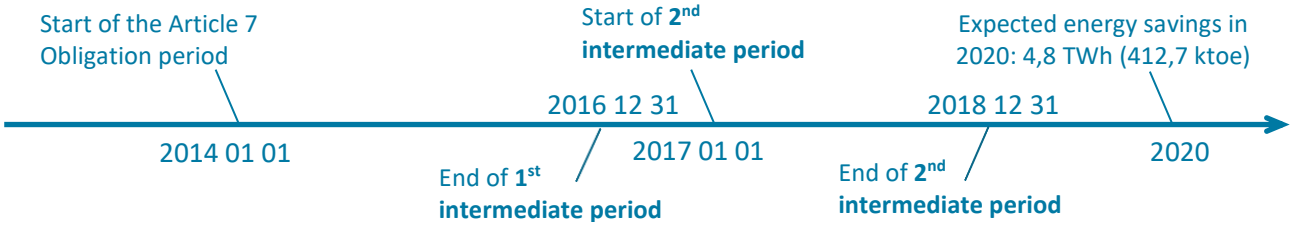
Sectoral coverage of the measure

This measure is directed towards all energy carriers, thus affecting everyone that uses them and has an impact on all economy/ all sectors.

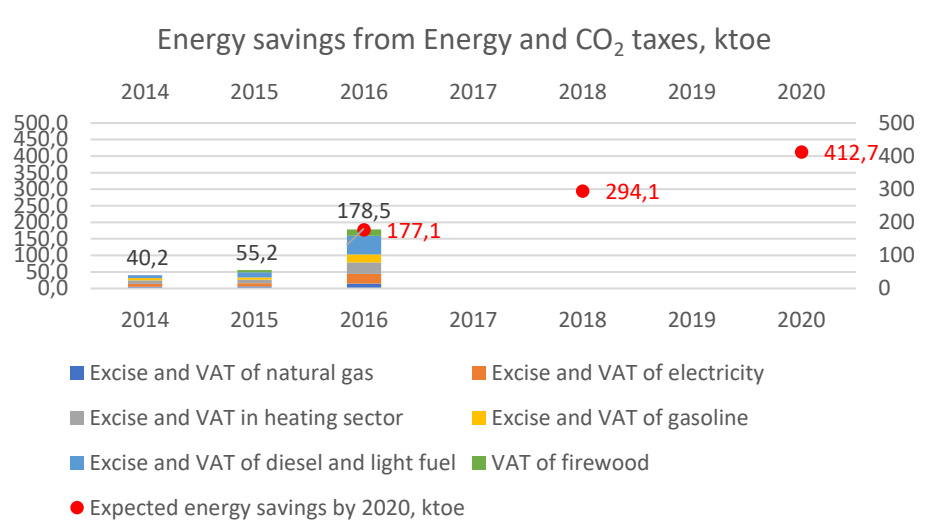
About energy subsidies for legal entities, Estonia has gradually reduced them: excise duty exemption for diesel fuel used in the inland fishing boats, mineralogical processes, and in agriculture; excise duty exemptions for natural gas used to keep the natural gas system operable, mineralogical processes; subsidy for electricity generation on the efficient cogeneration mode from peat or retorting gas of the oil shale processing.

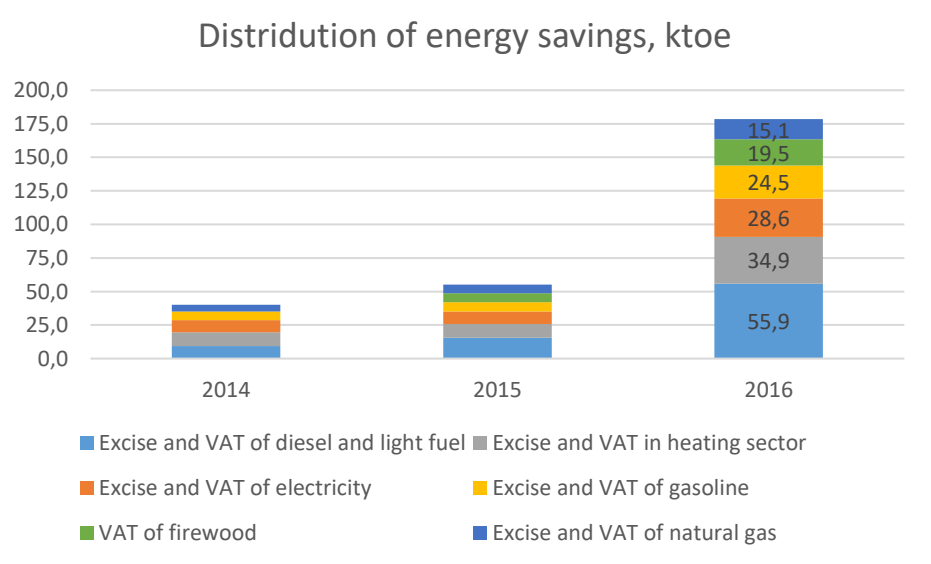
Costs and benefits of the measure

The measure Energy and CO_2 taxes does not have direct costs for the State. It generates additional income for the budget. The Ministry of the Environment annually allocates a certain share of all collected environmental taxes to achieve environmental goals, including the promotion of sustainable development.



Form of energy	Price	Consumption volume (TJ)	Price elasticity coefficient	Estimated annual energy savings from taxation	Total savings in the period 2014–2020
Natural gas	11.90 €/GJ	5 113	-0.26	73.20 GWh	512.41 GWh
Electricity	0.11 €/kWh	25 202	-0.18	226.49 GWh	1585.41 GWh
District heating	57.09 €/MWh	16 560	-0.20	134.25 GWh	939.74 GWh
Petrol	1.29 €/l	11 067	-0.26	78.13 GWh	546.88 GWh
Light fuel oil, diesel	1.35 €/l	24 581	-0.26	167.75 GWh	1174.23 GWh
				TOTAL	4.8 TWh





Total achieved energy savings in 2016 amounted to 178.5 ktoe and reached the intermediate target of 177.1 ktoe set for this year.

Most of the savings – 31.3% – came from diesel and light fuel oil taxes, 19.6% from heating sector taxes, 16% from electricity taxes.

If these trends continue, Estonia will successfully reach its 2018 intermediate target and overall target of 412.7 ktoe (4.8 TWh) by 2020 for this measure.

Overview of the Estonian energy efficiency policy mix

(*Measures presented in the NEEAP 2017, not limited to measures reported to Article 7*)

Transversal / cross-cutting

Energy and CO_2 taxes encompass excise duty and VAT on natural gas, electricity, fuels used for district heating, petrol, light fuel oil and diesel fuel and firewood. The energy savings achieved as a result of tax effects are not regarded as cumulative savings in the calculation method, i.e. the lifetime of a tax effect is one year.

Residential

Renovation of apartment buildings: https://kredex.ee/en/services/elamistingimuste-parandamiseks/renovation-grant-2019

Industry

Energy and resource efficiency in industries: https://www.kik.ee/en/supported-activity/energy-and-resource-efficiency-undertakings

Services

Renovation of street lighting: https://kik.ee/en/supported-activity/renovation-street-lighting-infrastructure

Renovation of public buildings: there was political will to commit to renovate a public bodies' buildings to meet the requirements of nearly zero energy building to popularize energy efficiency and set an example. The state when it invests in renovation of buildings always assesses whether energy efficiency will significantly improve. The State Real Estate Ltd acts as a central real estate developer that assesses energy efficiency indicators when planning investments. And lastly, since 2019 there is a central measure to support increasing energy efficiency in public bodies' buildings where the finances come from selling pollution allowances/ permits. https://kik.ee/en/supported-activities (energy section)

Transports

Promoting economical driving (including eco-driving).

Spatial and land-use measures for urban transport energy savings to increase and improve the efficiency of the transport system:

Improvement of the traffic system – Includes updating parking policies in cities, planning land use to reduce the use of private cars, restructuring the streets in cities, etc.

Reducing forced movements with personal vehicles in transport – Includes developing telecommunication and also developing short-term rental cars systems.

Development of convenient and modern public transport – Includes improving the availability of public transport, developing ticket systems and new services.

Increasing fuel economy in transport – Includes developing a support system for energy efficient cars, hybrid buses, hybrid trolleys, electrical buses etc.

Road usage fees for heavy duty vehicles – Based on time, location, environmental aspects, etc.

Increasing the share of biofuels in transport sector – The main target of this measure is to achieve the 10% share of biofuels in transport sector by 2020 and 14% by 2030.

As regards EED article 7, almost all energy savings (90%; 533 ktoe out of 592 ktoe) are expected to be delivered by the energy and CO_2 tax measures over 2014-2020. The remaining part is distributed between Renovation of street lighting – 5 ktoe; Energy and resource efficiency in industries – 18 ktoe; Renovation of apartment buildings – 32 ktoe; and Other investment support schemes (mostly in the public sector) – 4 ktoe.

Interview with Hanna Jemmer, Expert of the Energy Department, Ministry of Economic Affairs and Communications

What have been the main changes in the policy in the recent years?

The resource efficiency measure (for industry) was cancelled this year.

What about MRV?

MRV will most probably be outsourced in the upcoming period, as both the EED Annex V and Governance Regulation Annex III require much more detailed and complex MRV that requires very high knowledge on energy sector dynamics analytics.

What success factors have you identified?

Public awareness of the measures is an important factor, this also means regular communication with stakeholders.

Are there interactions with other policies?

The measures cover environment, energy, transport, industry, rural development, buildings.

Are there any expected modification under discussion?

At the moment we expect to continue with similar measures. Perhaps some tweaks are in order but this will be analysed and discussed in more details in the future.

If you could go back in time, what would you do differently?

The take up of the resource efficiency measure should have been quicker, also the funding for different measures should be stable throughout the period.

Finland: Energy Efficiency Agreements

Responsible authority: Ministry of Economic Affairs and Employment (MEAE)

Managing authority: Finnish Energy Authority

General information regarding the measure

Energy Efficiency Agreements are a long-standing policy in Finland and play a key role in achieving the targets set out in Article 7 of the EED. The current energy efficiency agreement period is 2017 – 2025. The main policy objectives are to encourage the efficient use of energy in the industrial, municipal, property and oil sectors.

The agreements between the government and businesses are framework contracts supplemented by sub-sectoral Action Plans. Participating companies and municipalities enter into the Energy Efficiency Agreement by signing an 'Accession Document' which details their obligations in the agreement and their energy savings target for the period 2017-2025.

The agreement is a way to start or continue energy management systematically with a view to continuous improvement. When the EED Art. 7 target for 2014-2020 were set in 2013 it was expected that by 2020 the cumulative savings from energy efficiency measures implemented by the EEA participants would achieve more than half of the binding national cumulative energy savings target set for Finland (49 TWhcum). As reported in the EED annual report 2019, in 2020 the expected cumulative savings from Energy Efficiency Agreements cover almost 70% of Finland's Art. 7 cumulative target in 2020.

Organization and MRV for the measure

The Ministry of Economic Affairs and Employment (MEAE) and the Energy Authority are the responsible administrative authorities. Motiva is an entrusted party who support participating companies in the implementation of the policy, as well as monitoring and evaluation of the energy efficiency agreements.

Participants implement energy efficiency actions and report their progress on an annual basis. Reports are submitted through the online monitoring system, operated by Motiva. The target for each participating company is expressed in percentage of energy savings (GWh). The baseline used is the energy use upon entering into the voluntary agreement. There is an overall target for the participating company, for the period 2017-2025 and an intermediate target in 2020.

The aim of the agreements is to show continuous improvement in energy efficiency, as part of the existing or planned management systems or operating plans. Actions to improve energy efficiency will contribute to the target if they take place in the agreement period, 2017-2025. To qualify, actions must also be reported in the scheme's monitoring system and the action must relate to the energy use included in the specification of the company's target.

Sectoral coverage of the measure

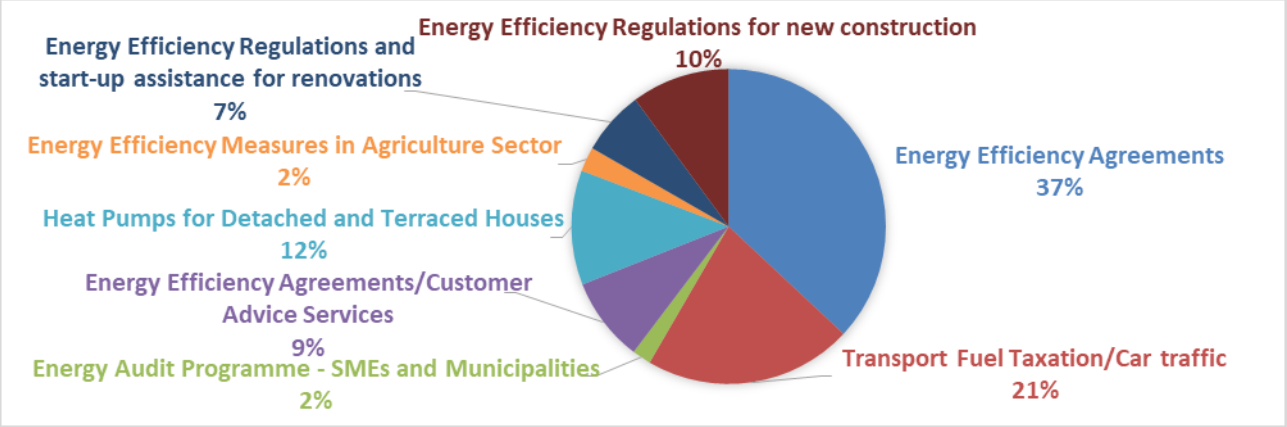
The sectors covered by the agreement, include Industries (Industry, Energy sector and Private Service sector), Property Sector, Municipal Sector, and Oil Sector (distribution of liquid heating fuels). The participating companies aim to introduce new energy-efficient technologies and also aim at improving the fuel efficiency of transport by improving logistics.

Costs and benefits of the measure

Public finances are used for the administration of the Agreement. The operational and administrative cost of the policy was approximately 1 million Euros in 2017.

Many participants use the agreements as a way to demonstrate environmental responsibility which is increasingly important. By joining the agreement, the participants can also be eligible for specific technical support and/or financial incentives.

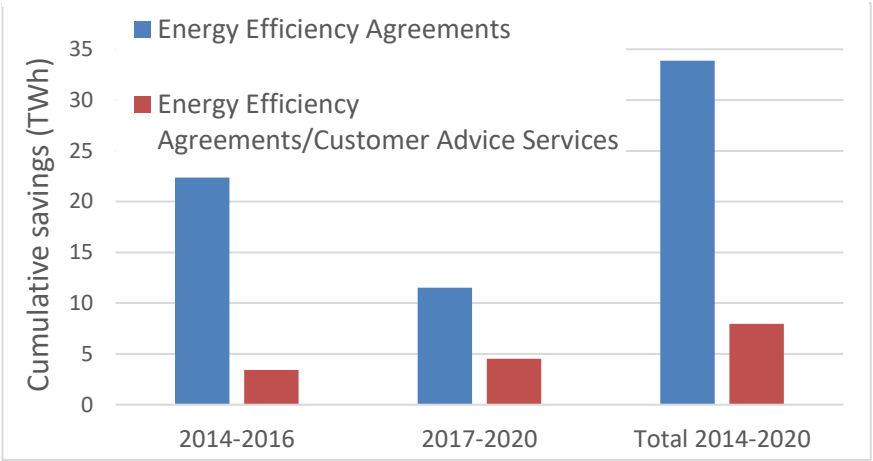
Expected share of the total cumulative savings (TWhcum) of the 8 notified measures in Finland in 2020 for the EED Art.7 obligation period 2014-2020



For the obligation period 2014-2020 of the EED Art.7:

- The **target** for Finland is **49 TWh** of cumulative savings over 2014-2020.
- The **expected cumulative savings** from the policy mix in place amount to **91.7 TWh** (source: EED annual report 2019).

Energy Efficiency Agreements activities - Expected cumulative savings for the sub periods 2014-2016 and 2017-2020 and for the whole period 2014-2020. Source: EED annual report 2019



Overview of the policy mix reported by Finland for article 7

Finland is implementing eight alternative measures under Art.7(9) of the EED (see Finland's notification).

Transversal / cross-cutting

- Energy efficiency agreement activities are used in the following sectors: Trade and Industry, Municipal sector, Real estate sector (commercial and residential buildings)
- Energy efficiency agreements/customer advice services
- Energy audit programme for SMEs and municipalities
- Energy efficiency regulations and start-up assistance for renovations
- Energy efficiency regulations for new construction

Residential	Agriculture	Transports
Heat Pumps for Detached and Terraced Houses	Energy Efficiency Measures in Agriculture Sector	Transport fuel taxation / car traffic

Energy Efficiency Agreements have since 1997 been a key part in promoting energy efficiency in Finland and are viewed as a flexible and cost-efficient policy measure for implementing EED Article 7. Energy Efficiency Agreements play a central role in Finland for achieving the targets set out in Article 7 of the EED. Thus the Energy Efficiency Agreements for Trade and Industry could cover approximately half of Finland's overall target for cumulative energy savings.

Interview with Ulla Suomi, Director, Monitoring and Evaluation, Motiva Oy

What have been the main changes in the policy in the recent years?

The policy launched in the late 90's, thus it has of course evolved a lot over the different periods (1997-2007, 2008-2016, 2017-2025). For the current 2017-2025 period the agreements were fine-tuned again, for example the level of non-binding targets is now set when participants join the agreement; some reporting requirements changed for all participants; the online database and interface were updated accordingly; and the M&V guidelines for participants were updated. We have also launched a virtual network and forum for discussion which is only open to the participants that have joined the agreements. In addition we have totally rebuilt our own webpage for the energy efficiency agreements (only limited content in English).

What about MRV?

A well-functioning monitoring system for the voluntary Energy Efficiency Agreement scheme (EEA) has had a central role in demonstrating the results and creating trust and credibility between all parties – not only for the Government. MRV has also played a key role in achieving a long-term, top-level commitment from the Government. This is demonstrated by the fact that:

- EEAs have been part of all national energy and climate policy and strategy papers since they were launched in 1997
- Investment subsidies for energy efficiency (EE) measures have been available continuously since 1998
- Reasonable recourses have gone towards the programme administration and the continuous maintenance and development of the monitoring system

The main features of MRV remained when we moved to the current agreement period (2017-2025).

A new publication platform was established for the current agreement period (only in Finnish). In addition, guidelines for M&V were updated to correspond with EED 2012/2018 requirements and training webinars related to this issue have bene organised.

What success factors have you identified?

We have found than many factors have contributed to its success. And it's important to say that it is a combination of many of these factors, at the same time, which has proved necessary to the success of this kind of policy. These success factors include:

Voluntariness: Instead of legislative or other obligatory means, it is a more flexible and functional way for participants to implement energy efficiency measures and investments. Each company and municipality can go at their own pace.

Trust and cooperation: Functional, personable and confidential relationships between the government administration, sector and branch associations, participating companies and municipalities andthe ability and willingness of Agreement parties to cooperate.

Commitment: Active involvement of the responsible persons in the Agreement parties. Participants make genuine commitment to energy efficiency.

Financial and operational support: Government energy subsidies for energy audits (for SMEs) and energy efficiency investments; unbiased advice financed by the government and branch associations; networks and peer support.

Structural factors: Long established history and good experiences of the Agreement Scheme, central and active role of sector and branch associations in Finland.

Transparency: Participants commit to fulfil their annual reporting obligation. The annual reporting combined with reliable M&V enables Finland to use the EEAs to implement the EED Article 7 binding energy savings obligation.

Feasibility and cost-efficiency: Administratively lighter to implement than an Energy Efficiency Obligation Scheme. Implementing energy efficiency is rational and economically beneficial.

(*continuation next page*)

Are there any expected modification under discussion?

No, as we have only recently started the current period (2017-205). We will next discuss possible bigger modifications in the agreement scheme when we start negotiations about the following period that ends in 2025.

Germany: Competitive funding programme 'Energy efficiency and process-heating from renewable energies in business – competition'

Responsible authority: Federal Ministry for Economic Affairs and Energy (BMWi)

Managing authority: VDI/VDE Innovation + Technik GmbH

General information

The federal competition-based funding programme 'Energy efficiency and process-heating from renewable energies in business – competition' is the follow-up of 'STEP up!', a pilot programme of BMWi for competitive energy efficiency tenders in Germany. The new programme started in April 2019 and will run until the end of 2022 with a possible extension. It is also part of the German Climate Package which outlines the measures to reach the CO_2-targets by 2030.

In contrast to STEP up!, the new programme refers to CO_2 emission reductions (instead of only electricity savings) and is open for all types of energy carriers saved (heat, electricity, etc.).

Projects eligible for funding are selected according to the lowest cost-benefit ratio (EUR funding per tCO_2 saved). The higher the savings or the lower the funding applied for, the better the funding efficiency and thus the chance of winning support in a competition round. There is also a requirement of a minimum pure energy cost-based payback period of four years for projects.

Up to 50% of the eligible costs of the project will be funded through a non-refundable grant. However, each applicant de facto decides – from a competition-strategic point of view – about the funding rate asked for their project up to the maximum ceiling of 50%. The maximum funding amount is EUR 5 million per project.

The funding also includes the preparation of the energy savings concept required for the application and the implementation support of the subsidised investment measure by external energy experts.

Organization and MRV for the measure

In order to apply for funding, applicants need to prepare an energy saving concept of the project, which must include a brief description of the applicant, a reference of the project to the policy objectives of the energy efficiency competition, a detailed description of the project (status-quo and planned after-retrofit state), a specification of the current and expected absolute and relative energy consumption.

The energy saving concept can either be prepared by an energy advisor (appointed by BAFA for the support programme "Energy advisory services for small and medium-sized enterprises"), or in-house without the involvement of an approved energy consultant, provided that the applicant company has a certified energy or environmental management system in accordance with ISO 50001/EMAS.

All applications submitted at closing tender date will be checked for completeness, compliance with the competition conditions and plausibility. The application review is carried out by VDI/VDE Innovation + Technik GmbH. All positively evaluated applications will be ranked according to their funding efficiency (EUR funding per tCO_2 saved). If an application is not successful in a competition round, it can be submitted again in one of the upcoming competition rounds. Applications received after a certain deadline will be considered for the next round of the competition. All projects will be funded in descending order according to the ranking until the budget available for each round has been exhausted.

Funding recipients must keep the following documents in case of audit/control:

- The technical report and the savings concept;
- Verification of the operational readiness of the technical plant(s) and confirmation of (respective) commissioning;
- Proof of the costs invoiced for the implementation of the measure;
- Confirmation by a qualified energy consultant or expert for the proper implementation of the savings concept;
- In case of contracting, the contractor must submit a confirmation from the contracting party that the measure has been implemented.

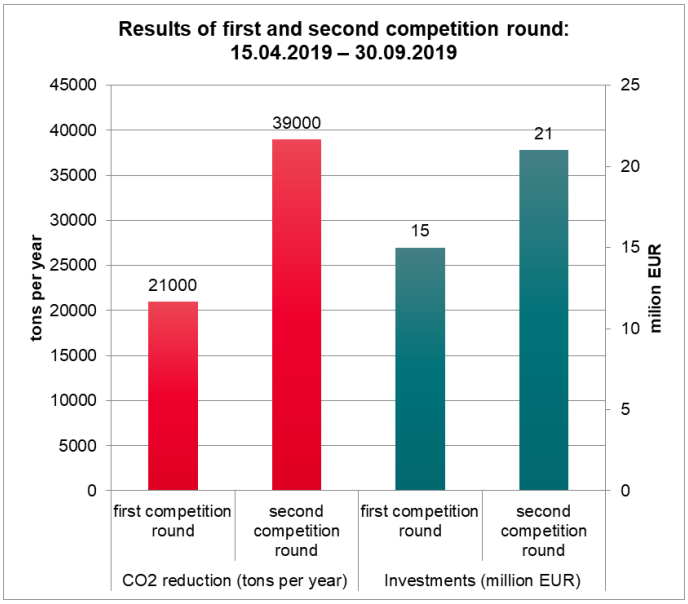
Sectoral coverage of the measure

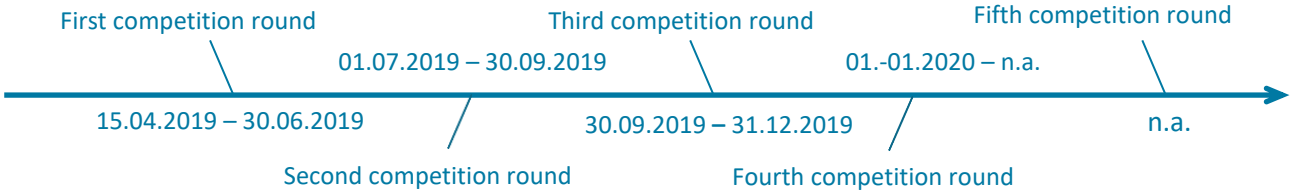
Eligible applicants are private and municipal companies, freelancers and contractors. Eligible measures are all investments by companies in new, highly efficient technologies and measures to increase the share of renewable energies for the provision of process heat such as

- Process and procedure conversions to efficient technologies
- Energy optimization of industrial or commercial plants and processes
- Measures to increase electricity or heat efficiency
- Electricity generation from waste heat or external waste heat use
- Process heat supply from renewable energy sources
- Acquisition and installation of sensors, measurement and control technology.

Costs and benefits of the measure

Funding is drawn from the German Energy Efficiency Fund (EEF), with EUR 7 million available for each of the 3-month rounds in 2019 (3 in total in 2019). The figure below shows the results of the two first rounds.





For more details about the previous programme (Step Up!), see for example (Langreder et al. 2019).

Overview of the policy mix reported by Germany for Art.7 (NEEAP 2017)

Name of measure	Final energy savings in 2015 in PJ
Energy and electricity tax	74.0
Energy Saving Regulation (for existing buildings)	11.8
Funding of corporate investments	6.7
KfW Funding Programme for Energy-Efficient Construction and Renovation (CO2 Building Renovation Programme)*	7.1
Energy Saving Regulation (for new buildings)	4.6
Air traffic tax	4.2
Emissions trading	1.7
Federal Government energy advice programmes	1.0
Renewable Energies Heat Act	1.0
Market incentive programme for the promotion of the use of renewable energies in the heating market (Federal Office for Economic Affairs and Export Control portion)	0.3

Interview with Martin Richter, Project Manager at VDI/VDE Innovation + Technik GmbH

What have been the main changes in the policy in the recent years?

Energy Efficiency has become a major issue in regards to climate change. In the beginning, the focus was mainly on renewable energy in Germany. Today, it is clear that a combination of different measures is necessary to fight against climate change and to reach the final stage of the German Energiewende; energy efficiency can play an important role.

What about MRV?

Energy efficiency still has no real importance for companies. They know what they produce and they maybe know what they have to pay for energy in general; but in most cases they do not know about energy efficiency potentials of their processes in detail. That is not their daily business. Their daily business is to produce something. In addition, the pressure to save energy costs is not really high for most of the enterprises at the moment. Therefore, there is just a very low data-base in regards to energy saving available. However, we can recognise a change: more and more companies start to see energy efficiency as an important economic factor.

What success factors have you identified?

It takes some time until a new funding programme "reaches the mind" of the target group. Therefore, a sustainable programme marketing is necessary. That also applies for energy efficiency measures: it takes time for the companies to realize the need and the economic advantages of investing in energy efficiency measures and in measures to collect energy data on a concrete process base.

Are there interactions with other policies?

Energy efficiency is an important component of the recently published "Climate package" of the German Government. Hence, there is a very broad range of interaction with other sectors and policies.

Are there any expected modification under discussion?

There will be an amendment of the funding guideline for the WEnEff-programme early in 2020. However, there will be no major changes in the programme just some concretions and "fine-tuning".

If we could go back in time, what would you suggest to do differently?

The awareness about the importance of energy efficiency in regards to climate change issues has started too late in my opinion.

Interview with Lars-Arvid Brischke, Senior project manager at ifeu (Institut für Energie- und Umweltforschung Heidelberg GmbH)

According to you, what were the strong points of the STEP up! programme?

- Openness for all measures, technologies and all actors
- Cost-effective measures were achieved (average 5 ct / kWh)
- Support program for specific and individual solutions

And what were the weak points or limitations?

- Limitation to electricity efficiency measures
- Application procedure is quite complex and requires habituation
- Risk to fail due to the competitive approach
- Higher risk and effort than for classic efficiency funding programs but no higher funding rate
- Due to complex application not suitable for micro-measures
- Collection projects not attractive enough for project administrators (30 % funding rate of the overhead costs)

Were there also strong and weak points that you could identify about monitoring and verification?

See the answers to the two previous questions – these points are experiences of applicants and stakeholders.

In the beginning, only electricity measures were allowed. In the last three rounds, also heating efficiency was eligible and consequently a number of such measures applied for funding.

Do you think the new programme 'Energy efficiency and process-heating from renewable energies in business – competition' brings interesting improvements?

Yes, there are significant improvements:

- Open to all types of technologies, sectors and measures (heat & electricity,...)
- Competitive factor: CO2 savings of the measure (no limitation)
- Funding rate up to 50 % (instead of 30%)

If we could go back in time, before the start of STEP up!, what would you suggest to do differently?

Nothing. The first years of a funding program with a completely new approach are always difficult. Applicants, consultants and other stakeholders need time to know about the program and to gain experience with the applications and the realization of the measures

Hungary: Corporate tax relief for energy efficiency investments in industry

Responsible authority: Ministry of Finance

Managing authority: National Tax and Customs Administration of Hungary

General information regarding the measure

Hungary declared in 2015 that it plans to fulfil the Art. 7 target of EED by implementing alternative measures for the period 2014-2020 (Energy Efficiency Act of 2015 and 3rd NEEAP of 2015). In the 4th National Energy Efficiency Action Plan of 2017, a revised target was determined for 2020. The cumulated energy saving target for the purpose of Art.7 for 2020 was calculated 167.5 PJ, equivalent to at least about 5 PJ new savings per year.

According to the draft Integrated National Energy and Climate Plan of 2019, Hungary's energy consumption in 2030 should not exceed the value for 2005 (gross final energy consumption of 27.6 Mtoe). In the new saving period of 2021-2030, an EEO scheme is envisaged to be introduced, based on the newly drafted long-term energy strategy for Hungary.

Key actors, roles and options

The Ministry of Innovation and Technology is responsible for Article 7 policy design and implementation of the various alternative measures, as well as monitoring and verification of the results.

The corporate tax relief measure, however, belongs to the Ministry of Finance. The Managing Authority is the National Tax and Customs Administration (NAV). The Hungarian Energy and Public Utility Regulatory Authority (HEA) is responsible for controlling energy audits.

Scope and focus

The corporate tax relief was introduced in 2017 for the implementation and operation of investments aimed at improving energy efficiency. It promotes energy efficiency investments all over the business sector at large, medium and small enterprises. From 2018, not only new energy efficiency investments, but energy efficiency refurbishment are also included. This may entail any purchase of new equipment, machinery or other asset, switching to a more efficient one or carrying out a refurbishment of existing assets or buildings.

The tax incentive can be up to 30% of eligible costs, but not more than the HUF equivalent of EUR 15 million at present value, which can be increased by 20% for small enterprises, and 10% for medium-sized enterprises. Also, a regional differentiation is possible in line with State aid rules. The tax relief was notified to the Commission for State aid approval. The scheme was declared compatible with the internal market regulations of the EU.

The tax incentive may only be claimed in connection with projects aimed at EE improvement. No tax credit can be applied with respect to investments aiming at fulfilling the mandatory environmental protection standards or minimum mandatory energy efficiency standards.

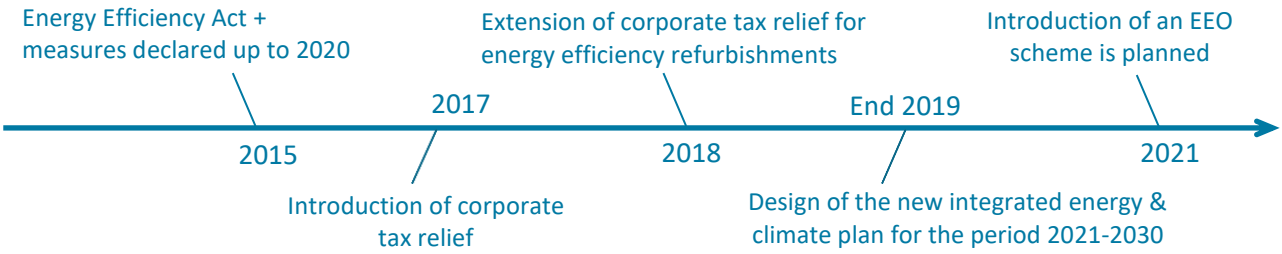
Monitoring, Reporting and Verification

NAV controls requests for tax relief within 3 years by checking ex-post if all requirements for the tax relief were met. Large enterprises are required to register with HEA and annually provide data on energy consumption, implemented energy efficiency measures and savings.

It is necessary for the applicant to obtain a certificate from an auditor registered with HEA that proves that the investment aims at improving energy efficiency. The certificate should be based on the result of an energy audit.

Auditors and auditing companies are required to provide HEA with data on the certified energy efficiency investment and the projected savings within 30 days after issuing the certificate for the company applying for the tax relief. HEA controls and verifies 3% of the audits. The method used to calculate the energy savings are based on the energy audits.

Companies and auditors have to report data to HEA through an online template. Data are verified by HEA through plausibility check, and for a sample of 3%, a detailed review is performed by controlling invoices and documentation of the measure.



The tax relief was enforced through the Act on Corporate and Dividend Tax of Hungary and Government, and the related Decree No. 176/2017.

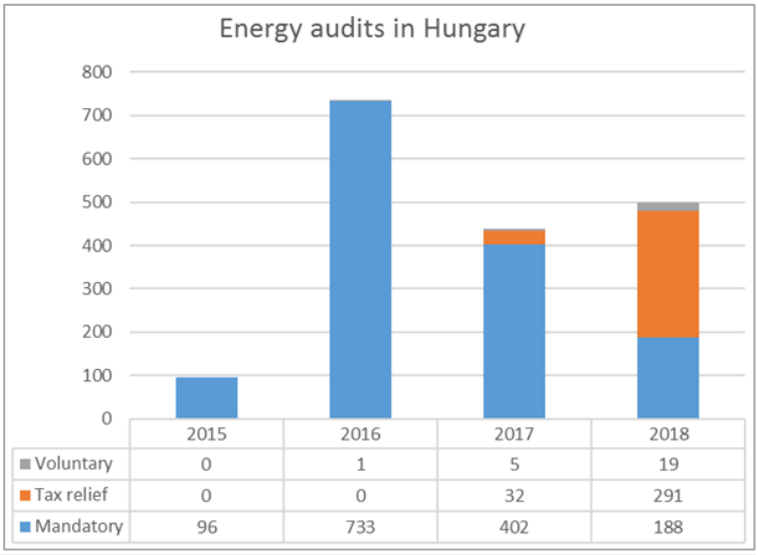
Costs for stakeholders

Market participants are required to carry out an energy audit as a pre-condition for the tax credit.

Results of the corporate tax relief in 2018

Measures in 2018	Energy savings (GJ/year)	CO_2 savings (kt/year)
Transport	436	15,6
Industrial processes	153 189	2 849
Building	109 071	3 763
Other	6 159	109
Total energy savings	**268 846**	**39 338.5**

- 323 data provision on implemented invetsments up to the end of 2018
- 269 TJ/year energy savings
- 39 kt CO_2 saved/year
- energy efficinecy investment volume of HUF 7 billion (21 million euros)
- average life time of measures: 15 years



Newest data for 2019 show exponential increase of the audits prepared for taking advantage of the tax incentive.

Overview of the policy mix reported by Hungary for Article 7

Transversal / cross-cutting

European Structural funds financed **Operational Programmes** (OPs) that provide a wide range of - mostly - non-refundable support for various target groups, including SMEs, public buildings, and local authorities to implement energy efficiency investments or improvements. Almost ten different OPs provide support for various action types.

Residential

Green Investment System and Green Economy Financing Scheme, financed from CO_2 quotas, providing non-refundable support for residential actions (e.g. heating modernization, replacement of appliances).

Zero-interest residential loan scheme, funded through an OP, to finance energy efficiency improvements and renewable installations for homeowners, apartments, multi-family buildings, cooperatives.

Services

Corporate tax relief for energy efficiency measures
Mandatory application of an **energy manager** at large enterprises

Industry

Corporate tax relief for energy efficiency measures
Mandatory application of an **energy manager** at enterprises with high energy consumption (threshold defined by law). 0.6-0.7 PJ saving were reported in 2017.

Transports

Support to **electro mobility** financed from CO_2 quotas (Jedlik Ányos plan)

Bicycle infrastructure development

Interview with Anikó Pálffy, Energy efficiency policy officer at HEA (Hungarian Energy and Public Utility Regulatory Authority)

What have been the main changes in the policy in the recent years?

There has not been much change in the policy package. Hungary intends to meet Art.7 requirements through various alternative measures. As savings are behind what is projected and required for 2020, the introduction of an EEO schemes is envisaged for the next saving period (2021-2030).

What about MRV?

MRV is not streamlined for alternative measures. Energy efficiency support programs financed through Operational Programmes (EU funds) are the major measures in terms of volume and savings – but monitoring of the savings is not properly implemented.

What success factors have you identified?

The corporate tax relief is a relatively new measure introduced in 2017. Monitoring and verification of the savings for this measure is well documented and properly implemented.

Are there interactions with other policies?

For large enterprises there are three different measures that may overlap. There is the energy audit obligation based on Art 8 of EED for large enterprises as defined by EU law (non-SMEs). There is a somewhat larger circle of companies that are required by law to hire an energy manager. The energy manager is responsible for counselling on energy efficiency improvements. For the purpose of this measure high energy consumption matters: a threshold is defined by law for the volume of electricity, gas and heat consumption. The third measure is the corporate tax relief for energy efficiency investments and refurbishments. This incentive is open not only for large enterprises, but for SMEs as well.

Auditors and energy managers are required to provide HEA with data on yearly energy consumption, measures and savings. There is a different reporting template for auditors and energy managers. Auditors are required to indicate if the purpose of the audit performed was to take advantage of the tax relief. Auditors also have to indicate if the company benefitted from any other type of financial support to avoid double counting.

Are there any expected modification under discussion?

An EEO scheme is envisaged for the next saving period. Background studies are under preparation.

If you could go back in time, what would you do differently?

- More governmental support would have been necessary for energy efficiency in the last decade, especially for the improvement of energy efficiency in the residential sector through building retrofits. A well-functioning, less bureaucratic institutional background is a necessary requirement for the proper implementation of the measures enacted by legislative documents.
- Make timely decision on streamlining M&V for Art 7 measures

Lithuania: Energy Saving Agreements with energy companies

Responsible authority: Ministry of Energy

Managing authority: Lithuanian Energy Agency

General information

Energy Saving Agreements (ESAs) are mandatory agreements between energy companies (electricity, gas, heat) and the Ministry of Energy (hereafter – the Ministry). The purpose of these agreements is to either educate and advise consumers on energy-saving actions and solutions that change consumers' behaviour and habits, or achieve significant energy savings at the end-user level by implementing technical actions.

ESAs are implemented since 2017, and planned till 2030.

Savings from education and advice campaigns are calculated yearly and are valid only for that year. Savings from technical actions are calculated yearly and over the whole period. All savings are expressed in final energy.

Expected cumulative energy savings by 2020 from ESAs (education and advice campaigns excluded) are 1905.14 GWh of final energy.

Organization and MRV for the measure

The requirement to sign ESAs is laid down in the Energy Efficiency Act. Rules and regulations implementing this law are set by the Ministry. LEA (Lithuanian Energy Agency) is the delegated body for implementation.

Reports on measures implemented and results achieved by energy companies are submitted to LEA annually. The reports include detailed description of implemented measures, calculation of their impact, proof of implementation (agreements with suppliers, invoices and other supporting documents). All submitted information is verified and approved by LEA specialists.

Energy savings from education and advice campaigns are calculated using the approved methodology (Order n°1-320 of 5 December 2016). Energy savings from smart meters are determined using deemed savings (3% of energy consumption). Other measures – mostly technological processes and equipment (e.g. in industry) – are evaluated by comparing energy use before and after.

Most popular means for education and advice campaigns are internet, leaflets and brochures, additional information coupled with bills. The vast majority of energy savings from technical actions comes from smart meter installation.

Sectoral coverage of the measure

ESAs are not directed at specific end-use sectors. They are aimed at reducing the consumption of electricity, heat and gas and can be freely implemented where energy companies see the biggest potentials.

Most important requirement is that energy savings must be achieved at the final consumers' side.

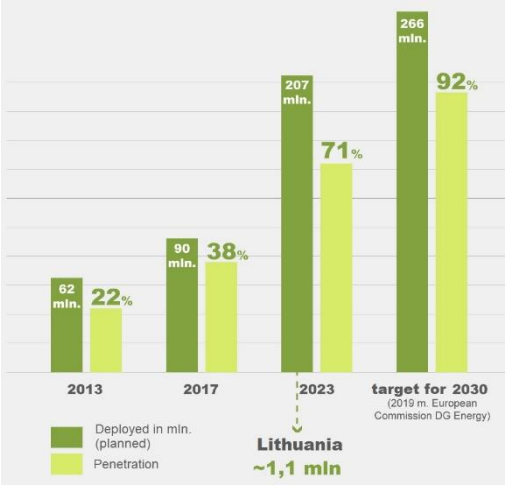
While agreements to educate and advice final consumers have no specific energy efficiency target, ESAs include targets to be achieved. The targets are negotiated and included in the agreement signed both by the energy company and the Ministry. All the information on the implemented measures is verified and approved by LEA.

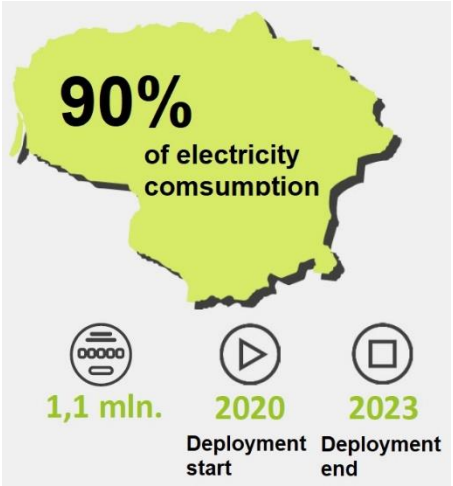
Costs and benefits of the measure

Implementation of education and advice campaigns is financed by energy companies and is not subsidised or included in energy prices.

Technical actions implemented by energy companies (electricity and gas) are financed by including the incurred costs in the energy tariff.

Timeline for smart meter (electricity) roll out programme





During a pilot project conducted by ESO (electricity and natural gas Distribution System Operator) in 2017, customers used on average up to 6% less electricity after the installation of the smart meter. The introduction of smart meters, recording consumption in 15-minute intervals, will enable competition, allowing independent suppliers to better compete for customers - whether in terms of service, quality, price or other customized solutions. With the introduction of smart meters, ESO will be able to monitor the quality of the power grid and take prompt action to prevent any disturbances.

Overview of the policy mix reported by Lithuania for article 7

Transversal / cross-cutting

Energy saving agreements with energy companies – regulatory measure. Obligation to energy companies to carry education and advice campaigns and/or implement energy saving measures. Cumulative energy savings – 1211.63 (41.86+1169.77) GWh.

Excises and taxes on road fuel. Energy savings – 2059.19 GWh.

Climate change and Lithuanian environment protection investment fund measures. Financing schemes and energy efficiency fund. Cumulative energy savings – 1076.84 GWh.

Residential

Multiapartment building renovation. Financing scheme. Cumulative energy savings – 2624.15 GWh.

Services

Renovation of public buildings. Financing scheme. Cumulative energy savings – 520,9 GWh.

Note: all savings mentioned above are cumulative energy savings over 2014-2020 from actions implemented between January 2014 and December 2017.

Lithuania's energy saving target for 2020 is 11674 GWh (11.674 TWh). Based on 2017 data, the three top measures contributing more than 50% of energy savings are: Multiapartment building renovation programme – 22%, Excises and taxes – 18%, Energy saving agreements – 10%.

Interview with Linas Bagdonavičius, Chief Specialist, Climate Change Management Policy Group, Ministry of Energy

What have been the main changes in the policy in the recent years?

Financial instruments promoting energy efficiency have increased: measure to replace inefficient heat production facilities (inefficient biomass boilers) with more efficient technologies using renewable energy resources in households; differentiation of a fee for services of general interest in industrially intensive companies (whose consumption is more than 1 GWh/year) for installed energy efficiency improvement measures.

What about MRV?

Supervision, control and verification of a representative sample of data on energy savings is performed by an independent body, the Lithuanian Energy Agency.

What success factors have you identified?

- application of good practice,
- common goal of different institutions,
- efficient decision making,
- the attractiveness of financial measures, with a direct link between energy efficiency indicators.

Are there interactions with other policies?

There are interactions between the alternative policy measures in place, for example synergies between financial incentives and voluntary agreements.

Are there any expected modification under discussion?

Planned implementation of additional energy efficiency measures.

In the next commitment period, between 2020 and 2030, Lithuania plan to improve not only the already existing energy efficiency measures but also construct new ones, paying more attention to energy efficiency measures in the transport sector.

If you could go back in time, what would you do differently?

Early and more efficiently address the preparation of the necessary documentation for the implementation of energy efficiency improvement measures.

The Netherlands: Long-Term Agreements on Energy Efficiency for non-ETS sectors

Responsible authority: Ministry of Economic Affairs and Climate Policy

Managing authority: Netherlands Enterprise Agency (RVO)

General information

The third generation of Long-Term Agreements on Energy Efficiency (LTAs) aim at improving energy efficiency and promote renewable energy use in large and medium-sized companies in the industry (non-ETS sectors), agriculture and service sectors.

Since 1992 LTAs are an important policy instrument in the Dutch energy policy. The third generation of LTAs entered into force in 2008 and will last until 2020.

The unit used to count the savings is primary energy savings per year (non-cumulative) but is reported cumulative compared to the reference year 2005, also distinguishing between process efficiency and chain efficiency improvements.

The target is to improve energy efficiency by 30% in the period 2005-2020 (20% from process efficiency and 10% from chain efficiency). The latest results from 2017 show that total efficiency improvements are 25.6% (22.7% from process efficiency and 2.9% from chain efficiency).

Organization and MRV for the measure

The governmental authority responsible for the LTA policy is the Ministry of Economic Affairs and Climate Policy, with the Netherlands Enterprise Agency being implementing body. Sectoral organisations are responsible for drawing up sector-wide long term energy efficiency plans. Municipalities and Provinces are the Competent authorities, responsible for enforcing the Environmental Management Act.

Companies joining the LTAs are committed to draw up energy efficiency plans every four years, implement cost-effective energy saving measures, introduce an energy management system, and provide monitoring data on an annual basis. Since 1 July 2019, most LTA companies must also submit energy efficiency audit reports (ultimately before 31 December 2020); this is a rule in the framework of the EED (article 8) from which there were previously exempted. Companies joining and complying with the LTA are both largely exempted from the generic energy tax and granted compliance with energy-related provisions of the Environmental Management Act.

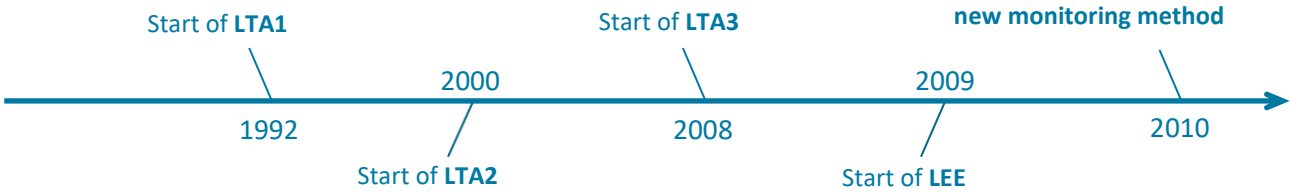
In 2010, a new monitoring methodology for reporting gross energy saving was introduced. Since then, companies have to report their energy efficiency improvements in their process or chain on the basis of bottom-up energy savings per energy efficiency project (for more details, see e.g., EPATEE, 2018). Other influential factors, like climate, production scale, or changed product specifications do not count towards energy efficiency improvements anymore.

Sectoral coverage of the measure

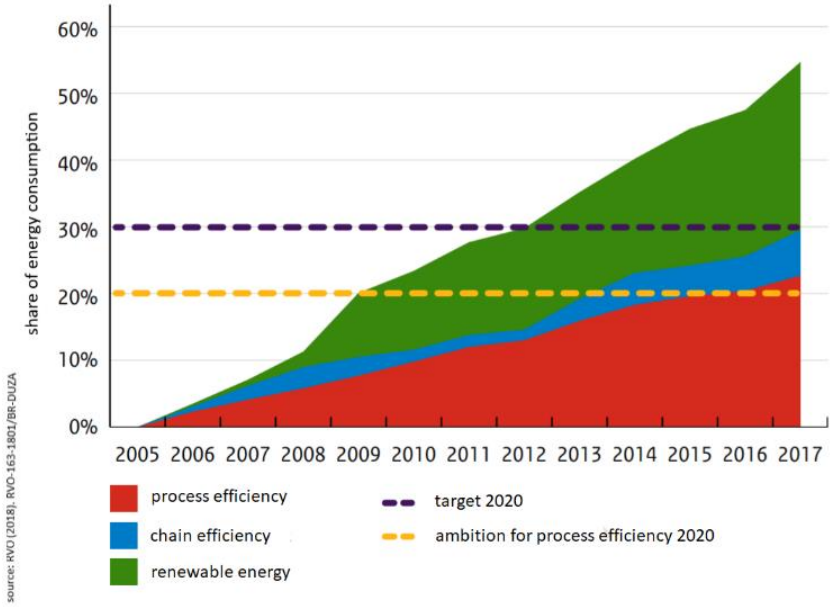
Around 1000 companies from 33 different sectors participate in the LTA3. Sectors include industry, service sector, agriculture, and transport. The energy use of these sectors amounted to 255 PJ in 2017, with the LTAs covering usually 70-80% of their sectoral energy use.

Costs and benefits of the measure

The average total annual costs for implementing the LTA3 and LEE covenants in the Netherlands was about 23.8 million euros in the period 2008 – 2012. These figures include an average of 15.3 million euros' government spending (Ministries and RVO) on human and supporting resources, which was primarily financed by the Ministry of Economic Affairs. Firms and industrial branches spent around 8.5 million euros on administrative and compliance (excluding any capital investments). The costs-effectiveness is estimated at 0.78 euro / PJ saved when using above mentioned costs, a 1% additional energy savings lasting 15 years and an average energy use 204 PJ in the period 2008-2011 (Ecorys, 2013). The governmental budgets allocated after 2012 to the LTAs have been significantly lower.



The timeline shows the evolution of the various LTA schemes in the Netherlands. The first generation of LTAs started in 1992. These LTAs primarily focussed on energy saving via improving process efficiency. In 2000, the less energy intensive industries agreed upon renewal of the second generation LTA, focussing on both energy savings via process efficiency, chain efficiency, and on renewable energy. The energy-intensive sectors concluded the Benchmarking agreement on energy efficiency. The LTA3, signed in 2008, marked a further continuation, broadening and intensification of the agreements on energy efficiency. In 2009 the LEE covenant (Long-term agreement on energy efficiency in ETS companies) followed up the Benchmarking agreement. An important marker was the introduction of a new monitoring methodology for the LTAs in 2010. **The LTAs will <u>not</u> be renewed after 2020**.



This figure shows that the ambition level for process efficiency (20% in 2005-2020) has already been achieved in the year 2017. The target for process and chain efficiency (30% in 2005-2020) has not been achieved yet.

Overview of the policy mix reported by The Netherlands for article 7

Transversal / cross-cutting

Fiscal incentive: **Energy Investment Allowance** (EIA). EIA is a fiscal measure that offers an additional allowance on taxable profit for entrepreneurs. EIA applications can be made for the purchase of designated energy efficient equipment.

Residential

Policy package of measures targeting residential sector

Services

Voluntary agreements: Long-term agreements with service sectors (**LTA3**)

Policy package of measures targeting service sector

Industry

Voluntary agreements: Long-term agreements with industry (**LTA3**)

Voluntary agreements: Long-term agreements with industry under EU-ETS (**LEE**)

There is a variety of alternative measure in the Dutch policy mix for article 7. Voluntary agreements are a frequently used policy instrument. The policy package of measures targeting the residential sector yields the largest amounts of energy savings compared to the other policy instruments / packages.

Interview with Harry Vreuls, Expert in monitoring and reporting energy efficiency and climate change at the Netherlands Enterprise Agency (RVO)

What have been the main changes and lessons learnt since 2017?

Although the LTAs on energy efficiency have gradually evolved since their first introduction in 1992, the key elements of the LTAs are still in place: sectoral energy efficiency targets, company energy efficiency plans, and proper monitoring and verification in combination with a set of supporting policy measures. The last change to the scheme (2013) was the introduction of the annual progress statement in order to be eligible for an energy tax refund. Participating companies will only receive this annual progress statement from the Netherlands Enterprise Agency if the planned energy-saving measures have been sufficiently implemented.

And more specifically about monitoring, verification and controls?

Companies participating in the LTA scheme must monitor energy efficiency based on primary energy data, as opposed to the Energy Efficiency Directive, which requires the reporting of energy savings based on final energy consumption figures. This means that the existing monitoring data & information requires further processing for the correct reporting for the EED. Another topic is double counting: how can energy savings be properly attributed to different interacting policy instruments (for example, Long-Term Agreements and Energy Investment Allowance)? As a solution, the gross energy savings of each policy instrument are still reported, while the total amount of double-counted energy savings is communicated separately. The last topic is the development of baseline scenarios. Baseline scenarios are new in the EED, but have never been an issue in the existing monitoring and verification programmes. So, we are now working on developing such scenarios for the various policy instruments and underlying measures.

What are the main interactions with other policies?

The LTAs are a policy package of several interacting policies, consisting of the energy covenant itself, and the supporting measures such as the energy efficiency planning & monitoring / verification, the Energy Investment Allowance, tax relief schemes for environmentally friendly investments and the Environmental Management Act. The co-existence of separate climate policies is getting more and more important.

Are there challenges or changes foreseen for the coming years? (especially after 2020)

Since a couple of years climate policies aiming at the reduction of greenhouse gas emission are emerging in the Netherlands (Nationaal Klimaatakkoord). Energy efficiency policies will therefore play a less prominent role in the future, which is already evident from the discontinuation of the LTA scheme after 2020. The future availability of energy saving data needed for the EED reporting (currently available via LTA monitoring and reporting) is therefore depending on the inclusion of energy savings data in the monitoring of climate change policies. The major challenge is therefore to keep energy efficiency monitoring on the agenda, particularly as new alternative measures will be included.

If you could go back in time, what would you do differently?

Involving the people responsible for the monitoring of the separate alternative measures (e.g. LTA) in the broader EED reporting process proved very challenging. Creating a solid support base for EED monitoring is something we would have given more attention to.

Portugal: mix of alternative measures

Responsible authority: Directorate-General of Energy and Geology (DGEG)

History, current targets and results

Portugal chose to fulfil the target of Article 7 for the period 2014-2020 with the implementation of a mix of alternative measures.

The target in cumulative energy savings for the period 2014-2020 amounts to 2.5 Mtoe (NEEAP 2017).

Based on the 2013 notification, the expected cumulative energy savings over 2014-2020 from the planned alternative measures were estimated to 4.29 Mtoe, with an interim target of 1.14 Mtoe for cumulative savings over 2014-2016.

Key actors, roles and options

The Directorate-General of Energy and Geology (DGEG), under the responsibility of the Ministry of Economy, is the Portuguese public administration responsible of the design, implementation and evaluation of energy policies, including those for Article 7 of the EED.

In the NEEAP2017, it was highlighted the necessity to improve the current governance model and was specified that the DGEG and the Executive Committee of the NEEAP Management Structure are involved in monitoring and guaranteeing full follow-up of the results of the planned energy efficiency measures. Moreover, all parties involved are responsible for implementation and fulfilment according to the adopted legislation.

Finally, it was decided to operationalize the Energy Efficiency Fund optimizing the provided incentives and envisaging liaison with the defined instruments for climate change mitigation.

Scope and focus

The policy mix planned in the 2013 notification included alternative measures covering all the end-use sectors:

- transport: Eco Car programme (2 measures), Urban Mobility programme (3 measures), Energy Efficiency System for the Transport sector (4 measures)
- households and services: Renew Home & Office programme (5 measures), Energy Efficiency System for Buildings (2 measures), Solar Thermal programme (2 measures)
- industry: Intensive Energy Consumption Management System (3 measures)
- public sector: Energy Efficiency in the State Sector (4 measures).

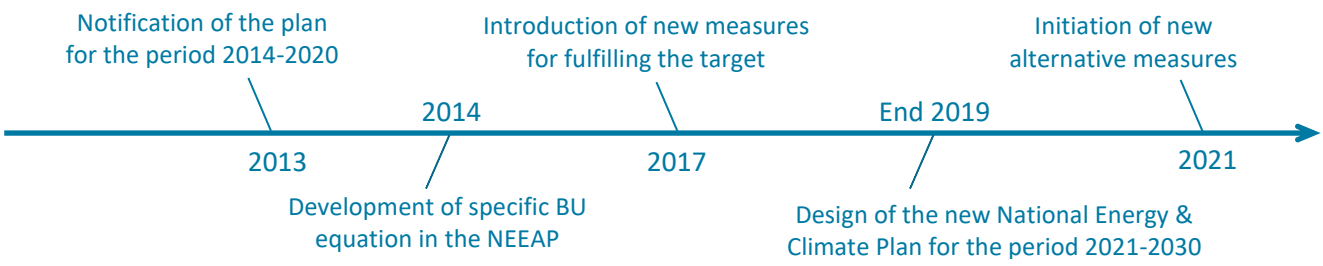
Monitoring, Reporting and Verification

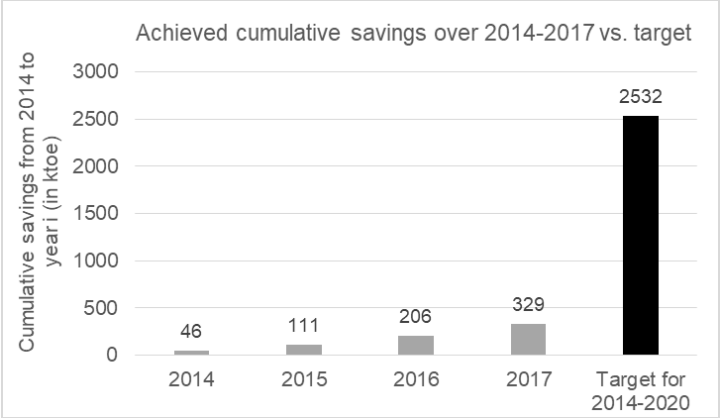
The 2013 notification established the framework for the monitoring and measurement of the energy savings. This involves both monitoring the achievement of energy savings from each measure separately and the continuous and comparative assessment of their cost-benefit ratio.

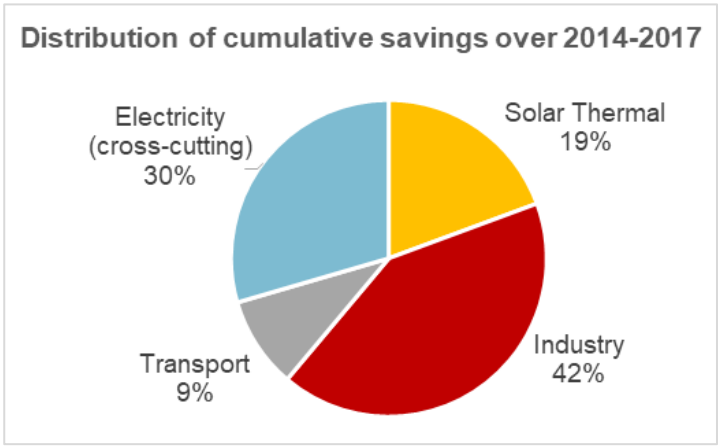
The monitoring is primarily based bottom-up methods tailored to each measure (calculation formula per action type). This is complemented by top-down energy efficiency indicators to monitor savings per (sub-)sector. In addition, other specific quantitative indicators were considered to assist the process for monitoring the implementation of the measures.

In the NEEAP2014, various bottom-up equations were developed for the foreseen energy efficiency measures in the different end-use sectors. Moreover, the completed Energy Performance Certificates, as derived by the respective database, have been used to estimate the energy savings achieved from energy efficiency interventions in buildings.

Finally, various periodic surveys and evaluation reports in the mandatory schemes for public consumers along with data collection on specific facilities, such as energy efficiency in public administration have been used for the measurement of the achieved energy savings.







Implemented energy efficiency measures and the resulting cumulative energy savings achieved over 2014-2017 (in ktoe) according to the annual reports.

Four energy efficiency programmes (or policy packages) have been reported by Portugal in the period 2014-2017, with 329 ktoe of cumulative energy savings achieved over 2014-2017, showing a significant deviation from the target:

- Industry: Programme "**Management System of Intensive Energy Consumption in the industrial sector**" (Industry) with the highest contribution (42% of the cumulative savings).
- Electricity (cross-cutting): the **tendering scheme** "PPEC - Consumption Efficiency Promotion Plan" aims to promote a more efficient behaviour and the adoption of more efficient equipment by consumers of electricity (30% of the cumulative savings).
- The programme promoting **solar thermal** systems in residential and tertiary buildings (19% of the cumulative savings).
- Transport: the programme "**Management Regulation of Energy Consumption in Transport Sector**" aims at specific operators of transport fleets and company transport fleets to conduct specific audits (9% of the cumulative savings).

In the NEEAP 2017, two new measures were proposed to fill the gap to achieve the target by:

- Imposing the **obligation to the local authorities** to reduce the final energy consumption annually by 1.5% (Local Energy Agreement).
- Imposing the **obligation to the companies that participate into the European Emissions Trading Scheme** to reduce the final energy consumption annually by 1.5%.

Total annual energy savings for years 2014 to 2017 (in ktoe/y):

Policy measures	2014	2015	2016	2017
Solar Thermal - Incentive programs to solar thermal utilization	8.1	15	19	21
SGCIE - Management System of Intensive Energy Consumption	21.9	30	38	49
RGCE ST - Management Regulation of Energy Consumption in Transport Sector	2.4	7	10	12
PPEC - Consumption Efficiency Promotion Plan	13.7	14	27	42
Total achieved energy savings	**46.1**	**65.4**	**94.2**	**123.8**

Source: annual reports and NEEAP 2017.

Romania: Energy audit and energy management

Managing authority: ANRE (Romanian Energy Regulatory Authority)

General information

In Romania alternative policy measures have been adopted with the following financial support: own resources, bank loans, EU funds, grants etc.

The overall national indicative energy efficiency target is based on primary energy consumption. Romania's indicative national energy efficiency target (Article 3 of the EED) is to achieve primary energy savings of 10 million toe by 2020, which would mean a reduction by 19% compared to the primary energy consumption (52.99 million toe) forecasted for 2020 in the PRIMES2007 scenario. Reaching this target means that in 2020 the primary energy consumption energy consumption should not exceed 42.99 million toe.

In 2017, the primary energy consumption in Romania was 32.375 million toe and the final energy consumption was 23.205 million toe.

The National Energy Efficiency Action Plan – NEEAP IV was approved in 2019 (GD no. 203/2019) and is structured on two components:

- Energy savings in the energy supply system - transformation, transport and distribution;
- Energy savings at the final consumer (scope of the article 7 of the EED).

The Article 7 target in cumulative final energy savings for 2014-2020 is 5.511 Mtoe.

Sectoral coverage of the measure

The sectors of activity where have been identified energy efficiency measures that could bring substantial energy savings (over 100 000 toe) are: the energy industry, the cement industry and the manufacturing industry. It should be mentioned that these data are estimates and represent information related to the energy audits performed by a number of 330 economic operators.

Regarding energy management, from the analysis of the programs of improvement of the energy efficiency for the year 2018, results an energy saving of 84 325 toe.

Organization and MRV for the measure

According to the provisions of art. 3 paragraph (2) b) of Law no. 121/2014 on energy efficiency, with subsequent amendments and completions, the Department for Energy Efficiency within ANRE monitors the stage of implementation of the National Action Plan in the field of energy efficiency and related programs for improving energy efficiency at national level, as well as energy savings resulted from providing of energy services and other measures to improve energy efficiency.

ANRE submits to the Government, in order to inform the European Commission, the Report on the progress achieved in the fulfilment of national energy efficiency objectives and annual Report on NEEAP monitoring, by April 30. It is published on the ANRE web site and of the European Commission

The main types of methods used to calculate the energy savings are scaled savings from energy audits.

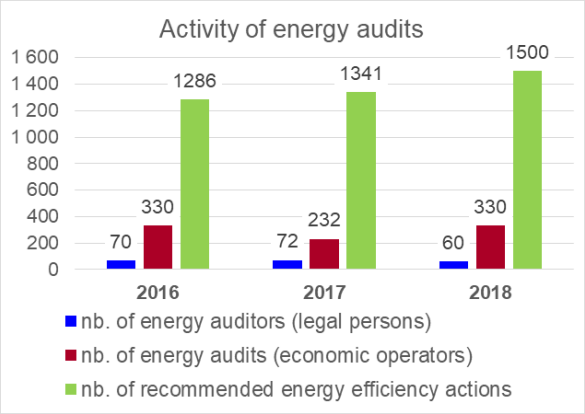
Economic operators exceeding 1000 toe energy consumption have to report their energy savings annually, no later than April 30 based on their own calculation/ estimation, they have to carry out an energy audit every 4 years (with the exception of SMEs), to draw up programs to improve energy efficiency and to appoint an energy manager certified by ANRE.

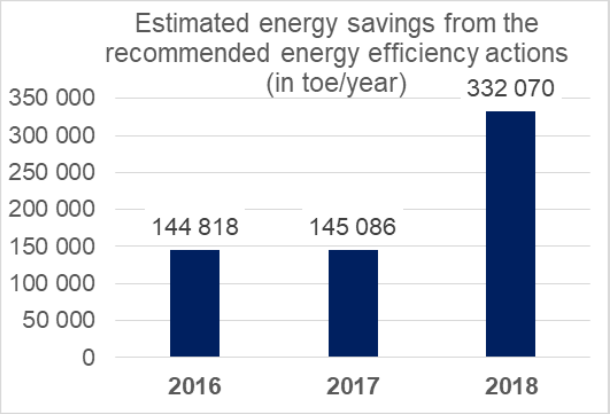
Costs and benefits of the measure

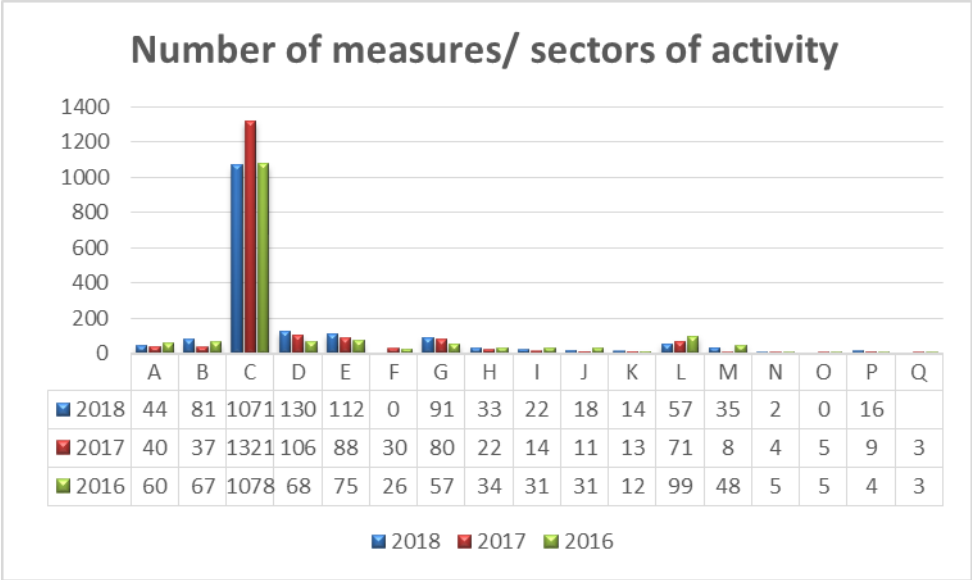
From the energy audits carried out at 330 economic operators in 2018, 1500 energy efficiency actions have been recommended approximately, which would produce after implementation energy savings estimated at 332 070 toe/year, for an investment amounting to about 12.7 million lei (about 2.6 million euros).

According to the estimations of energy auditors, the implementation of energy efficiency actions recommended within complex energy audits could bring cumulative energy savings of over 200 000 toe.

In 2018, 13 audits were performed in the public administration sector. By implementing the recommended energy efficiency actions, energy auditors estimate that over 20 000 toe could be saved, which would imply investments worth around 100 000 lei (about 21 000 euros).







A- Agriculture, forestry and fishing
B- Extractive industry
C- Manufacturing industry
D- Production and supply of electricity and heat, gas, hot water and air conditioning
E- Water distribution; sanitation, waste management, decontamination activities
F- Constructions
G- Wholesale and retail trade; repair of motor vehicles and motorcycles
H- transport trucks
I- Hotels and restaurants
J- Information and communications
K- Financial services and insurances
L- Real estate transactions
M- Professional, scientific and technical activities
N- Administrative service activities and support service activities
O- Public administration and defense; social insurance from the public system
P- Education
Q- Health and social assistance

Overview of the policy mix reported by Romania for article 7

Energy efficiency in the industrial sector: • Energy audit and energy management	**Energy efficiency in the residential sector:** • Thermal rehabilitation of residential blocks • Thermal rehabilitation of single-family homes • Energy audit and energy management
Energy Efficiency in the services sector: • Thermal rehabilitation of government buildings • Thermal rehabilitation of public buildings (city halls, schools, etc.) • Rehabilitation of public lighting • Rehabilitation of public water supply systems	**Energy efficiency in the transport sector:** • Renewal of the car park • Retrofitting of urban public transport • Extension of the underground transport in Bucharest • Retrofitting of rail transport • Retrofitting of waterborne transport

Interview with Zoltan Nagy-Bege, Vice-President, Head of the Energy Efficiency Department at ANRE

What have been the main changes in the policy in the recent years?

In 2019, the National Energy Efficiency Action Plan-NEEAP IV was approved through GD no. 203/2019 and includes energy savings measures that will be achieved in order to reach the target assumed by Romania, as well as the financing sources.

ANRE monitors the implementation status of the NEEAP and the related programs for improving energy efficiency at national level, as well as the energy savings resulting from the provision of energy services and other measures to improve energy efficiency.

The annual report on the progress achieved in the fulfilment of national energy efficiency objectives elaborated by ANRE includes the legislative changes in the field of energy efficiency.

What about MRV?

ANRE's databases constitute the main data sources for monitoring and reporting of the implemented energy efficiency measures in different industry sectors.

The utilized procedure for the monitoring of the energy efficiency measures in Romania is based on the annual reporting of the total energy consumption statement, the analysis questionnaire of the energy consumer and the programmes for improving energy efficiency, which include the energy consumption, the implemented measures in the last 3 years, the planned measures and related investments and the updated energy efficiency master-plans on annual basis.

The reported energy savings are assumed by the economic operators, municipalities and the ministries involved in the NEEAP IV implementation, while ANRE aggregates the data received.

In this respect, ANRE is very interested in the results of the project, especially in its capacity of elaborating a MRV scheme, so that there would result a single methodology for all MS.

What success factors have you identified?

According to the 4th Report of the European Commission on the state of the Energy Union which includes the 2018 Assessment of the progress made by the Member States towards achieving the 2020 national targets for energy efficiency, in terms of energy intensity, almost all Member States have managed to improve their industry performances during the period 2005-2017, and Romania is one of the countries with the highest improvements (over 50%). Regarding the progress made under Article 7 EED (the obligation on energy savings), Romania is among the Member States which are on the right track or have obtained more energy savings than necessary for the period 2014-2016.

Are there interactions with other policies?

In order to finalize the NECP targets, according to the recommendations of the European Commission for all 5 dimensions, it is necessary to harmonize the programming process for investments from European funds for the period 2021-2027, with the completion of the Long-term renovation strategy to support the renovation of the national park of residential and non-residential buildings, both public and private, as well as with the supportability of energy consumers' bills.

Are there any expected modification under discussion?

The new Energy Performance in Buildings Directive must be transposed into national legislation by March 2020, being the first approved under the new European legislative package, given the huge energy saving potential in the building sector as the largest European energy consumer (with 40% final energy consumption, in Romania 45%) and being responsible for one third of the CO2 emissions in Europe.

If you could go back in time, what would you do differently?

The specialized fund for investments in energy efficiency as alternative policies measures is not yet implemented in Romania after 5 years, therefore it is crucial for the Romanian government to create, at national level, this financing possibility in order to reach the 2030 energy efficiency target.

Sweden: energy and carbon taxes

Interview with Fredrik von Malmborg, Deputy Director at the Government Offices of Sweden, Ministry of Infrastructure

Have there been changes in the energy and carbon taxes in the recent years? (or in the policy measures accompanying the taxes)

Changes are made regularly in the Swedish energy and carbon taxes. Recent changes that took place are in the transport and industrial sectors. The tax on electricity was also increased by approximately 15 % in two steps in 2017 and 2019, following the multi-partisan energy policy agreement in 2016. In addition, regular adjustments are also made in accordance with Consumer Price Index (CPI) and GDP growth.

Have there been changes in the way that the effects of the policy are monitored?

The Swedish Energy Agency has recently taken greater role in monitoring the outcomes in terms of energy efficiency achieved. Overall monitoring is carried out by Swedish Taxation Board.

What success factors have you identified?

Overall reduction in the fossil fuel use. Especially in the households and industrial sectors. There are also increased investments in heat pumps in dwellings to reduce the use of electricity for heating.

Are there interactions with other policies?

Yes, to address market imperfections and energy efficiency targets Sweden applies different complementary policy instruments even though energy, carbon tax and EU-ETS are the main general economic instruments. Examples of other policy instruments are energy performance regulations, different informative instruments, energy step (where large companies that have made an energy audit can get financial support for investments in energy efficiency), industrial leap (financial support to companies for reducing use of fossil fuels), a national programme to support energy efficiency in small and medium sized enterprises, Local climate investment program, technology procurement.

Are there any expected modification under discussion?

No, not at the current situation. The Government's proposal for implementing the requirements on energy savings obligations in the EED was sent for public consultation. The majority of respondents are in favour of the Government's proposal, which will be reported to the Commission in Sweden's Integrated Energy and Climate Plan at the end of the year.

If you could go back in time, what would you do differently?

Taxation could have been made even simpler with less exemptions and reductions in the very beginning.

Sources and references

General sources used to prepare the country fact-sheets

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