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LANDSCAPE OF ENERGY EFFICIENCY POLICY PACKAGES IN A MULTI-LEVEL GOVERNMENT SYSTEM

PART OF WORK PACKAGE 1: MAPPING OF ENERGY EFFICIENCY POLICY INSTRUMENTS AND
AVAILABLE TECHNOLOGIES IN BUILDINGS AND TRANSPORT

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Università Commerciale
Luigi Bocconi



OXFORD
BROOKES
UNIVERSITY

Universiteit
Antwerpen



Wuppertal Institute
for Climate, Environment
and Energy



SEI STOCKHOLM
ENVIRONMENT
INSTITUTE

Institution: Stockholm Environment Institute Tallinn Centre

Steering Committee member (1): Tiit Kallaste

Prepared by: Tiit Kallaste, Mari Jüssi, Kerli Kirsimaa, Piret Kuldna

(1) The Steering Committee member has the responsibility for ensuring the quality of the report.

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Contents

ACRONYMS	4
EXECUTIVE SUMMARY	5
1. THE ROLE OF GOVERNANCE AND ENERGY EFFICIENCY POLICY PACKAGES ON THE NATIONAL LEVEL	6
1.1 POLICY PACKAGES AND POLICY GOVERNANCE IN EUROPEAN MEMBER STATES.....	6
1.1.1 Buildings Sector	6
1.1.2 Transport Sector	10
1.2 National Programmes and Initiatives.....	15
1.2.1 Green Investment Scheme implementation in building sector	15
1.2.2 Green Investment Scheme in transport sector.....	17
1.2.3 ELMO – Estonian Electromobility Programme in transport sector.....	19
1.3 Conclusions and Lessons Learned of other Projects about the Performance of the National Policy Packages for Energy Efficiency	20
1.3.1 Buildings sector	20
1.3.2 Transport sector	22
2. INTERACTION BETWEEN THE NATIONAL AND THE SUB-NATIONAL LEVELS	24
REFERENCES.....	25

Table of Tables

Table 1 Transport sector’s energy consumption targets in Estonia.....	11
Table 2 Estonia’s Green Investment Scheme Transactions 2010-12.....	16
Table 3 GIS programs regarding transport and energy efficiency	18
Table 4 Summary of energy efficiency recommendations	21
Table 5 IEA energy efficiency recommendations for Estonia in transport sector.....	23

ACRONYMS

AAU	- Assigned Amount Units under UN FCCC
DH	- District heating
EIC	- Environmental Investment Centre
ELMO	- Estonian Electro-Mobility Programme
ENMAK	- Estonian National Energy Sector Development Plan
GIS	- Green Investment Scheme
EPBD	- Energy Performance of Buildings
EPC	- Energy Performance Certificates
EU ETS	- EU Emissions Trading Scheme
EV	- Electric Vehicle
JI	- Joint Implementation
KIK	- Estonian Environmental Investment Fund
KredEx	- Credit and Export Guarantee Fund
LEB	- Low-Energy Building
MEAC	- The Ministry of Economic Affairs and Communication
NEEAP	- National Energy Efficiency Action Plan
nZEB	- nearly Zero-Energy Buildings
ODEX	- Energy efficiency index of industry
RKAS	- State Real Estate Company Ltd (Riigi Kinnisvara AS)
SEAP	- Sustainable Energy Action Plan
UNFCCC	- United Nations Framework Convention on Climate Change

EXECUTIVE SUMMARY

The energy efficiency targets for the buildings sector are given in two major national programmes. Firstly, The National Reform Programme “Estonia 2020” describes the objectives established to improve competitiveness and activities needed to achieve these objectives. Final energy consumption is targeted to remain at the level of 2010 in 2020. This means that energy efficiency must be significantly raised in particular in the buildings sector. The Estonian government has made tangible progress in meeting the targets set so far. Starting from 2013 more stringent energy efficiency requirements established to new and reconstructed buildings by Ministry of Economy and Communication, having overall responsibility in energy efficiency. Implementation of the requirements of EPBD Directive is foreseen in the first order in public buildings to reach the maximum energy efficiency and to demonstrate the example. The reform programme includes the implementation of the investment package for energetic refurbishment of multiple apartment houses, also the fuel switch subsidies from oil to more efficient types of fuels in private houses.

Secondly, the Estonian National Development Plan of the Energy Sector until 2030 (ENMAK 2030+) with the vision till 2050 is one of the central strategic documents which fix the main pathways of development of many other programmes. ENMAK 2030+ draws the main concept lines of energy sector development up till 2030. The programme is the most updated document describing, in fact, the vision of possible development paths of all sectors including the buildings. Detailed description on existing stock of buildings is given based on what the further development paths for energy saving are formulated. Technical energy saving potential forms around 80% (9.3 TWh/y) of present energy consumption of buildings and it comprises roughly 1/3 of total final energy consumption (33-34 TWh/y) in Estonia

The energy efficiency target for the transport sector is set in the Estonian Transport Development Plan 2014–2020: to retain the transport sector’s energy consumption by the year 2020 on the level of the year 2012 and to create a basis for reducing energy consumption after the year 2020. The measures described in the strategy target both supply and demand-side management and cover all three efficiency dimensions: system efficiency, travel efficiency and vehicle efficiency. Green Investment Schemes have been an important national program in the transport sector enabling transport sector energy efficiency investment. The report presents transport schemes supported by GIS and the biggest national program related to transport energy efficiency – Estonian electro-mobility program ELMO that has supported the purchase of 1164 EV-s in Estonia, including 507 iMiEVs for social workers all over Estonia, providing a network of 165 quick chargers and ELMO rent system.

Most international transport energy efficiency related projects highlight the high potential of energy saving in transport sector. ODYSSEY-MURE project concluded that the energy efficiency index ODEX for transport in Estonia has increased by 17.3% (from 2000 to 2010) meaning that the energy intensity has increased. The difference of energy intensity of transport in Estonia and the EU is very essential: in Estonia 0.087 kg oe/EUR2000 and the EU average 0.032 kg oe/EUR2000 in 2010. IEA and OECD have recommended Estonian government to implement more policies related to transport energy efficiency including mandatory vehicle fuel efficiency standards, measures to improve vehicle fuel efficiency, improving operational efficiency through eco-driving and other measures.

1. THE ROLE OF GOVERNANCE AND ENERGY EFFICIENCY POLICY PACKAGES ON THE NATIONAL LEVEL

1.1 POLICY PACKAGES AND POLICY GOVERNANCE IN EUROPEAN MEMBER STATES

1.1.1 Buildings Sector

Official documents, national programmes, strategies, action plans etc., give the targets for further improvement in energy saving and energy efficiency in buildings sector in a different way. Some of them give qualitative assessments or brief general descriptions only and suggest the overall improvement approaches. The others introduce the numerical data on the energy saving or efficiency targets up till 2020 or 2030. Energy efficiency has been referred as a priority or an objective in a number of national development plans, policy documents and reports to European Commission.

The Ministry of Economic Affairs and Communications is responsible for the elaboration and implementation of 12 different strategic documents for Estonia which are listed on MEAC website (MEAC, 2015). Seven of them are related to energy efficiency issues in buildings and/or transport sectors. The Ministry of the Environment quotes to energy efficiency in its two National Communications to UN FCCC as the prevailing share of greenhouse gas emissions is due to inefficient generation of energy based on local fossil fuel, oil shale. In the following these main national official documents are listed;

- National Real Estate Strategy, approved in 2007. The strategy is aimed to better usage of state-owned real estate and drafts the further development path, representing Estonia's strategy to achieve the "Europe 2020" objectives;
- Estonian National Housing Development Plan 2008 – 2013. Prepared by the MEAC, the Ministry of Justice and Kredex in 2007;
- Estonia's Fifth National Communication under the UN Framework Convention on Climate Change. Prepared by the Estonian Ministry of the Environment and the Estonian Environmental Research Centre in 2009.
- Estonian Renewable Energy Action Plan for 2020 (NREAP), 2010, in accordance with Directive 2009/28/EC on the promotion of the use of energy from renewable sources;
- Estonia's sixth National Communication under the UN Framework Convention on Climate Change. Prepared by the Estonian Ministry of the Environment and Estonian Environmental Research Centre in 2013.
- National Energy Efficiency Action Plan (NEEAP), 2014. Estonia's Communication to the European Commission under Article 24(2) of Directive 2012/27/EU;
- Estonian National Development Plan of the Energy Sector until 2030 (with the vision up to 2050). Prepared by the Estonian Ministry of Economic Affairs and Communication in 2014;
- Strategic Environmental Impact Assessment of the Estonian National Development Plan of the Energy Sector until 2030. 2015. Prepared by I. Möldre, Estonian Development Fund.
- "Estonia 2020", The National Reform Programme, finally approved in 2015. The programme 2050) to be submitted for approval to Estonian Government and Parliament in 2015.

The National Real Estate Strategy main targets are to improve the development of the real estate property which belongs to state from ecological, economic and spatial planning point of views. To ensure the maintenance of real estate in a best possible way considering economic efficiency and highest technical standards for maintenance including energy efficiency. The strategy foresees the implementation of energy saving technologies and construction materials to be used in newly built office buildings (Riigi ..., 2007). The strategy has been compiled by the Estonian Ministry of Economic Affairs and Communication in close cooperation with The Estonian Union of Co-operative Housing Associations (<http://www.ekyl.ee/?lang=en>).

The Estonian National Housing Development Plan for 2008-2013 constitutes a strategic basis for developing the housing sector. It has set out the directions and principles for resolving the individual issues specific to the housing sector. The principal aims in the field of housing are ensuring access to suitable and affordable housing for the population of Estonia, achieving high quality and sustainable housing stock and building diversified residential areas which are developing following the principles of sustainable development. The Plan was prepared in close cooperation with the Ministry of Economic Affairs and Communications, the Ministry of Social Affairs, the Ministry of Internal Affairs, the Ministry of Justice and the Credit and Export Guarantee Fund KredEx. The objectives and measures of the Development Plan served as a basis for planning the state budget resources as well as for funding from the EU Structural Funds and the Cohesion Fund during the period of 2007-2013. The more important individual activities and courses of action have been identified for the near term. A detailed implementation plan has been developed on an annual basis in line with the state budget strategy (Estonian ..., 2008). See for more at Baltic Energy Efficiency Network for the building Stock (BEEN) project webpage at: <http://www.been-online.net/Mitglieder-des-Netzwerks.250.0.html?&L=1>.

Estonia's Fifth National Communication under the UN Framework Convention on Climate Change has been prepared by the Estonian Ministry of the Environment and the Estonian Environmental Research Centre in cooperation of universities and research institutions in 2009 (Estonian ..., 2009). The communication quotes on energy efficiency issues in relation with the environmental pollution spectrum and in particular the emissions due to energy generation based on main local energy carrier, oil shale.

The National Renewable Energy Action Plan until year 2020 is a comprehensive development plan summarizing the national renewable energy policies, forecasting final energy consumption and setting out renewable energy targets and forecast trajectories until 2020. It has been worked out by the Estonian Ministry of Economic Affairs and Communication (Eesti ..., 2010). The Action Plan is one of the fundamental documents for achieving the European Union Renewables Directive (2009/28/EC) targets and gives a comprehensive outlook of the development of the renewables sector. It has been worked out by the MEAC. The International Energy Agency web-page (National..., 2010) describes the Estonia's renewable energy 2020 targets as follows:

- Overall target: 25% of renewable energy in final consumption;
- Heating and Cooling: 18% of demand met by renewable energy sources;
- Electricity: 5% of electricity demand met by electricity generated from renewable energy sources;
- Transport: 3% of energy demand met by renewable energy sources.

Estonia has introduced a number of measures facilitating achievement of above enlisted targets, they could be listed as the following (National..., 2010):

- Feed-in tariff;
- Certificate of origin;
- Excise duty exemption for biofuels;
- Investment support for RES projects;
- National Energy Technology Programme – ETP;

As for the share of renewable energy in final consumption Estonia has reached the set target by today, also the present share of renewable energy sources based electricity generation is very close to 2020 target.

Estonia's sixth National Communication under the UN Framework Convention on Climate Change has been prepared by the Estonian Ministry of the Environment and Estonian Environmental Research Centre in 2013 (Estonian ..., 2013). Also the sixth communication quotes on energy efficiency issues in relation to the greenhouse gases emissions due to the energy generation based on main local energy carrier, oil shale (Estonian..., 2013).

Estonia's second National Energy Efficiency Action Plan (NEEAP) was prepared by Ministry of Economy and Communications as pursuant to Directive 2006/32/EC. NEEAP listed 99 energy efficiency measures in eight policy areas, including 34 measures in the buildings sector; seven in the public sector (except buildings); 12 in industry; 14 in the energy sector; 17 in transport; four in household appliances and the service sector; four in agriculture and seven in other areas. The largest reductions in energy use are expected to come from the following sectors (NEEAP, 2014):

- buildings: 3.5 PJ;
- transport: 2.5 PJ from changing motor fuels to biofuels.
- industry: 2.2 PJ; comprising 0.9 PJ ordinary fuels, 0.7 PJ electricity and 0.6 PJ heat;

Energy Efficiency Watch conducted a qualitative and quantitative survey with the help of national experts in the field of energy efficiency policies implementation in EU Member States. This comprehensive overview covered both the buildings and the transport sector. As a result 11 experts answered in the interviews on National Energy Efficiency Action Plan that Estonia has made very good progress in energy efficiency policies since the First NEEAP and is among the three best Member States. 55 % of the experts believe that the national energy savings target is likely to be achieved. Positive developments reported include the increased availability of funds (especially from emission trading), more businesses active in energy efficiency sector (especially building renovation and energy services) and more use of CHP. However, the critical issues include the lack of a coherent framework for energy efficiency, capacity in the public sectors, binding targets, financing and funding programmes (Egger C. et al., 2012).

"Estonia 2020", The National Reform Programme is a reform programme that describes the objectives established to improve competitiveness and activities needed to achieve these objectives. Final energy consumption is targeted to remain at the level of 2010 in 2020. For the buildings sector this means that energy efficiency must be significantly raised in particular in the buildings sector. The Estonian government has made tangible progress in meeting the targets set so far. Starting from 2013 more stringent energy efficiency requirements established to new and reconstructed buildings by MEAC. Implementation of the requirements of EPBD Directive is foreseen in the first order in public

buildings to reach the maximum energy efficiency and to demonstrate the example. The reform programme includes the implementation of the investment package for energetic refurbishment of apartment houses, also the fuel switch subsidies from oil to more efficient types of fuels in private houses and subsidy programme for energetic refurbishment of small private houses (Eesti 2020 ..., 2015).

The Estonian National Development Plan of the Energy Sector until 2030 (ENMAK 2030+) with the vision till 2050 is one of the central strategic documents which fix the main pathways of development of many other programmes. It has been approved by the Government already, and next it will be approved by the Parliament, most probably in the second half of 2015. ENMAK 2030+ draws the main concept lines of energy sector development up till 2030, but also the vision for development up till 2050. The programme is the most updated document describing, in fact, the vision of possible development paths of all sectors including the buildings. Detailed description on existing stock of buildings is given based on what the further development paths for energy saving are formulated. Technical energy saving potential forms around 80% (9.3 TWh/y) of present energy consumption of buildings and it comprises roughly 1/3 of total final energy consumption (33-34 TWh/y) in Estonia (Housing..., 2015). The development plan has been prepared by the MEAC within the close cooperation of other ministries, governmental institutions, universities and research institutes who took part in the preparatory seminars and brainstorming on voluntary basis. Also, the whole preparatory process was organised web-based to allow experts and wider public to participate in the specialised discussions and propose their comments and opinions on further development options of the energy sector (Energiatalgud..., 2015).

All national development plans have to pass the Environmental Impact Assessment. Thus is also valid for the abovementioned energy sector development plan.

Strategic Environmental Impact Assessment of the Estonian National Development Plan of the Energy Sector until 2030 was prepared by the Estonian Development Fund. The latter was also responsible to organize the practical work to prepare the material for the long term energy sector development plan. The impact assessment deals with the energy efficiency tasks related to electricity and heat generation and usage in various economic sectors. Among the major tasks under consideration, the heat generation efficiency for housing sector via continuing the sustainable maintenance of the district heating networks, also the options and long term perspectives to increase the renewable energy share in transport sector were analysed (Energiamaajanduse..., 2015).

Synthesis of policy packages

In buildings sector some examples could be brought. The National Housing development Plan is closely linked to the National Renewable Energy Action Plan and Estonia's Second National Energy Efficiency Action Plan. The governmental institutions closely cooperate in implementation of strategies and action plans which main lines coincide.

Target groups

The above listed programmes, action plans, strategies etc. do not specifically target on certain group at national, regional or local level. They tend to be rather general towards all levels. It is common that none of the official documents specify the target group, instead they include the general principles to be taken for the basis in regional or local level implementation practices. The 2020 targets in various sectors are handled as nationwide and are regulated with governmental and other legislative acts and local governments' decrees.

Governance framework

The governance framework in Estonia functions quite well. The ministries are cooperating in their common interest areas, they coordinate with each other when working out strategies, compiling development plans, action plans, they, also cooperate in the phase of practical implementation.

The Ministry of Economic Affairs and Communication (MEAC) holds the overall accountability for energy efficiency policy. There are two departments responsible for the most of tasks related to energy efficiency, district heating and renewable energy policies – the Energy Department, and the Building and Housing Department. The ministry works closely with two relevant executive agencies in the field of energy efficiency, Credit and Export Guarantee Fund KredEX and EIC (Environmental Investment Centre). The first working with targeted measures in residential housing sector and electromobility programme, and the another implements the measures targeting public infrastructure (heat and electricity generation), energy distribution systems and street lighting. Both agencies work with the issues linked to the promotion of energy efficiency (Energy..., 2013).

The Ministry of the Environment is increasingly involved in energy policy its' responsibility includes the development of green public procurement rules and guidelines for the purchase of energy-efficient goods. The two ministries keep close cooperation and coordination of energy and environment policy developments. The Energy and Water Regulatory Division of the Estonian Competition Authority carries out the promotion of energy efficiency through energy tariffs. The Estonian Development Fund has a unit working on long-term development in the energy sector (Energy ..., 2013).

The Ministry of Economic Affairs and Communication, the Ministry of the Environment and the Ministry of Finance together with state governed foundations Estonian Development Fund, Credit and Export Guarantee Fund KredEX and Enterprise Estonia work in close cooperation in the field of energy efficiency of buildings. The institutions support mutual activities in case their areas of interest coincide. An example could be brought about wider deployment of solar energy foreseen in National Development Plan of the Energy Sector until 2030 and also, this priority is fixed in the NREAP. The responsible ministries coordinate their action plans towards achieving the target.

There are two Energy agencies, one in Tallinn municipality – Tallinn Energy Agency, another in Tartu, Tartu Regional Energy Agency, both working with buildings' energy efficiency issues and proceed with training and wider scope information dissemination in improving energy efficiency at local level. However, for the successful work they still lack appropriate number of staff and relevant financing. The energetic refurbishment has gained high popularity in almost at all local governments. Estonia is lacking the national Energy Agency at present, still it was founded in 2009 under governance of MEAC and it functioned for two years only. The main task of the agency was to continue the energetic refurbishment work what Kredex housing department has started earlier.

1.1.2 Transport Sector

The main national official documents describing policy packages for energy efficiency in the transport sector are:

- National Development Plan for Energy Sector till 2030, with the vision till 2050 (to be submitted for approval to Estonian Government and Parliament) (ENMAK 2030+, 2015);
- Estonian Transport Development Plan 2014–2020, approved by the Estonian Parliament on 19 February 2014 (Transpordi... 2014);
- National Energy Efficiency Action Plan (NEEAP), 2014. Estonia's Communication to the European Commission under Article 24(2) of Directive 2012/27/EU. (NEEAP, 2014)

- The national reform programme “Estonia 2020”, approved in 2011. Estonia’s strategy for achieving the “Europe 2020” objectives. (National... 2015)

These documents are described below.

The National Energy Sector Development Plan; “ENMAK 2030+ Eesti energiamajanduse arengukava aastani 2030¹”. (ENMAK 2030+), compiled by Ministry of Economy and Communications is currently in the final draft version (13.02.2015) to be presented to the Parliament. It describes the vision for transport energy consumption in 2050 as follows:

The energy efficiency and environmental sustainability of transport has increased through the interaction between various measures, uptake of energy saving technologies, increased use of alternative fuels and partial modal shift of freight transport to rail.

The energy efficiency target for the transport sector is set in the Estonian **Transport Development Plan 2014–2020**; “Transpordi arengukava 2014-2020²”. (Compiled by Ministry of Economy and Communications and approved by the Parliament on 19.2.2014): to retain the transport sector’s energy consumption by the year 2020 on the level of the year 2012 and to create a basis for reducing energy consumption after the year 2020.

Table 1 Transport sector’s energy consumption targets in Estonia

Indicator / Year	Initial level 2012	Interim level 2017	Target level 2020
Transport sector’s energy consumption (million TJ)	33	33	33

Source: (Transpordi arengukava 2014-2020, 2014)

The measures target both supply and demand-side management and cover all three efficiency dimensions: system efficiency, travel efficiency and vehicle efficiency. The measures and activities for targeting demand and improving the transport **system efficiency** are:

- **replacing unnecessary travel** (measure 1.1):

1. Activities related to substituting obligatory commutes will be implemented within the framework of the Green Paper for Arranging Public Services and the Information Society Development Plan 2020 (e-Estonia).
2. Opportunities for teleworking will be developed.

- **reducing unnecessary travel** (measure 1.2):

1. Instructions, guidelines, best practices, etc. will be prepared for spatial planning and mobility arrangement, on the level of the state, local governments and the private sector.

¹ http://www.energiatalgud.ee/img_auth.php/5/5b/ENMAK_2030_Eeln%C3%B5u_13.02.2015.pdf

² <https://www.riigiteataja.ee/aktiisa/3210/2201/4001/arengukava.pdf>

2. New county plans will be established.

Measures and activities for targeting supply and improving the **travel efficiency** are:

- **giving preference to more sustainable means of transport** (measure 1.3):

1. Local governments will be supported from the EU structural aid in preparing and implementing sustainable urban mobility projects.
2. Third sector projects will be supported, oriented towards implementing the principles of mobility arrangement.

- **developing intelligent transport systems** (measure 1.4):

1. The transport system's real-time data collection infrastructure will be developed, incl. within the framework of other infrastructure investments (e.g. for sensor-based gathering and forwarding of road information).
2. Development projects or pilot projects for innovative solutions or solutions adapted to Estonia's needs will be initiated and implemented in co-operation with the private sector and researchers:
 - in the field of solutions for processing and analysis of the transport system's data (incl. real-time and preventive analysis), enabling to e.g. increase road safety and manage traffic loads;
 - in the field of solutions for sharing data in the transport system (incl. prototype services), and the relevant standards or interoperability rules (e.g. for data exchange between road users);
 - in the field of joint solutions for logistics planning and management.
3. Support will be provided for development of integrated travel planning between various transport modes and/or via additional services (e.g. ticket sales), and other transport information services, incl. especially for handheld devices.
4. Regulation facilitating the safe implementation of self-driving/autonomous vehicles, the relevant interoperability and safety standards, and the supervision principles will be developed.

- **developing nationwide public transport connections** (measure 5.1):

1. In order to increase the competitiveness of long-distance bus traffic, the reconstructing and constructing of bus stations and bus stops in functional area centres will continue, as will connecting them to the centres' important destinations.
2. In order to ensure the quality of railway traffic, investments into infrastructure modernisation will continue, so as to ensure the top speed of 120 km/h and, if not entailing disproportionately large costs, 140 km/h.
3. In order to ensure service quality, investments initiated in the period of 2006-2013 for ships and harbours necessary for retaining the connections will be completed. This includes reconstruction of the harbours necessary for the connection between Saaremaa and Hiiumaa, and acquisition of a new ship for operating the line.

- developing regional public transport connections (measure 5.2):

1. Line networks will be modernised.
2. Tendering documents will be adjusted for the purpose of fulfilling the requirements set with the service standard.
3. The arrangement of regional public transport will be taken from the county level to the level of larger regions including several counties.
4. In regions with low population density, flexible public transport solutions will be implemented, e.g. on-demand buses, social transport or social taxis.

- developing local public transport connections (measure 5.3):

1. Public transport projects in functional area centres will be supported from EU structural aid.
2. Acquisition of environment-friendly rolling stock in functional area centres will be supported in the extent that the environment-friendly rolling stock costs more than rolling stock with diesel engines.
3. Distribution of tasks between the state and local governments upon arranging public transport, and the related funding will be analysed and proposals for changes will be made if necessary.

- integrating and improving access to public transport (measure 5.4):

1. The ticket systems of public transport networks of larger cities and their surrounding regions (incl. railway traffic) will be integrated. Ticket sales systems will be integrated on a country-wide level.
2. A support measure will be established for local governments, to ensure that public transport stops that serve country-wide lines will be better connected to the local commuting and most important destinations.
3. Rolling stock will be consistently replaced with models suitable for serving people with movement disabilities.
4. Public transport's information availability will be improved, implementing information systems conforming to the needs of people with hearing and vision disabilities.

Measures and activities for improving the **vehicle efficiency** are:

- promoting the use of renewable fuel sources in road transport (measure 4.1);

The activities to implement with this measure are specified in the Estonian Energy Sector Development Plan until 2030:

1. Providing a motivating economic framework for entrepreneurs and investors in the production and consumption of biofuels and other alternative fuels.
2. Ensuring long-term investment security with the state tax policy
3. Analysing the use of alternative fuels in public sector and taking them into use on socio-economic grounds.
4. Research and development activities.

- **improving car fleet economy** (measure 4.2);

The activities to be implemented with the measure:

1. A system of energy labels for vehicles will be established and awareness-raising campaigns will be conducted.
2. Energy efficiency requirements will be prescribed for public procurement conditions upon acquisition of vehicles for the public sector's needs.

Estonia's second National Energy Efficiency Action Plan (NEEAP)³ was prepared by Ministry of Economy and Communications as pursuant to Directive 2006/32/EC. According to the **NEEAP (2014)**, the estimated final energy consumption in 2020 in transport sector is 38.4 PJ. The NEEAP excludes the final energy use in the transport sector from the calculation of overall energy savings (without further explanation). The overall amount of energy savings represents a total of 9468 GWh (34PJ) in Estonia during the period from 1 January 2014 to 31 December 2020. Gaps in 2020 forecasts and the fact that transport energy saving potential is excluded from the overall energy savings calculations shows that the latest NEEAP report is not in line with the Transport Development Plan.

The national reform programme "Estonia 2020"⁴, prepared by Estonian government describes the objectives for 2015 and 2020 established to improve competitiveness. The objective is set to retain the final energy consumption on the level of the year 2010 (approx. 2818 ktoe) i.e. reducing final consumption of energy by approx. 11% compared to the level forecast for 2020. Maintaining the level of final consumption at the level of 2010 means that energy saving must be increased in nearly all sectors, in particular in the household, industrial, transport and public sectors. Actions related to transport are in line with the Transport Development Plan described above.

Target groups

The Transport Development Plan 2014–2020 does not specify the target groups. Most of the measures are targeted to the national and regional level (as regional level in Estonia represents state on the county level), transport industry, transport users and local municipalities.

Governance framework

The Transport Development Plan describes the development plan's overall implementation, monitoring, cost and implementers, without specifically referring to energy efficiency. The main responsible bodies are the institutions (Road Administration)⁵ and state enterprises in the area of governance of the Ministry of Economic Affairs and Communications⁶. Practically all other ministries, but primarily the Ministry of the Environment⁷ and the Ministry of Internal Affairs⁸ (responsible for planning and regional policy, Police and Border Guard Board) are involved in certain matters of implementing activities and applying support measures. In addition, state governed foundations like Estonian Devel-

³ https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_estonia.pdf

⁴ https://riigikantselei.ee/sites/default/files/riigikantselei/strateegiaburoo/eesti2020/eesti2020_tegevuskava_14.05.2015.pdf

⁵ <http://www.mnt.ee>

⁶ <http://www.mkm.ee>

⁷ <http://www.envir.ee>

⁸ <http://www.siseministeerium.ee>

opment Fund⁹ (partly filling the tasks of national Climate and Energy Agency that existed 2009-2011), KredEX¹⁰ and Enterprise Estonia¹¹ have a role in promoting energy efficiency activities and supporting start-ups in Estonia, local governments, primarily larger cities, have an important role.

There are two local/regional level energy agencies in Estonia – Tallinn Energy Agency¹² and Tartu Region Energy Agency¹³. These agencies have an active role in capacity building, networking and dissemination activities.

Most of the energy efficiency measures and facilitating foundations/agencies are not covered with long-term finances and are highly dependent on EU funds, Green Investment Scheme negotiations and project-based funding in general.

1.2 National Programmes and Initiatives

1.2.1 Green Investment Scheme implementation in building sector

Estonia is using two flexible mechanisms of UN FCCC Kyoto Protocol: EU Emissions Trading Scheme (EU ETS) and Joint Implementation (JI). Estonia has the right to offer unused emission quota for sale internationally. Estonia has had significant volumes of excess Assigned Amount Units (AAU), which represent carbon credits to be sold. It gained the excess units thanks to the thorough rearrangement of the economy when modern technology and alternative ways of producing energy were introduced, more renewable energy sources were taken into use, and saving measures were introduced in energy production. This financing measure was added to Environmental Investment Centre's (EIC) portfolio and is titled the Green Investment Scheme (GIS) pursuant to which the revenue is directed to investments ensuring a decrease in CO₂ emissions as agreed with the buyer of the quota, for example ensuring the energy efficiency of public buildings or finance the electro-mobility programme in transport sector. This is, in fact the financing instrument giving excellent option for earmarked investments for energy efficiency and renewable energy wider deployment.

Estonia started selling AAUs in 2009, under the GIS and has earmarked the proceeds for projects that facilitate emissions reductions. Examples include CHP installations, improving DH networks, retrofitting boiler houses, improving energy efficiency in buildings and industry, wind farms and introducing more efficient buses and trams in city traffic, and electric vehicles. In the frame of the instrument the areas of financing will be decided by the buyers.

Type of policy instrument: Financial instrument as it provides financial support to district heating networks supplying both public and private sector with more efficiently and hence cheaper heat. It has gained high popularity and showed up very good result in decreased heat consumption. Instrument is also, efficiently used for energetic refurbishment projects in buildings sector.

The first grants channelled through EIC were for the renovation of the district heating networks, renovation of combined heat and power generation plants and more environmentally-sustainable boiler houses, see for more at: (<http://www.kik.ee/et/energeetika/hasti-tehtud>). Still, the most significant financing has been channelled to energetic refurbishment of public buildings, also electro-mobility programme. In 2010-2013 the Riigi Kinnisvara AS (RKAS) has elaborated to implementation the ener-

⁹ <http://www.arengufond.ee>

¹⁰ <http://www.kredex.ee>

¹¹ <http://www.eas.ee>

¹² <http://www.tallinn.ee/est/energiaagentuur>

¹³ <http://trea.ee>

getic refurbishment directed to increasing the energy efficiency of 543 public buildings based on the Assigned Amount Units trade in total volume of EUR 165,67 million (<http://www.rkas.ee/co2>).

Table 2 Estonia's Green Investment Scheme Transactions 2010-12

Programme	Objectives	Activities	Transaction time	Ministry in charge, Implementing body	Contract partner	Transaction amount
Establishment of renewable energy based combined heat and power plants, boiler house reconstruction, saving energy in district heating networks (41 projects)	Improve the process efficiency to generate in cogeneration the electricity to be sold to grid, and heat for supplying buildings. Decrease CO ₂ emissions from fuel burning.	Fuel switch from fossil to biomass excluding the CO ₂ emissions into air. Change of technology of fuel burning	2010	Ministry of the Environment, Environmental Investment Centre, EIC	Austria (2 contracts)	2.9 M AAUs
Establishment of energy efficient street lighting systems (7 cities), Saving energy in district heating networks and boiler house reconstruction (22 projects)	Energy saving in supplying heat to apartment houses		2012	Ministry of Economic Affairs and Communications, Ministry of Environment, Environmental Investment Centre, EIC	Austria	10,9 M AAUs

Source: EIC, http://www.kik.ee/sites/default/files/stories/RIS/aa_u_transactions_2010-12_eng_12.pdf (07.08.2015).

Objectives. In buildings sector the main idea of the policy instrument is to give subsidies to energy efficiency projects. This policy instrument concerns the whole buildings sector at national, regional and local levels including energy supply side (renewable energy based combined heat and power

plants, DH networks) and demand side (multiple apartment houses, office buildings). It is aimed to improve the energy efficiency in both, public and private sectors. At present the instrument is continuously used and new procurements, including also the energy efficiency of public buildings, are opened, see for more at RKAS homepage (Procurements, 2015).

Target groups. The policy instrument concerns the whole buildings sector, public and private, households and industrial buildings.

Rules and influencing mechanisms. The rules for the sale of AAU state that all the money from the trading must be channelled to environmentally friendly projects that lower the emission of CO₂ and other greenhouse gases. Which areas will be financed will be decided by the quota buyers. The Green Investment Scheme is regulated by the Ambient Air Protection Act (Välisõhu ..., 2004).

Implementation network. The Estonian government copied a successful German KfW scheme where finance from different funds was offered to private banks to make loans to home-owner associations. Essential elements were in place. For instance, energy audits were required as part of granting the loans. This started in 2009 but ended in summer 2012 when the scheme ran out of funds. Interest rates are fixed for ten years at less than commercial rates (4.4% maximum with loan average interest at 4%). Grants are 15% to 35% of the cost of the project, scaled to the effort, and 35% grant for comprehensive retrofits, including heat, ventilation and air-conditioning upgrades and triple glazing. (Energy ..., 2013).

1.2.2 Green Investment Scheme in transport sector

General information. The Green Investment Scheme (GIS) has been a financing mechanism for implementing projects aimed at improving energy efficiency. Under the GIS, revenues gained from the trading of Estonia's CO₂ quotas, as provided by Article 17 of the Kyoto Protocol, are channelled into environmentally sound projects and programmes that lower the emission of CO₂ and other greenhouse gases. The GIS is regulated by the Ambient Air Protection Act.

Estonia had excess emissions of about 91.5 million tonnes of CO₂ equivalent, or 18.3 million tonnes of CO₂ equivalent per year. 21 deals have been concluded 2010-2012 in order to sell 72.6 million AAUs (Assigned Amount Units, i.e. CO₂ emission units) for EUR 388 million. The deals have been concluded with the Republic of Austria, the Kingdom of Spain, the Grand Duchy of Luxembourg, and Japanese corporations. (EIC, www.kik.ee). GIS supports projects in the field of housing, wind energy, transport and street lightning.

Type of policy instrument: Economic policy instrument as it provides financial support to projects and programmes. Policy type: subsidy.

Objectives. Energy efficiency is among the objectives of three transport programmes under the GIS (Table 3).

Table 3 GIS programs regarding transport and energy efficiency

Programme	Objectives	Activities	Ministry in charge, Implementing body	Contract partner	Transaction amount
Development of public transport (2010)	To promote public transport and reduce transport CO ₂ emissions.	Buying 120 fuel-efficient buses for county lines (Ida-Viru county, Harju county, Tallinn)	Ministry of Economic Affairs and Communications, Road Administration	Spain	21 M EUR
ELMO – Electro-mobility Programme (2011-2014)	To promote emission-free personal transportation in order to achieve better city environment, energy efficiency and fuel independence.	1. Establishment of nation-wide quick charging network for electric cars 2. Provision of electric cars to social and other state workers; 3. Electric car purchase support scheme for private persons and organisations	Ministry of Economic Affairs and Communications, Foundation KredEx	Mitsubishi Corporation	10 M AAUs
Development of electric public transport in Tallinn		Procurement of energy efficient trams for Tallinn lines no. 3 and 4 (20 trams)	Ministry of Economic Affairs and Communications, Linna-transporti AS	Spain	53.4 MEUR

Source: EIC, http://www.kik.ee/sites/default/files/stories/RIS/aau_transactions_2010-12_eng_12.pdf (07.08.2015).

Target groups. Public transport operators, EV users

Rules and influencing mechanisms. The areas which will be financed, are negotiated and decided by the quota buyers. Products and services are bought via public procurements.

Implementation network. The Ministry of Economic Affairs and Communications co-ordinates the trade in permissible emission allowance. The Ministry of Environment is responsible for the coordination and implementation of CO₂ quota sales agreements. The Government determines an appropriate minister as the user of the revenues for the implementation of each GIS-scheme. The implementing agencies in transport energy efficiency projects are the Road Administration, Foundation KredEx, Tallinna Linnatranspordi AS (public transportation company owned by the Tallinn city).

1.2.3 ELMO – Estonian Electromobility Programme in transport sector

The biggest national level program that has been initiated with the GIS scheme is the national electromobility programme, ELMO.

General information. ELMO (www.elmo.ee) is mainly driven by innovation policy agenda. It is a Green Investment Scheme programme, which started in March 2011 when the Government of the Republic of Estonia concluded a contract with Mitsubishi Corporation, Japan, for the sale of CO₂ quotas in the amount of 10 million AAUs. The programme consists of three parts:

1. Infrastructure – a charging network of electric cars was created to cover the whole Estonia, being the first country in the world constructing it in 2012. The quick charging network with 165 chargers was constructed by ABB. The charging points are in all roads with dense traffic and in all settlements with over 5000 inhabitants, e.g. at petrol stations, cafes, shops, post offices, bank buildings, parking lots and also in ports. The distance between quick charging points is 40–60 km. The location and availability of quick charging points can be seen here: <http://elmo.ee/charging-network-2/>

2. Grant for electric cars – the Ministry of Economic Affairs and Communications developed a support system for natural and legal persons for acquisition of electric cars, with a purpose to decrease the pollution load of transport and increase the use of renewable energy in transport through wider commissioning of electric cars.

The grant period was 2011–2014. According to the regulation and the procedure established by Foundation KredEx, the purchase of an electric car, including the down-payment of leasing and the purchase of one charger per one electric car, including the necessary installation work, was supported. Since November 2012, the purchase of plug-charged hybrid vehicles has also been supported.

In total, KredEx has supported 657 (339 for private persons and 318 for company's) car purchase and 350 home chargers. Most applicants (74%) came from Harju County (incl. Tallinn).

3. Demonstration and awareness raising activities:

- Estonian government purchased a fleet of 507 Mitsubishi iMiEVs **electric cars for the social workers** around Estonia for their public duties.

- **A demo centre** – an interactive exposition introducing the technology of electric cars was opened in June 2013 in Science Centre AHHA located in Tartu.

- **ELMO Rental** – a pilot car sharing program with 24 electric cars in Tallinn and Tartu, launched in July 2013.

In addition, KredEx is running promotional activities and campaigns for electric cars.

Type of policy instrument: Economic (mainly) and informative policy instrument. Policy types: subsidy and provision of information for sustainable transport. ELMO programme is fully financed using funds received from CO₂ emission trading scheme.

Objectives. The goal of the ELMO programme is to speed up the commissioning of electric cars in Estonia, and facilitate the achievement of the goal undertaken by the state to increase the use of re-

newable energy to 10% in transport sector by 2020. The programme promotes emission free personal transportation and electric cars in order to achieve better city environment, energy efficiency and fuel independence. Electric vehicles are considered as one option to bring renewable energy to transport sector.

Target groups. Private persons, companies, social workers, etc.

Rules and influencing mechanisms. The grant amount for the purchase of an electric car and down-payment of leasing is up to 50% of the purchase price of the electric car, but not more than EUR 18 000 for a person who is not a VAT payer. For VAT payers, the grant is 35% of eligible costs, but not more than EUR 18 000 per car. The owner of EV-s purchased with the grant have to cover their electricity consumption with green electricity certificates, the grant comes with a 5 MWh green certificate.

Implementation network.

Distribution of the purchase grant and the administration of the quick charging network is organised by Foundation KredEx.

1.3 Conclusions and Lessons Learned of other Projects about the Performance of the National Policy Packages for Energy Efficiency

1.3.1 Buildings sector

International Energy Agency made the Energy Policy Review on Estonia in 2013¹⁴ (Estonia, 2013). To summarize the detailed report, it is said that Estonia is recognised for its rapid reforms following its independence, with a clear preference for liberal economic policies well engaged with regional and international efforts to advance sustainable energy and efforts to address climate change challenges. Estonia clearly aspires to a more energy-efficient and sustainable economy. Estonia's policy challenges and opportunities extend beyond the 2020 horizon of EU obligations. The government of Estonia aims to use the EU directives as a step on the way to shaping longer-term objectives and has started working on Energy Strategy of Estonia to 2050.

The Energy Policy Report summarises the IEA 25 Energy Efficiency Policy Recommendations and plots Estonia's priorities against the 25 recommendations and should be regarded as a framework for a comprehensive portfolio of policies. To achieve savings in the buildings sector, the IEA recommends the following (Energy..., 2013):

¹⁴ Estonia joined the IEA in 2014. Following its accession to the Organisation for Economic Co-operation and Development (OECD) in 2010, Estonia applied for International Energy Agency (IEA) membership in 2011. This review of Estonia's energy policies is part of the IEA accession process. It analyses the energy policy challenges and opportunities facing Estonia, and provides critiques and recommendations for future policy improvements. It is intended to guide the country towards a more secure and sustainable energy future.
<http://www.iea.org/publications/freepublications/publication/energy-policies-of-iea-countries---estonia-2013-review.html>.

Table 4 Summary of energy efficiency recommendations

Summary of energy efficiency recommendations	Priority	Notes
Mandatory building energy codes and minimum energy performance requirements.	Medium	Regular review, upgrade cycle and pilot activities are important.
Aiming for net zero-energy consumption buildings.	Medium	Promote zero/low-energy buildings
Improving energy efficiency of existing buildings.	High	Rationalise and extend existing schemes for this priority end-use, integrate with DH policies.
Buildings' energy labels and certificates.	Low	Work with EU labelling.
Energy performance of building components and systems.	Medium	Align local manufacturers with EU standards.

By present day we could evaluate that the majority of the points in those recommendations have already taken and they are in work. This means that Estonia has been successful in delivering the energy efficiency. However, Estonia can still more usefully structure and integrate the various functions delivering energy efficiency policies and programmes.

The implementation of government funding programmes for energy efficiency, climate change and DH support appears to be spread over different programmes that seem to be driven by funders' criteria and to overlap without consistent guiding principles. The relationship between the MEAC, and the Ministry of the Environment and operational programmes should be restructured to remove operational overlaps and improve consistency. Estonia should consider creating an energy efficiency unit, which would be able to commission, research, evaluate and implement energy efficiency priorities maximising delivery efficiency, reporting to the Energy Department in the MEAC. The latter should lead co-ordination of energy efficiency policies across government to merit required focus and operational clarity (Energy ..., 2013).

Finally the IEA Energy Policy Report on Estonia makes a number of recommendations in energy efficiency for buildings sector (Energy..., 2013):

- Focus on energy efficiency policies and programme activities that meet both Estonia's cost-effective priorities and the requirements of the EU directives.
- For new buildings, strengthen building codes with staged improvements in stringency and adopt a more ambitious pathway to zero- and low-energy buildings. Complement this with capacity-building measures.
- For the existing building stock, develop an integrated programme of fiscal and funding measures that enable priorities in the building stock to be improved over a defined time period. Increase the ratio of private-sector funding.
- Integrate building measures with policies on DH to ensure that end-use efficiency improvements in buildings are taken up and that consumers exposed to unsustainable DH systems have priority for insulation and high-efficiency local heating, such as a heat pump.

1.3.2 Transport sector

Energy Efficiency Watch (www.energy-efficiency-watch.org): 2013:

The Estonian NEEAP is very well elaborated and balanced. Estonia sees the buildings sector as priority for energy efficiency (EE) which is underlined by many good measures in that sector. In the transport sector, most measures are only planned. Currently, the activities mainly focus on improving the EE of vehicles by acquiring new public transportation rolling stock and by implementing an E-mobility programme. All types of measures have been addressed (planning instruments, regulatory instruments, economic incentives, information and advice, R&D) and different actors have been considered, but most measures are not implemented nor described in detail.

To further strengthen its framework in transport sector, Estonia should improve R&D support and there is a need to actually implement planned measures.

ODYSSEE – MURE 2010, Energy Efficiency Policies and Measures in Estonia in 2012:

The largest share of final energy is still consumed by households but the share has the downward trend. The second largest part of final consumption goes for transport and its share is growing.

In road transport, the consumption of diesel fuel has been increasing almost constantly, the trend towards increasing share of diesel fuel consumption is clearly pronounced since 1995.

There have been only slight changes in the structure of energy consumption by type of transport during 1995–2010: the shares of road transport and to some extent also of air transport have increased, the share of rail transport is declining. In road transport, consumption of both fuels – petrol and diesel – has been increasing. In Estonia, the proper analysis of energy efficiency in transport cannot be carried out as there is a lack of relevant reliable data. Based on general available data, it can be concluded that the energy efficiency index ODEX for transport in Estonia has increased by 17.3% (from 2000 to 2010) meaning that the energy intensity has increased. The difference of energy intensity of transport in Estonia and the EU is very essential: in Estonia 0.087 kg oe/EUR2000 and the EU average 0.032 kg oe/EUR2000 in 2010 (Energy..., 2012).

OECD/IEA, Energy Policies Beyond IEA Countries, 2013:

Estonia's National Energy Efficiency Action Plan (NEEAP) excludes energy used for transport from the country's final energy consumption.

Estonia has significant potential to reduce energy consumption in the buildings, district heating (DH) and transport sectors.

Transport fuels are imported from global markets and Estonia has effective storage and a number of sea- and land-based routes for supply.

Transport is the main source of CO₂ emissions in the non-ETS sector. Its emissions increased by 37% from 2000 to 2010, when they accounted for 12% of all energy-related CO₂ emissions in the country. Without ambitious measures, emissions are set to rise further, as the country grows wealthier. The private car ownership rate is one-fifth lower than in the wealthier EU15 countries (407 cars per 1 000 inhabitants in Estonia versus 503 in EU15 in 2009) and has plenty of room to expand. Freight transport, in turn, typically increases in tandem with gross domestic product (GDP). The 2010 National Renewable Energy Action Plan projects energy use in the sector to increase by 13% from the average of 2005-08 to 2020.

To achieve significant energy savings in the transport sector, the IEA recommends five key policy areas for Estonia (see **Fehler! Verweisquelle konnte nicht gefunden werden.**5).

Table 5 IEA energy efficiency recommendations for Estonia in transport sector

Summary of energy efficiency recommendations	Priority	Notes
Mandatory vehicle fuel efficiency standards.	Low	Reasonable for a small technology-taking country to rely on EU processes.
Measures to improve vehicle fuel efficiency.	Low	
Fuel-efficient non-engine components.	Low	
Improving operational efficiency through eco-driving and other measures.	Med	Cost-effective energy and safety from eco-driving.
Improving transport system efficiency.	Med	Pursue transport energy efficiency plans.

The government of Estonia should:

- Review the proposed energy efficiency policy options in the transport sector and develop a strategy of prioritised measures to improve mobility in passenger and freight transport in order to minimise transport fuel demand.
- Apply EU policies to advance the efficiency of the vehicle fleet, meeting the unique mobility needs and characteristics of Estonia's vehicle fleet.
- Develop effective policies to improve mobility in cities and towns.
- Ensure that priorities are economic and that realistic funding is identified.
- Develop a strategy to ensure that freight transport effectively supports the economy and improves efficiency with efficient vehicles, modes and logistics management systems.

2. INTERACTION BETWEEN THE NATIONAL AND THE SUB-NATIONAL LEVELS

In terms of targeted strategies and actions, it is the state level that is most active in the field of energy efficiency. Besides ministerial institutions, also state governed foundations like Estonian Development Fund, KredEX and Enterprise Estonia have a role in promoting energy efficiency activities and supporting start-ups in Estonia. Estonian Development Fund (state governed foundation that partly took over the tasks of Estonian Climate Energy Agency 2009-2011) acted as a co-ordinator of the National Energy Development Plan 2030+ (ENMAK), which was an active participatory process, and involved teams of experts and background studies in the field of housing, transport, biofuels and electricity production and offered an interactive collaboration platform www.energiatalgud.ee.

Six Estonian municipalities have signed the Covenant of Mayors (Tallinn, Rakvere, Tartu, Jõgeva, Võru, Rõuge) with a total population of ca 550 000 inhabitants. Two cities have submitted Sustainable Energy Action Plans to the Covenant of Mayors: Rakvere and Tallinn (4.3% of Estonian cities and towns). The SEAP of Rakvere has been accepted by the Covenant of Mayors. SEAP of Tallinn is pending with clarifications requested, as of 24 July 2015. Also Tartu city, Jõgeva city and Võru city have published energy saving action plan (under IEE funded MESHARTILITY project).

There are two local/regional level Energy agencies, one in Tallinn municipality – Tallinn Energy Agency, another in Tartu, Tartu Regional Energy Agency, both working with buildings' energy efficiency issues and proceed with training and wider scope information dissemination in improving energy efficiency at local level. The energetic refurbishment has gained high popularity in almost at all local governments. These agencies have an active role in capacity building, networking and dissemination activities. Still, Estonia is lacking the national Energy Agency at present.

REFERENCES

Directive 2009/28/EC on the Promotion of Electricity Produced from Renewable Energy Sources. Available online: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0028&from=EN> (03.08.2015).

Eesti 2020 tegevuskava 2015-2020. (2015). [Estonia 2020 Action Plan]. Approved by the government 14.05.2015. Available online: https://riigikantselei.ee/sites/default/files/riigikantselei/strateegiaburoo/eesti2020/eesti2020_tegevuskava_14.05.2015.pdf (03.08.2015).

Eesti taastuvenergia tegevuskava aastani 2020, MKM. [The National Renewable Energy Action Plan until year 2020]. Available online: https://www.mkm.ee/sites/default/files/taastuvenergia_tegevuskava.pdf (04.08.2015).

Egger C. et al., (2012). SURVEY REPORT Progress in energy efficiency policies in the EU Member States - the experts perspective. Findings from the Energy Efficiency Watch Project 2012. Available online: http://www.energy-efficiency-watch.org/fileadmin/eew_documents/EEW2/EEW_Survey_Report.pdf (3.08.2015).

EIC. Available online: http://www.kik.ee/sites/default/files/stories/RIS/aau_transactions_2010-12_eng_12.pdf (07.08.2015).

Energy efficiency and district heating. (2013). IEA, Energy Policies Beyond IEA Countries, ISSN 2307-0897, pp. 44-55. Available online: https://www.iea.org/publications/freepublications/publication/Estonia2013_free.pdf (05.08.2015).

Energy Efficiency Watch. (2013). Energy Efficiency in Europe Assessment of Energy Efficiency Action Plans and Policies in EU Member States. Available online: http://www.energy-efficiency-watch.org/fileadmin/eew_documents/Documents/EEW2/Estonia.pdf (23.07.2015).

Energiamaajanduse arengukava aastani 2030 keskkonnamõju strateegiline hindamine. (2015). [Strategic Environmental Impact Assessment Report]. I. Möldre. Estonian Development Fund. 75p. Available online: https://www.mkm.ee/sites/default/files/141023_enmak_2030_ksh_aruanne_avalikustamisele.pdf, (08.09.2015).

Energiatalgud. (2015). [Energy brainstorming. Web-based online workshop to develop energy development plan]. Available online: (http://www.energiatalgud.ee/index.php?title=ENMAK:Ajakava_ja_tegevused#Elamumajandus_.2F) (08.09.2015).

ENMAK 2030+ (2015). National Development Plan for Energy Sector till 2030, with the vision till 2050 (final draft) Ministry of Economic Affairs and Communications, Available online: http://www.energiatalgud.ee/img_auth.php/5/5b/ENMAK_2030_Eeln%C3%B5u_13.02.2015.pdf (30.07.2015).

Estonia 2013. Energy Policy Review. (2013). IEA, Energy Policies Beyond IEA Countries, ISSN 2307-0897. Available online: https://www.iea.org/publications/freepublications/publication/Estonia2013_free.pdf. (10.08.2015).

Estonian National Housing Development Plan for 2008 – 2013. (2008). MEAC. Available online: <http://www.been-online.net/The-Estonian-National-Housing-Development-Plan-for-2008-2013.485.0.html?&L=1>, (14.07.2015).

Estonian Republic. Ministry of the Environment, Estonian Environmental Research Centre. (2009). Estonia's fifth National Communication under the UN Framework Convention on Climate Change. Available online: http://unfccc.int/resource/docs/natc/est_nc5.pdf, (10.09.2015).

Estonian Republic. Ministry of the Environment, Estonian Environmental Research Centre. (2013). Estonia's sixth National Communication under the UN Framework Convention on Climate Change. Available online: https://unfccc.int/files/national_reports/non-annex_i_natcom/application/pdf/est_nc6.pdf, (10.09.2015).

Housing sector development plans, ENMAK 2030+. (2015). Available online: http://www.energiatalgud.ee/img_auth.php/2/25/ENMAK_2030_Eeln%C3%B5u_23.10.2014.pdf, (03.08.2015).

MEAC, 2015. Development Plans. Available online: <https://www.mkm.ee/en/objectives-activities/development-plans>, (3.08.2015).

National Energy Efficiency Action Plan, 05.05.2014, The Government of Estonia, Estonia's Communication to the EU under Article 24(2) of Directive 2012/27/EU, 2014. Available online: https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_estonia.pdf, (03.08.2015).

National Reform Programme "Estonia 2020" (2015). National Reform Programme "Estonia 2020". Approved by Government on 14th of May 2015. Available online: https://riigikantselei.ee/sites/default/files/riigikantselei/strateegiaburoo/eesti2020/eesti2020_tegevuskava_14.05.2015.pdf

National Renewable Energy Action Plan, NREAP. (2010). Estonian MEAC and Ministry of the Environment. IEA, Available online: <http://www.iea.org/policiesandmeasures/pams/estonia/name-36461-en.php> (07.08.2015).

NEEAP. (2014). National Energy Efficiency Action Plan. Ministry of Economic Affairs and Communications (2014). Estonia's Communication to the European Commission under Article 24(2) of Directive 2012/27/EU. Available online: https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_estonia.pdf (23.07.2015).

ODYSSEE – MURE. (2012). Energy Efficiency Policies and Measures in Estonia. Monitoring of EU and national energy efficiency targets. Tallinn University of Technology. Tallinn, September 2012. Available online: <http://www.odyssee-mure.eu/publications/national-reports/energy-efficiency-estonia.pdf>, (24.07.2015).

OECD/IEA. (2013). Energy Policies Beyond IEA Countries. Available online: http://www.iea.org/publications/freepublications/publication/Estonia2013_free.pdf (24.07.2015).

Procurements. (2015). RKAS web-page. Available online: <http://www.rkas.ee/co2-en/procurements>, (10.08.2015).

Riigi kinnisvarategevuse strateegia. (2007). [National Real Estate Strategy]. Available online: <http://riigivara.fin.ee/lr1/web/guest/strateegia>, (03.08.2015).

Transpordi arengukava 2014-2020. (2014). Majandus- ja kommunikatsiooniministeerium, 2014. [Transport Development Plan 2014–2020], Available online: <https://www.riigiteataja.ee/akt/12312201/4001/arengukava.pdf#>, (23.07.2015).

Välisõhu kaitse seadus. (2004). Riigi Teataja, RT I 2004, 43, 298 [Ambient Air Protection Act], Available online: <https://www.riigiteataja.ee/akt/123122013072>, (10.02.2015).

Wuppertal Institute. (2012). How to design and implement energy efficiency policies. Available online:

http://www.bigee.net/media/filer_public/2013/11/28/bigee_txt_0007_pg_how_to_design_and_implementation_policies.pdf, (01.07.2015).

Wuppertal Institute and Ecofys. (2009). Energy Efficiency Watch. Evaluation of National Energy Efficiency Action Plans. Final Report. Wuppertal, Cologne, 2009. Available online: http://www.energy-efficiency-watch.org/fileadmin/eew_documents/Documents/Results/EEW_-_Final_Report_July_2009.pdf, (01.07.2015).