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INTERLINKAGE AND SYNERGIES BETWEEN SELECTED OTHER POLICY AREAS AND ENERGY EFFICIENCY

D.1.3

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

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"Forward-looking socio-economic research on Energy Efficiency in EU countries"

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HERON: Forward – looking socio-economic research on Energy Efficiency in EU countries

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ACRONYMS

ENMAK	-Estonian energy management development plan 2030+ [Eesti energiamajanduse arengukava aastani 2030+]
EU	- European Union
IBS	- Institute of Baltic Studies
MEAC	-Ministry of Economic Affairs and Communications

EXECUTIVE SUMMARY

The policy instrument with direct link to energy in buildings sector analysed hereof is the promotion and production of green energy. In Estonia, the power consumption in buildings sector makes up to about 42.7 % from the overall energy balance. Thus the production of energy is highly depending on the household sector and the other way around. The policy instrument with an indirect link to energy is the fuel and electricity excise tax, being one of the major mechanisms which indirectly influence the energy efficiency in housing sector. It affects all the energy producers and network operators, but also the homeowners who heat their houses with liquid fuel, and who are now, due to the tighter regulations, being influenced to change their heating systems towards more sustainable options in a way. The respective policy instrument interlinking both the direct and indirect policy instruments as described above in respect of the effects these have on the energy efficiency of Estonian housing market, is the National Energy Management Development Plan 2030+. In this document both, the topic of green energy production (direct policy instrument), as well as fuel and electricity excise tax (indirect policy instrument) have been combined and described in one comprehensive document, together with the strategies related to Estonian housing market (visions for Estonian housing stock up to 2050). Yet, the mentioned development plan is in the draft form and still, to be made official in the near future.

For the transport sector two case studies are represented. Developing E-Estonia and related e-services is a governmental policy instrument that has a direct link to energy efficiency, expected to reduce unnecessary trips and related energy consumption. Impact assessment of the Estonian e-government services in 2013 concluded that Estonia has managed to save remarkable amounts of time and money by developing and updating e-services, but obtaining accurate data for calculating the cost-effectiveness of e-government investments is very difficult. As to the indirect link to energy efficiency in transport sector a case on traffic safety hazard mapping tool for schools is presented. The aim of the tool is to analyse and map traffic safety hazards on students' home to school trips, to map travel modes and provide Road Administration and local authorities with highlighted traffic spots and traffic safety information generated by students, and improve overall traffic safety of primary school students. The mapping could be linked to energy efficiency targets and be integrated with science and physical education classes, the mapping tool could calculate energy saving potential of a class, a school or personal trips. The module could be also more closely linked to encouraging preparation of school travel plan (currently voluntary for schools). Both national and local governments, schools and families would benefit from full energy efficiency considerations. National Transport Development Plan 2014-2020 sets goals both for substituting unnecessary travel with e-services, for traffic safety and transports energy efficiency however it does not interlink all these goals and respective measures.

CHAPTER 1: ACHIEVING ENERGY EFFICIENCY THROUGH INTEGRATION IN OTHER POLICY AREAS

In current debates the multiple benefits of energy efficiency are broadly discussed and available analyses are growing in number (e.g. IEA 2014 report on multiple benefits). However, in some cases energy savings can rather be seen as the co-benefit of other policies or measures, which do not target energy efficiency by design.

The aim of this task is to identify policy areas suitable for combination with energy efficiency policies and systematically analyse how they may contribute to improve energy efficiency, particularly if untapped energy saving potentials still exist.

1.1 POLICY INSTRUMENTS WITH A DIRECT LINK TO ENERGY

1.1.1 CASE STUDY FOR THE BUILDINGS SECTOR: Promotion and production of green energy

Focus: More widespread introduction of renewable energy sources.
Target group: Electricity/ energy production companies or inhabitants of Estonia in general.
Objective: Reduce greenhouse gas emissions by increasing the share of renewable energy sources in the whole of energy consumption.

Relation to Energy Efficiency

It is stated in the Estonian Renewable Energy Action Plan up to 2020[1], that renewable energy must also be promoted through the introduction of local generating installations using renewable energy in buildings. Therefore, the direct supply of heat or cooling through district heating and cooling in buildings should also be considered in accordance with the Directive 2009/28/EC[2] (Eesti..., 2015).

Concerning the increase of the share of energy from renewable sources and requirements for the use of renewable energy in the buildings sector in Estonia, no national and regional legislation in Estonia have been established. However, it has been discussed to add requirements to the Building Act and legislation issued on the basis of thereof (MEAC, 2010).

No statistical data about the share of renewable energy in the buildings sector is available. Local authorities in Estonia have the right to establish additional techniques for increasing renewable energy in new buildings. This can be seen as part of fulfilling the EU obligation (Directive 2009/28/EC)

[1] Eesti taastuvenergia tegevuskava aastani 2020 [Estonian Renewable Energy Action Plan up to 2020], Ministry of Economic Affairs and Communications. Available online: https://www.mkm.ee/sites/default/files/taastuvenergia_tegevuskava.pdf, (05.07.2015)
[2] European Parliament & European Council, (2009). Directive 2009/28/EC. Available online: http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32009L0028, (05.07.2015)

for all the new buildings to be zero-energy. The possibilities to share renewable energy in buildings is also studied by the construction of sample buildings, and training events organised for specialists working in the buildings sector (MEAC, 2010).

Additional measures concerning the use of renewable energy in buildings are definitely required. Further rules and legislations should come to establish the minimum level of energy use from renewable energy sources in the case of existing buildings particularly that undergo large-scale renovation (MEAC, 2010).

In 2014, 14.8 % out of all the energy consumption consisted of renewable energy. This is 2.2 % more than compared to 2013. In total, the overall amount of renewable energy produced in 2014 was 1.36 TWh and the production increased 18 %. Production of electricity increased the most out of biomass, biogas and waste (26 %), followed by increase in using wind energy (9 %) and hydro energy (3 %) (Elektrisüsteemi..., 2015).

Estonia in general is doing relatively well with renewable energy production. In 2011, Estonia was the first EU Member State to reach its 2020 target, and as according to Eurostat statistics, being the 7th best among the EU countries in terms of share of energy from renewable sources as shown on Figure 1.

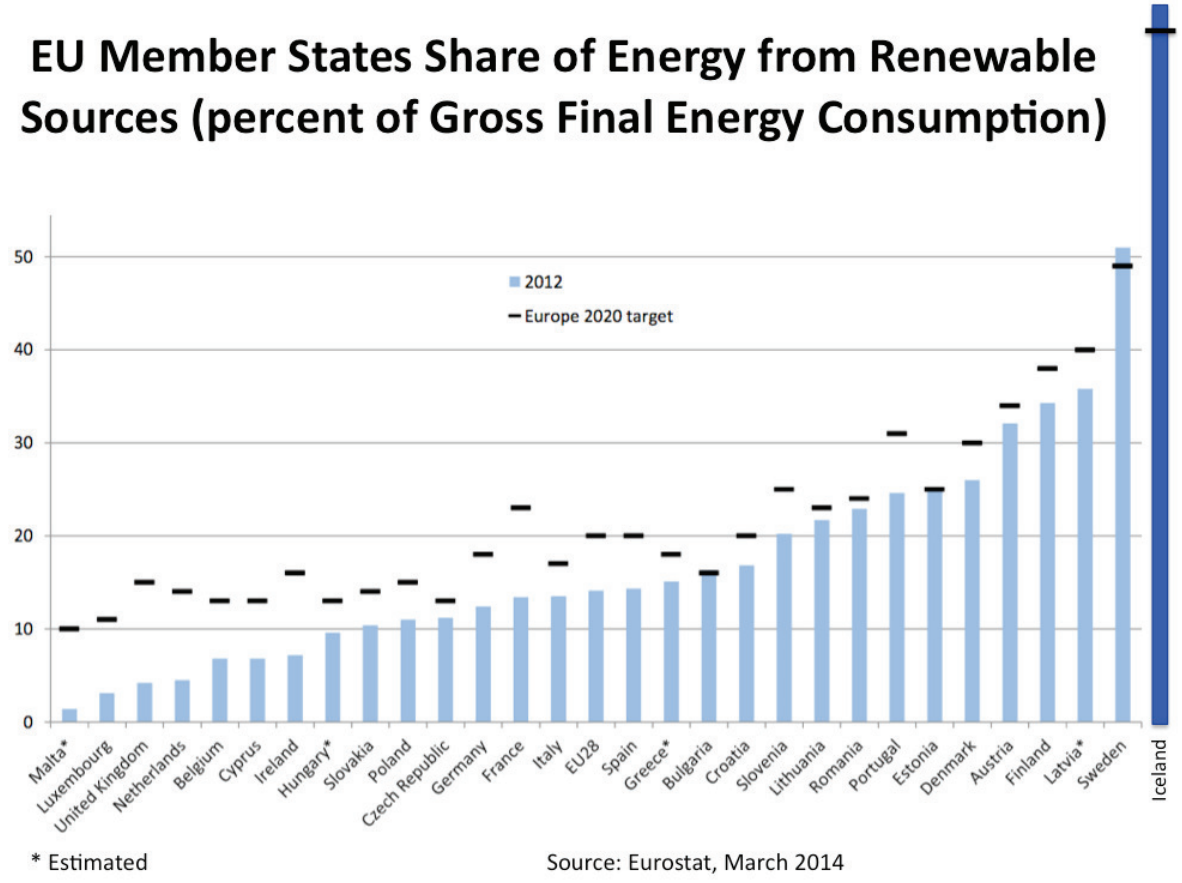

Figure 1 EU Member States Share of Energy from Renewable Sources (percent of Gross Final Energy Consumption)

Interaction between objectives

Buildings and production of energy are highly interlinked sectors simply because a significant part of the energy balance is demanded by the buildings. Therefore, buildings sector is one of the important areas to work on when working towards energy efficiency – energy consumption in buildings make up to 40% of the overall EU energy consumption. In Estonia, the power consumption in buildings sector makes up to about 42.7 % from the overall energy balance (ENMAK 2030+, 2015). Achieving energy efficiency in buildings (renovating, insulation) and using renewable resources in the buildings both for heating and cooling are therefore an important factors to succeed in the same goal.

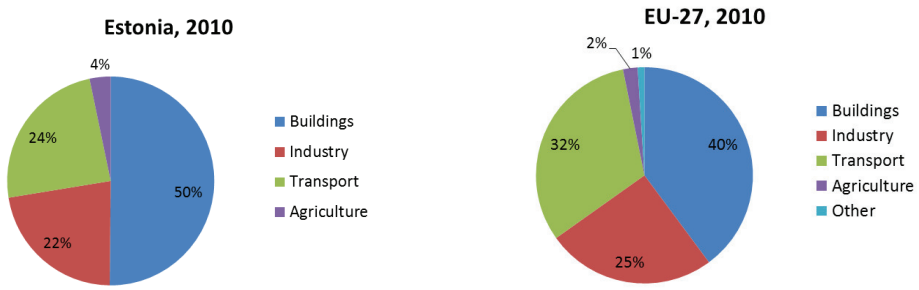

Figure 2: Energy use in buildings in Estonia

Source: European Commission, 2010

Up to 2013 Estonia was following the Estonian Housing Development Plan 2008-2013. In this document, reducing the dependence on non-renewable resources in housing sector has been discussed; however nothing is mentioned in terms of using renewable resources for heating and cooling (Eesti..., 2008). Today, Estonian Housing Development Plan 2008-2013 together with a list of other strategies, have all been replaced by the National Energy Development Plan 2030+[3], which is currently yet in the draft form. The new document combines all the energy efficiency related objectives in line with the EU Directives, directly linking renewable energy production as part of achieving energy efficiency in the buildings sector. The use of renewable resources must be increased 20 % by 2020 and 27 % by 2030 (ENMAK 2030+, 2015).

Interaction between target groups

The target groups in terms of energy efficiency in buildings sector, are either the house/flat owners or tenants and apartment associations (inhabitants in general), as well as the government (both local and national) of Estonia whose interest is to fulfil EU targets related to energy efficiency.

The target group for renewable energy production are primarily the energy service companies, but similarly with the buildings sector target group consists also the house owners themselves who wish to install solar panels on their roofs for instance, as well as again the government (both local and national) of Estonia whose interest is to fulfil EU targets related to energy efficiency and

[3] ENMAK 2030+, Eesti Energiamajanduse arengukava aastani 2030+, [National Energy Management Development Plan 2030+]. (2015). Ministry of Economic Affairs and Communications. Available online: http://www.energiatalgud.ee/img_auth.php/2/25/ENMAK_2030._Eeln%C3%B5u_23.10.2014.pdf, (05.07.2014).

sustainability. During the past few years, the number of private renewable energy micro-producers has increased, in 2014 more than ever before - 186 new micro-producers joined, that especially in terms of solar power (Taastuvenergia..., 2015). The largest share of renewable energy is in the heating sector – 43 %. In the electricity sector the share of renewable energy is about 13.2 % and in the transport sector about 0.2 %. In the heating sector the switch to renewable resources is rising every year, that because the wood is much cheaper than natural gas and heating oil. Yet, as about 83% of Estonian electricity is produced out of oil shale, the electricity production in Estonia is still very energy consuming with a large environmental impact (Taastuvenergia..., 2015).

In general the common target group does exist in the described two instruments, both on a political (public) and private level. The property owners can save costs both by renovating or making their homes more energy efficient as well as by using renewable resources. This works in symbolism with the government bodies whose direct interest is to achieve energy efficiency in the entire country. Therefore several governmental funding schemes have been implemented such as by Foundation KredEx for apartment associations to help them to renovate homes or the support given for renewable energy production under the Electricity Market Act §59[4], recently being renewed in 01.09.2015 (Elering, 2015).

Interaction between Rules-Influencing Mechanisms

The energy performance of the buildings and production of renewable energy are topics recently both being combined within the new National Energy Management Development Plan 2030+. This is an overall national strategy which sets the targets in line with the EU Directive to achieve energy efficiency 20 % by 2020 (2009/28/EC). This is an overall law which interacts with the two policy instruments – 1. KredEx Foundation[5] established for the benefit of achieving energy efficiency in the housing market (KRedEx provided support for renovation of the detached private houses for the purchase and installation of the equipment for local renewable micro-energy supply and replacement of heating systems with heat-pumps and biomass boilers); 2. National Renewable Energy Action Plan 2020[6]. Both of them have helped to implement the Estonian Housing Development Plan 2008-2013 and achieve energy efficiency in general as requested by EU Directive 2009/28/EC. The strategies set in latter being now part of and renewed in the new National Energy Management Development Plan 2030+.

Interaction between the Implementation Network / governance structures

In Estonia, the main national body responsible for topics regarding renewable energy and energy efficiency in buildings sector, is the Ministry of Economic Affairs and Communication (MEAC). Much of the energy efficiency in the Estonian houses is achieved thanks to the renovation fund KredEx which was established by MEAC. In addition, renewable energy production is also directly funded by MEAC through different energy companies such as Elering. In addition, the Ministry of Agriculture has also initiated and led the development of "Development Plan for the Promotion of the Use of Biomass and Bio Energy for 2007-2013" (MEAC, 2015). However, subsidies to the generation of

[4] Electricity Market Act (2003) [Elektrituruseadus]. RT I, 30.06.2015, 43. Available online: https://www.riigiteataja.ee/en/compare_original/503072015001, (25.09.2015).
[5] KredEx Foundation, Available online: http://www.kredex.ee/en/, (20.06.2015).
[6] Eesti taastuvenergia tegevuskava aastani 2020 [Estonian Renewable Energy Action Plan up to 2020], Ministry of Economic Affairs and Communications. Available online: https://www.mkm.ee/sites/default/files/taastuvenergia_tegevuskava.pdf, (05.07.2015).

energy from all kind of renewable sources of energy are to be provided under the Electricity Market Act issued by the Parliament of Estonia (Electricity Market Act, 2003). Therefore, in general the network in Estonia in terms of implementation and financial administration is not too overlapping on the national level.

1.1.2 CASE STUDY FOR THE TRANSPORT SECTOR: E-Estonia

E-Estonia is a governmental program for developing electronic governance and public services with an objective to provide such services fast and with the smallest possible administrative burden (E-Governance, 2015). The e-Estonia digital society is made possible largely due to its infrastructure. Instead of developing a single, all-encompassing central system, Estonia created an open, decentralized system that links together various services and databases. The flexibility provided by this open set-up has allowed new components of the digital society to be developed and added through the years. E-Estonia means services available in Internet, such as:

- DigiDoc: Digital signing of documents (launched in 2002);
- I-voting (launched 2005);
- E-Tax: Submitting tax reports (VAT, income or social tax) (launched 2000);
- E-business register: for establishing a company, NGO;
- State e-services portal and social welfare e-services;
- E-Cabinet (Information System of Government Sessions), e-Health (Electronic Health Record), e-Prescription, e-School, e-Police, e-Law, etc.;
- E-residency: e-Residency — a transnational digital identity available to anyone in the world interested in administering a location-independent business online (launched 2014);
- MobileID, M-parking, MobilePayment.

The energy savings are linked to transport system efficiency and derived from fewer travels to visit various government agencies, banks or polling places.

Relation to Energy Efficiency

The main goal of E-governance is to reduce administrative burden and improve accessibility to services. National Transport Strategy (MEAC, 2014) lists developing E-governance/Digital society as one of the policy measures to improve transport system efficiency and reduce the need for travel (for errands related to national and local governmental offices, banks, health services, tickets etc. E-governance facilitates services related to public transport and other mobility services (e-ticketing, M-parking, car sharing).

Transport energy efficiency has been indirectly considered by the policy – **Digital Agenda 2020 for Estonia** (MEAC, 2013) states that the development of e-services reduces their environmental impact, incl. transport demand. Impact assessment of the Estonian e-government services in 2013 concluded that Estonia has managed to save remarkable amounts of time and money by developing and updating e-services, but obtaining accurate data for calculating the cost-effectiveness of e-government investments is very difficult (Kalvet et al., 2013).

Interaction between objectives

E-governance, transport and substituting the demand for physical travel with digital access and e-services is mainly discussed in the following three governmental strategic documents:

1) **The Transport Development Plan 2014-2020** (MEAC, 2014), measure 1.1, under the sub-goal 1 "Convenient and smart commuting environment" addresses reducing the demand for unnecessary trips and substituting trips partly with e-services and digital access. The underlying principle of the measure is that upon shaping the public sector's services, solutions are preferred that enable their electronic use and reduce the need to physically visit an official institution or other physical service point (ticket office, information office).
2) **Green Paper on the Organisation of Public Services** (MEAC, 2013) discusses in more detail better arrangement of public services, inter alia to reduce obligatory commutes. Energy efficiency is not directly addressed in the Green Paper.
3) **Digital Agenda for Estonia 2020** (MEAC, 2013) states ***"****Smart manufacturing solutions, houses and transport have led to a more sustainable use of resources, which constitutes a saving both for businesses and individuals. This has reduced resource intensity - in Estonia, more is done with fewer resources"***.**

No quantitative energy efficiency related targets are described in the above mentioned documents.

Interaction between target groups

Target groups of all these policies are citizens, Estonian residents, public authorities, businesses and other institutions in the broadest sense.

Interaction between the Implementation Network / governance structures

Impact assessment of the Estonian e-government services in 2013concluded that Estonia has managed to save remarkable amounts of time and money by developing and updating e-services, but obtaining accurate data for calculating the cost-effectiveness of e-government investments is very difficult (Kalvet et al., 2013). The Institute of Baltic Studies (IBS) developed method for assessment of the impact of e-services. 15 e-services with a different level of maturity were selected for the study. The development of these services has been co-funded from the structural funds of the European Union (Operational Programme for the Development of Economic Environment).

Full utilisation of information technology often requires major changes in the organisation of work of government agencies and/or communication between them. This concerns the organisation of work in the agency that provides the service as well as the interaction between various information systems (of different agencies). The X-road and ID card are extremely important as infrastructure, because they have created the basis on which the remaining services have been developed, and they have often been the unavoidable prerequisite of various e-services (Kalvet et al. 2013).

The analysis of Kalvet et al (2013) also concluded that a more thorough analysis must be carried out before the initiation of new e-government projects and measurable goals should be established for each development project. In future e-government projects, analysis of the total cost of ownership of an e-service should become one of the main selection criteria in making financing decisions. The expected impact and specific target levels that describe the future e-service, and the way of information collection for the cost-effectiveness should be determined in the preparatory stages of major new projects. While doing so, development of e-services that enable for greater cost effectiveness should be given priority.

1.2 POLICY INSTRUMENTS WITH AN INDIRECT LINK TO ENERGY

1.2.1 CASE STUDY FOR THE BUILDINGS SECTOR: Fuel and Electricity Excise Taxes

Focus: fuel and electricity in entire energy sector

Target group: All sectors related to fuel and electricity consumption

Objective: Discourage the use of non-renewable energy sources; promote the production of energy from renewable resources.

Relation to Energy Efficiency

Fuel and electricity excise duty is a law directly related to energy, yet it can be considered as an indirect tool when analysing the energy efficiency of housing sector. The law on excise duty for alcohol, tobacco, fuel and electricity (originally in force since 2003), was renewed very recently on July 1st 2015 (Alkoholi..., 2003[7]). The new law is increasing the rates of excise duty on natural gas; looses tax benefits of liquid fossil fuels; exempts electricity producers, who are connected to the grid and produce below 100 kilowatts, from tax burden; as well as releases biogas from excise duty (Alkoholi..., 2003).

In Estonia the housing development strategies are currently in the process of being combined with the overall National Energy Development Plan (ENMAK 2030+). Before that a separate Housing Development Plan existed up to 2013, called as Estonian Housing Development Plan 2008-2013. In the latter document, there was not even a word mentioned about excise taxes. Yet, the new National Energy Development Plan 2030+, currently under review, combines all the energy related activities, questions and sectors in one comprehensive document. However, fuel and electricity excise taxes in the mentioned document have only been discussed under sectors related to transportation, yet still quite in a limited manner.

However, fuel and electricity excise taxes are one of the major mechanisms which indirectly influence the energy efficiency in housing sector. It affects all the energy producers and network operators, but also the homeowners who heat their houses with liquid fuel. The new law on excise duty was implemented in 2015 (Alkoholi..., 2003). The overall aim of this is to limit the use of non-renewable resources and promote the use of renewables. However, as change is not to happen overnight, the new rules caused a lot of resentment explicitly for heating oil dependent house owners, as it doubled the prices existed so far. According to the Estonian Construction Register, there are about 3200 residential buildings which are depending on liquid oil heating (about 2800 detached houses), including some extra public buildings such as community houses, cultural centres etc. Thus the heating oil dependent house owners are in many cases considering to replace their heating

[7] Alkoholi-, tubaka-, kütuse- ja elektriaktsiisi seadus. (2003). [Alcohol, Tobacco, Fuel and Electricity Excise Duty Act] Riigi Teataja I 2003, 2, 17, accessible at: https://www.riigiteataja.ee/en/eli/ee/518062015016/consolide/current, (23.07.2015).

systems, which is however not the easiest and cheapest task to do, even though it is possible to apply for the KredEx renovation grant, because it still requires home owners to self-finance some part of it. Though, once the investment is has been done, it is thought that not only the environment, but also public could benefit from using more sustainable energy resources what the law indirectly would hopefully trigger them to do. In the other words, it would encourage sustainable energy micro-production at homes, the more so as tax is not required for those producing below 100 kilowatts (Eesti..., 2015).

Whilst the excise taxes are in many cases seen as unpleasant expenses, it is believed that environmental benefits will be seen in the future. Support for the enterprises in the energy sector in order to promote renewable energy, is given to the electricity producers under the excise act of alcohol-, fuel- and electricity (Alkoholi..., 2003); and for the district heating support is given by EU structural funds and other sources through Estonian Environment Investment Centre (Taastuvenergia..., 2015). The more so, as with the implementation of the new excise law, production of biofuels was freed from taxes, in order to support local energy production and enhance energy independence from Russian gas (Eesti..., 2015).

Interaction between objectives

The energy efficiency policy instrument under discussion hereof is the National Energy Development Plan (ENMAK 2030+) and the selected policy instrument indirectly influencing the energy efficiency in the housing sector are the excise taxes set for fuel and electricity particularly. The common objective in both of the instruments is to promote the use of renewable energy resources, limit the emissions and reduce energy consumption in general. Another common objective is to achieve the EU 20/20 target set in EU Directive 2009/28/*EC*.

As the implementation of the new and stricter Excise Duty is still very fresh, as well as the new energy development plan is yet not official, it is hard to draw out the impacts what the implementation of these instruments have already achieved. However, according to KredEx, the renovation of apartment buildings, both in terms of insulation and heating system, has an increasing popularity. The volume of housing loans with KredEx guarantee increased by 29 % from the beginning of 2015 (KredEx, 2015). In the near future, even higher increase has been estimated.

Interaction between target groups

The common target group consists of the house owners, particularly the ones depending on natural gas or light fuel oil. Another common target group could also be the architects, engineers and builders who from now on must focus on building more energy efficient homes, and soon zero-energy homes as obliged by Directive 2010/31/EU.

Interaction between Rules-Influencing Mechanisms

Environmental taxes should induce producers and consumers to make environmentally friendly decisions. In Estonia energy efficiency should be mainly improved in transport- and housing sector. One of the interacting measures to achieve this is by raising the excise taxes. However, it has been indicated, that the household sector is already the biggest environmental tax payer, fuel tax being the largest share in it, and this is often considered unfair when compared to industries or other sectors for instance. If to look at transportation fuels consumption and the distribution of excise duties, the sectors with the greatest influence on the environment, do not always bear the greatest

tax burden in Estonia (Keskkonnamaksud..., 2015). However, the collected environmental taxes in turn, are used to cover the environmentally beneficial projects (including related to buildings energy efficiency) such as via Estonian Environmental Investment Centre (KIK- Keskkonnainvesteeringute Keskus).

Interaction between the Implementation Network / governance structures

As the implementation of the new and stricter Excise Duty is still very fresh, as well as the new energy development plan is yet not official, it is hard to evaluate what has been the implementation capacity of the government to achieve the objectives targeted with both of the instruments. Yet one of the most influential tools in Estonia working towards improving the energy efficiency in houses is the funding and consultancy offered by Foundation KredEx. Below is the table providing information about the number of houses which have received KredEx funding and the savings (both in EUR and kWh) after the implementation of activities by KredEx.

Table 1 Energy savings in Estonian houses in 2013 after the implementation of KredEx renovation fund

City/County	Number of houses	2013 savings in kWh	Savings in EUR
Tallinn	153	18 835 839	1 488 031
Tartu	31	4 367 870	279 544
Harjumaa	43	3 566 858	267 514
Tartumaa	19	1 667 597	125 070
Pärnumaa	20	1 288 205	96 615
Ida-Virumaa	6	998 427	74 882
Lääne-Virumaa	7	895 827	67 187
Raplamaa	10	638 517	47 889
Valgamaa	4	626 060	46 955
Viljandimaa	6	402 608	30 196
Jõgevamaa	5	246 233	18 467
Saaremaa	2	226 290	16 972
Läänemaa	3	197 523	14 814
Järvamaa	2	116 447	8 734
Põlvamaa	1	65 253	8 734
Võrumaa	1	45 793	3 434
Hiiumaa	1	22 453	1 684
Total	**314**	**34 207 800**	**2 592 882**

Source: Korterelamute renoveerimisturu…, 2014. P. 21-22.

1.2.2 CASE STUDY FOR THE TRANSPORT SECTOR: Traffic safety hazard mapping

Traffic safety hazard mapping is an educational module ("*Koolitee ohtlike kohtade kaardistamine*") provided by the Estonian Road Administration targeting primary schools, primary school students (especially 4. and 7.-graders) and local traffic safety officials. This module is part of "Health and Safety" educational program that is one of the 8 cross-curricular horizontal themes of primary school curricula that facilitates teachers of science, geography and other related classes to integrate safety issues in their class themes. The module consists of internet-based mapping tool, teacher's guidance and activity descriptions. The aim of the tool is to analyse and map traffic safety hazards on students home to school routes (while learning about maps and traffic safety rules), to map travel modes and

provide Road Administration and local authorities with highlighted traffic spots and traffic safety information generated by students, and improve overall traffic safety of primary school students. (Estonian Road Administration…., 2015) This interactive mapping tool has been also used as a basis for developing school travel plans in 10 piloting schools in Estonia in 2012-2014 (Sarv, 2014).

Interaction between objectives

The explicit objective of this instrument is to improve traffic safety among school children. Safe traffic environment is one of the key prerequisites of children independent home to school trips and shifting car trips to public transport, walking and cycling. The National Transport Development Plan 2014-2020 has goals both for traffic safety and transport energy efficiency (MEAC, 2014), including funding schemes for better urban mobility environment/public transport/walking and cycling infrastructure and intends to cap energy consumption by improving walking, cycling and public transport conditions, this educational module is not directly linked to these interlinked goals and could be linked more closely to energy efficiency goals. For example the mapping exercise could be linked to mathematics, science and physical education classes and the mapping tool could calculate energy saving potential of a class, a school or personal trips. The module could be also more closely linked to encouraging preparation of school travel plan (currently voluntary for schools). Both national and local governments, schools and families would benefit from full energy efficiency considerations.

Interaction between target groups

National funding schemes for better urban mobility environment, public transport, walking and cycling infrastructure target mainly transport users living in the cities or commuting to the city. School children are essential sub-group of this target group. The selection of potential projects (both local and national governments) could benefit more from the mapping exercises and information generated by schools travel plans and students.

Interaction between the Implementation Network / governance structures

The Road Administration has developed teacher's guidance and supports schools with organizing teachers' training to carry out the classes. The module is highly dependent on availability of computers during the classes and not all schools have the possibility to carry out the mapping exercise on computers. There is no comprehensive overview or annual statistics how many schools actually apply this module, how many children participated in mapping. One of the aims of the module is to provide local authorities with information about traffic safety concerns of children and improve the environment around schools; however there are no institutional arrangements for local authorities to actually use this data. NGO Linnalabor working on urban planning and mobility issues has suggested Road Administration to use the mapping tool more actively to promote school travel plans and increase awareness on more active travel modes and traffic safety (Sarv, 2014).

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