



**EXPERT EVALUATION NETWORK  
DELIVERING POLICY ANALYSIS ON THE  
PERFORMANCE OF COHESION POLICY 2007–2013  
YEAR 1 – 2011**

**TASK 1: POLICY PAPER ON RENEWABLE ENERGY AND  
ENERGY EFFICIENCY OF RESIDENTIAL HOUSING**

**ESTONIA**

**VERSION: FINAL**

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**A report to the European Commission  
Directorate–General Regional Policy**

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## LIST OF ABBREVIATIONS

- AIR – Annual Implementation Report
- EAFRD – European Agricultural Fund for Rural Development
- EEN – Expert Evaluation Network
- ERDF – European Regional Development Fund
- ESF – European Social Fund
- OP – Operational Programme

## 1. EXECUTIVE SUMMARY

Support for renewable energy in Estonia consists of national-level policy measures that are of a fiscal and administrative nature. The most influential measure relates to feed-in tariffs, but this support does not vary among the different types of energy sources or with their profitability.

Measures promoting residential energy efficiency are targeted at the renovation of apartment buildings and at raising awareness of energy conservation. The most influential measures are loans (supported by ERDF—European Regional Development Fund) and renovation grants.

All the energy policy related ERDF-funded measures are aimed at supporting the broader use of renewable energy and energy efficiency in the housing sector. The initial co-financing from ERDF (EUR 87.2 million) was reduced to EUR 28.8 million because an opportunity emerged to carry out the measures using a larger share of national funding (received from the Estonian CO<sub>2</sub> quota sales). In addition, there was a need for additional funds for enterprise support projects.

ERDF support complements national funds in respect of renewable energy and energy efficiency. For renewable energy, the scale of ERDF support is rather limited compared both to the overall ERDF funds as well as other national funds: the total national expenditure for 2010–2020 is expected to amount to EUR 0.96 billion as against ERDF funding of EUR 9.6 million for 2007–2013. For energy efficiency, the share of national funds and the ERDF is of a similar scale.

The rate of support for improving residential energy efficiency does not vary for the ERDF-funded measures, but it does vary for the national renovation grant project (grant rates 15%–35%).

Estonian policy in both areas has been stable and has not generally changed since 2007 as a result of the recession. The only major change since 2010 is related to the introduction of renovation grants aimed at increasing residential energy efficiency. The demand for grants increased as suitable national funding became available and as loans became less attractive due to the recession.

The rationale for public intervention is stated in rather general terms, including references to the profitability of investment and/or to the social or environmental returns of investment, resulting in a public debate about the rationale and the methods used for supporting renewable energy development. This, coupled with possible changes in the support system for renewable energy, has already slowed investment in new projects.

## 2. NATIONAL POLICY

Domestic sources of energy, largely in the form of oil shale, account for a large share of energy consumption in Estonia. While the substantial use of oil shale guarantees the security of energy supply in Estonia and reduces dependence on world market prices, major environmental damage is caused by the mining and use of oil shale, which has a low calorific value. Low energy efficiency in Estonia is also due to the lack of large hydropower plants and the fact that over 90% of electrical energy is produced in low-efficiency, condensing power plants (as against combined heat and power-production plants). There are also considerable losses in electricity and district heating networks [Operational Programme (OP) for the Development of Living Environment 2007, 36–39].

Some 70% of Estonian dwellings are located in low-energy-efficiency apartment blocks constructed between 1960s and 1980s. Problems in these buildings are related to excessive energy consumption, insufficient energy mapping, the lack of energy auditors and their uneven competence, and losses in the transmission and distribution of energy (OP for the Development of Living Environment 2007, 36–39).

The main focus in the period 2007–2013 in developing energy supply and improving its security and environmental performance is: to rationalise the structure of electricity-generating capacity (the distribution and meeting peak loads); to increase the share of co-generation of heat and power as well as of renewable energy; and to promote energy conservation in production, distribution, and final consumption (OP for the Development of Living Environment 2007, 36–39; see Table A and Annex Tables A–C for the share of renewable energy currently and for the 2020 goals).

**Table A – Renewable energy as % total energy consumption**

	2005	2006	2007	2008	2020
Estonia	18.0	16.1	17.1	19.1	25.0
EU 27	8.5	8.9	9.7	10.3	20.0

Source: Eurostat 2011.

Policy measures supporting renewable energy in Estonia apply at the national level and are of a fiscal and administrative nature. The current measures can be classified as follows:

1. Support for the mobilisation of renewable energy sources (see no. 1–4 in Table B);
2. Support in the agriculture and forestry sectors, funded mainly by the European Agricultural Fund for Rural Development (EAFRD) (see no. 5–7 in Table B);
3. Measures to encourage R&D, funded mainly by the ERDF (see no. 8–9 in Table B) (Renewable Energy Development Plan 2010, 12; see also Annex Table D).

**Table B – Overview of renewable energy measures, 2010**

Name and reference of the measure	Type of measure	Comment
1. Feed-in tariff	Financial	The most influential measure. Estimated cost 2010–2020 ca EUR 808 million according to the Action Plan of the "Renewable Energy Development Plan 2020" (2010). Feed-in tariffs are approved with the Electricity Market Act.
2. Certificate of origin	Regulatory	
3. Exemption of biofuels from fuel excise duty	Regulatory	
4. Support for investment for broader use of renewable energy sources for power production	Financial	Funded from ERDF (see section 3 for details).
5. Support for investment in bioenergy production	Financial	Funded mainly from the EAFRD and can be used for constructing buildings for processing biomass and producing bioenergy by farmers.
6. Diversification towards non-agricultural activity	Financial	Funded mainly from the EAFRD and includes support to micro-farmers for the production of biofuels, bio-electricity and bio-heat from biomass.
7. Support for investment in adding value to forestry products	Financial	Funded mainly from the EAFRD to support micro-undertakings engaged in forestry and can include purchasing of equipment required for the production of bioenergy.
8. National Energy Technology Programme – ETP	Financial	Funded from ERDF for developing technologies for the production and processing of oil shale as well as renewable energy technologies and new, rapidly developing energy technologies.
9. Development Plan for Enhancing the Use of Biomass and Bioenergy for the Period 2007 to 2013 – R&D	Financial	Financing is provided also for (applied) research related to biomass and bioenergy.

Source: Adopted from Renewable Energy Development Plan 2010, 12; updated by the author, based on interviews.

The support provided (via feed-in tariffs) does not vary between the different sources of energy, but it does vary according to the process applied. Support (EUR 0.054 per kWh) is provided if electricity is generated from a renewable energy source or biomass in a cogeneration process. If electricity is generated from biomass in a condensing process, it is not subject to support. Financial support (EUR 0.032 per kWh) is provided if the electricity is generated in an efficient cogeneration process from waste or with a generator with a capacity of 10 MW or less. If electricity is generated in an efficient cogeneration process from a renewable energy source, support is provided at the aforementioned rate or at the rate approved by the Estonian Competition Authority<sup>1</sup>. Support to producers using wind power is available up to the point where wind power generates 600 GWh of electricity in the country (Electricity Market Act, § 59).

<sup>1</sup> The same rate applies to peat, an exhaustible resource.

Measures to improve energy efficiency of residential housing are targeted at the renovation of apartment buildings and raising general awareness of energy conservation (Table C). No support is provided to individual homes. The main measures are loan support and renovation grants.

**Table C – Overview of measures aimed at residential energy efficiency, 2010**

Name and reference of the measure	Type of measure	Comment
1. Loan support to renovation of buildings	Financial	Loan support to reconstruction and renovation works. Funded partially from ERDF (see section 3 for details).
2. Grant support to renovation of buildings	Financial	Renovation grants, 15–35% of the total cost of renovation project (see section 5 for details). Issued since 2010 (total budget EUR 28 million) and funded from money obtained from the sale of unused pollution quotas to Luxembourg.
3. Support to the performance of expert assessments and energy audits in apartment houses	Financial	Funded from ERDF (see section 3 for details).
4. Provision of information and training to consumers concerning the possibilities and importance of energy conservation	Information dissemination	Funded from ERDF (see section 3 for details).
5. Energy label	Regulatory	An energy label is the summary from an energy audit and gives the consumer basic information about yearly average energy consumption of the apartment/house. Since 2009 the energy label must be presented upon the request of a buyer or renter.

Source: Author, based on Energy Efficiency Action Plan 2007–2013, Estonian Housing Development Plan 2008–2013, and interviews.

Estonian policy in both areas has been relatively stable, generally not changing since 2007 or being affected by the recession. The only major change since 2010 concerns the introduction of renovation grants aimed at increasing the energy efficiency of housing. This was motivated by the strengthening of demand as suitable national funding became available and loans becoming less attractive due to the recession. The loans and the grants are not competing with each other: there is no overlap in funding, they complement each other.

Estonia is a small country, so there are no regional energy policies as such. Investment in renewable energy is likely to have a neutral effect on regional development. Energy conservation in housing will tend to improve the living conditions of the urban population in particular because the proportion of people living in apartment blocks is larger in cities (OP for the Development of Living Environment 2007, 96).

Nevertheless, regional disparities in Estonia are relatively wide—especially between the urban regions of Tallinn and, to a lesser extent, Tartu and the peripheral rural areas. Regional problems are especially acute in north–east Estonia, a region where heavy

industries were developed after World War II (Kalvet 2010). This region, however, is where oil shale mining and oil–shale–based energy production takes place. If this is reduced, this region is almost certain to be affected adversely.

### 3. ERDF AND COHESION FUND SUPPORT AND CONTRIBUTION TO NATIONAL POLICY

Priority axis three – “Development of energy sector” – of the OP for the Development of Living Environment (2007) is aimed at improving energy efficiency and reducing its environmental effects through supporting, on the one hand, wider use of renewable energy and, on the other hand, energy saving in distribution networks and by final consumers, including in housing. A total of EUR 87.2 million was allocated to the axis from the ERDF. Some EUR 10.2 million was allocated from the ERDF and Cohesion Fund to renewable energy (0.6% of the total funds) and EUR 71.3 million (4.4%) to improving residential energy efficiency (Table D, Annex Table E)<sup>2</sup>.

**Table D – Initial ERDF allocations to renewable energy and energy efficiency (EUR million)**

	Renewable energy: wind	Renewable energy: biomass	Renewable energy: total (FOI 39–42)	Energy efficiency: co-generation, energy management	Housing infrastructure	Energy efficiency: residential housing (FOI 43+78)
Operational Programme for the Development of Living Environment	6.8	3.4	10.2	63.4	7.9	71.3

Source: DG Regio 2011.

Allocations to “Development of energy sector” (and so funding of measures aimed at developing renewable energy sources and residential energy efficiency) have been reduced. This followed the proposal Estonian authorities submitted to the European Commission in 2010, which arose from the opportunity to carry out the measures by using a larger share of national funding (received from the Estonian CO<sub>2</sub> quota sales), the need for additional funds for enterprise support projects and the generally slow start of the renewable energy and energy efficiency measures. Accordingly, EU support was reduced by EUR 58.4 million, and the current budget of ERDF–supported measures is EUR 28.8 million (excluding the R&D technology programme) (Table E). Following this amendment, the share of funds allocated

<sup>2</sup> It remains unclear why the DG Regio data on ERDF allocations (Table D) and the allocation to priority axis three—“Development of energy sector”—of the OP for the Development of Living Environment (2007) are not equal (EUR 81.5 million vs. EUR 87.2 million). All measures of priority axis three are related to renewable energy and energy efficiency of residential housing.

from the ERDF to renewable energy declined to 0.6% of the total and to residential energy efficiency, to 1.2%. Only minor changes have taken place in the scale, form, and focus of the renewable energy support measures [Annual Implementation Report (AIR) for the OP for the Development of Economic Environment 2010, 63–64].

**Table E – ERDF allocations to renewable energy and energy efficiency, 2011**

Name of measure	Community amount (EUR million)
Broader use of renewable energy sources for power production	9.6
Raising awareness of energy saving among residents of apartment buildings	0.6
Grants for apartment building energy audits	1.6
Loans for apartment building reconstruction	17.0
<b>Total</b>	<b>28.8</b>
Supporting R&D for energy technology	6,4
<b>Total ERDF</b>	<b>3,452.3</b>

Source: Estonian Register of Structural Funds 2011.

The main measure to promote the wider use of renewable energy sources are investment grants, which support

1. Establishment of combined heat and power plants using renewable energy sources,
2. Conversion of boiler plants to renewable energy sources,
3. Improvement and reconstruction of heating networks for energy saving purposes (see AIR for the OP for the Development of Economic Environment 2010 and OP for the Development of Living Environment 2007 for more details).

Applicants may be ‘legal entities’—local authorities, non-profit making associations, companies (except farmers) or foundations—that provide district heating or sell energy for heating. The maximum rate of support is 50% of the eligible expenditure of a project, or 40% in the case of a large-scale project in Tallinn and Harju County.

In addition, the Energy Technology Programme has been launched with ERDF support, facilitating diversification of energy sources (including an expansion in the share of renewable energy) and the implementation of more energy efficient technologies and increasing research potential in energy. The R&D project support programme has been initiated as part of this.

The main measures to promote residential energy efficiency include support for:

1. Apartment and housing associations and communities of apartment owners renovating their buildings. Loans are provided to achieve energy savings of at least 20% in apartment buildings of up to 2000 square metres and at least 30% in



- apartment buildings of over 3000 square metres for a period of up to 20 years with interest fixed for 10 years (at a maximum of 4.4% less). Self-financing (at least 15%) can be covered by parallel bank loans (see Annex Figure 1 and 2 for details) or a grant scheme introduced in 2010 and funded from national funds.
2. Expert assessments and energy audits in apartment blocks (50% of the costs).
  3. Public information campaigns on how to improve energy efficiency (see AIR for the OP for the Development of Economic Environment 2010 and OP for the Development of Living Environment 2007 for more details).

In addition to the OP for the Development of Living Environment (2007), measures relating to renewable energy and residential energy efficiency are also included in the European Territorial Cooperation Programmes (in particular, the Central Baltic cross-border cooperation programme 2007–2013, the Estonia and Latvia cross-border co-operation programme 2007–2013, the Estonia–Latvia–Russia cross-border co-operation programme and the Baltic Sea Region transnational co-operation programme 2007–2013), but the activities supported relate to studies, limiting their importance and potential impact.

**Table F – ERDF allocations, commitments, and payments regarding renewable energy and energy efficiency measures, 2010**

Name of measure	ERDF allocation (EUR million)	Commitments		Payments	
		EUR million	%	EUR million	%
Raising awareness of energy saving among residents of apartment buildings	0.6	0.6	99.8	0.2	38.4
Grants for apartment building energy audits	1.6	0.7	46.5	0.7	46.3
Loans for apartment building reconstruction	17.0	17.0	100.0	17.0	100.0
Broader use of renewable energy sources for electricity generation	9.6	9.4	97.6	2.1	21.8
<b>Total</b>	<b>28.8</b>	<b>27.7</b>	<b>96.2</b>	<b>20.1</b>	<b>69.7</b>
Supporting R&D for energy technology	6.4	2.7	41.9		0.0
<b>Total ERDF</b>	<b>3,452.3</b>	<b>2,496.7</b>	<b>72.3</b>	<b>848.8</b>	<b>24.6</b>

Source: Estonian Register of Structural Funds 2011.

According to the conclusions in the AIR for 2009, implementation of all the support measures concerned has proceeded satisfactorily, although the implementation of the measure in respect of renewable energy was delayed due to the time taken to process the state aid application (Annex Table F). At the end of 2010, both the commitments and payments made do not generally give cause for concern (Table F). The nature of the difficulties in carrying out spending according to plan has altered. In 2009 problems were mainly related to delays in initiating the implementation of the measure and to the subsequent heavy workflow in evaluating proposals and the ability of beneficiaries to provide their own funding (AIR for the OP for the Development of Economic Environment

2010). Interviews have indicated, however, that the implementation of projects by beneficiaries has been slower than expected as wide-ranging discussions have begun to take place on potential changes in the support system relating to renewable energy. This has created an uncertain environment for investment, causing both project implementers and the banks providing additional funds to them to delay making decisions (see sections 4 and 6 for details).

In sum, ERDF support complements national funding in respect of renewable energy and energy efficiency. The scale of ERDF support is rather limited in relation to both the total ERDF financing available and other national funds invested in renewable energy: Total expenditure for 2010–2020 is expected to amount to EUR 960 million (Action Plan of the "Renewable Energy Development Plan 2020" 2011, 10) as compared with ERDF funding of EUR 9.6 million for 2007–2013. Feed-in tariffs are approved with the Electricity Market Act. In the case of energy efficiency in housing, the share of national funding and ERDF-supported financing is similar.

#### 4. RATIONALE FOR PUBLIC INTERVENTION

The rationale for public intervention is stated in the OP for the Development of Living Environment (2007), although it is rather general: "*Estonia holds the opinion that energy restructuring should continue to be stimulated mainly by fiscal and administrative instruments, while direct investment support should be limited to correcting market failures. It is therefore important to establish in identifying the operations to be supported whether there exist market failures related to energy conservation in housing and district heating systems, in particular lower capacity ones, or related to the construction or reconstruction of lower capacity power plants and boiler plants*" (91).

An in-depth discussion of the relationships between the concrete measures taken and subtypes of market failure is not included in ERDF programmes or related documents. Still, the discussion of the problems in the ERDF-related documents as well as the nature of the measures enables us to speculate about the rationale (Table G). Two of the measures are targeted at improving awareness—the state needs to act as a catalyst to motivate the owners of multi-storey apartment blocks to pay more attention to and invest more actively in increasing the energy efficiency of their buildings. Two of the measures relate to positive externalities—reconstruction activity as well as the broader use of renewable sources, which will lead to an overall, more-efficient energy balance. Finally, R&D support is related to increasing the capacity of local R&D teams to develop energy technologies (including renewables).

**Table D – Measures and rationale for intervention**

Name of measure	Rationale for intervention
Raising awareness of energy saving among residents of apartment buildings	Information failure
Grants for apartment building energy audits	Information failure
Loans for apartment building reconstruction	Externalities
Broader use of renewable energy sources for power production	Externalities
Supporting R&D for energy technology	National innovation system failure: capacity failure

Source: Author.

The documents regulating the use of ERDF and Cohesion Funds do not make concrete references to the profitability of investment in the two areas and/or to the social or environmental returns to investment.

However, public debate in Estonia about the rationale and the methods used for supporting the development of renewable energy sources is beginning. In particular, Estonia is facing an increasing burden of renewable-energy subsidies with electricity tariffs rising for the general public (see also section 6). The current Coalition is planning to cut the support tariffs for new projects as well as to open negotiations on the support tariffs for existing projects. The need to differentiate support rates according to energy sources is also agreed by the current government. Despite these steps, the agreed objectives with regard to the development of renewables should still be achieved (Coalition Agreement 2011).

## 5. RATE OF SUPPORT AND PROFITABILITY

As noted above, the current rate of support in Estonia, whether in the form of direct grants or feed-in tariffs does not vary with the profitability of the different sources of renewable energy, though feed-in tariffs vary according to the process concerned (see section 2 for details). The Estonian Competition Authority (2011) has argued that the essential disadvantage of the existing scheme is the fact that the support provided does not take into account the actual market price of electricity. The higher the market price, the higher the profitability will be for the producer (25–28; see section 6 for details).

The current rate of support in Estonia for improving residential energy efficiency does not vary for the ERDF-funded measures and the same interest rate applies to all. However, the renovation grant scheme (initiated in 2010) does vary as also noted above:

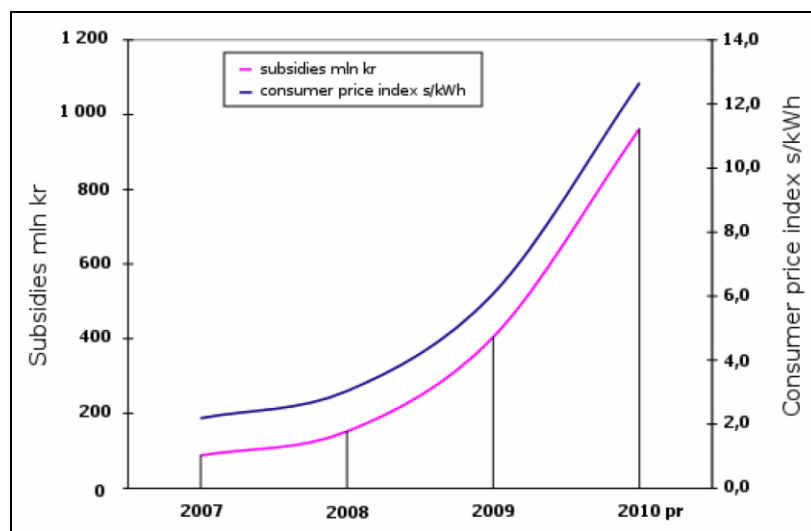
- to obtain a 15% grant, an apartment building needs to achieve energy saving of at least 20% in an apartment building with a net area of up to 2,000 square metres or at least 30% in a building larger than this. Through the reconstruction work, the building needs to achieve at least energy label class E.

- To obtain a grant of 25%, the apartment building needs to have in addition a heating system that is locally adjustable and devices that monitor heating costs individually by apartment; it must be partly or fully insulated with a reconstructed facade and an insulated and reconstructed roof. Through the reconstruction work, the building needs to achieve an energy saving of at least 40% and energy label class D.
- To obtain a grant of 35%, the building needs additionally to have a ventilation system with heat return and achieve an energy saving of at least 50% and an energy label class C (Terms and Procedures of Using Green Investment Scheme 'Apartment Building Renovation Grants' 2010).

## 6. COSTS, PUBLIC SUPPORT, AND PRICES

According to a recent study by the Estonian Competition Authority (2011) on the impact of the Electricity Market Act on the competitive situation, there is a need to review the justification for the economic burden borne by electricity consumers (in the form of a renewable energy fee and the support rates). This proposal has been submitted to the Ministry of Economic Affairs and Communications. Support for renewable energy in the form of feed-in tariffs has increased from EUR 0.0014 per kWh in 2007 to EUR 0.0081 per kWh in 2010, almost a six-fold increase. While in 2009 the total sum of support paid for 619 GWh of electricity was EUR 25.9 million, in 2010, it was estimated at EUR 61.5 million for 1,202 GWh of electricity produced (Figure 1). In 2009, support amounted to 7.9% of the cost of electricity produced. The subsidy is currently estimated at 22% of the final cost to the consumer and is expected to increase with the addition of new producers.

The Estonian Competition Authority considers that the economic rationale for supporting renewable energy production in the current form is unreasonable. Investors would not base their decisions on the price implied by the actual ratio between supply and demand but on achieving as short a payback period as possible based on the support available. For example, in the case of cogeneration plants, where thermal capacity exceeds the actual heating needed, the aim would be to achieve as large a capacity as possible in order to get more support. The electricity produced would then be sold on the open market, so affecting producers in neighbouring countries (Finland, Latvia and Lithuania). Since the market price exceeds the subsidised cost of production, the investor's profit will increase with the amount produced.

**Figure 1 – Renewable energy support in the period 2007–2010<sup>3</sup>**

Source: Estonian Competition Authority 2011, 26.

According to the interview, a strong incentive currently exists for owners to invest in improving energy efficiency. Given the Estonian climate, heating costs are high and consume a steadily growing proportion of income, so increasing interest in energy saving. The overall awareness of people of the issue, however, is still limited, as is reflected in the relatively small difference in prices and rents of energy-efficient buildings as compared with others. According to experts, the premium is 10% in Harju country and 5% in other locations in Estonia.

## 7. CONCLUSIONS

Estonia is making considerable progress in both developing renewable energy and increasing the energy efficiency of housing. In both areas, there are stable policy measures in place. Nevertheless, some considerations need to be taken into account for the future.

First, recent changes in the Estonian policy include cuts in ERDF-funded measures due to the availability of additional national funding received from Estonian CO<sub>2</sub> quota sales. Such *ad hoc* funding, however, might not be available in future, raising questions about the sustainability of current measures.

Secondly, the rationale for public intervention is stated in rather general terms in all policy documents, including references to the profitability of investment and/or to the social or environmental returns of investment. This has led to a public debate about the rationale and the methods used for supporting the development of renewable energy. The resulting uncertainty generated has begun to slow down investment in renewable energy projects.

<sup>3</sup> 1 EUR = 15.6466 EEK (kr).

Thirdly, there is a need to differentiate support rates according to energy sources, an idea that is supported by the current government.

Finally, the loan–support programme for reconstruction and renovation is not sufficiently attractive if large–scale investment is needed since people are not able or willing to take on the financial obligation involved. The 15% of self–funding, which is often met by a traditional, more expensive loan, can be a heavy burden. A combination of loan programmes coupled with grants seems to be a more attractive package that might continue to trigger wider interest in energy efficiency.

## REFERENCES

All links valid as of 26 May, 2011.

Adler, M. 2009. Financing instruments in Estonia. [http://www.clearsupport.projektas.lt/wp-content/Clear%20support%20\\_medziaga/7\\_CIS\\_Mirja%20Adler.%20KredEx](http://www.clearsupport.projektas.lt/wp-content/Clear%20support%20_medziaga/7_CIS_Mirja%20Adler.%20KredEx).

Baltic Sea Region Programme 2007–2013 Annual Implementation Report 2008. 2009. Baltic Sea Region Programme Monitoring Committee.

Central Baltic Interreg IVA Programme 2007–2013 Annual Implementation Report 2008. 2009. Programme Monitoring Committee.

Coalition Agreement, 2011.

<http://valitsus.ee/UserFiles/valitsus/et/uudised/taustamaterjalid/Valitsusliit%20I.pdf>

Conditions for the Measure “Broader Use of Renewable Energy Sources for Power Production”, Regulation No 14 of the Minister of the Environment of 24 March 2009, <https://www.riigiteataja.ee/ert/act.jsp?id=13164085>.

Eesti eluasemevaldkonna arengukava 2008–2013 [Strategy of Estonian Housing Policy 2008–2013]. 2008. Ministry of Economic Affairs and Communications. [http://www.kredex.ee/esk2/failid/EMA\\_ARENGUKAVA\\_21\\_01\\_08kinnitatud.pdf](http://www.kredex.ee/esk2/failid/EMA_ARENGUKAVA_21_01_08kinnitatud.pdf).

Electricity Market Act, RT I 2003, 25, 153, <https://www.riigiteataja.ee/akt/13349804?leiaKehtiv>.

Elukeskkonna arendamise rakenduskava 2007–2013 [Operational Programme for Development of Living Environment 2007–2013]. 2007. Republic of Estonia. Available online in English at [http://www.struktuurifondid.ee/public/elukeskond\\_ENG.pdf](http://www.struktuurifondid.ee/public/elukeskond_ENG.pdf).

Elukeskkonna arendamise rakenduskava seirearuanne. Aruandluse period 1.01.2009–31.12.2009 [Annual Implementation Report, Operational Programme for Development of Living Environment, 1.01.2009 – 31.12.2009]. 2010. Elukeskkonna arendamise rakenduskava seirekomisjon.

Energiasäästu sihtprogramm 2007–2013 [Energy Efficiency Action Plan 2007–2013]. 2007. Ministry of Economic Affairs and Communications. <http://www.mkm.ee/221420/>

Estonia – Latvia Programme 2007–2013 Annual Implementation Report 2008. 2009. Estonia – Latvia Programme Monitoring Committee.

Estonian Competition Authority. 2011. Aastaruanne 2010 [Annual Report 2010]. [http://www.konkurentsiamet.ee/public/Aastaraamat/AASTARAAMAT\\_2010.pdf](http://www.konkurentsiamet.ee/public/Aastaraamat/AASTARAAMAT_2010.pdf).

- Kalvet, T. (2010). Country Report on Achievements of Cohesion Policy: Estonia. Expert Evaluation Network delivering Policy Analysis on the Performance of Cohesion Policy 2007–2013. Brussels: DG Regional Policy.
- Majanduskeskkonna arendamise rakenduskava 2007–2013 [Operational Programme for the Development of Economic Environment 2007–2013]. 2007. Republic of Estonia. Available online in English at [http://www.strukturifondid.ee/public/maj.keskond\\_ENG.pdf](http://www.strukturifondid.ee/public/maj.keskond_ENG.pdf).
- Majanduskeskkonna arendamise rakenduskava seirearuanne. Aruandluse period 1.01.2007–31.12.2008 [Implementation Report, Operational Programme for the Development of Economic Environment 2007–2013, 1.01.2007 – 31.12.2008]. 2009. Majanduskeskkonna arendamise rakenduskava seirekomisjon.
- Majanduskeskkonna arendamise rakenduskava seirearuanne. Aruandluse period 1.01.2009–31.12.2009 [Annual Implementation Report, Operational Programme for the Development of Economic Environment, 1.01.2009 – 31.12.2009]. 2010. Majanduskeskkonna arendamise rakenduskava seirekomisjon.
- Operational Programme for the Development of Economic Environment 2007–2013. 2007. Republic of Estonia. Available online in English at [http://www.strukturifondid.ee/public/maj.keskond\\_ENG.pdf](http://www.strukturifondid.ee/public/maj.keskond_ENG.pdf).
- Operational Programme for Development of Living Environment 2007–2013. 2007. Republic of Estonia. Available online in English at [http://www.strukturifondid.ee/public/elukeskond\\_ENG.pdf](http://www.strukturifondid.ee/public/elukeskond_ENG.pdf).
- Operational Programme of Baltic Sea Region Programme 2007–2013. 2007.
- Operational Programme of Central Baltic Interreg IVA Programme 2007–2013. 2007.
- Operational Programme of Estonia – Latvia Programme 2007–2013. 2007.
- Renewable Energy Development Plan. 2010. [http://ec.europa.eu/energy/renewables/transparency\\_platform/doc/national\\_renewable\\_energy\\_action\\_plan\\_estonia\\_en.pdf](http://ec.europa.eu/energy/renewables/transparency_platform/doc/national_renewable_energy_action_plan_estonia_en.pdf).
- Riiklik struktuurivahendite kasutamise strateegia 2007–2013 [National Strategic Reference Framework (NSRF) 2007–2013]. 2007. Republic of Estonia. Available online in English at [http://www.strukturifondid.ee/public/Estonian\\_NSRF\\_21June07\\_ENG.pdf](http://www.strukturifondid.ee/public/Estonian_NSRF_21June07_ENG.pdf).
- Rohelise investeerimisskeemi “Korterelamute rekonstrueerimise toetus” kasutamise tingimused ja kord [Terms and Procedures of Using Green Investment Scheme „Apartment Building Renovation Grants”]. 2010. RT I 2010, 58, 397. <https://www.riigiteataja.ee/akt/120052011003>



Taastuenergia tegevuskava aastani 2020” rakendusplaan aastateks 2010–2013 [Action Plan for 2010–2013 of the “Renewable Energy Development Plan 2020]. 2010. Ministry of Economic Affairs and Communications,  
[https://valitsus.ee/UserFiles/valitsus/et/valitsus/arengukavad/majandus-ja-kommunikatsiooniministeerium/Eesti\\_taastuenergia\\_tegevuskava\\_aastani\\_2020\\_rakendusplaan.pdf](https://valitsus.ee/UserFiles/valitsus/et/valitsus/arengukavad/majandus-ja-kommunikatsiooniministeerium/Eesti_taastuenergia_tegevuskava_aastani_2020_rakendusplaan.pdf).

### **Statistical information**

DG Regio. 2011. Data delivered in April 2011.

Estonian Register of Structural Funds. 2011. Data on community amounts allocated for selected operations, commitments and payments,  
<http://www.struktuurifondid.ee/struktuuritoetuse-kasutamise-aastaulevaated/>.

Eurostat. 2011. On-line database available at <http://ec.europa.eu/eurostat>.

## **INTERVIEWS**

Mirja Adler, Head of Housing Division, Fund KredEx. Interview on 25 May, 2011.

Madis Laaniste, Director of Sustainable Energy Division, Energy Department, Ministry of Economic Affairs and Communications. Interview on 10 May, 2011.

Siim Umbleja, Executive Co-ordinator (Energy), Structural Funds Unit, Environmental Investment Centre. Interview on 10 May, 2011.

Aivar Villemson, real estate expert, A&A Kinnisvara. Interview on 25 May, 2011.

## TABLES AND FIGURES

**Annex Table A – Renewable energy as a share of gross final energy consumption and by source**

	Breakdown of renewables by source (% total renewables)																	
	Hydro			PV			Wind			Solar thermal			Biomass			Geothermal		
	2000	2005	2008	2000	2005	2008	2000	2005	2008	2000	2005	2008	2000	2005	2008	2000	2005	2008
Estonia	0.0	0.3	0.3	0.0	0.0	na	0.0	0.8	1.7	0.0	0.0	na	100.0	98.8	98.0	na	na	na
EU 27	30.9	21.8	18.6	0.0	0.1	0.4	1.9	5.0	6.7	0.4	0.7	1.1	63.2	68.0	69.4	3.5	4.4	3.8

Note: na: data not available (generally small)

Source: Eurostat 2011.

**Annex Table B – Electricity generated from renewable sources (% of gross electricity consumption)**

	1990	1995	2000	2005	2006	2007	2008
Estonia	0.0	0.1	0.3	1.1	1.4	1.5	2.0
EU27	11.9	13.0	13.8	14.0	14.6	15.5	16.7

Source: Eurostat 2011.

**Annex Table C – Expected amounts of electricity generated in 2020 by renewable sources of energy (compared with 2005)**

	Total renewables (GWh)		% electricity consumption		% total renewables: Hydropower		Solar power		Solar PV		Wind		Total biomass	
	2005	2020	2005	2020	2005	2020	2005	2020	2005	2020	2005	2020	2005	2020
Estonia	107	1913	1.2	17.5	18.7	1.6	na	na	na	na	50.5	80.3	30.8	18.1
EU 27 (TWh)	492	1217	15.8	34.5	70.5	30.4	0.0	1.6	0.2	6.8	14.2	40.7	13.6	19.1

Note: some figures on solar power and solar PV are unknown but these are likely to be very small.

Source: ECN 2011, utilizing the National Renewable Energy Action Plans of the Member States.

## Annex Table D – Overview of all renewable energy policies and measures

<i>Name and reference of the measure</i>	<i>Type of measure*</i>	<i>Expected result**</i>	<i>Target group and/or activity***</i>	<i>Existing or planned</i>	<i>Start and end dates of the measure</i>
1. <i>Feed-in tariff</i>	Regulatory	Increased energy generated from renewable sources	producer of electricity	existing	A supplement to the Electricity Market Act 1 July 2010
2. <i>Certificate of origin</i>	Regulatory	Increased energy generated from renewable sources	producer of electricity	existing	The Electricity Market Act
3. <i>Exemption of biofuels from fuel excise duty</i>	Regulatory	Increased consumption of bioliquids	consumer	existing	The Alcohol, Tobacco and Fuel and Electricity Excise Duty Act until 27 July 2011
4. <i>Support for investment Broader use of renewable energy sources for power production</i>	Financial	Increased energy generated from renewable sources	District plant heating	existing	As of 24 March 2009
5. <i>Support for investment in bioenergy production</i>	Financial	Increased energy generated from renewable sources	farmer	existing	Until 2013
6. <i>Diversification towards non-agricultural activity</i>	Financial	Increased biofuel production	farmer	existing	Until 2013
7. <i>Support for investment in adding value to forestry products</i>	Financial	Increased biofuel production	Biofuel producer	existing	Until 2013
8. <i>National Energy Technology Programme – ETP</i>	Financial	Development of technology	R&D	existing	2007–2013
9. <i>Development Plan for Enhancing the Use of Biomass and Bioenergy for the Period 2007 to 2013 – R&amp;D</i>	Financial	Development of technology / surveys	R&D	existing	2009–2014

Source: National Renewable Energy Action Plan – Estonia 2010, 12.

**Annex Table –E – Allocation by programmes, 2007 (EUR million)**

	Renewable energy: total (FOI 39–42)	Energy efficiency, co-generation, energy management	Housing infrastructure	Energy efficiency in residential housing (FOI 43+78)	Total ERDF + Cohesion	Total Structural funds
	10.2	63.4	7.9	71.3	3,011.9	3,403.5
Operational Programme for Human Resource Development						391.5
Operational Programme for the Development of Economic Environment					1,404.6	1,404.6
Operational Programme for the Development of Living Environment	10.2	63.4	7.9	71.3	1,607.3	1,607.3

Source: DG Regio 2011.

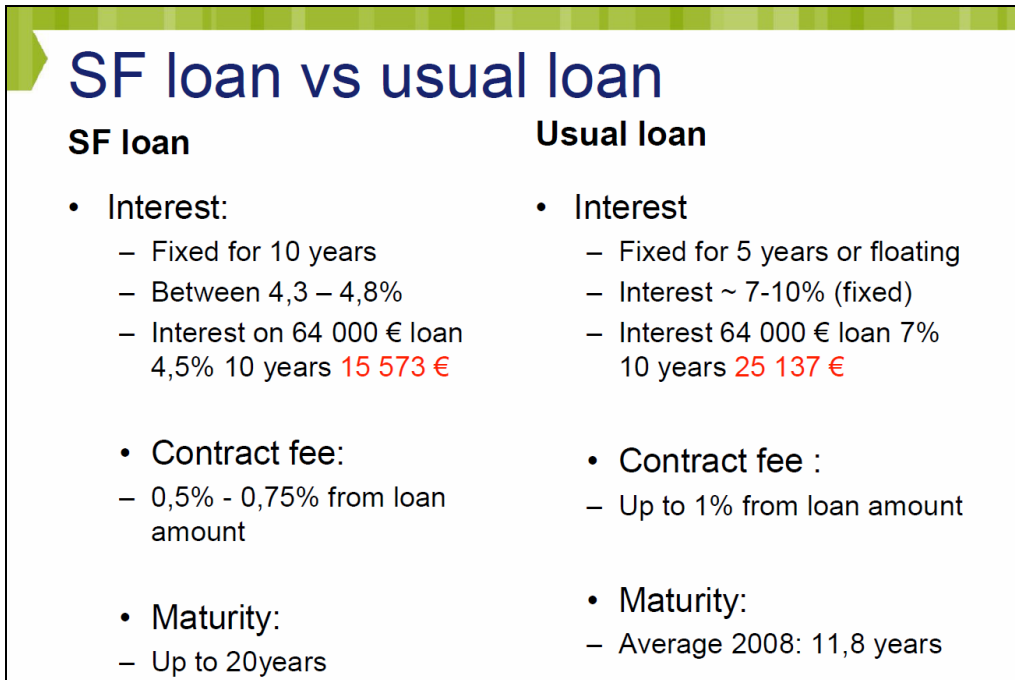
**Annex Table F – Allocation and commitments of ERDF, ESF and Cohesion Fund (end 2009) in EUR million**

Renewable energy	allocation	commitments
39 wind	6.8	
40 solar		
41 biomass	3.4	
42 hydroelectric, geothermal and other		
Total	10.2	0
Energy efficiency in residential housing	allocation	commitments
43 Energy efficiency, co-generation, energy management	63.4	27.6
78 Housing infrastructure	7.9	
Total (1)	71.3	27.6
<b>Total ERDF+ESF+Cohesion fund</b>	3,403.5	1,897.5
<b>Total ERDF+Cohesion fund</b>	3,011.9	1,691.2

(1) Not: not all investment is for energy efficiency in residential housing

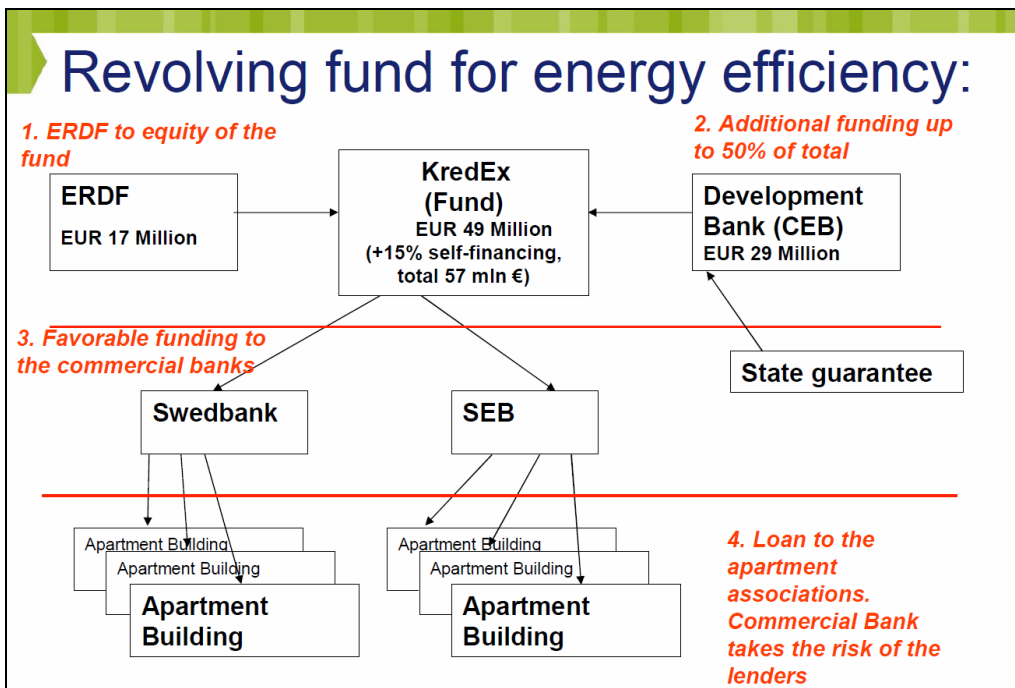
Source: DG Regio 2011.

Annex Figure 1 – ERDF-supported loan compared to usual loan



Source: Adler 2009, 21.

Annex Figure 2 – Loan support scheme



Source: Adler 2009, 14.