

<b>Title of the measure:</b>	<b>LV31 Grants for Renewable Energy Technologies in Households</b>
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### General description

Latvia, due to active participation in the GHG emissions trading mechanism, has the revenues from the sale of GHG emissions under procedures pursuant to Article 17 of the UNFCCC Kyoto Protocol. Part of these revenues had been allocated for CO<sub>2</sub> emissions reduction by implementing small scale renewables based heat and electricity production technologies for own consumption in households. Responsible ministry for the measure was the Ministry of Environment Protection and Regional Development, the responsible institution supervising the implementation – state ltd. company “Latvian Environmental Investment Fund” (*valsts sabiedrība ar ierobežotu atbildību “Vides investīciju fonds”*).

The measure was implemented by two open tenders [1] announced in year 2011. Within the frame of both tenders the 1759 project had been implemented in years 2011-2012 [8].

**Financing.** The total *ex-post* financing, provided by the national green investment scheme - Climate Change Financial Instrument (CCFI) - was 8.568 MEUR<sup>1</sup> [8]. Maximum financial support from CCFI for one project was stated 9960 EUR. The maximum rate of support was defined 50% of total eligible costs of the project. The beneficiary initially implemented the project by own resources, after completion the CCFI grant was received. The project’s co-financing by CCFI is based on the principle of additionality, namely, the support received within the framework of CCFI cannot be combined with the support received from other public or individual support programmes.

Micro-generation technologies eligible for financial support are characterized in the following Table 1. Requirements for efficiency coefficients have been defined for each of heat production technologies category. The maximum of specific total eligible costs – EUR/1 kW - for each category of technologies (including VAT) was stated (Annex 3 of [1]), the costs, increasing this specified maximum, was defined as ineligible and should be fully covered by the beneficiary.

**Table 1.** Eligible Renewable Technologies within the Tenders by Climate Change Financial Instrument [Article 16, [1]).

Technology	Capacity
solar heat collectors	up to 25 kW (including)
solar PV	up to 10 kW (including)
wind	up to 10 kW (including)
firewood, wood chips, wood pellets and straw technologies	up to 50 kW (including)
heat pumps	up to 50 kW (including)
combined use of above technologies	eligible

#### The eligible costs were:

- purchasing, installation, connection and regulation costs of renewable technologies,
- costs of technologies’ management systems,
- wind turbines’ fundament construction works,
- construction works relating to installation of heat pumps, including drilling.

Costs for renovation of inner heat supply networks, radiators, change or installation of stacks were stated ineligible.

As the threshold eligibility criterion, it was defined cost efficiency of CO<sub>2</sub> emissions reduction. Namely, the annual CO<sub>2</sub> emissions reduction should be at least 280 kg CO<sub>2</sub> / 1 EUR granted, and above.

<sup>1</sup> Initially (opening the tenders) the total support of CCFI was planned up to 16.220 MEUR, thus one can see not all available financial support was demanded. In addition, the administrative costs, evaluated for the whole CCFI, constitutes around 2.3% of the finances paid to beneficiaries.



The following categories of residential buildings were eligible for support: (i) individual (single) dwelling house or summer house, (ii) semidetached or multi-detached house, (iii) separate two dwellings house, (iv) separate three and more dwellings house, (v) garden house. Both existing houses and new buildings registered under construction were eligible.

The projects applicants might be (i) house owner (private person<sup>2</sup>) or (ii) association of dwelling owners in case of multi-dwelling house. In case of multi-dwelling house the project activities shall relate to all building, not to separate dwelling.

The beneficiary shall provide that at least 5 years after project completion (i) the installed renewable technologies will be in place in given real estate, (ii) the heat and electricity, produced by granted technologies, will be used only for own consumption, (iii) the function of residential house will not be changed as well as the house will not be demolished, (iv) the residential house, in which project activities are implemented, shall not be rented to third persons or used for commercial activities.

Before submitting the project the applicant should perform inquiry of at least 3 technologies' suppliers and assemblers regarding the costs of available renewable technologies. The technologies should correspond to *CE* certificate or *Solar Keymark* certificate. To help the applicants, the responsible institution had compiled the list of eligible technologies' suppliers and assemblers.

Due to the total required financial support (by summing all submitted projects which had passed the given above eligibility criterion) was less than the sum of finances available from CCFI, the quality evaluation of submitted projects was not performed. However, the layout of quality evaluation criteria, presented in the Table 2 below, might be of interest.

**Table 2.** Layout of projects' quality evaluation criteria (Annex 5, [1]).

maximally available score, in points	45
1. emissions reduction cost efficiency, reduced kg CO <sub>2</sub> annually / 1 EUR granted , <i>threshold – 0.28 kg CO<sub>2</sub> / 1 EUR granted (1 point)</i> <i>maximum score (10 points) if this value is 1.23 kg CO<sub>2</sub> / 1 EUR granted and above</i>	1-10
2. specific emissions reduction value per installed capacity of renewable technology, <i>maximum score (10 points) if this value is 900 and above kg CO<sub>2</sub> annually / 1 kW<sub>installed</sub>,</i> <i>minimum score (1 point) applicable if this value is below 500 kg CO<sub>2</sub> annually / 1 kW<sub>installed</sub>,</i>	1 -10
3. sustainability (technical life-time) of technology, necessity for additional maintenance investments <i>The higher score for technologies with lower necessity of additional investments related to maintenance (solar PV electricity – 20, liquid/ water &amp; liquid/air heat pumps and solar heat collectors – 15, air/water, air/air, water/water and direct evaporation/water heat pumps – 10, wind technologies – 5, biomass technologies – 0 score)</i>	0-20
4. Scoring depending on heat consumption of building (appropriate documents proving heat energy consumption shall be submitted) to promote buildings with already good energy efficiency (good keeping of building). <i>maximum score (5 points) applicable if heat energy consumption per 1 m<sup>2</sup> of heated area of the building (in year 2009) less than 70 kWh/1 m<sup>2</sup>,</i> <i>1 point applicable for buildings with heat consumption 130 kWh/1 m<sup>2</sup> heated area,</i> <i>for buildings with this consumption above 130 kWh/1 m<sup>2</sup> zero points are scored, the same for buildings for which documentation are not submitted</i>	0-5

<sup>2</sup> persons under insolvency procedure were ineligible



## ***Impact evaluation (methods and results)***

### ***Method of Calculation of Reduction of CO<sub>2</sub> Emissions.***

According [1], the CO<sub>2</sub> saving, which is achieved due to reduction of heat energy consumption, is determined pursuant to the CO<sub>2</sub> emission average factor – 264 g/kWh. This average emission factor is calculated pursuant to the total emissions in Latvia in the energy conversion sector (boiler houses and combined heat-power units), which are applied against the final consumption of the district heat energy – the average value during the time period from 2000 until 2007 – by correcting the indicator value by the amount of heating fuel used in CHP units and which has been consumed for the generation of electricity, i.e. not taking into account the CO<sub>2</sub> emissions that have occurred during electricity generation process.

The CO<sub>2</sub> saving, which is achieved due to reduction of electric energy consumption is determined pursuant to the specific CO<sub>2</sub> emission factor for electricity production and transmission - 0,397 t CO<sub>2</sub> /MWh, this coefficient is determined as the emission factor of the last marginal power production unit, including transmission and distribution losses, which may be replaced by renewable technologies. When calculating CO<sub>2</sub> saving, which is achieved due to heat supply switch from fossil fuel to heat pumps, the electricity consumption is taken into account by applying the above specific CO<sub>2</sub> emission factor.

### ***Implemented projects and technologies***

Within the frame of the given programme the 1759 projects were implemented, of which 78% were implemented in existing buildings, and the rest – in new buildings. The dominant part of the projects (95%) was implemented in single family houses and summer houses.

Taking into account that 9% of beneficiaries implemented more than one technology, the total number of implemented renewable technologies increases 1900, of which heat pumps – 36%, solar heat collectors – 32%, biomass heat technologies – 25%, solar PV – 5%, wind – 2% [2].

The total number of dwellings in Latvia in 2010 was evaluated 928 thousand [6], thus ~ 0.19 % of dwellings had took part in the described CCFI programme.

### ***Impacts***

Based on the information on contracted savings of particular projects [8], the total savings constitutes 19.5 thousand tons annually.

As presented above, the maximal capacity of solar PV and wind technologies is 10 kW. Assuming that the average capacity per one renewable electricity project is 5 kW (50% from the maximum), it can be estimated the total capacity of installed solar PV and wind technologies ~ 0,665 MW<sub>el</sub>. Assuming 2500 hours of annual load, the amount of annually produced new renewable electricity may be evaluated up to 1.7 GWh (0.006 PJ) and related to this amount CO<sub>2</sub> savings up to 660 tons.

The rest of CO<sub>2</sub> savings (18.8 thousand tons annually) thus might be attributed to renewable heat. Thus, the total amount of annually produced renewable heat may be evaluated up to ~71 GWh (0.25 PJ). However the annual production of new renewable heat is lower - it has to be taken into account that not all implemented new renewable technologies replaced fossil fuel ones operated before, also the substitution of older low efficiency biomass technologies with new renewable ones having high efficiency had took place.

The annual final energy consumption of Latvia household sector in the years (2008-2011) before the implementation of the given CCFI programme in average constituted ~ 60 PJ [5]. Thus the renewable energy, produced by new technologies installed within the frame of the CCFI programme, may cover around 0.4% of this requirement - based on these considerations the semi-quantitative evaluation is attributed as “medium”.

## Interaction of measures

The multi-apartment dwellings might apply for the financial support both in the frame of the described CCFI programme as well as within the frame of the programme “Increasing Heat Energy Efficiency in Apartment Buildings: 2007-2013” co-financed by ERDF (see the measure HOU-LV41). However in the real practice such combination was very rare.

## References

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3. Ministry of Environment Protection and Regional Development (MEPRD) Republic of Latvia. Website of the 1<sup>st</sup> open tender [http://www.varam.gov.lv/lat/darbibas\\_veidi/KPFI/projekti/?doc=11385](http://www.varam.gov.lv/lat/darbibas_veidi/KPFI/projekti/?doc=11385) (in Latvian).Latvian Environmental Investment Fund (LEIF). List of Implemented Projects of the 1<sup>st</sup> Tender, <http://kphi.lv/modules/Konkurs/projekti.php?id=1&lang=lv> (in Latvian).
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5. Central Statistical Bureau, Republic of Latvia. Statistical Database ENG 07 “Energy Balance”, [http://data.csb.gov.lv/pxweb/en/vide/vide\\_ikgad\\_energetika/?tablelist=true&rxid=cdbc978c-22b0-416a-aacc-aa650d3e2ce0](http://data.csb.gov.lv/pxweb/en/vide/vide_ikgad_energetika/?tablelist=true&rxid=cdbc978c-22b0-416a-aacc-aa650d3e2ce0)
6. Central Statistical Bureau, Republic of Latvia. Statistical Survey “Energy Consumption in Households”, the table emp1.0, [http://data.csb.gov.lv/pxweb/en/vide/vide\\_energ\\_pat/?tablelist=true&rxid=cdbc978c-22b0-416a-aacc-aa650d3e2ce0](http://data.csb.gov.lv/pxweb/en/vide/vide_energ_pat/?tablelist=true&rxid=cdbc978c-22b0-416a-aacc-aa650d3e2ce0)
7. MEPRD. “Informative Report on the Results of the Climate Change Financial Instrument Operation in Year 2015” (*Informatīvais ziņojums “Par Klimata pārmaiņu finanšu instrumenta darbību 2015.gadā*), June 2016, in Latvian, [http://www.varam.gov.lv/lat/darbibas\\_veidi/KPFI/likumd/](http://www.varam.gov.lv/lat/darbibas_veidi/KPFI/likumd/)
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*Last update: 30 September 2017*

