



Hungary: Energy Efficiency and Renewable Sources

Proposed priorities for Cohesion Policy in Hungary – Increasing energy efficiency and RES substitution in buildings

Problem statement

According to various analyses (Energiaklub, CEU, REKK, Munkácsy et al.), there is a huge potential in Hungary to cut fossil energy use in buildings and build in economically viable renewable energy sources (RES) technologies.⁷⁶ While this increases energy security by reducing primary energy needs (National Energy Strategy: reducing heating energy use in buildings results in 10% less of those needs), it also contributes significantly to meeting the EU energy efficiency and RES targets and create jobs and economic opportunities in line with Strategy 2020.

In Hungary – as typically in other CEE countries – 40% of total use of energy is consumed in buildings, of which 75% is heating-cooling. The Hungarian building stock uses 180-320 kWh/m²/year for heating and HWP (at least twice as much as in Austria or in Denmark). The mainly privately owned single family houses (70% of the total 4.3 million flats) and 70% of public buildings have the weakest energy performance. At least 150 PJ annually (40% of the energy used in flats) could be saved with proper energy efficiency measures.⁷⁷ However, a significant number of the attempted measures (e.g. some EE budget lines in the Environment and Energy Operational Program, KEOP) were changed/aborted or closed well before demand was met due to a lack of sufficient (state) funding, even with special intensity rates and constructions. Even though auctioning revenues will be used for the financing of energy efficiency, a long-term funding program from EU funds is essential to realize these low-carbon structural changes in buildings and avoid a lock-in effect. With low prices of EU ETS allowances, the auctioning revenues will not be sufficient to satisfy the demand and achieve necessary massive change.⁷⁸

It is advisable to combine deep retrofits in buildings with the introduction of RES for heating, hot water and electricity, in line to meet the RES targets set by EU and consequently

Public support for renewables is a key tool to start low-carbon development in the disadvantaged regions. Mórahalom geothermal cascade (geothermal well in picture) inspired the town-hall to undertake other energy efficiency projects as well.



Photo: Mórahalom municipality

76 a. Energiaklub: Negajoule 2020: Energy efficiency opportunities in Hungarian houses. More than 40% of the energy used in households (152 PJ) could be spared with improving energy efficiency (330 000 households). 50 billion HUF/year in 5 years (30% funding intensity) can result in 7.56PJ savings.
 b. CEU studies (p.e.g. http://3csep.ceu.hu/sites/default/files/field_attachment/project/node-2059/novikovavarge-vorsatztanulmany.pdf): for the period 2008-2025: to use the full energy savings potential in buildings (34,8 Twh/year) 39 billion eur is needed, resulting in 7.8 million tCO₂ savings per year (73% of the base).
 c. REKK: Impact assessment of a beyond 20% EU mitigation target on Hungary
 d. Munkácsy et al: 100% RES
 77 Energiaklub: Negajoule 2020: Energy efficiency opportunities in Hungarian houses
 78 The needed funding rate/intensity of the energy saving- and efficiency investments in buildings depends on the 2020 mitigation commitments (20% or 30%) and on the auction revenue opportunities as well. See REKK 20-30% study: e.g. reductions in natural gas use in case of 30% mitigation commitment: 1053 m³, in case of 20%: 335 m³. Funding needs at 30% commitment: 157 million eur state funding + 53 million eur auction revenues; 20% case: 383 million eur state funding + 394 million eur auction revenues.
 79 There is only a little info about RES in buildings; the National Action Plan aims to increase the RES rate in the heating-cooling sector from 9% (2010) to 18.9% by 2020. Within this rate, thermic solar energy takes 3.43 PJ (approx. 1 billion eur); geothermal 14,95 PJ, with 6PJ/year increase rate (according to experts a 30 PJ/year increase rate of direct use is more realistic); biomass: 53 PJ.
 Munkácsy et al: 100% RES: RES potential in the buildings sector by 2020: 9 PJ in solar (3,7 PJ heat and 5,3 PJ electricity); 1-2 PJ in biogas (12 PJ for all sectors, 2 PJ estimated for buildings), 1-2 PJ geothermal (estimated from the data: by 2050 approx. 50% of households electricity = 7.5 PJ), 0,5 PJ wind, 30 PJ (currently 24 PJ biomass used for domestic heat). Units used: 1 toe = 41 868 GJ = 11 630 kWh.



in the National RES Action Plan.⁷⁹ RE use in Hungary also faces the challenge that the previous feed-in tariff system was suspended, but the new, improved FIT system (prepared almost 1 year ago) has not yet been introduced, scaring away RES stakeholders and increasing insecurity.

It is important to note that in total approx EUR 190 billion (EUR 120 billion from ERDF and EUR 68 billion from CF) could be made available for mitigation actions in CEE across different sectors such as SME's (trainings for efficiency and green jobs, exchange of boilers, efficiency in technologies), in R&D for developing green technologies and in EE and RES directly, especially for energy savings in the housing sector. The 20% mainstreaming principle entitles EUR 38 billion at least to be spent on climate mitigation in CEE.

Regarding the absorption rates in Hungary, the half-term analysis of the Environment and Energy Operational Program (KEOP, 2007-2013) shows that the 'RES-use' priority (KEOP 4.) absorption rate is only 50% so far – but with a significant increase in small and administratively simplified projects (mainly by households) in the past 2 years, while the 'EE increase' priority (KEOP 5.) absorption rate is 121%, proving the extra demand from households. Learning from the analysis and similar recommendations by NGOs, the government plans to shift significant money from other OPs, increasing the RES-use budget for the total period from 0.25 billion eur to 0.39 billion eur and the EE budget from 0.15 billion eur to 0.57 billion eur. The financial allocation for all the 8 priorities of KEOP is 0.517 billion eur from ERDF and 4.156 billion eur from Cohesion Funds, for the total 2007-2013 period.

Support program for energy efficiency and renewables

Aim of the program

Cutting energy use of buildings by 40% and substituting 20% fossil energy use by RES in buildings (heat-hot water-electricity) by 2020.

Objectives

(In line with the Buildings Energetics Action Plan, long-term measures, 2010-2020):

- Energy efficient buildings: new houses to meet the passive standard.
- Deep retrofits in housing - to meet the low energy standard, with regard to regional/local opportunities.
- Substitute 20% fossil energy use by RES in buildings (heat-hot water-electricity) by 2020.
- Soft measures: energy info network, public consultation and awareness raising, energetics trainings.

Sustainability criteria to take part in the program

- Minimising material and energy use in the full life cycle in buildings, increase efficiency of material and energy use.
- Avoid using toxic materials in the whole life-cycle (e.g. during the production of polystyrene and in its decomposing process)
- Decrease negative externalia in building-retrofitting (e.g. adapting Natureplus etc. ecolabels, giving bonuses if using local and renewable materials like straw bale and local clay).
- Take the long-term effects on human health into account.
- Prefer the use of local resources if this does not conflict with their sustainable use.
- Prefer RES use if this does not conflict with their sustainable use.
- The use of RES in buildings should not be in conflict with basic human needs e.g. food supply.
- The use of RES in buildings should minimize long-distance transport, preferring local use and re-use.
- Avoid waste through using by-products as resources in production cycles.

Eligible project activities to be supported within the program

- Deep energy retrofits of existing buildings (to meet the low energy standard) combined with efficiency measures in heating using local RES heating (biogas, local biomass, geothermal energy, solar cells).
- Energy efficiency in domestic hot water and use of RES for hot water (solar, local biomass and biogas, geothermal energy etc.).
- Energy efficient electricity systems with smart grids elements (like local RES clusters or virtual plants), combined with local small RES such as wind and solar PV - preferably mounted on buildings. Targeted support of local, sustainable, small-scale production of renewable electricity not covered by the new feed-in tariff system (new FIT to be introduced only in 2013): e.g. solar systems in households below 50 kW, local systems run by energy cooperatives etc.
- Construction of new buildings in passive energy standard.
- Small scale, local biomass cogeneration projects – government strategies already plan to over-prioritize biomass, thus only sustainability-proven, small scale local pilot projects (for local use) should be supported.
- Soft measures: Awareness raising, trainings.



The indicators of the program and the required targets

- Retrofit rate – 50-80% of residential buildings by 2020
- Energy savings from insulation and efficient heating, hot water and efficient electricity systems – 150 PJ by 2020
- Fossil fuel substituted by RES heating and hot water and by RES electricity – 72 PJ (20%) by 2020

Required finance

Experts' estimate is 40 billion eur (EE) + 50 billion eur (RES).

Using the 2011 Environment and Energy Operational Program of Hungary (KEOP) indicators, the figures are lower – 15.7 billion eur (EE) + 7.5 billion eur (RES), but these KEOP indicators have their challenges. However, even these amounts prove that more funds, more state/own contribution is needed: these amounts are much higher than the actual KEOP budget for 2007-2013, which is 4.67 billion eur⁸⁰.

Summary of the program and overall indicators of the whole program

Priority	Output indicators	Result/Outcome indicators & Measurement unit	Milestone for 2016	Milestone for 2018	Target for 2022
(4c) supporting energy efficiency and renewable energy use in public infrastructure and in the housing sector	Saved energy in housing (% and/or PJ)	Decreased energy consumption	-20%	-30%	- 40%, 150 PJ
	RES use in buildings	Substitution of fossil fuels by RES in buildings (heat and electricity)	15%	17%	20%

⁸⁰ See Environment and Energy Operational Program of Hungary (KEOP), OP amendments document (2011): Using 2011 KEOP indicators, EE performance is 33.4 GJ savings/year/1 million HUF (funding intensity 61.7%), meaning that 150 PJ savings will need 15.7 billion eur funding. Using the 2011 KEOP indicators for RES electricity (indicator only for electricity!) 266 000 GJ/year/billion HUF, 72 PJ RES would only require 0.95 billion eur funding, which is a rather unrealistic result, demonstrating the limits of the KEOP indicator. As this 72 PJ also contains non-electricity elements, we'd rather count with the EE figure (33,4 GJ savings/year/1 million HUF), in which 72 PJ means 7.5 billion eur funding needs.