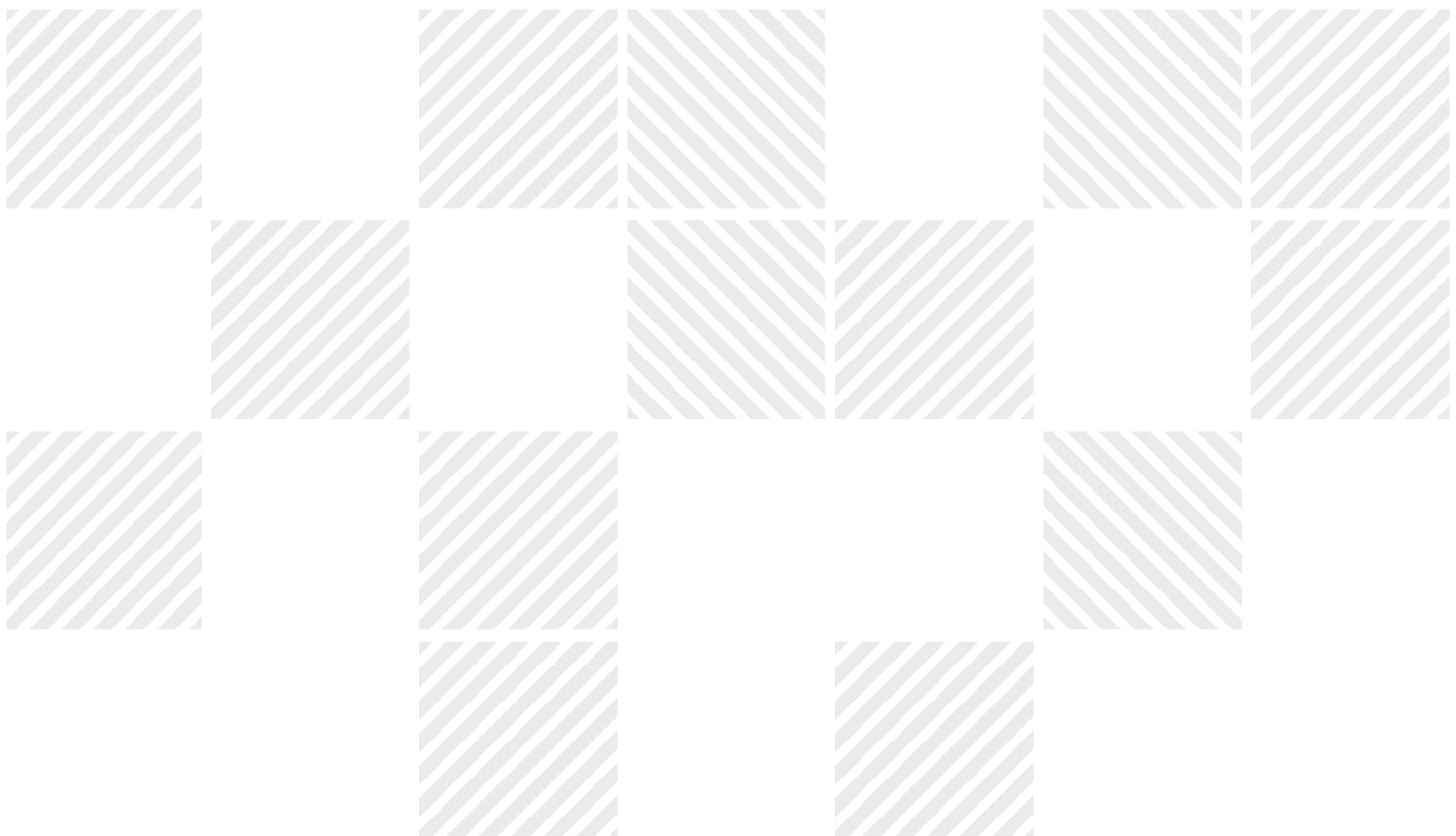


FUNDING SUSTAINABLE DEVELOPMENT IN EUROPEAN REGIONS

CEE Bankwatch Network recommendations for the programming of EU funds in 10 CEE countries





energy efficiency



sustainable transport



biodiversity



waste management



economic alternatives



renewable energy

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Chapters in this publication are position papers of NGO coalitions on national level with collective authorship.

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Introduction

The European Union's Cohesion Policy, in other words its regional development policy, aims to reduce the gap between the less and more developed regions of the EU, namely by promoting economic, social and territorial cohesion. Its financing instruments – the so-called 'Structural and Cohesion Funds' (EU funds) – account for one third of the current EU budget¹, making this the second largest spending line. This financial support exerts a major influence on overall public financing, especially in less developed countries such as the new member states in Eastern Europe. Table at this page shows that in Central and Eastern European countries (CEE) the share of EU funds makes up more than half of all public investments.

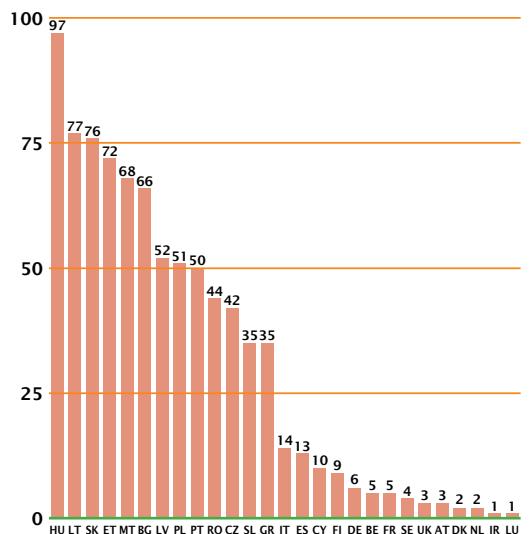
Given the weight of EU funds within the national spending and due to its leverage effect on loans from other international financial institutions (IFIs) and private investors, the way EU Structural and Cohesion Funds are invested in these countries largely determines their economic development path.

However the current EU funds are not delivering on European public benefits such as tackling climate change or promoting green jobs. Currently climate change mitigation measures such as energy and resource efficiency, renewable energy and investments for sustainable transport receive a negligible share of all EU funds.² Meanwhile, a significant amount of the EU funds subsidise motorways and other infrastructure investments (e.g. in the waste sector) that are more likely to intensify climate change and lock countries into carbon-intensive paths of development.

The future generation of EU funds for the 2014 – 2020 period should therefore contribute to achieving the EU's 2050 long-term climate goals and directly deliver on the Europe 2020 targets and beyond. Specifically they should finance infrastructure and other measures that foster truly sustainable development and catalyze the transformation to a low energy-consuming, renewable-based and resource efficient society, living within its ecological limits.

The current reform and renewal of the EU funds for the period 2014 – 2020 provides the opportunity to change the currently prevailing regional development pattern, and shift regional investment strategies towards building sustainable economies. While the new legislative framework for the Cohesion Policy is still under negotiation between the European Commission, the European Parliament and Member States, the planning for concrete EU funds investment measures, priorities, new financial instruments and financial allocation at national level is underway: Member States are already setting up their investment plans, the Partnership Agreements (PA) and Operational Programmes (OP) that will define the performance frameworks, investment strategies and spending conditions of future EU funds.

Share of EU funds in total public investments 2009 – 2001, Source: DG Regio, September 2012



1 EUR 347 billion for the period 2007 to 2013.

2 Only 2.4% of EU funds in CEE countries have been allocated to measures supporting Energy Efficiency and Renewables, <http://bankwatch.org/publications/potential-unfulfilled-eu-funding-and-cohesion-policy-can-do-more-sustainable-climate-an>.

This publication, prepared by CEE Bankwatch Network, in close cooperation with national NGO coalitions and the support from external experts, aims to contribute to the elaboration of Partnership Agreements and Operational Programmes by proposing concrete measures to be financed, targets to be set, performance indicators to be applied and investment needs to be met. The focus is laid on various sectors including energy efficiency and renewables, sustainable transport, resource efficiency, research and innovation, and nature protection.

For 10 CEE member states and pre-accession countries, namely Albania, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Macedonia, Poland and Slovakia, an analysis of the current EU funds context sets the frame for a problem definition in the respective sector on the national level. Following this, the local potentials for energy savings, installation of renewables energy sources, sustainable transport and waste management investments and eco-system protection are laid out. This then leads to concrete recommendations and proposals which should be taken into account for the future sustainable development of European Regions.

February 2013



Albania: Resource Efficiency

CSO Position paper on engagement of CSOs in planning, programming and monitoring of IPA Funds in Albania – On Resource Efficiency related Funds

This position paper is directed to the Ministry of Public Works and Transportation, the Ministry of Environment Forestry and Water Administrations, the Ministry of European Integration, the Ministry of Economy, Trade and Energy, the Ministry of Finance, and the European Union Delegation to Albania. It addresses Resource Efficiency issues and comes from a group of CSOs interested in the planning, programming and monitoring of IPA Funds in Albania.

We consider IPA Funds to be very crucial for the sustainable development of our country and we think that the existence of a constructive dialogue between the government and CSOs will help to achieve a more democratic and inclusive process. This paper follows our requests³ to take part in the planning, programming and monitoring of IPA Funds in Albania regarding resource efficiency projects.

Regarding resource efficiency projects, the main IPA Funded projects have been focused on the water supply sector (improvement of drinking water), sewage sector (construction of sewage systems and waste water treatment plants) and also waste management projects (buying sweep machines, waste collection machines and pick up). Even though according to the Albanian 2012 progress report⁴ some progress was made on waste management, uncontrolled dumpsites still remain the main place for waste disposal. According to the law on integrated waste management, each local governmental unit has to design its waste management plan. Until 31 December of 2018 local governmental units must collect waste separately at least for paper, metal, plastic and glass. Waste is currently one of the biggest environmental problems in Albania and separated waste collection is a top priority need for Albania.

Giving the conditions that we as civil society actors do not have any policy dialogue instrument to express our views, opinions and thoughts about potential projects, which would contribute to the sustainable development of the country, as well as to the improvement of the environment state of art⁵, we are presenting this position paper.

Through this position paper CSOs are trying to bring the following recommendations related to the resource efficiency field to your attention:

- Apply the waste management hierarchy in financing of projects: Prevention; Preparation for re-use, Recycling, Energy recovery operations and only then Disposal (construction of landfills). Start planning and implementing incentives to environmentally sound means of managing waste according to the hierarchy.
- Incinerators as the most expensive waste solution should not be financed through the IPA
- Financing of waste prevention, waste separation facilities and waste management standards to be applied throughout the whole country.
- We strongly support financing of waste water treatment plants.

³ Letters sent to Ministry of Integration, line Ministries and EUD to Albania ("Request on engagement of CSOs in the programming of IPA Funds through presence in the consultations of SIF and PIF") on 8 July and 7 September 2012.

⁴ http://ec.europa.eu/enlargement/pdf/key_documents/2012/package/al_rapport_2012_en.pdf

⁵ As recognized by Commission Opinion on Albania's application for membership of the European Union the full compliance with the acquis in the field of the environment could be achieved only in the long term and would require substantial levels of investment; efforts in this area should be accelerated. http://ec.europa.eu/enlargement/pdf/key_documents/2010/package/al_opinion_2010_en.pdf

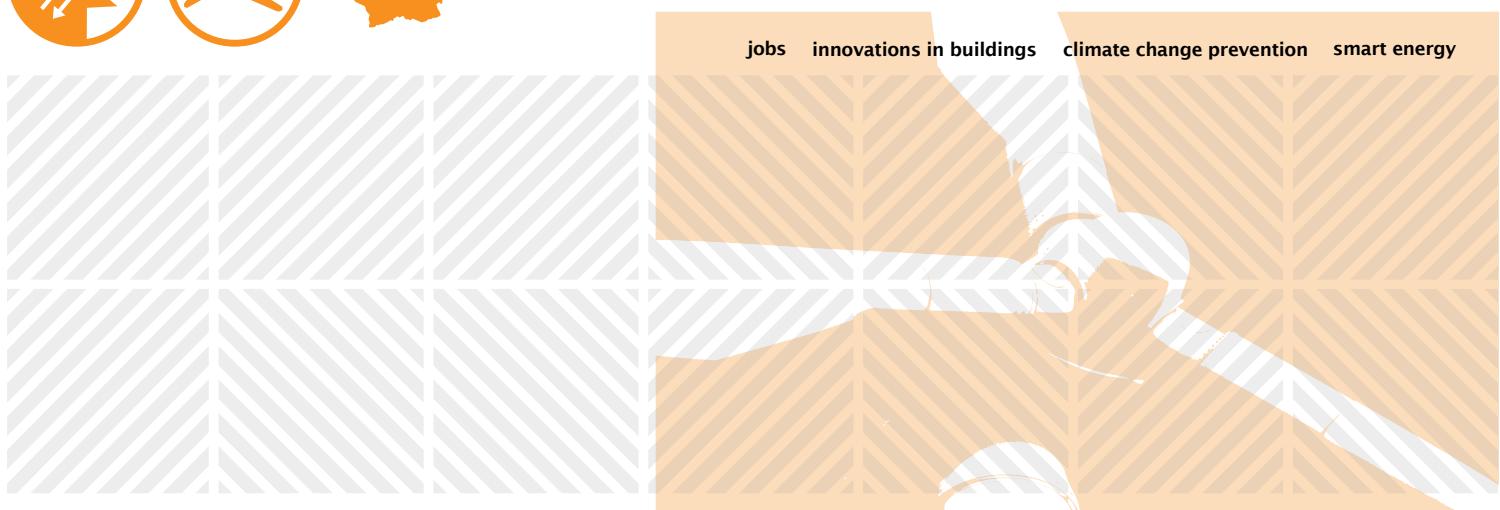


- Proper implementation of the national waste legislation (contains main European principles like proximity principle and self-sufficiency, precautionary principle, polluter pays principle and producer responsibility) should be a prerequisite for the funding of projects through IPA.
- To request technical support for the analysis of “hot spots” in the field of hazardous waste.

We think that such measures and long term investments are necessary to be fulfilled in the framework of the European Integration process.

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Bulgaria: Energy Efficiency and Renewable Sources

Position of the Bulgarian Coalition for Sustainable use of the EU Funds and CEE Bankwatch Network: Funding for clean energy through the Structural and Cohesion Funds for the programming period 2014-2020

Recommendations

- Funding needs to be available for small-scale renewable energy applications in industry, the tertiary sector, public buildings and households as well as in rural areas in order to make them more attractive even without national support (e.g. feed-in-tariffs)
- At least EUR 400 million from the European Fund for Regional Development should be directed towards housing energy retrofits – the needs are much higher but the country is unlikely to be able to manage a much bigger renovation programme.
- At least EUR 400 million through OP Competitiveness towards clean energy applications in small and medium enterprises – support only for ambitious energy savings and introduction of renewable energy.
- No support for gas infrastructure (except for biogas)
- Any support from EU funds for newly built buildings planned in the period 2014-2020 must be conditioned on fulfilling zero-energy criteria set by the Energy Performance of Buildings Directive II (EPBD II) from 2014
- Conditionality must be set for any new or renovated building with EU funds support to count on renewable energy as the main source for heating and cooling (15% is the minimum required by the Bulgarian Renewable Energy Act)
- An obligation needs to be set to use green procurement rules for spending of Structural and Cohesion Funds – recommended as an ex-ante condition as there are already developed and easy to apply rules in Bulgarian that remain unutilized due to the fact they are not obligatory.
- All building stock that has a long life-span and is being renovated must aim for ambitious energy saving levels closer to zero energy standards. Some renovated buildings could be exempted from this requirement – e.g. prefabricated buildings with a short lifespan that will be demolished before ambitious energy saving measures pay back.
- Infrastructure for electric vehicles needs to be developed with incentives to charge during the hours when there is an excess of renewable energy in the network.
- Utilization of green electricity in rail transport
- No support for energy recovery from municipal waste incineration
- Development of administrative capacity, human resources and support for “green jobs” adequate for the schemes for clean energy that are promoted during the period 2014-2020

Problem analysis

Renewable energy Rooftop PV systems have so far had to undergo more or less the same complicated licensing procedures as large solar to be able to sell electricity to the grid. According to one study by the Bulgarian Photovoltaic Association a rooftop PV requires around 8 working hours to get approved and arranged in Germany, whereas in Bulgaria it requires 404 hours.

The new Bulgarian RES law - implementing the Directive on Renewable Energy 2009/28/EC - generally transferred the simplification of procedures onto local authorities, thus asking 264 municipal authorities in Bulgaria to develop their own package of application documents, without considering their limited capacity and almost no authority to deal with the grid operators, for example. Some important packages and rules were supposed to come with the new regulatory framework, however the regulations were never put in place. The Energy Act narratively proposes the possibility of having RES heating and cooling networks that use the existing district heating networks but there have been no steps towards such a system yet.



In such an unclear regulatory framework the European budget offers a great opportunity to fund small-scale renewable energy applications in industry, the tertiary sector, public buildings and households – allowing technologies such as photovoltaics to be less reliant on feed-in-tariffs and making it possible for such installations to become attractive even when needed to cover only a household's own needs and to secure the clean redevelopment of Bulgaria.

Energy efficiency in buildings

Designing, funding and constructing to “nearly zero energy” in 2018 means starting planning in this way as early as 2014. Even within the current programming period there is potential that should not be missed – e.g. Sofia Tech Park that is to be built and that may become an energy model for newly constructed buildings. Considering the requirements of Directive 2010/31/EU on the Energy Performance of Buildings, the zero energy performance of a building should be a condition for any investment from the Cohesion and Structural Funds into new construction and reconstruction.⁶

Considering the energy intensity in the country and the poor condition of almost the entire building stock, even reaching the minimum binding level of energy savings will not guarantee fair improvements. Bulgaria will have to find ways to accelerate these levels of energy efficiency improvements beyond the minimum requirements in the Energy Efficiency Directive Directive. The requirements for heat and cooling network development, co-generation etc. will require significant reforms to be quickly implemented in the energy companies and - notably – the district heating companies.

Natural gas - just as any fossil fuel - has to be phased out by 2050 and any public support for fossil fuels should completely end. Providing support for gas with public money now will only create a new problem, and the growing market for gas will make it harder to get rid of it when the time comes. Regarding the gas network, additional attention should be paid to the possibility of every biogas producer feeding into gas pipelines without a minimum quantity that has to be provided in order to get access to the network. Infrastructure financing connections of rural biogas sources should be available.

Green procurement

Labeling - despite the broadened scope - does not cover all products, neither there are schemes with European funding that have much relevance to the Green Procurement Directive. An obligation to use green procurement rules in spending of Structural and Cohesion Funds, especially under programmes which involve tendering for new equipment, should be set.

Energy in Cohesion Policy allocations

Cohesion Fund

In the current programming period the Cohesion Fund is the main source for OP Transport (to be renamed to OP Transport Infrastructure for the period 2014-2020, hinting what the priorities are) and OP Environment. It provides for transport projects, water treatment projects and waste management. The funding from the Cohesion Fund in Bulgaria has so far translated only into support for highways (polluting automotive transport), landfills (most often not even utilizing the generated methane energy-wise) and wastewater plant projects – some far too expensive and constructed in the most unexpected places in the country while other places are desperately in need of wastewater treatment (like some Black Sea and mountain resorts). Thus only grey infrastructure is supported and the experience that is developed in Bulgaria is limited only to large projects.

Cohesion Fund funding priorities must be:

- low-carbon transport infrastructure and transport schemes,
- development of ecosystem-based water treatment
- waste management prioritizing the first steps of the binding waste hierarchy
- smart grids (the local green solution)
- energy efficiency in housing with an ambitious target in residential energy retrofits.

ERDF

The European Regional Development Fund is the main source of funding for OP Regional Development and OP Competitiveness. Support to clean energy has to continue much more intensely towards building renovation, intelligent grids, renewables and energy efficiency in buildings and industry, and the development of greener, more sustainable and less energy demanding urban environments.

⁶ For old prefabricated blocks whose lifespan is no more than 3-4 more decades it should not be obligatory to invest into in passive standards as the buildings will be demolished sooner than ambitious energy efficiency measures will pay back.



ESF

The European Social Fund will be the main source for OP Human Resources and OP Technical Assistance and Administrative Capacity. The funding has to focus on green jobs and the training of human resources that can support projects related to the transition to an energy-efficient, renewables-based economy. In this programming period there was no measure in OP Human Resources focused on green jobs. This already predetermines that there is not much experience to step on for 2014-2020. For the next programming period much more out of the box thinking is required when it comes to supporting projects through ESF. Such measures should provide assistance and incentives for the development of community initiatives, capacity building and training for environmentally friendly measures.

Many more community-led projects should be supported in urban areas – for example municipalities should make it possible for small local groups or even individuals to get small funding to keep and maintain their areas and neighbourhoods. Such projects have been successfully implemented already in this programming period mostly for maintenance of green areas but the scope should be broadened also to support the development of small energy projects – funding the time, efforts and the capacity building of people, making it possible to train people to apply for small grants (and making small grants available and accessible with less bureaucracy) and providing additional incentives and training for active citizenship.

Currently, the ESF in Bulgaria focuses mainly on basic-level training (like language training), without a long-term strategy of the development of human resources and capacity at all levels of the state apparatus and throughout society.

The future Operational Programmes in 2014-2020 and Energy

OP Transport Infrastructure

With more focus on railways that use electricity and with the gradual penetration of electric vehicles, OP Transport Infrastructure has to consider making a competitive link towards the use of green electricity in the railways and to developing the necessary infrastructure for electric vehicles. The planning and implementation of cycling infrastructure has to find a place in this programme.

OP Regional Development

The National Renovation Programme, which envisages the renovation of 680,000 dwellings (80,000 multifamily buildings) around the country, has been rusting since 2005. The existing estimate of investment needs to put the programme in motion is about EUR 2 billion – providing half of it through public funding comes to EUR 1 billion or easily over 1/3 of the current ERDF levels for Bulgaria. As most calculations in the National Renovation Programme were done in the period 2004-2005 some recalculations might be necessary. The initial calculations in the National Renovation Programme from 2005 estimated that around 800 m BGN (approx. EUR 400 million) will be required to realize the programme at 20% subsidy for the projects. The current scheme offers 50% subsidy so the levels of public funds required should be adjusted up to EUR 1 billion. It is questionable whether Bulgaria could cope with such an extensive renovation programme. A simple calculation shows that renovating 80,000 buildings from now until 2020 results in 30 renovated buildings per day. It is unlikely that the country has the capacity to do quality work at these levels of demand. Considering the levels of the new EU budget dedicated for climate protection and clean energy, housing renovation allocations needs to be over EUR 400 million from the ERDF – this is approximately EUR 60 million per year over a 7-year period. This will cover the investment needs of this sector more realistically than the current renovation scheme with EUR 32 million for 1.5 years.

Strong support for energy efficiency in public buildings has to continue with a set of ambitious energy saving levels and criteria for the quality of building materials when tendering. More transparency of the tenders is needed as there are some projects around the country that seem suspiciously expensive considering the energy efficiency measures applied. The Operational Programme should continue the push for a more sustainable urban environment with the development of bike lanes, green roofs (as energy savers), more pedestrian areas, implementation of anti-congestion measures, small renewables installations and reuse and recycling of waste including building materials.

OP Competitiveness

Over EUR 300 million were supposed to support clean energy in business and especially in SMEs through grants and bank guarantee schemes within this programming period. Businesses have been promised these measures since 2007-2008. Only at the end of 2011 a measure for large industry started disbursing EUR 40 million. Schemes of EUR 150 million grants + EUR 150 million guarantees for SMEs commenced only in July 2012 – less than a year and a half before the end of the programming period. Proper utilization of these funds 1.5 years before the end of the programming period after keeping business on stand-by for over 5 years seems very unlikely. The next programming period should start clean energy funding for business from the very beginning, giving a clear signal to companies when and how much funding will be available. When financing clean measures for the generation of electricity under OP Competitiveness a double



subsidy is avoided because the power generating capacity does not get a preferential feed-in-tariff – this is an incentive for enterprises to choose the most market mature technologies to cover their energy needs and the extra burden of the higher energy prices for the consumers is avoided. The funding for clean energy in the next programming period should be at least doubled from EUR 190 to 400 million.

When financing a change of fuel base with new one that is again utilizing fossil fuels, increasing efficiency and decreasing total greenhouse gas emissions, high levels of subsidy have to be avoided – e.g. when reaching only 5-10% efficiency increases it is inappropriate to subsidize 70%, 50% or even 30% of the project price. Levels of subsidy should be sufficiently motivating to push for maximum energy savings and greenhouse gas emission reductions.

OP Environment

OP Environment must stop funding landfills, must decrease funding for grey infrastructure and start to provide support the green infrastructure (e.g. ecosystem waste water treatment), that is also less energy intensive compared to grey infrastructure. Energy-wise, OP Environment should explicitly exclude energy recovery from municipal waste incineration, due to its energy inefficiency, poor use of recyclable resources and lock-in effect in preventing advances in waste prevention, re-use and recycling.

OP Administrative Capacity and Technical Assistance

The people working in the state administration and local authorities need to increase their expertise in clean energy, developing local policies in clean energy and knowledge to support local people in their clean energy development – from providing assistance on building renovation to figuring out the best ways for community investments in renewables and assisting investors in clean energy schemes to quickly penetrate locally. More tools should be available online to allow people to skip unnecessary travel. Where appropriate municipalities should fund energy experts – one or more for larger municipalities and one per municipality cluster when the local authorities are smaller. Administrative capacity should open schemes to fund capacity building in civil society groups in the form of small grants and voucher systems.

OP Human Resources

In the current programming period there is not a single measure aimed at developing skills for people to take green job positions ie. for green urban gardens, green job training, inclusion through green initiatives. 2007-2013 has represented a loss of opportunities to obtain experience and to define what is necessary for developing human capital towards the new energy efficient, renewables-based economy. There is a lack of quality green-tech work force skilled in energy retrofits, installation of RES, ecosystem restoration, and green infrastructure. These are foreign ideas to developers, which can be felt on the market. The signal for financing them has to be very strong, clear and timely.

Rural Development Programme

The idea that the Rural Development Programme will mirror the functions of OP Regional Development was already previously mentioned. As of September 2012 it was still unclear what would be the demarcation between the two programmes – what is envisaged is that OP Regional Development will focus on the bigger cities and the urban areas where around 70% of the population is situated. Even though the programme is out of the SCF we mention it here to complete the picture of energy funded through the European budget. It is still very unclear if this concept is realized whether it will fund for example energy efficiency in family houses, biomass in rural areas, or even the utilization of local, sustainable building materials that can be used for insulation and better energy efficiency – e.g. straw and clay. It is also necessary to learn from the mistakes of this programming period – e.g. providing double incentives for renewables like PV in the rural areas by providing a grant and then by keeping them eligible for feed-in-tariffs. All these developments were meant to better the lives of people in the rural areas, however the application procedures were only possible for companies that could get the services of a consultant. Thus the subsidies never served their purpose to reduce regional disparities and instead they just widened the gap. The focus for 2014-2020 when funding clean energy should be on locally produced fuel – biomass from agriculture and forestry residues and biogas plants and very cautiously liquid biofuels (see Bankwatch's sustainability criteria⁷). A strong focus should be put on community-led and -owned renewable projects.

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proper planning

waste reduction

smart economy

composting



Bulgaria: Resource Efficiency

Position of the Bulgarian Coalition for Sustainable use of the EU Funds and CEE Bankwatch Network: EU Funds for Resource Efficiency and Sustainable Waste Management 2014 - 2020

Recommendations

CEE Bankwatch Network, in cooperation with the Bulgarian Coalition for Sustainable Use of the EU Funds⁸ is proposing the following measures to be implemented in the process of planning and programming of the future Cohesion Policy instruments in the field of resource efficiency and waste management:

- Close adherence to the binding waste hierarchy in the programming and management of the available EU funding
- Phasing out of projects for the construction of landfills and disposal sites and further concentration of investments towards the upper-levels of the Waste Hierarchy in the next programming period
- Setting a strategic goal of 60% recycling of residual waste to be reached by 2020.
- Result-oriented, measurable and sustainable indicators, decoupled from GDP to be employed for evaluation of progress towards the future OP Environment strategic targets and objectives
- Systematically developed sectoral strategies and action plans for resource efficiency
- Initiatives aimed at managing consumption and demand to be put into practice (focus not exclusively on production patterns)
- Priority resources to be identified, waste to be considered a resource
- Development of strong institutional setup⁹
- Implementation of 'good examples'

Context of the proposal

According to the official national statistics¹⁰, in 2010 Bulgaria generated 3 091 000 tonnes of municipal waste, which is 589 000 tonnes less compared to 2005. The recycling rates are also gradually increasing; reaching a total value of 26 000 tonnes in 2010, which is 25, 7 more than the value for 2006. However, the improvement could not be considered as major or fully compliant with the overall strategy, targeted results and the regulatory framework of the EU. Such an approach cannot result in the fulfillment of the ex-ante conditionalities for EU funds management for the future Cohesion Policy. At the moment this remains heavily dependent on crucial system improvements.

Within this context, it has to be noted that for the present programming period Bulgaria did not manage to efficiently utilize the funding resources for waste management provided under Priority Axis 2 Improvement and Development of the Waste Management Infrastructure of the national Operational Programme Environment 2007-2013. The total budget of the programme accounted to EUR 1 800 748 085, of which the actual payments until August 2011 reached only around 14% (the lowest rate in comparison to the other six OPs).

7 <http://bankwatch.org/sites/default/files/EBRD-energy-tug-of-war.pdf> p.33-34

8 The Bulgarian Coalition is currently comprised by 36 environmental and social NGOs

9 In the current programming period the major amount of funds available under Priority Axis 1 Improvement and Development of Waste Waterl and 2 Improvement and Development of Waste Treatment Infrastructure remained unutilized due to the fact that responsibilities EC delegated at MS level were further left for realization at municipal level. The insufficient capacity in terms of financial and human resources prevented municipal authorities from the opportunity to use the resources available and to develop result-oriented projects over the long-term. For the next programming period, substantial modifications in the present system of the funding management has to be implemented towards developing options for collaborative participation of both municipal authorities at national level.

10 Statistics of the Bulgarian Statistical Institute (NSI) <http://www.nsi.bg/otrasalen.php?otr=38>



Although, strategic objectives for waste prevention, re-use and recycling, laid down in compliance with the binding waste hierarchy were clearly outlined in the OPE, the development of infrastructure for the construction of regional landfills was still the primary objective in practice and remain the only direction for projects realization under Priority Axis 2. As of September 2011, under this priority axis, 47 projects in total are at different stages of implementation, 35 of them being for Technical Assistance (preparing investment proposals, etc). The rest of the ongoing projects concern the construction of regional landfills - at present, six regional waste landfills are in the process of construction and 23 more are at different stages of preparation for construction.

In addition, it has to be noted that the National Waste Management Programme (2009-2013) made provisions for the construction of 56 regional landfills for solid waste disposal to be finalized within the framework of the present programming period. Until present, only 26 regional landfills were made operative in compliance with the requirements set in the Landfill Directive¹¹. As the construction of the envisaged landfills was heavily delayed, the Government of Bulgaria has taken measures to speed up the construction of missing landfill infrastructure and the realization of a programme of new landfills is under way.

The remaining landfills will be a priority measure for financing in the upcoming programming period as well, in contradiction with the overall EU legislative framework, providing for binding adherence to the waste hierarchy and the overall targets and goals set in respective EU Directives, Regulations and strategic documents. This will expectedly divert financial resources in the next programming period as well from investments in the upper levels of the waste hierarchy, resulting in an overall delay for the introduction of sustainable measures for resource efficiency in Bulgaria.

To conclude, regarding the amounts of funding absorbed as well as the realization of the set objectives, Bulgaria has failed in reaching lasting solutions in the area of resource efficiency and waste management in particular, in the process of EU funding management for the present programming period. More importantly, it has to be considered that the present situation imposes a serious risk to the sustainable spending in the future budget for resource efficiency and waste management in Bulgaria within the framework of the next programming period.

Challenges for Bulgaria in the field of Resource Efficiency within the context of the EU strategic goals and targets

For the next programming period the Cohesion Policy interventions must have a strong focus on the Europe 2020 goals and objectives. In order to ensure the achievement of the binding targets of the Waste Framework Directive and in general to respond to the commitments made within the framework of the EU 2020 Strategy, namely a 50% recycling rate of municipal and 70% recycling of construction and demolition waste, the Bulgarian authorities are expected to focus on the implementation of an approach in line with the provisions of the new Resource Efficiency Roadmap, adopted in May 2012.

For the present programming period, the tendencies for Bulgaria in terms of resource efficiency indicators are especially negative, considering that Bulgaria exceeds the EU average levels for material resources use per capita and consumes resources at similar levels to much more productive economies as Germany, France and Poland (values for per capita use of material resources for 2008¹²). The statistics for material productivity demonstrate that Bulgaria is at the bottom of the list, followed only by Romania and far behind the average levels for the EU 27.

Despite these tendencies, Bulgaria does not have a Resource Efficiency Strategy or Plan of Action stipulating a long-term vision and taking into consideration the various instruments, mechanisms, policies, strategies on EU and national level. There are, however, various operative policy documents that provide for measures on effectiveness of resources and that define priorities on waste management targets and values, still, without any explicitly stated interlinkages or established interdependence.

Therefore, it is highly recommendable for the national authorities, to develop a strategy on resource efficiency, based on current statistical data, relevant, result-oriented and measurable indicators, consideration of the relevant European regulatory framework and the overall EU priorities and targets. Such a national strategy should address the following major problematic areas:

1. Low levels of recycling, high levels of land filling of waste, which still remains the most common waste disposal method in Bulgaria, practically 100% landfilling¹³;
2. High and gradually increasing rates of waste generation;
3. Low resource productivity¹⁴;

11 Directive 1999/31/EC

12 European Environmental Agency http://www.ier.org.tw/smm/2_MATERIAL_USE_AND_RESOURCE EFFICIENCY_IN_THE_EU.pdf

13 Eurostat data, 2009



4. Lack of effective enforcement mechanisms for waste legislation, compatible with the EU standards, as basis for the promotion of continual improvement towards sustainable waste management;
5. Inefficient system of indicators for measuring the real impact of the National Waste Management Programme and the municipal Waste Management Plans;
6. Ineffective control of the authorities over the Extended Producer Responsibility (EPR) schemes, resulting in overall unsatisfactory levels in terms of recycling;
7. Overall low quality environmental performance of products throughout their life cycle (the so-called "integrated product policy" of the European Commission);
8. The quality of the information gathered on the monitoring of waste in Bulgaria is still not at the desired level. The reporting, registration, processing and analysis of the waste management information remain problematic;

Opportunities

While the aforementioned aspects of the policy in Bulgaria have an overall negative influence over the long-term effectiveness of the invested public funding, it has been already proved in practice, that the strict adherence to the waste hierarchy has huge potential in terms of major social and economic benefits such as energy and material savings, reduction of dependence on raw materials imports, employment, etc. It is estimated that the waste management sector and recycling industries alone provided between 1.2 to 1.5 million jobs in the EU.

To this end, in the following sections, we would like to bring to your attention the areas of intervention, we identify as requiring systematic improvement and specific investment concentration in the process of the funding allocation for the programming period 2014-2020.

Implementation of the Waste Hierarchy

- We recommend the allocation of the available funding under the new OP Environment 2014-2020, within the waste management priority, to be based on the defined hierarchy of waste management, providing for priority funding of measures towards waste prevention, re-use and recycling over waste recovery and disposal as laid down in the Roadmap to a Resource Efficient Europe.
- Derogations from the hierarchy are to be justified on the basis of a life-cycle analysis, including social and cost-benefit analysis.

Setting quality result-oriented indicators

The objectives of the present national Operational Programme Environment are as follows:

- Strengthen the competitiveness of the economy to achieve high and sustainable growth;
- Develop human capital to ensure higher employment, income and social integration¹⁵

The objectives of the Priority axis 2 – Improvement and development of waste treatment infrastructure are as follows:

- Improve the waste management in the country in compliance with the defined hierarchy for waste management (prevention, utilization and final treatment).
- Improve the soil and groundwater condition and to decrease the part of the country's territory covered with existing landfills for household waste.

The following impact, result and output indicators are identified, with the purpose of measuring progress on the implementation of the priority axis¹⁶:

- Population served by integrated waste management systems
- Areas of remediated sites as a result from re-cultivation and closure
- Number of constructed/completed regional facilities/installations for waste treatment
- Number of constructed facilities/installations for pre-treatment of waste
- Number of regional facilities for recycling of construction and demolition waste
- Number of closed landfills that do not comply with legal requirements

We recommend the employment of appropriate indicators, measuring the direct impact of the invested funding, decoupled from GDP, based on resource efficiency and material flow accounting.

14 Eurostat data, 2009 <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsdpc100>

15 Bulgarian Operational Programme Environment, 2007-2013, p. 4

16 OPE, p. 37



Decrease the overall amount of waste

Indicator: waste production

The aim of the indicator is to support projects leading to waste prevention and reuse within the industry.

Decrease the amount of municipal waste

Indicator: municipal waste production

The aim of the indicator is to support projects leading to waste prevention and reuse in municipalities.

Increase material recovery of municipal waste

Indicator: material recovery ratio of municipal waste

The aim of the indicator is to support projects leading to waste separation, recycling and other material recovery.

Defining strategic priorities and objectives is a crucial step towards reaching long-term impacts.

We recommend the set up of concrete values and targets towards achieving results in the areas of waste management and resource efficiency, following the positive examples of other MSs in the process of EU funding planning and programming (e.g Hungary has set up the following measurable targets: Reducing the quantity of yearly waste produced by 20%, at least 70% of the construction-demolition waste should be recycled until 2020¹⁷, etc).

Recommendations for measures in place

In line with the targeted recycling rates of 50% of municipal and 70% of C&D waste, we consider the process of phasing out of projects for construction of landfills and disposal sites and the further concentration of investments towards the upper-levels of the Waste Hierarchy in the next programming period, as a necessary step for contributing to the key EU targets. Within this context, we recommend the following measures to be introduced as part of the framework under the future OP Environment.

Measures for Waste Prevention

Waste prevention is to be considered as the ultimate goal for increased resource efficiency and reduced negative environmental impact. The prevention and eventually the minimization of waste quantities require the implementation of a complex set of measures directed towards both individuals and industries. We recommend the introduction of several indicative policy instruments in the National Waste Management Plan, already employed in various EU MSs, with direct impact on the minimization of waste values, namely:

- The setting up of specific targets for decrease in the generated waste estimated per capita and the employment of relevant impact indicator, on the basis of which the gradual progress to be measured.
- The setting up of overall requirements for industries towards improvements in the manufacturing process and eco-design of products.
- The development of country-specific strategic methodologies for decoupling economic growth/consumption and waste generation.

Possible policy instruments with direct impact on minimization of waste generation

Provision of information on waste prevention

The policy instrument includes incentives of municipalities for informing citizens on waste quantities and treatment and providing practical guidance with the purpose of increasing motivation for source separation and waste prevention in households. It is estimated that such informative measures, intended towards households and industries may reduce waste intensities with up to 10%¹⁸ (Swedish Environmental Research Institute (SERI), 2010, p.15);

Potential Impact: Practical experience with such campaigns has proven that waste quantities are indeed affected, e.g. Sweden.

Industrial waste-plan requirements and clean production

Imposition of a legal requirement for a statutory waste plan elaborated by companies that generate over 2000 tonnes waste or over 2 tonnes of hazardous waste (SERI, 2010, p.20).

Potential Impact: The policy measure has the potential to reduce the waste intensity of industries (SERI, 2010, p. 20) and in addition to increase the awareness on waste-related issues. The policy measure would have a positive impact over the waste management practices of companies in general as it requires a deliberate focus on the efficient measures for waste management.

17 European Environmental Agency, Material Use and Resource Efficiency in Europe, 2011

http://www.iier.org.tw/smm/2_MATERIAL_USE_AND_RESOURCE_EFFICIENCY_IN_THE_EU.pdf

18 Swedish Environmental Research Institute(SERI), Effects of policy instruments on waste intensities, 2010, p.15

<http://www3.ivl.se/rapporter/pdf/B1939.pdf>



Quantity-based collection fee – limitation of values

(“Pay as you throw” pricing of waste collection/disposal)

Imposing a fee, assessing the waste collected per household based on residual waste. All waste producers should face at each step in the consumer cycle prices that reflect the cost arising from the production of the additional amount of generated waste¹⁹.

Potential Impact: Where the quantity-based collection fee is introduced, a reduction of 20% of unsorted household waste could be expected²⁰. In addition, additional results as waste prevention and increased source separation, home composting and material recycling might be considered as potential direct outcomes.

Measures for Re-use

- Development of an integrated deposit system, “markets” and networks for effective re-use and repair of materials on local level.
- Setting up of specific targets for re-use of materials in the National Waste Prevention Programme and the municipal Waste Management Plans.
- Setting up of a regulatory framework for eco-design of products, compliant with the targets for reduced generation, re-use and recycling of waste.

Measures for Recycling

- Setting up of a strategic goal of 60% recycling of residual waste to be reached by 2020.
- Employment of sustainable impact indicators, decoupled from GDP, to measure the progress towards the targets realization.
- Priority financing for projects and measures for source separation of recyclable waste.
- Investments in the development of a “recycling market”.
- Ban on the incineration and landfilling of recyclable/compostable materials.

We recommend the setting up of more ambitious targets for recycling in Bulgaria, than the minimum required by the EU legislation as at present, Bulgaria is significantly lagging behind in terms of realization of the “recycling society goal” set in the Thematic Strategy on prevention and recycling of waste²¹. Irrespective of the overall tendency within the EU, observed in the past decade, of an overall increase in the recycling rates and decrease of the amounts of waste landfilling, Bulgaria remains one of the few MSs, in which landfilling remains the primary waste disposal method.

Improvement in the mechanisms for partnership

The actual implementation of the partnership principle as stipulated in Art. 31 of the Waste Framework Directive will require major improvements in the present system of providing information to citizens and citizens’ organization. We require for wider transparency and increased public participation in the process of elaboration of the national strategies, programmes, plans as well as in process of projects selection and implementation.

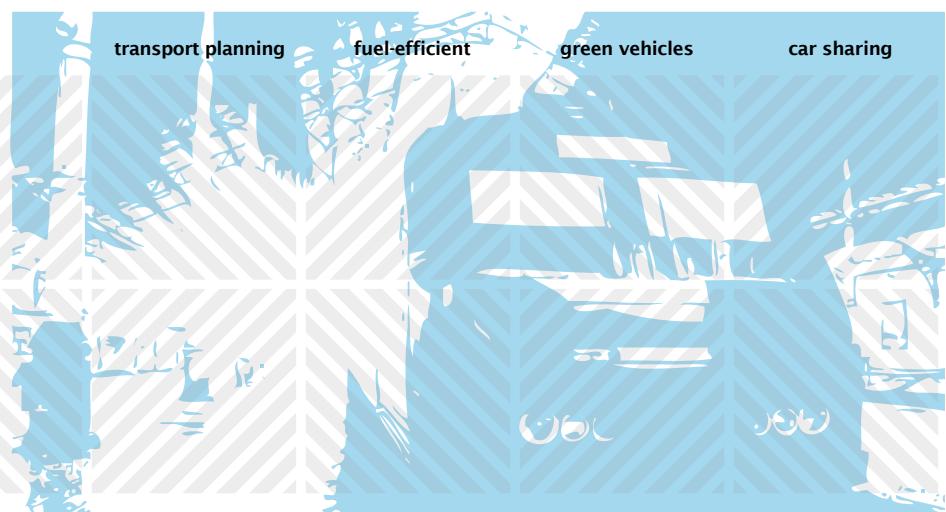
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19 Eunomia et al, 2009, p.47 <http://www.environ.ie/en/Publications/Environment/Waste/WasteManagement/FileDownload,21596,en.pdf>

20 Swedish Environmental Research Institute(SERI), Effects of policy instruments on waste intensities, 2010, p.15 <http://www3.ivl.se/rapporter/pdf/B1939.pdf>

21 Review of the Thematic Strategy on the Prevention and Recycling of Waste , 22 October 2010



Bulgaria: Transport

Recommendations for strategy, measures and projects in OP Transport 2014-2020

Problem analyses and proposals on national level

We would like to assert the importance of four of "Ten goals for competitive and resource efficient transport system" listed in the European Commission White Paper on transport (COM(2011) 144 final), stressing that these are very relevant and executable on national level in case of Bulgaria:

- Halve the use of 'conventionally-fuelled' cars in urban transport by 2030; phase them out in cities by 2050; achieve essentially carbon-free city logistics in major urban centres by 2030.
- 30% of road freight over 300 km should shift to other modes such as rail or waterborne transport by 2030, and more than 50% by 2050, facilitated by efficient and green freight corridors. To meet this goal will also require appropriate infrastructure to be developed.
- By 2050, connect all core network airports to the rail network, preferably high-speed; ensure that all core seaports are sufficiently connected to the rail freight and, where possible, inland waterway system.
- Move towards full application of "user pays" and "polluter pays" principles.

These strategic requirements are supported by the Environmental Assessment of the General Transport Master Plan 2030 (GTMP) – the most recent strategic transport document, specifically with Position No. 1-1/2010 of the Minister of Environment and Water. The major environmental objective of the Plan is the development of sustainable transport: "Balanced development of various modes of transportation and rise of the share of railway transport in order to reduce emissions."

Monitoring of the goals is to be carried out using the following indicators for determining the project impacts and results:

- Shifts in GHG quantities (CO_2 , N_2O , CH_4) in tonnes.
- Shifts in the ratio between transported freight and passengers with automobile and railroad transport in percentage.

The following issues need to be priorities in the Operational Programme Transport 2014-2020, as they are in the Europe 2020 and Bulgaria 2020 strategies, in order to achieve the main goal of a sustainable transport system while increasing mobility.

Reduction of oil dependence and harmful emissions

According to the GTMP the systematic underfunding of railways has not solely impeded their strategic development, but also prevented effective maintenance and led to the collapse in services we are currently witnessing.

Together with the Government's priority support of the road sector, this has led to the following situation in the country's transport system: "Statistical data from recent years show that transportation of approximately 2/3 of the total volume of freight - 64% (or over 60 million tonnes annually) and 2/3 of the total passenger flows in the public transport sector - 66% (or over 640 million annually) is carried out by road transport."²² Road freight transport prevails and covers 89 % of the goods transported²³. The one-sided deep dependence of our country on road freight and passenger transport has resulted in numerous negative consequences:

²² Ministry of Regional Development and Public Works: Priorities for the development of road infrastructure of the Republic of Bulgaria by 2020, 2010

²³ GTMP, p.42



- traffic accidents are a major factor in mortality among the economically active population (deaths from road traffic accidents alone cost the budget € 600 million a year²⁴);
- main roads and access routes to major cities are congested on a daily basis, resulting in significant economic losses,
- social pressure due to fuel prices is increasing,
- and last but not least - systematic contamination of the environment by exhaust emissions and other harmful physical factors.

Despite years of public funding of roads and highways, including within the current OP where financial resources for carbon intensive projects are nearly as twice as high as for rail in terms of their indicative value, none of the fundamental transport problems has been solved.²⁵

The current OPT budget certainly does not meet the priorities set by the environmental assessment of the GTMP for "balanced development of different modes of transportation and rise of the share of railway transport to in order to reduce emissions." Problems with unbalanced investment priorities and project implementation were also confirmed in the mid-term evaluation of the Operational Programme Transport 2007-2013.

Up to now the proposed indicative levels of road and railway projects and of the major TEN-T network are worth EUR 2.4 bil. and EUR 3 bil. respectively. Those financial parameters are insufficient to meet the needs of a transition to a balanced low carbon transport system. The situation is worse when examining the financial parameters of the extended TEN-T network, which has EUR 1.8 bil. for roads and one railway infrastructure project worth EUR 376 mil.²⁶

On the other hand, there is a large potential for the development of low carbon transport projects and network extension, namely because of the need for better connection of underdeveloped regions such as the Rhodope mountain range, the northwest and the northeast of Bulgaria, as well as many of the rural areas with their respective regional hubs. In such a way the required alternative to private cars would be provided. The low quality of public transport services, or their complete lack in some areas, would also be compensated.

We propose to shift more funds towards rail. A portion of the road allocation can also be focused on the acquisition of low carbon vehicles. Through appropriate planning this can encourage research and innovation in the sector and will also contribute to the development of a modern market with progressive transport related technologies. An element that has to be developed in the next programming period is the introduction of alternative fuel systems and installations (e.g. electricity, hybrid, methane, LPG, HHO hydrogen systems) conjunct to existing transport vehicles in all sectors. In this way modest investments will lead to a rapid reduction of both emissions and general fuel expenditure.

In terms of the specific recommendations of the White Paper, a clear objective needs to be set for reducing emissions of greenhouse gases from transport by 2030 and 2050.

An analysis of oil dependency for the national transport system and a clear strategy and objectives for its reduction need to be developed, including changes of passenger and freight transport patterns through the financing of a massive information campaign on the harm caused by car use and the positives of public and environment friendly modes of transport.

People's access to public transport and mobility

From the perspective of public needs, the Eurostat analysis EUROPOP 2008 and the EC's 2009 report concerning the ageing of the population²⁷, it is expected that senior citizens in the EU aged over 65 will make up 24% of the EU population in 2020 and 29% in 2050 compared with 17% nowadays. One in six EU citizens also has some degree of disability and about 20% of people aged over 75 suffer drastic restrictions in their daily lives. With increasing life expectancy in the elderly, the number of those who have severe movement constraints is expected to increase as the group becomes increasingly large relative to the economically active population.

Other vulnerable groups should also be taken into account - children, people with special needs, minorities or cultural restrictions such as gender, who for social, health or demographic reasons, have limited or lack of access to individual vehicles.

Page 8 of the Bulgarian Strategic Investment Plan 2020 (SIP) is quoted in the GTMP's conclusion, stating that "increased general prosperity and the higher number of personal cars will continue to be a major cause for the lack of competitiveness

24 GTMP, p.92

25 More detailed analysis has been written by the Coalition in 2011 and can be accessed (in Bulgarian) at <http://www.fesbg.org/node/263/> as well as a position paper on the 2012 Strategic Investment Plan at <http://www.fesbg.org/node/282>

26 Presentation at the new OP working group, 18.09.2012

27 European Commission, DG Economic and Financial Affairs: 2009 Ageing Report: Economic and budgetary projections for the EU-27 Member States (2008-2060)



of bus and especially of railroad travel as opposed to car transportation, unless significant improvements are made." Such "significant improvements", needed to shift the transport system's focus from individual carbon-intensive vehicles to a fully operational and efficient public transport system which meets both the demographic realities and environmental standards, are among the key priorities for the achievement of a sustainable transport system as recommended by the EC and required by the environmental assessment of the GTMP.

However, such a transformation cannot be accomplished by investing in new infrastructural projects alone. As it is pointed out in the GTMP in the analysis of the faults of the national transport system, "current capacity of the transport infrastructure is to be considered to be one of the least problematic elements". The major problem is the "lack of continuous and consistent transport networks, providing rapid and safe movement over longer distances, both within Bulgaria and also in terms of transit". Current investments are targeted mainly in large urban centres. Overconcentration on strengthening links between larger urban hubs stimulates and aggravates peripheral depopulation.

Our proposal is that these problems can be overcome only by careful planning of the interaction between transport networks at both local and regional level with major road and rail routes.

In regards to regional and local railroad projects, possibilities can vary according to specific needs - standard railroad, light rails or even trams. Bicycle transport should not be underestimated in either (sub)urban or rural areas. For example, a strategic solution might lie in the improvement of the infrastructure of cultural and tourist sites not only via the most carbon intensive means, e.g. construction of roads, but by building rail connections and bike lanes instead. Practice shows that such "small" projects, in terms of scale and cost, are easy to implement in the given timeframes. They also prove to be, in cost-benefit analyses, much more economically profitable for the affected population.

Defining needs at a local level and regional planning may be achieved within the currently drafted Integrated Plans for Development, and thus meet the requirements of Article 87.2 of the Common Provisions Regulation.

Concrete activities of the investment plan should be set up for adequate planning and development of a "door to door" transport system that satisfies the needs of all groups of society, without discrimination, especially towards the vulnerable. It is necessary to plan and carry out local and regional public transport schemes (or secondary connectivity) through the implementation of Integrated Territorial Investments (ITI) according to Art. 99 of the Common Provisions Regulation.

In general, we believe that for the achievement of the goal "sustainable national transport system", the OP Transport 2014-2020 must adopt a shift from only infrastructure construction towards improvement of mobility through the financing and realization of a set of measures which will lead by 2020 to "...uninterrupted, successive and permanent transport networks to ensure fast and safe movement for longer transport distances within, to, from and through Bulgaria" including the purchase of low-carbon vehicles.

Project assessment

After the strategic choice of priorities, project selection is the most important field. During recent years we have identified the following problems.

The Strategic Investment Plan 2014-2020, which is based on the Transport Master Plan, contains a significant defect, namely: on p. 5 (p. 32 TMP) in the table summarizing the data about the forecasting models, the fuel price is given as EUR 1.13 per litre in 2015 and EUR 1.23 per litre in 2030 , as estimated by the consultant. The petrol prices in October 2012 (A95) in Bulgaria are EUR 1.37 per litre which shows that the projections above are very far from the reality. This projection also contradicts the conclusions of the White Paper below.

The Impact Assessment²⁸ of the White Paper makes "latest projections similar to those of the International Energy Agency", with oil prices of USD 59/barrel in 2005, increasing to USD 106/barrel in 2030 and USD 127/barrel in 2050 (at the USD exchange rate in 2008). The above projections mean that the fuel price for the transport sector will be EUR 600 billion more in 2050 compared to 2010 or a more than 70% increase over the period under consideration.

We consider that this error in the forecast model is a substantial manipulation of the cost and benefit analysis (CBA) of the road projects in the GTMP and calls into question their economic viability.



The lack of alternative proposals is a further main gap in project assessment. For example, regarding roads the usual practice in the Environmental Impact Assessment is to propose two-three alternative routes similar to each other but an alternative mode of transport is never evaluated.

Also the project list for the next programming period contains a project for navigation on the Danube via deepening of the riverbed. Lack of quality strategic environmental assessment and cost-benefit analysis of such a project does not allow the appropriate management decisions to be taken. The project is conceived as an array of relevant technical requirements, mostly in accordance with the needs of big shipping companies, without taking into account the differences between heavily modified Western rivers and the Danube, especially its specific hydromorphological characteristics, environmental features and the particularities of the Lower Danube's river fleet. These problematic issues make it highly unlikely that the project will obtain environmental approval without substantial changes. In either case, the result will lead to a significant delay similar to the ones we have witnessed within the current OP.

If adequate assessments were to be carried out, it is very likely that alternative options would be preferred in this part of the river, such as reloading to shallow drafted ships (in use by the Bulgarian fleet) or the formation of an intermodal terminal at Vidin from where transport to both major endpoints (Varna and Odessa) would be done by train. In any case, it is better to consider options that are more environmentally sound and economically viable. The annual investment needed to maintain the required riverbed depth parameters is not to be underestimated, as it will be funded by the national budget.

The proper assessment of the projects and their alternatives is very necessary to ensure their contribution to the priorities of the OP. Our concrete proposals are:

- Adequately implement the Partnership Principle in the preparation of strategic documents, the selection of project solutions and the monitoring of their implementation.
- Fully apply the horizontal integration of environmental protection through the mechanisms of strategic environmental impact assessment at the level of programmes and projects, by examining and choosing alternatives that will have minimal impact, by constructing environmental infrastructure in order to avoid habitat fragmentation and reduce noise pollution.
- Set up within the OP a green procurement objective and describe its role in the general framework.

In June 2011 a Monitoring Committee (involving interested NGO parties) was created to ensure the proper design, development and implementation of the Kresna Gorge tunnel on the Struma highway. We believe that such Committees, if implemented early enough, can be a beneficial mechanism for all major infrastructure projects to avoid problems at an initial stage, thus preventing mistakes and delays in due time. Such a body is even more necessary with the Government's increasingly frequent practice of engaging a single contractor to carry out Design Development and Construction (DD&C).

Indicators

For the approval of each project, as well as their subsequent assessments, we propose the following indicators, in line with the regulations of both the EU and the Ministry of Environment and Water of Bulgaria:

Transport indicators

Amendments of the passenger transport ratio	Percentage ratio of each mode of transport expressed in km per passenger	Data can be found in Eurostat: http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tsdtr10&language=en and national statistics.
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Argumentation: Division by modes of transportation is a key result-oriented indicator. Desired results by the end of 2020 are to reduce the number of passengers using personal vehicles, and to achieve the preponderance of low carbon public transport. Data is available on both European and national levels.

Amendments of the freight ratio	Percentage ratio of each mode of transport expressed in tonnes per km	Data can be found in Eurostat: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=tran_hv_frmod&lang=en and national statistics.
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Argumentation: Division by modes of transportation is a key result-oriented indicator. Desired results by the end of 2020 are to reduce automobile freight, and to achieve the preponderance of railroad freight. Data is available on both European and national levels.



Introducing new, rehabilitated and upgraded rail infrastructure so as to reduce greenhouse gas emissions	tonnes CO ₂ equivalent
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Introducing new, rehabilitated and upgraded road infrastructure so as to reduce greenhouse gas emissions	tonnes CO ₂ equivalent
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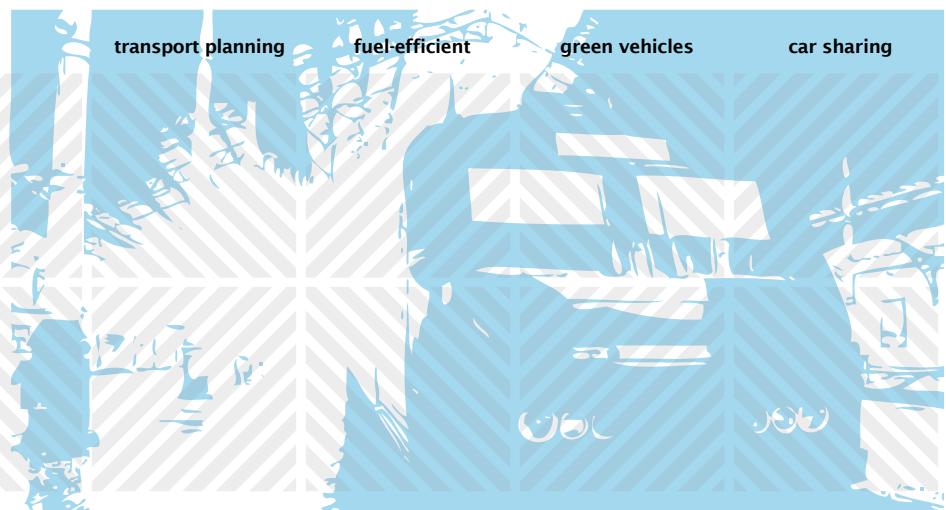
Argumentation: we propose to replace the current indicator, measuring the length of infrastructure, as it does not provide the necessary information about the effects of the implemented projects. It is necessary to introduce an indicator reflecting the emissions resulting from the project's implementation. Such an indicator could be used in the assessment of environmental impacts, and would thus serve as a factor in the project selection procedures, facilitating the successful achievement of European transport system objectives. Railway companies generally have the necessary information on tonnes per km, whereas identical information might be gathered by toll systems for traffic intensity monitoring. Currently further systems are being developed. For example, the European Investment Bank Carbon Footprint Methodology, the methodologies of EC's Directorate-General for Climate Action or the Climate Research methodology for estimation of climate impact assessment by CE Delft Institute.

Increase of passenger travel with public transport	Increase in passenger-kilometres
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Argumentation: Supporting public transportation should not only be limited to urban areas but also ought to include rural areas. In rural regions public transportation tends to be the only means to travel. This is both in terms of price, for vulnerable groups, and, on the other hand, from a purely physical perspective, benefiting people with disabilities or the elderly. We propose the extension of the indicator to all forms of public transport (excluding air transport).

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Croatia: Transport

Position paper for the 2014-2020 programming period transport in Croatia

Investment needs

As explained below, both the passenger and freight transport system in Croatia are focused on road transport, while other modes have been neglected for several decades. In order to change this, it is necessary to invest significant funds in environmentally and socially acceptable projects:

- Additional construction, reconstruction and adaptation of existing rail infrastructure
- Reconstruction and construction of railway stations
- Additional construction of power lines for railways
- Increasing the number of ferry lines to the islands in the Adriatic sea, in order to improve quality of life on the islands and to reduce depopulation and immigration to inland cities
- Development of intermodal transport, construction and development of services in multimodal terminals and the related logistics centres.
- Equipping of all international category internal waterway ports with facilities for the collection and treatment of sewage and bilge water from shipping
- Extension of the polluter pays principle, for example through the introduction of freight road transport charging. This would not only serve to increase the attractiveness of railways, but also decrease the negative trend of bypassing the tolled sections of the road network and damaging the lower category roads.
- Investments in urban transport (upgrading and modernizing railway, tram and bus infrastructure, introduction of Park&Ride systems, establishment of companies that will coordinate timetables of different public transport carriers)
- Developing new intercity bicycle routes and connecting them to the European network

Description of the problem

Croatia has an outdated Strategy of Transport Development, from 1999, before even the 2001 EU White Paper on transport was published. The public debate about a new Strategy should have started in 2011, but so far this has not happened. Based on unofficial information, public discussion should be in the first half of 2013.

In the existing Strategy²⁹, of the total investments in the transport sector, 40% was meant for road transport, railway transport 25%, water transport 20%, aviation 5% and combined transport 10%. In reality, the Programme for Investments in Transport Infrastructure 2005 – 2008 invested as much as 68% of financial assets in road transport, nothing was invested in intermodal transport, and investments in railway and water transport were less than planned. This discrepancy between the planned and achieved investments led to a situation in which road traffic is pushing out all other types of traffic. In the picture below data is shown from the Statistical Yearbook of the Republic of Croatia for the years 2004³⁰ and 2009³¹, in which we can see that in the period of 5 years the share of road traffic in goods transport rose from 50% to 64%, and in that same time the share of railway traffic has decreased from 11% to 8%.

29 <http://narodne-novine.nn.hr/clanci/sluzbeni/271868.html>

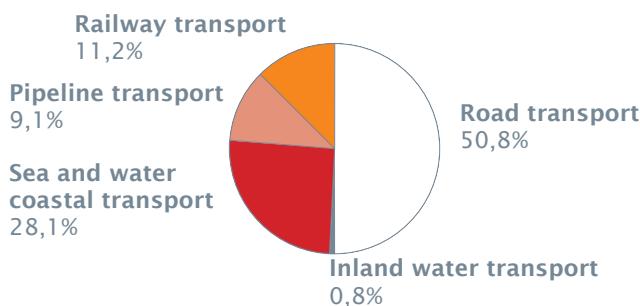
30 http://www.dzs.hr/Hrv_Eng/Ijetopis/2005/20-graf.pdf

31 http://www.dzs.hr/Hrv_Eng/Ijetopis/2010/SLJH2010.pdf

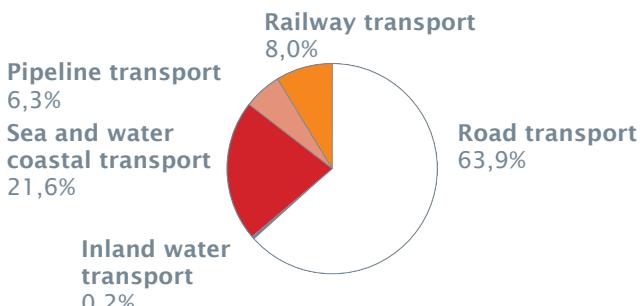


Structure of goods transport, by mode of transport 2004 and 2009

Structure of transport of goods, by mode transport, 2004



Structure of transport of goods, by mode transport, 2009



The Croatian parliament adopted a National Programme of Investment in Railway Infrastructure 2008 - 2012, with a plan to invest 18.05 billion HRK (approximately 2.4 billion euros) in railway infrastructure in that period.³² However, this was not carried out according to plan, and the majority of projects were not implemented. For example, one of the projects in the Programme is the construction of a railway line Zagreb – Samobor – Bregana whose total price is 256.4 million HRK. Even though the realization of this project should have started in 2008, to this day this has not happened. Because of this and other similar shortcomings, it is necessary to create a new Programme, with the priority on urban – suburban traffic in large cities, because the deadline for return on investments is significantly shorter than in big intercity infrastructural projects. After that the goal should be the modernization of the entire railway network (only a third of railway lines are electrified, less than 10% of the length of railway lines are double-tracks, and as many as 92% of railway lines in Croatia do not allow for speeds greater than 120 km/h). This situation has led to poor usage of railways, and the cancelation of several local railway lines and more than 50% of international railway lines during 2012 alone.

What not to finance?

As the National Transport Development Plan for 2014-2020 is still in the early stages of preparation, and as there is no new Strategy for Transport Development, there is no official information available about the projects and measures it will include. Therefore we would like to underline projects/measures announced by the Croatian government, which in our view are not in compliance with sustainable development goals:

- Construction of Danube – Sava multipurpose canal (negative effect on surrounding biodiversity)
- Continuation of construction of motorway on Vc corridor (estimate of number of vehicles per day does not justify the need for construction)
- Pelješac bridge (There is no need to construct the bridge, as there is a possibility to reach an agreement with Bosnia and Herzegovina about passing through its territory. Considering that the total cost of the bridge would be 260 million euro, it is essential to use a cheaper solution. Increasing the navigability of the Sava river (on the Corridor X there is a need to reconstruct railway infrastructure, and the Sava river should remain at the same level of navigability as in the 1980s. Otherwise it will have negative impact on the biodiversity). The Zagreb on the Sava project (among other elements, this project would mean increasing the navigability of the Sava all the way to Zagreb, which would have a negative effect on biodiversity downstream of Zagreb)
- Construction of new airport terminals (financing of new terminals should not be financed by public money, because of the negative effect of air traffic on environment, especially its high carbon intensity)

Indicators and goals

The proposals of the Regulations on the CF and on ERDF published by the Commission in October 2011 contain also proposal of indicators. In the transport sector we propose to extend them in order to really enable monitoring of the level of change achieved by the EU funds in the given sector.



The following indicators must be included:

1. Modal split of passenger transport	Unit: percentage share of each mode of transport, expressed in passenger-kilometres	Data can be found from Eurostat: http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tsdtr210&language=en and national statistics.
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Justification: We propose to introduce the outcome indicator "Modal split of passenger transport". Modal split is the key results indicator for support in the transport sector. The desired outcome is a decrease in the use of passenger cars and roads and an increase of public modes (trains, trams, buses) and railway transport.

2. Modal split of freight transport	Unit: percentage share of each mode of transport, expressed in tonne-kilometres	Data can be found from Eurostat: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=tran_hv_frmod&lang=en and national statistics.
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Justification: We propose to introduce the outcome indicator "Modal split of freight transport". Modal split is the key results indicator for support in the transport sector. The desired outcome is a decrease in the use of road freight transport and increase of railway and water transport.

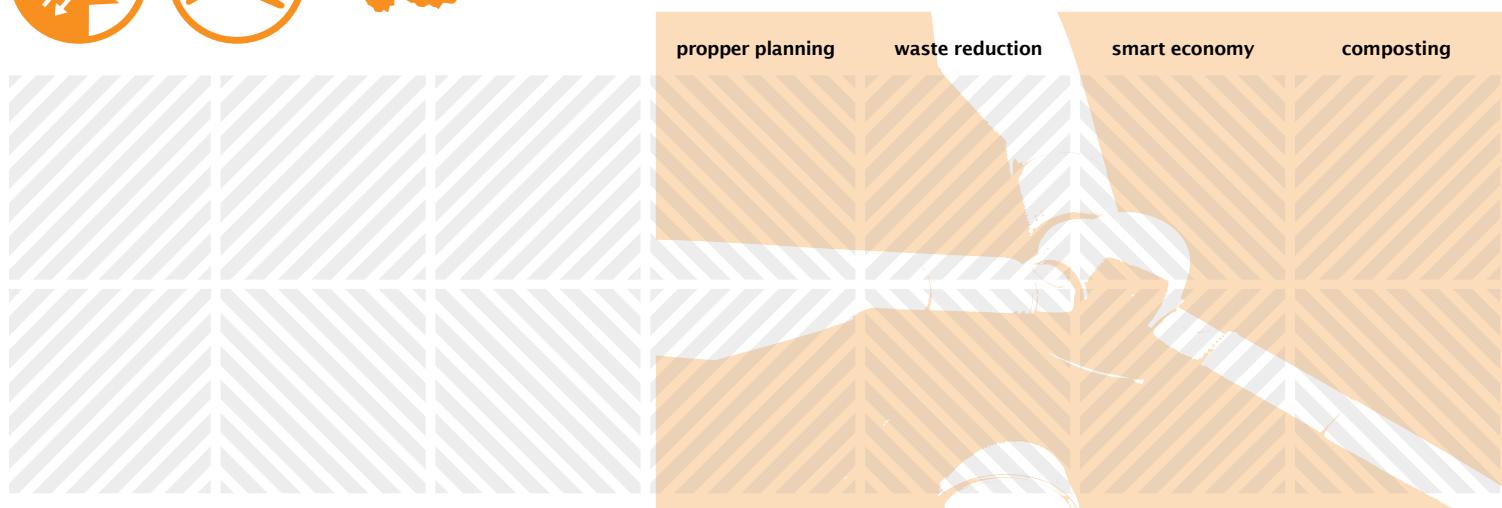
3. Contribution of newly built, reconstructed or upgraded railway lines to decrease of GHG emissions	tonnes CO ₂ equivalent
4. Contribution of newly built, reconstructed or upgraded roads to decrease of GHG emissions	tonnes CO ₂ equivalent

Justification: We propose to complement the indicators measuring the length of built or reconstructed infrastructure with measuring of the immediate effect of such support on greenhouse gases (GHG) emissions. The length of infrastructure as an indicator does not give information about its effects. There should be an indicator in the transport sector to describe the positive immediate outcome of investments. One of the main goals of the Europe 2020 strategy is the reduction of GHG emissions by 20 percent. The transport sector is alongside with energy the key to its achievement. While in the energy sector there are indicators related to consumption of fossil fuels and GHG emissions in place, in the transport sector such indicators are lacking. The issue cannot be addressed only in urban transport or inland waterways, but has to be covered on a more complex level.

Railways have very detailed and precise information on the number of vehicles/tonne/km and therefore there are enough data available to calculate GHG emissions after the completion of projects. Concerning roads, similar data are available from electronic toll collection systems and transport intensity surveys performed by national authorities. Also other methodologies of the assessment of the emission impacts of the transport projects are in place or under preparation, like e.g. Exploration of a methodology for including climate impacts in project appraisal Delft, CE Delft, October 2011, the EIB carbon footprint methodology or the one from DG Climate Action.

5. Increase of passenger trips using the supported public transport service	Unit: number of passenger journeys
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Justification: Support in passenger transport should not be limited to urban areas but should cover rural areas as well. This is a very sensitive issue as in rural areas public transport is often the only affordable option especially for elderly or socially excluded people. Concerning data availability this amendment means no change from the original Commission proposal as the data are possible to obtain from regularly performed measurements of transport intensity.



Czech Republic: Energy Efficiency and Renewable Sources

Position of CEE Bankwatch Network and the Zelený Kruh association of environmental non-governmental organizations

Recommendations

CEE Bankwatch Network and Zelený Kruh propose to:

- make energy efficiency one of the main thematic priorities for drawing EU Structural and Cohesion Funds (SCF) in the 2014 – 2020 period;
- invest at least CZK 10 billion³³ (EUR 40 million) per from EU Structural and Cohesion Funds into energy efficiency measures in private and public buildings, in tertiary sector buildings and in small and medium enterprises, as well as in use of renewable resources in buildings;
- support research, development and implementation of buildings technologies to achieve ambitious efficiency criteria before 2018, as a preparation of the Czech building industry for fulfilling the demands of the EPBD II Directive;
- set a horizontal principle for any new buildings funded from the SCF to achieve nearly zero-energy or higher standard, and all buildings reconstructed from EU funds to reach low-energy or higher standard. The projects that reach a better standard and involve the use of renewable resources in buildings should get priority support;
- create a portfolio of financial instruments, such as subsidies, soft loans, guarantees or risk insurance in order to support renewable energy production and energy savings in buildings and make them suitable and available to a wide range of beneficiaries, including local communities, cooperatives, small municipalities etc.

High energy efficiency criteria in public buildings can bring not only energy savings, but also air-quality improvements like in this case of reconstruction of elementary school in Praha-Slivenec where forced ventilation with recuperation improved conditions for pupils.



Photo: Aleš Brotánek

Problem outline

20 years after the start of economic transformation, the Czech Republic remains the fourth most energy intensive economy in the EU, even after recalculations on GDP by purchasing power parity³⁴. Czech greenhouse gas emissions per capita also remain the fourth highest in the EU³⁵. Two reasons for this can be traced: the strong orientation of the Czech economy towards industrial production, and traditionally low energy efficiency in buildings, industry and transport. Both households and public institutions face growing costs of fuels and energy – and this tendency can hardly be expected to change. High energy use together with the growing cost of energy is becoming a threat for Czech economic competitiveness.

Energy savings in the sector of buildings, including housing as well as public buildings, offers a great opportunity to lower both the energy intensity and energy dependency of the Czech Republic.

³³ This figure is based on calculations of absorption capacity in energy efficiency retrofits under the current OP Environment and the Green Investment Scheme programme in 2009 – 2011. It corresponds to an estimate published by the industry association Šance pro budovy: (<http://www.realit.cz/aktualita/sance-pro-budovy-nova-zelena-usporam-si-zaslouzi-vice-penez>) as well as an estimate of absorption capacity by the Ministry of Environment (CZK 8 billion/year according to an oral presentation of Vice-Minister Tomáš Podivinský).

³⁴ Eurostat: Energy intensity of the economy; <http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tsdec360&language=en>

³⁵ European Environmental Agency: Greenhouse gas emissions as tonnes CO₂-equivalent per person <http://www.eea.europa.eu/data-and-maps/figures/greenhouse-gas-emissions-as-tonnes>



According to the Czech Energy Efficiency Action Plan³⁶, the main potential for energy savings lies in the housing sector, followed by industry and transport. A study by Porsenna³⁷ consulting company shows that 60 percent of energy in residential buildings can be saved. The highest energy efficiency potential lies in energy efficient retrofits of buildings to save energy on heating and hot water.

In the residential sector, both high energy losses and the poor state of the housing stock are a key problem. According to the Panel Scan 2009³⁸ study, 45 percent of the stock of pre-fab "panel" apartment buildings has been neglected; in other kinds of apartment buildings it is almost 88 percent. Reconstructions have not usually used the full potential for energy savings. In the case of panel buildings, only 34 percent of them have high quality new windows. A reconstruction can prolong the life-time of this sort of building from the originally projected 40 years up to an assumed 100 years.

Renewables have passed through turbulent periods in the Czech Republic, with feed-in tariffs, legislation, taxes and permitting processes changing rapidly. The current proposal in the State Energy Strategy,³⁹ still to be finalised by the government at the time of writing, neglects the development of the RES sector and suggests that from 2015, there should be no operating financial support for RES. At the same time, the Czech Republic with a vibrant manufacturing industry of biomass boilers and wind and hydro turbines has very good potential for competitive innovations in RES technologies. Lack of national demand in this area strongly undermines the companies' possibilities to further develop their businesses.

European funds, an opportunity for the Czech economy

The thematic orientation of support from European Cohesion and Structural Funds in 2014-2020 will be driven by the Europe 2020 strategy,⁴⁰ with the draft EU funds regulation emphasising the common priorities and targets set by this policy. Choosing energy efficiency and renewables as one of the top priorities would open up a unique opportunity for the Czech Republic to fulfil several targets set in these strategies. Earmarking a substantial amount of finances from both the Cohesion Fund and ERDF for energy efficiency will bring jobs dispersed throughout the regions and net profit to the budget.⁴¹

High energy intensity in buildings goes hand in hand with the push to open new areas for carbon intensive lignite mining and for waste incineration instead of prevention.⁴² Energy efficiency and renewables are the most prominent measures to be financed to achieve real decarbonisation of the Czech economy.

Benefits of financing energy savings in the Czech Republic

Experience with the current Operational Programme Environment, priority axis 3 – Sustainable Use of Energy, the New Panel Programme and the Green Investment Scheme (GIS) shows that there is enormous interest in public financial support for energy efficiency measures in both private and public buildings. For example, the most recent call for projects distributing the last available resources in axis 3 of the OP Environment was opened in February 2012 and within only 2 days, the financial allocation for this call was oversubscribed. The total allocation has been used up almost two years before the end of the budget period, and the number of applications was significantly higher than financial possibilities of the programme. This success by the Ministry of the Environment is in great contrast with the utilisation of other operational programmes and axes.

Financing energy efficiency in buildings is also a very good measure to tackle the consequences of the financial crisis, namely in the building industry, which has recently faced a significant downturn. Due to public financial support, it is possible to mobilise private savings from households and use them to restart growth in the building sector and eco-innovation market. Miroslav Zámečník, a member of the Independent Governmental Committee on Economy, said about the Green Investment Scheme: "I dare to say, that from the perspective of multiplication effect, the effect of one invested crown for the whole of the national economy, we could hardly find a better proposal for anti-crisis measures."⁴³

36 Národní akční plán energetické účinnosti do roku 2011 http://ec.europa.eu/ceskarepublika/pdf/press/ks6_cr_akcni_plan.pdf

37 Porsenna: Study on potential of energy savings in residential buildings by 2050. (in Czech) http://hnutiduha.cz/sites/default/files/publikace/typo3/uspory_obytne_budovy_final_v3.pdf

38 PanelScan 2009: Studie stavu bytového fondu panelové zástavby v ČR http://www.sfrb.cz/o-sfrb/pro-media.html?no_cache=1&cid=262&did=63&sechash=2e05d27b

39 Ministry of Industry and Trade: Aktualizace Státní energetické koncepce České republiky, 2012 <http://download.mpo.cz/get/46568/52524/591180/priloha003.pdf>

40 COM(2010) 2020 final: EUROPE 2020 - A strategy for smart, sustainable and inclusive growth <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF>

41 Zámečník M., Lhoták, T.: Analýza ekonomického dopadu akcelerovaného zavádění kvalitních energetických standardů ve výstavbě rezidenčních budov v České republice, http://www.sanceprobudovy.cz/images/docs/miroslav_zamecnik-makroekonomicka_analyza_dopadu.pdf

42 City of Plzeň, for example, is currently considering a construction of Chotíkov waste incinerator as one of sources of heat in the city to cover a cut of supply from a heat plant turned to power generator.

43 Ekonom Miroslav Zámečník: Program Zelená úsporám prospěl zaměstnanosti, <http://www.novinky.cz/kariera/222867-ekonom-miroslav-zamecnik-program-zelena-usporam-prospel-zamestnanosti.html>



Miroslav Zámečník is also one of the authors of a study⁴⁴ which proved that the New Panel Programme helped within 9 years of its existence to keep 6500 jobs. According to the study, the GIS provided within its one and half years of existence 19 000 annual job equivalents. Most of these working places were created in small and medium-sized construction companies based in the Czech Republic. These jobs were evenly distributed within the regions, and were not concentrated in the big cities only.

The Czech Republic also lists energy savings as a goal of its energy policy in its official documents. The Second Energy Efficiency National Action Plan reads: "Maximising heat savings: high priority goal, aiming towards maximisation of the heat savings in buildings in the business, public, municipal and household sectors. The buildings sector is an area with the biggest potential for energy savings, achievable for an acceptable cost.⁴⁵" The Independent Energy Commission, led by the then chairman of the Academy of Science Václav Pačes stated: "The financial resources of the European Structural Funds should be used to lower the energy intensity of Czech public and business buildings. These measures should be conditioned by reaching at least a low-energy standard.⁴⁶"

Specific measures

Savings in household and public sector: energy retrofits of buildings

The Czech Republic shows a high absorption capacity in investments into energy retrofit of buildings. Revenues from the auctions of ETS allowances, planned to be used to support energy savings in buildings as well, will, according to an estimate by the Ministry of the Environment, reach EUR 96 million per year.⁴⁷ Compared with the amount requested in applications for the Green Investment Scheme by 31 December 2012 – EUR 1.08 billion (EUR 430 million per year on average), it is clear that the financial resources gained in auctions will not be able to cover the absorption potential of the energy efficiency measures in residential buildings. Our calculations of public funds invested into energy efficiency from the GIS and operational programmes show that the absorption capacity of energy retrofits of public and residential buildings to high efficiency standards including installations of small RES reaches EUR 400 million annually.

Considering the obligation of the Czech Republic to fulfil the Directive on the Energy Performance of Buildings (EPBD II) by 2018, and considering the importance of public buildings for their potential to set an example for their visitors, it is highly recommended to set the financial criteria so that any building, newly constructed from the Structural and Cohesion Funds, reaches at least nearly zero-energy standards already in 2014.

Public financial support for energy efficiency must be linked to ambitious efficiency criteria. As the nearly zero-energy standard is, according to EPBD II, to be defined by the Member States based on cost-optimal levels of minimum energy performance requirements, it may stay well below achievable ambitious efficiency criteria such as the passive standard. Efficiency criteria for EU funded buildings should go beyond the nearly zero-energy standard if it is not defined in an ambitious way in the Czech Republic. Setting insufficient efficiency criteria for public buildings may lead to ineffective use of SCF, as European Court of Auditors recently highlighted in the case of the Czech Republic.⁴⁸

For reconstructions, the principle should be that any building reconstructed from the SCF must achieve at least low-energy standards. The higher the standard achieved, the higher should be the financial support with a grant component. The possibility of financing energy efficiency in housing and public buildings opens up an opportunity for higher financial support for top technologies in the building industry. Use of such technologies requires good preparation and experienced building companies and employees, increasing their competitiveness. It is necessary to use financial resources from the European Social Funds to support especially the capacity building of individuals, SMEs, small municipalities and micro-regions to apply for and implement both energy efficiency measures and renewables, as well as to support behavioural changes and proper usage practices.

Energy security and independence: support for renewable resources

An opportunity widely unused so far is the area of heat production from renewable sources, ranging from installation of small solar thermal panels for heating and hot water to utilising geothermal resources and biomass. The new Act on Renewable Resources deals with operating support for heat production from renewable resources in installations over

44 Zámečník M., Hlaváč J.: Home is where the heat is. <http://bankwatch.org/sites/default/files/Home-is-where-the-heat-is.pdf>

45 Ministry of Industry and Trade: Second National Energy Efficiency Action Plan (in Czech): <http://download.mpo.cz/get/45106/50714/583777/prilo-ha002.pdf>

46 Independent Energy Committee for assessment of long-term energy needs of the Czech Republic: Final Report. <http://www.vlada.cz/assets/media-centrum/aktualne/Pracovni-verze-k-ponenture.pdf>

47 Source: Ministry of Environment: Roundtable discussion on using revenues from auctions of ETS allowances in 2013 - 2020

48 European Court of Auditors: Cost-effectiveness of Cohesion Policy investments in energy efficiency - <http://eca.europa.eu/portal/pls/portal/docs/1/19610748.PDF>



200 kW. Investment support from SCF should be used to support small scale renewables as well as systematic solutions stretching along the whole production chain e.g. local production and distribution chain of pellets from agricultural crops (farmer – local production of pellets – installation of pellet furnaces in the municipality). Another area is support for increased efficiency of the networks for heat distribution or micro-heating – small sources for individual blocks of buildings.

Strict conditions have to be set on financing boiler replacements and pollutant filters, currently planned in the draft proposal of OP Environment. Investment into the prolonging life-time or increasing capacity of coal burning installations, isolated efficiency measures or measures aimed at fulfilling minimum legal limits for air pollution must not be financed. Financing must be limited only to boiler replacements for RES. In order to use the full synergy of energy efficiency and air quality improvements, it is necessary to set up the support programmes so that they simultaneously target investments in energy efficiency of the heated buildings, efficiency in the distribution grid and RES heat sources (including solar, geothermal, biomass etc.) as well as capacity decrease, as the efficiency measures in buildings and grid will decrease the demand.

Renewable sources of electricity need a balanced system of support without discrimination against any type. The Czech Republic may not be able to fulfil its 2020 RES target (13%). The National Renewable Energy Action Plan⁴⁹ sets annual thresholds for installed output of each type of RES technology. The current law on supported energy sources⁵⁰ states that in case the annual threshold for a given technology is reached in the year, no feed-in tariff support will be provided for installations of that technology in the following two years. As the thresholds in the NREAP are set to bring the RES electricity production just slightly over the target (to 13.5%), this limitation of support as well as the uncertainty about the support will severely limit the willingness of investors to develop electricity-generating RES.

Investment support for RES from the Structural and Cohesion Funds should bring the necessary stability and predictability in this field. With well-set criteria on environmental impacts and a focus on the contribution of RES projects to furthering the goals of the Cohesion Policy, such as support for disadvantaged regions and communities, local energy security and innovation, SCF support is in a unique position to set a new standard for meaningful RES development. As a first step, it is necessary to include support of all kinds of RES technologies, able to fulfil these criteria, in the areas of support in the OP proposal. It is also necessary to ensure that environmentally harmful technologies such as waste incineration are not re-branded as RES in the Czech Republic.

For small scale renewables mounted on buildings, stable financing with a grant component must be established, as the complicated and ever-changing feed-in tariff regulation and low willingness of distributors (most of them owned by power giant ČEZ) to connect them discourage small economic actors from these investments. Setting environmental criteria should avoid the SCF support for sources with harmful environmental impacts such as fertile land occupation or unsustainable sources of biomass. The monitoring of environmental impacts of RES planned under OP Environment should be used to define and apply these criteria.

For Czech competitiveness: innovation in the energy sector, smart grids

In the area of energy efficiency it is necessary to avoid support to projects with low efficiency criteria, where quick absorption of the funds is ensured but the efficiency potential is not fully used. In order to achieve a high level of energy savings it is necessary to create a motivational framework that will reward those who exceed the minimum requirements of the technical norms and introduce innovations, etc. At the same time the requirements must be coordinated and harmonised among the areas of support (residential, public buildings etc.) to achieve synergies. Ambitious requirements applicable to all sectors create sufficient demand for innovation and economies of scale.

In the field of integration of renewable resources, this refers primarily to the use of smart-grid elements allowing the regulation of supply and demand. In order to allow integration of the necessary proportion of electricity from RES, both consumer and distribution networks must be prepared. It is necessary to invest in technical equipment on the grid level and in changes in network management. SCF are well positioned to pilot smart-grid development in the Czech Republic through financing their integrated development together with RES sources and demand management in pilot regions. For effective use of biogas, biogas stations must be hooked up to the gas network and distribution and use of biogas must be implemented as a fuel for city vehicles, for example in public transport or garbage collection (with a positive impact on air pollution as well).

49 National Renewable Energy Action Plan of the Czech Republic,
http://ec.europa.eu/energy/renewables/transparency_platform/doc/dir_2009_0028_action_plan_czechrepublic.zip

50 Zákon 165/2012 Sb. o podporovaných zdrojích energie a o změně některých zákonů,
<http://aplikace.mvcr.cz/sbirka-zakonu/ViewFile.aspx?type=z&id=24254>



Indicators and targets

In order to fulfil the targets anchored in the Europe 2020 strategy we suggest that the Czech Republic set the following goals, specifically in the field of energy savings and renewable energy.

Energy efficiency in buildings

- Total energy consumption of households: 257 PJ in 2020, decrease by 13.7 % compared to 2010.
- Buildings reaching almost zero-energy standard: All new public buildings and 10 % of new housing buildings (1400-2200 buildings per year), will be built to nearly zero-energy standard or higher between 2014-2020.
- Speed of energy renovations of buildings: At least 3 percent of housing stock will undergo energy efficiency retrofit per year, reaching low-energy or better standards.

Renewable sources

Energy manufactured from renewable sources in the Czech Republic in 2020:⁵¹

- biomass: 215 PJ
- solar-thermal sources: 12 PJ per year
- geothermal sources: 12 PJ per year
- total share of renewable resources in primary sources of energy: 215 PJ, 15 %

Total installed output of renewable resources for energy production in the Czech Republic 2020

- Solar: 10 000 roof installations on family houses, apartment buildings and public buildings annually
- Wind: 1500 MW of installed output by 2020
- Geothermal: 25 MWe of installed output in geothermal combined heat and power sources

Further goals:

Renewable sources: Ten micro-regions to implement a strategy of maximum use of local renewable resources and achieve 50 % coverage of energy consumption from renewable sources.

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⁵¹ The RES targets are based on the “consistent and smart” scenario for the development of the Czech energy sector commissioned from the Wuppertal Institute. Karel Polanecký et al: Chytrá energie, http://www.chytraenergie.info/images/stories/chytra_energie.pdf



Czech Republic: Resource Efficiency

Position of CEE Bankwatch Network on Resource Efficiency in the programming period 2014-2020 in the Czech Republic

Recommendations

CEE Bankwatch Network proposes the following:

- In order to increase resource efficiency, to set targets for decreasing waste production, decreasing municipal waste production and increasing material recovery of municipal solid waste.
- In order to comply with the binding waste hierarchy, not to finance projects for energy recovery of mixed municipal waste from public funds
- In order to reach the targets set in the Landfill Directive, mandatory separation of biowaste has to be started quickly and efficiently, along with support for biogas stations treating the bio-waste fraction of municipal solid waste.
- Experience in the course of the 2007-2013 programming period showed that the implementation of projects by far missed the main target of decreasing the amount of waste. Having this in mind it is necessary that EC requires guarantees from the Czech Republic in order to adhere to the waste hierarchy and prefer material recovery instead of less preferable means of waste treatment.

Description of the problem

The material and energy intensity of the economy should be greatly reduced through well-organized waste management. The most significant reduction of material and energy consumption occurs when making the same kind of product but with less waste. For example it is necessary to use approximately 7 kg of raw materials in the production of one kilogram of aluminium cans⁵². "When incinerated, the high calorific value of aluminium foil provides a valuable fuel substitute", says the European Aluminium Association⁵³. However, aluminium has a calorific value of 31 MJ per kilogram, but the manufacture of a kilogram of aluminium needs 128 MJ. Recycling of 1 kg of aluminium saves not only 7 kg of bauxite and 1 kilogram of waste, but in addition 4kg of chemical products and 50 MJ of electricity⁵⁴. What about if the can somehow be used several times? And what if we can prevent the need to manufacture the aluminium can altogether through use of other re-usable receptacles?

The Waste Framework Directive set a binding waste hierarchy: prevention, reuse, material recovery, energy recovery and in last place is the simple disposal of waste. The hierarchy indicates that it is energetically and materially favourable to prevent, reuse and recycle products. Effective recycling reduces dependence on imported raw materials, saves energy and creates more jobs than other methods of waste management. The Czech Republic should therefore take advantage of this unique opportunity to acquire the necessary funds for its recycling industry.

Total waste production decreased by 12% between 2003 and 2010 and year-on-year total waste production decreased by 1,4%⁵⁵. Waste production in recent years stood at around 33 million tonnes. Waste disposal facilities have sufficient capacity, especially landfilling, which is still the most common disposal method in Czech Republic.

52 Personal communication, ACRA, may 1993; Boustead and Hancock: EEC Directive 85/339 UK Data 1986, Open University, 1989 in Over packaging wasting money, wasting resources, FOE, London, June 1993

53 RAA: Aluminium in packaging, February 2007, see: <http://www.alueurope.eu/wp-content/uploads/2011/10/Aluminium-in-packaging-brochure.pdf>

54 Waste Watch: Aluminium recycling, 2005 see: dl.dropbox.com/u/21130258/resources/InformationSheets/metals.pdf

55 Report on the Environment of the Czech Republic 2010, see: http://www.mzp.cz/en/report_environment_2010



Insufficient attention is paid to the collection of sorted waste, the biodegradable fraction of municipal waste and recycling of municipal waste. There is high production of municipal solid waste per capita, around 510 kg per year⁵⁶ in the Czech Republic. The share of municipal waste recycling was only 24.3% in 2010,⁵⁷ while the EU15 average is in excess of 40%.⁵⁸ There are not enough recycling and treatment capacities to increase the recycling and biowaste treatment in the Czech Republic.

The priorities of the Czech Republic in the waste management sector are clearly set out in the Waste Management Plan adopted by the Government in 2003. The plan declares these strategic goals: "to decrease specific production of waste regardless of the level of economic growth, to maximise usage of waste instead of primary natural sources and to minimise negative health and environmental impacts of waste management." For municipal waste, the Plan clearly sets the priority of material recovery. The goal was to increase material recovery by 50% in 2010.

However because of very bad leadership in the EU Structural Funds in the programming period 2007-2013 the Czech Republic failed in its target to increase material recovery by 50%, and to decrease production of municipal solid waste, as well as failing in its target to build enough capacities to fulfil the requirements of the Landfill Directive.⁵⁹ For example the indicator in the Environment Operational Programme (OPE) contains the amount of municipal waste – but the expected output is not a decrease, but an increase from 4 million tonnes per year in 2006 to an estimated 5 million tonnes in 2013. This is an average increase of more than 8% per year. The OPE did not include the goal of increasing material recovery by 50% in 2010 either. The money from European funds for improving waste management in CEE countries like the Czech Republic have been spent without evidence about their influence on waste prevention, reuse and recycling of waste.⁶⁰

European context

In the proposed new Czech National Energy Concept, draft national Waste Management Plan the Government and draft new waste law does not want to focus on waste prevention and recycling, but on energy recovery (new waste incinerators are planned to be built with European funds and with wide governmental support). The main reason is pressure from the Association for District Heating which wants to burn waste instead of coal. But these plans are in conflict with the European waste hierarchy and sap the European push towards a materially efficient economy.

The Czech Government has proposed these plans even though the European Commission has given clear signals that the Czech Republic has to change its current practice. In the key European strategy Europe 2020 member states shall: "use regulation, building performance standards and market-based instruments such as taxation, subsidies and procurement to reduce energy and resource use and use structural funds to invest in energy efficiency in public buildings and in more efficient recycling." The Roadmap to a Resource Efficient Europe⁶¹ also lays out this goal: "Ensure that public funding from the EU budget gives priority to activities higher up the waste hierarchy as defined in the Waste Framework Directive (e.g. priority to recycling plants over waste disposal) (in 2012/2013)" In addition the future target of the Commission for waste generation is: „Waste generated per capita is in absolute decline.“

Specific measures

The supported measures must explicitly follow these long term goals: to decrease generation of waste and use waste as a secondary material.

Change of the production system (innovation) with reusable, re-used, easily repairable and completely recyclable products as the result

If the result is to be a reduction in total waste production, industry must undergo a fundamental change in production. Funds available from the Structural Funds should be an impulse for innovation. The result of these innovations should be more reusable products, more really reused products, and products which are easily repairable and completely recyclable.

Systems of complex⁶² management of biodegradable waste

Complex management of biodegradable waste should include household and community composting, separate collection of garden waste and kitchen waste, composting plants and biogas stations for bio waste processing. The Czech Republic

56 Report on the Environment of the Czech Republic 2010, see: http://www.mzp.cz/en/report_environment_2010

57 Report on the Environment of the Czech Republic 2010, see: http://www.mzp.cz/en/report_environment_2010

58 Report on the Environment of the Czech Republic 2010, see: http://www.mzp.cz/en/report_environment_2010

59 See data from Eurostat

60 The Landfill Directive requires a decrease in the amount of landfilled biowaste, however it is possible to separate biowaste only in a few municipalities. Consequently the mixed municipal waste contains a high ratio of biowaste and ends up in landfill or incinerators See: <http://bankwatch.org/sites/default/files/briefing-waste-hierarchy-Mar2012.pdf>

61 Roadmap to a Resource Efficient Europe, Brussels, 20.9.2011, COM(2011) 571 final

62 Systems have to be comprehensive to ensure that such resources invested in home composting will not be depreciated by introducing collection of biodegradable waste



is having problems meeting the targets from the Landfill Directive on decreasing the content of biodegradable waste in landfills. There is huge potential in the municipal sector. The Czech Republic has a well-established separation system for paper, plastic and glass packaging, but household organic waste can be separated only in a few places. In the previous programming period (2007-2013) municipalities had a considerable interest in these projects; we can therefore expect the continuation of this trend.

A bio-waste management system must be secured as a complex whole, including activities from different levels of the waste hierarchy: support for home composting - prevention, separate collection of bio-waste for composting - recycling, etc. Only a complex system of bio-waste management ensures that steps are not designed in conflict with the waste hierarchy and that they will reduce the amount of municipal waste.

Payment for waste with waste reduction

Reduction of waste generation will take place only if the producers of waste change their behaviour. The producers of municipal solid waste are municipalities by law, but in reality these are ordinary people. Structural Funds should support innovation on the municipal level based on a change of collection system or waste payment system, provided that this will lead to reduction of municipal waste.

Construction, or increased capacity (innovation) for waste reuse centres (bazaar, repair and re-sale centres) with waste reduction as the result

Reuse is the second important step of the waste hierarchy. It totally lacks financial support from official sources in spite of its potential for creating new jobs. The best reuse centres network is in Flanders. The aim there is that the reuse sector will be achieving an average of 5 kg of reused goods per resident and employing 3,000 people by the year 2015 in this part of Belgium⁶³. Reuse projects that will lead to waste reduction should receive at least investment support.

Targets and indicators for material efficiency

Properly set and selected indicators are essential to achieving the objective of increasing material efficiency. This is confirmed by experience in the programming period 2007-2013. The aim of the Operational Programme for Environment (hereafter OPE) was to reduce the amount of waste. The Programme Document OPE and the Implementation Document OPE defined the global aim of priority axis 4 for the period 2007 to 2013: "improve waste management, waste reduction and elimination of old environmental burdens"⁶⁴. According to the Implementation Document OPE the aim of priority axis 4.1 is: "reducing waste, increasing the proportion of recovered waste by supporting the separate collection of waste ..." The indicator to measure the fulfilment of this goal was set as "The volume of municipal waste (production)". However, as noted above, the target value of the indicator was chosen higher than the initial one, ie. the indicator expected an increase of waste production instead of a decrease. The issue was discussed at several OPE Monitoring Committees, mentioned by the ex-ante evaluator in 2006 and by the Supreme Audit Office in 2011.⁶⁵

The Ministry of Environment still has not addressed the problem. The wrongly selected indicator value and poor management of the OPE contributed to the non-fulfilment of the target to reduce waste. According to the Europe 2020 policy the Czech Republic should establish regulatory and market-based instruments to reduce consumption of resources. Structural Funds in the years 2014 - 2020 should therefore be used primarily to invest in more efficient recycling. Europe 2020 confirmed the legitimacy of targeting the national Waste Management Plan and Structural Funds in 2014-2020 at reducing the amount of waste and increasing recycling as the most effective ways of reducing resource consumption. In order to reflect the Europe 2020 strategy and to increase material efficiency we propose the following indicators:

Decrease the overall amount of waste

Indicator: waste production

Target year: 2020

Value for 2010: 31 811 000 t

Target value for 2020: 30 000 000 t

Data source: CENIA

The aim of the indicator is to support projects leading to waste prevention and reuse in industry.

63 www.ovam.be/jahia/jahia/pid/2412

64 Implementation document OP ENVIRONMENT 2007-2013, pg. 47

65 Audit conclusion from audit No. 10/14, see: www.nku.cz/assets/media/k10014_en.pdf



Decrease the amount of municipal waste

Indicator: municipal waste production

Target year: 2020

Value for 2010: 3 334 000 t⁶⁶

Target value for 2020: 3 000 000 t

Data source: ČSÚ, municipal solid waste production

The aim of the indicator is to support projects leading to waste prevention and reuse in municipalities.

Increase material recovery of municipal waste

Indicator: material recovery ratio of municipal waste

Target year: 2020

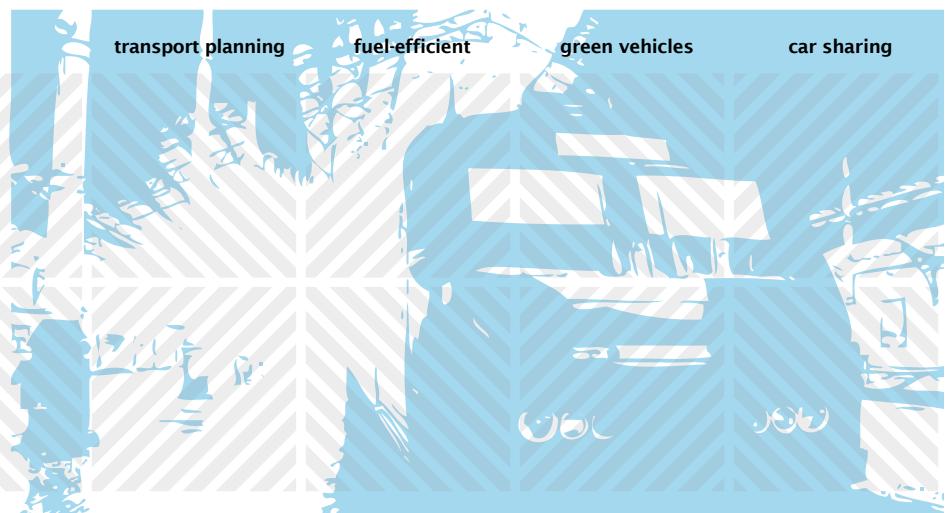
Value for 2010: 24.3 %

Target value for 2020: 50 %

Data source: CENIA

The aim of the indicator is to support projects leading to waste separation, recycling and other material recovery

⁶⁶ This number is valid for the previous methodology for the calculation of municipal waste production. This methodology was used to gain the data for 2003-2008. For 2009 and 2010 a new methodology was used for the calculations. This means the data for the period 2003-2008 are not comparable with data for 2009 and 2010.



Czech Republic: Transport

Position paper on transport for period 2014-2020 programme

Recommendations

Ideally, after the 2014-2020 programming period the Czech Republic shall have a number of significant transport projects implemented across transport modes thanks to the contribution from EU funds. These include upgrades of the railway system, missing links in the road network, terminals of multimodal freight transport, public transport in agglomeration areas, integration of ITS in road transport and installation of remote traffic management measures on rail transport. Only such measures which improve the offer for transport users and simultaneously contribute to the decrease of transport environmental impacts should be supported. Upgrades or reconstruction works should, at the same time, contribute to a decrease in the number of sections of the transport network which are in an inadequate technical state or close to it.

The measures supported shall explicitly follow the long term goal of an increase in the share of rail transport and a decrease of the sector's environmental impacts. It is therefore essential to support the following measures:

- Investments in upgrades of the railways, not only on trans-European or backbone routes
- Construction and development of services in multimodal terminals.
- Introduction of intelligent transport systems in order to increase safety and capacity of transport connections.
- Investments in the development of integrated transport systems in agglomeration areas.
- Decrease some negative impacts of road transport through construction of bypasses and roads with appropriate (meaning not exorbitant) capacity. A precondition of clear prioritization of projects across transport modes must be fulfilled in order to invest in the most fecund projects.
- Extension of the “polluter pays” principle, for example through extension of freight road transport charging to selected secondary and tertiary roads. This would not only serve to increase the attractiveness of railways, but also lead to the weakening of the negative trend of bypassing of charged sections of the road network and lesser devastation of roads of lower categories.
- Specify such indicators in the transport sector, that will really enable to monitor level of the change achieved thanks to the use of the EU funds (modal shift, decrease of the transport related emissions).

Experience in the course of the 2007-2013 programming period showed that implementation of projects is accompanied by a conflict of interests of politicians and officials, and also by excessive extra costs. Bearing this in mind, it is necessary that the EC requires concrete guarantees from the Czech Republic in order to prevent corruption and to increase control over and transparency of the implementation of EU funds-related projects.

Description of the problem

Transport infrastructure is a public asset with the public sector responsible for its operability, maintenance and development. In the Czech Republic its financing is very costly due to a number of reasons. Firstly, it is unfit technically (historical debt on maintenance and rehabilitation). Secondly it is the result of a reprehensible ineffectiveness in the entire process of the preparation and construction of transport structures without a clear strategic determination of priorities and with such financial costs that good investors will not accept. Moreover, it became usual that the partial interests of politicians linked to the construction business outweighed the public interest on the existence of an effective transport network with minimized impacts on environment and people's health. Therefore, some motorways were planned and constructed that are far beyond the necessary capacity or even not necessary at all due to the existence of a modern parallel road. Not exceptionally, these were also built in poor quality. Meanwhile, citizen of dozens of towns



and municipalities suffer with excessive transit traffic and the railway in most directions is not able to compete with road time-wise and sometimes also with its capacity. At the same time maintenance is underfinanced (railways, roads, bridges), and this situation continues to worsen.

These problems are naturally present also in the implementation of the OP Transport. It is true that due to unacceptable practices in planning, decision-making and construction costs the Commission rightly refuses to give a green light to finance a number of transport projects, especially motorways. As a result the country loses its chance to move ahead with its transport infrastructure and seems to be only able to start acting under fiscal constraints.

Currently the Transport ministry has an unselected "priority list" of some 500 important transport infrastructure projects, whose construction would require dozens of billions of EUR. Consistent analysis of the missing links in the transport network would very probably lead to the identification of many others. It is clear that due to the financial reality it is necessary to prepare a good strategy for the development of transport infrastructure which will transparently set real priorities, because it is clearly neither feasible nor necessary to build all the projects on the list.

At the same time there are also other crucial imperatives in place which must be taken into account – except for socioeconomic ones there is above all a need to decrease the environmental impacts of transport, including the need to decrease carbon footprint according to the EU strategies. These must be given appropriate importance, because the development of transport infrastructure cannot materialize without the significant involvement of the EU funds. The existence of a good strategy for the period 2014-2020 is an inevitable conditionality for their use.

The Transport ministry has started the process of preparation of such strategy (Transport Sectoral Strategy, SeStra II). Its elaboration started in September 2011 and it will be ready in the first half of 2013. It should serve as the basis for the preparation of the OP Transport 2014-2020. The strategy will be framed by the Transport policy of the Czech Republic for the given period, which is also being updated.

European priorities in Czech context

A necessity of the improvements in the transport sector as outlined in both the Europe 2020 strategy and in the new White Paper On Transport⁶⁷ was also reflected by the Czech government in its summary document⁶⁸, where transport is reflected in the following areas.

Support of competitiveness through the improvement of transport infrastructure

- Support of the finalization of transport infrastructure of national and European significance.
- Provision of good access of all regions to the trans-European network of road, rail and air transport.
- Support of the use of optimal transport mode in freight transport either individually or in combination through the support of the establishment of a network of public logistic centres, including multimodal terminals and through the support of the introduction of modern ITS technologies.

Strengthen regional competitiveness

- Rehabilitation of regional and local transport infrastructure.
- Support the use of public transport through the construction of necessary infrastructure, ITs and upgrades of rolling stock.

Opportunities

The main opportunity in the transport sector is the preparation and implementation of a good quality Transport sector strategy and subsequent OP Transport 2014-2020. This would - contrary to current OP Transport - enable investments in measures which provide the biggest transport, socioeconomic and environmental benefits. After the 2014-2020 period the Czech Republic could therefore, thanks to contributions from EU funds, have materialized several crucial projects across transport modes (railway upgrades, missing road links, terminals for multimodal freight transport, strengthening of public transport in agglomeration areas, integration of ITS in the road transport and installation of remote traffic management measures on rail. These would increase the offer and safety for transport users and simultaneously contribute to limiting the environmental impacts of transport).

67 White Paper on Transport, 2011

68 Souhrnný návrh zaměření budoucí kohezní politiky EU po roce 2013 v podmírkách České republiky, obsahující i návrh rozvojových priorit pro čerpání fondů EU po roce 2013



Specific measures

The supported measures should explicitly follow the long term goal of increasing the share of rail transport and decreasing the sector's environmental impacts. It is necessary to support the following measures:

- Investments in upgrades of railways, not only on trans-European or backbone routes. Investment on a small scale can also, in some cases, significantly increase effectiveness and quality of rail transport both for long-distance travel, as well as in regional passenger transport.
- Construction and development of services in multimodal terminals.
- Introduction of intelligent transport systems in order to increase the safety and capacity of transport connections.
- Investments in the development of integrated transport systems in agglomeration areas.
- Decrease some negative impacts of road transport through the construction of bypasses and roads with appropriate capacity. A precondition of clear prioritization of projects across transport modes must be fulfilled in order to invest to the most verifiably fecund projects.
- Extension of the "polluter pays" principle, for example through the extension of freight road transport charging to selected secondary and tertiary roads. This would not only serve to increase the attractiveness of railways, but also lead to a weakening of the negative trend of bypassing charged sections of the road network and lesser devastation of lower category roads.
- Specify such indicators in the transport sector, that will really enable to monitor level of the change achieved thanks to the use of the EU funds (modal shift, decrease of the transport related emissions).

As identified in the draft Transport policy for 2014-2020, which is under preparation, from the regional cohesion perspective it is important to ensure comparable quality of transport infrastructure in individual regions in the country.

The main missing links include:

South-Bohemian region – missing basic modern rail and road infrastructure in the direction of Prague – České Budějovice – Linz (A).

Karlovy Vary region – the basic modern road and rail connection in the direction of Prague – Karlovy Vary – Marktredwitz (D) is missing.

Liberec region – completely missing rail connection for passenger as well as freight transport (including the industrial area of Mladá Boleslav and backbone rail infrastructure to link main centres in the region).

Pilsen region – rail link in the axis Prague – Pilsen – Regensburg (D) is missing.

Výsočina region – good quality infrastructure is missing that would link important centres of the region as well as provide good connection to the capacity national railway network.

Prague and Central Bohemian region – road connection that would divert transit traffic from the capital is missing, as well as a good quality rail connection for regional transport between Prague and three biggest Central Bohemian cities.

Projects not to finance:

On the other hand there are projects where analyses so far show an intervention would not be desirable at all or could only take place provided preconditions of fundamental environmental impacts are resolved and economic viability proven. In terms of concrete projects, the following are facing difficulties, causing controversy or cannot be proven to make sense to invest in them in socio-economic terms. It is therefore not desirable that the EU funds are used for their construction:

Prague TEN-T ring motorway in the current plans – while generally necessary, there are serious problems with the officially promoted routing, which in some sections is too close to densely inhabited areas or even passes through them (esp. In NW, NE and SE section).

Motorway concept of South Moravia – the concept is linked to the controversial R52 motorway which will connect Brno and Mikulov/Drasenhofen (A) on the route to Vienna. While from the capacity point of view this does not make sense, potential construction is also linked to the need to build a new South-West tangent of Brno and the high capacity R43 motorway, which in the area of Brno is also planned to pass through a densely inhabited district. At the same time the role of the planned TEN-T R55 connection on the Katowice (PL) – Wien (A) around Břeclav is being restrained. Calculations show that a solution without the R52 and consequent "inevitable" investments would be both healthier for citizens and at least 1.2 billion EUR cheaper.



Motorway connection of Prague and Southern Bohemia – while nearly half of the R4 motorway in the direction of South Bohemian metropolis České Budějovice via city of Písek is built, a nearly parallel completely new D3 motorway around the city of Tábor is under construction. It will be yet another example of a PPP scheme in the country, after the previous ones which failed, and is another doubtful project with motorway parameters in economic terms. Also, the recreational area south of Prague near the Sázava river is under threat.

R49 motorway Hulín - Zlín - border with Slovakia – project is highly questionable both from economic and transport as well as environmental reasons (creating severe migration barriers for protected large mammal species), but which on the basis of national lobbying has become part of the new TEN-T - Core network.

Transfer of central railway station in the city of Brno – a persisting problem of the planned removal of the central railway station to the periphery, which is opposed by citizens. The badly designed intention contributed to the fact that no upgrades on this important passenger traffic node in South Moravia took place in the 2007-2013 period.

D8 motorway across Ceske Stredohori Protected Landscape Area – an evergreen among problematic projects. While the Commission has not approved any funding for this project so far, due to the fact that its completion date is constantly being postponed, and as a result of numerous lost court cases for the investor, the project can again appear among those in the pipeline for the 2014-2020 period.

Inland water transport projects and schemes. Another specific of the Czech situation is an effort to invest in inland waterway transport (freight as well as tourist) on the Vltava (Moldau) and Elbe rivers. This is not based on economic grounds. Neither has it significant development potential. Moreover, the constructions on Elbe river which are being promoted (especially a channel near Přelouč and the weir at Děčín) are located in sites that fulfil Natura 2000 criteria, but where authorities keep refusing to add them to the Natura 2000 network list. These projects should only become financed by the EU funds if a precondition of fundamental environmental impact is resolved and economic viability proven. Also never-ending is the promotion of the Danube-Oder-Elbe canal which certain Czech interest groups are constantly advocating in order to have them present in strategic documents like the TEN-T scheme. From the studies available so far it is clear that the environmental impact of such a scheme would be immense.

Prague metro extension – line A – an economically badly grounded and unnecessary project is the extension of the A line from Dejvická station to Motol. While EU money theoretically can still be used in the current period, it is possible that the money will be lost due to the failure of the Prague authorities to follow the EC conditions. Even if not so, the Commission should be very careful about any other metro extension project that Prague city might propose for the 2014-2020 period.

Indicators and targets

Proposals of the Regulations on the CF and on ERDF published by the Commission in October 2011 contain also a proposal of indicators. In the transport sector we propose to extend these in such a way which would really enable the monitoring of levels of change which would be achieved by EU funds in the given sector.

The following indicators should be included:

1. Modal split of passenger transport	unit: percentage share of each mode of transport, expressed in passenger-kilometres	Evidence can be found from Eurostat: http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tsdtr210&language=en and national statistics.
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Justification: We propose to introduce an outcome indicator “Modal split of passengers transport”. Modal split is the key results indicator for support in the transport area. The desired outcome is a decrease in the use of passenger cars and roads and an increase in public modes (trains, trams, buses) and railway transport. Data are available at Eurostat and from national statistics.

2. Modal split of freight transport	unit: percentage share of each mode of transport, expressed in tonn-kilometres	Evidence can be found from Eurostat: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=tran_hv_frmod&lang=en and national statistics.
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Justification: We propose to introduce an outcome indicator "Modal split of freight transport". Modal split is the key results indicator for support in the transport area. The desired outcome is decrease of road freight transport and increase of the rail transport (in tonn-kilometers). Data are available at Eurostat and from national statistics.

3. Contribution of newly built, reconstructed or upgraded railway lines to decrease of GHG emissions	Units: tons of CO ₂ eq.	from this TEN-T: tons of CO ₂ eq.
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4. Contribution of newly built, reconstructed or upgraded roads to decrease of GHG emissions	Units: tons of CO ₂ eq.	from this TEN-T: tons of CO ₂ eq.
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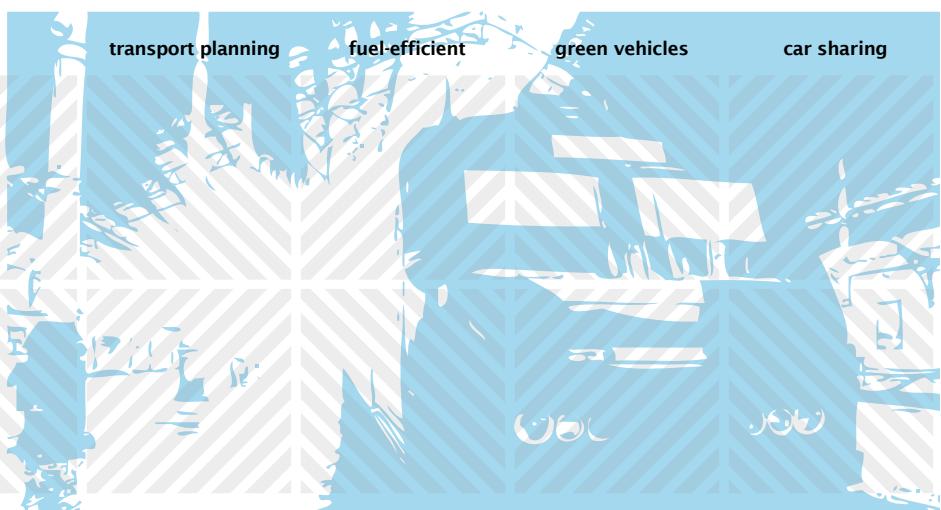
Justification: We propose to complement the indicators measuring the length of built or reconstructed infrastructure with measuring of the immediate effect of such support on greenhouse gases (GHG) emissions. The length of infrastructure as an indicator does not give information about the effects. There should be an indicator in place in the transport sector which describes the positive immediate outcome of investments. One of the main goals of the Europe 2020 strategy is the reduction of GHG emissions by 20%. The transport sector is, alongside the energy sector, the key to achieving this. While in energy sector there are indicators in place related to the consumption of fossil fuels and GHG emissions, in the transport sector such indicators are lacking. The issue cannot be addressed only in terms of urban transport or inland waterways, but has to be covered on a more complex level. Railways have very detailed and precise information on the number of vehicles/ton/km and therefore there are sufficient data available to calculate GHG emissions after the completion of projects. With regard to roads, similar data are available from electronic toll collection systems and transport intensity surveys performed by national authorities. Also other methodologies of assessment of the emission impacts of transport projects are in place or under preparation, e.g. Since GHG assessment methodology is under preparation at EU level, such an assessment shall take place as soon as the methodology is available.

5. Increase of passenger trips using supported public urban transport service	unit: number of passenger journeys
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Justification: Support in passengers transport should not be limited to urban areas but should cover rural areas as well. This is very sensitive issue as in rural areas public transport is often the only affordable option particularly for elderly or socially excluded people. We propose to widen this indicator in the Transport section to public transport and focus on urban transport within the Urban Development section. Concerning the data availability, this amendment means no change compared to the original Commission proposal as the data are possible to obtain from a regularly performed scrutiny of transport intensity.

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Estonia: Transport

Position paper on Estonia national programming of EU funds 2014-2020 in the transport sector

Recommendations

Of the total transport investments from EU funds in Estonia for 2007-2013, 64% are road investments, and just 22.7% are railway investments⁶⁹. Both the EU's and Estonia's transport development goal is to increase the share of rail transport and reduce the burden of road traffic, therefore it is vital to consider options for correcting the investment ratio between roads and railways for the next programme period 2014-2020. The division of transport investments between road and rail transport should take into account a comparison of their perspective, sustainability, economic efficiency, external costs and actual public transport needs. Only after this is done will it be possible to determine the optimal structure of the investments and the priority level for the construction of the projects. There is currently a lack of these kind of comparative calculations and figures in the present transport development and investment plans. In the next period there should also be firm measures included to support sustainable transport means and public transport development across Estonia.

Description of the problem

Estonia's economic growth has been very transport-intensive. If this growth continues at the same rate Estonia's transport system will soon be one of the most energy-consuming among EU countries⁷⁰. Uneconomic new cars and rapid price increases in sustainable transport modes (when compared to car-related costs) are also evidence of unsustainable attitudes and an unsustainable transport policy. The current transport policy will not contribute to the implementation of international commitments, in particular management of transport energy consumption and decreases in greenhouse gas emissions by 2020.

According to the transport report by the Commission for Sustainable Development a quarter of Estonia's final energy demand comes from the transport sector (of which 94% are cars and trucks). The period showing the fastest growth in fuel consumption and GHG emissions was that of 2004-2007, and the EU's 11% GHG emission 'growth limit' until 2020 has already been exceeded⁷¹. The potential for energy savings in transport is not widely recognised or debated. Measures for better planning and the influencing of consumers' choices towards sustainable modes of transport or even just more fuel-efficient cars are generally absent.

During the planning of transport investments (2007-2013), not enough analysis has been carried out (including external costs estimates, environmental impact evaluations, motor fuel prices and other aspects) to determine the optimal structure of the transport modes. Out of the total transport investments, almost two-thirds is going to road investments, and only 22.7% to railway investment. There is no financing being made available for public transport regulation. In different regions the public transport network is managed by different institutions, but financial assistance to the public transport system is modest and due to the recession there have been several cutbacks. As a result, the transport network does not meet the real needs of inhabitants and there is no nationwide awareness of the current need for public transport.

69 If not noted otherwise, all financial data is originated from European Union Structural Assistance to Estonia (<http://www.struktuurifondid.ee/mis-on-tehtud/>)

70 Säästva transpordi raport 2010. Säästva Arengu Komisjon <http://www.seit.ee/failid/782.pdf>

71 Ibid



Although both national and local government strategies claim to give priority to public transport, cycling and pedestrian traffic and promise to support alternative modes of transport, financing priorities often do not match these goals. E.g. according to the Operational Programme 'Development of Economic Environment'⁷² (OP) the use of public transport should have been increased from 207.5 million journeys in 2006 to 224 million in 2010. Statistics show, however, that journeys made by public transport have actually decreased from 207.5 million in 2006 to 165.2 million in 2010⁷³.

In the OP it is noted several times that there are plenty of ways to reduce the negative impacts caused by transport infrastructure development projects, such as: developing public transport, selecting safer and more environment friendly solutions, following environmental requirements, making safe transport corridors for animals, etc. But in fact the goals and indicators in the operational programme provide almost no proof as to how and to what extent these means are implemented or measured – the indicators just reflect road building as such. The OP also completely fails to identify current or planned levels of CO₂ emissions.

The National Transport Development Plan for 2014-2020 is still in the very early stages of compilation. Allegedly the compilation of the development plan and OP are going to be carried out in parallel by the end of 2012. Therefore there are serious concerns that the development plan (and OP) will consist mostly of projects listed in the Estonian government's programme⁷⁴, like the continuous widening of the Tartu-Tallinn highway (from 2-lanes to 4-lanes) and building the bridge/tunnel between Saaremaa island and the mainland. There is also strong opposition to the "polluter pays" principle in these documents. However, on the other hand there seems to be a will to support the development of the public transport system (development of small ports and railways).

Opportunities

Investments made with the support of EU funds should follow the long term goal of increasing the share of rail transport and decreasing the transport sector's environmental impacts. Therefore the projects financed should contribute to the European Parliament's decision to limit non-ETS sector GHG levels in the EU. That is, a maximum of 11% growth compared to 2005 levels and a decrease in GHG emissions by 0.484 million tonnes by the year 2020.

Specific measures

It is necessary to support the following measures:⁷⁵

- Strong implementation of CO₂ emissions based vehicle taxes, incentives and other fiscal measures, which directly influence the choice of consumers. Measures can also be regulatory, such as limiting car parking options for cars with high fuel consumption.
- Giving clear priority to public transport and integrated transport schemes. Currently, earmarking 75% of fuel excise duty revenue for national road construction relegates public transport and integrated urban mobility solutions to a minor position. E.g. one important project should be the modernisation of the Tallinn tram system and extension of lines (including to Tallinn Airport).
- Specifying indicators in the transport sector that would really enable monitoring of the level of change brought about by EU funds (modal shift, decrease of transport related emissions). Sustainable transport targets should be taken into account when new transport development strategies are drafted (both national and local strategies). The implementation of such targets – energy efficiency, an increase in the use of public transport and cycling and improvements in air quality – should be monitored. Strategic choices should be analysed when resolving transport problems and determining financing priorities. The full impact of such decisions on sustainable transport targets should be measured.
- Funding must be secured for public transport and cycling to support the advantages of sustainable modes of transport and to decrease transport externalities. At the national level, priorities could be set through increased financing for EU projects for public transport and cycling and introducing vehicle taxation based on CO₂ emissions (there is currently no vehicle taxation in Estonia). In larger urban areas financing could be improved by implementing more efficient parking management and with congestion charges in Tallinn.
- The development of rail connections should focus on the reconstruction of existing rail infrastructure and increasing the frequency of trains between larger Estonian towns and cities (Tallinn, Tartu, Pärnu and Narva) and to larger metropolitan areas like St. Petersburg, Riga and Moscow. Buying new trains and renovating tracks is, however, not enough to increase the competitive advantage of rail transport. Improvements in rail transport quality should be implemented along with other measures, such as planning new developments close to railway stations, internalising road transport externalities (mileage-based road charges for road freight and congestion charges in Tallinn) and improving intermodality (public transport interchange stops and 'Park & Ride' systems).

72 Majanduskeskkonna arendamise rakenduskava CCI 2007EE161PO001, http://www.struktuurifondid.ee/public/suunised/MARK_muudetud_juuni2011.pdf

73 If not noted otherwise, all statistical numbers are from Statistics Estonia, (<http://pub.stat.ee/px-web.2001/Database/Majandus/22TRANSPORT/22TRANSPORT.asp>)

74 Source: <https://valitsus.ee/UserFiles/valitsus/et/valitsus/tegevusprogramm/valitsuse-tegevusprogramm/Valitsusliidu%20,programm%202011-2015.pdf>

75 Measures noted here are in compliance with the Sustainable Transport Report. Available: Säästva transpordi raport 2010. Säästva

Arengu Komisjon <http://www.seit.ee/failid/782.pdf>



What to promote

As the national transport development plan for 2014-2020 is still in the very early stages of preparation, there is no information available about which projects and measures it will include. Therefore we would like to underline projects/measures from the Estonian government's programme which, in our view, are worth implementing:

- Development of high-quality public transport in rural and urban areas (including interconnections between rail and bus transport, increasing the frequency of trains).
- Supporting public water transport between the mainland and small islands (Kihnu, Ruhnu, Abruka, Vormsi, Prangli) and between Hiiumaa island and the mainland – renewal of ferries, reconstruction of small ports.
- Creating opportunities for faster and better connections with Western Europe (e.g. Rail Baltica – part of TEN-T). Compile studies in cooperation with Poland, Latvia, Lithuania and the European Commission.

What not to finance

As the national transport development plan for 2014-2020 is still in the very early stages of preparation, there is no information available about which projects and measures it will include. Therefore we would like to underline the projects/measures from the Estonian government's programme which, in our view, are not in compliance with sustainable development goals:

- Expansion of Tallinn-Tartu highway from 2-lane to 4-lane road. Construction of Tallinn bypass.
- Construction of bridge/tunnel between Saaremaa island and the mainland.
- Proposal not to implement CO₂ emissions-based vehicle taxes.
- Studying possibilities for decreasing weight restrictions of trucks on the main freight routes.

Indicators and goals

The proposals of the Regulations on the CF and on ERDF published by the Commission in October 2011 also contain a proposal of indicators. In the transport sector we propose to extend them so that they would really enable monitoring of the level of change that would be achieved by EU funds in the given sector.

The following indicators should be included:

1. Modal split of passenger transport	Unit: percentage share of each mode of transport, expressed in passenger-kilometres	Data can be found from Eurostat: http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tsdtr210&language=en and national statistics.
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Justification: We propose to introduce the outcome indicator "Modal split of passenger transport". Modal split is the key results indicator for support in the transport sector. The desired outcome is a decrease in the use of passenger cars and roads and an increase of public modes (trains, trams, buses) and railway transport.

2. Modal split of freight transport	Unit: percentage share of each mode of transport, expressed in tonne-kilometres	Data can be found from Eurostat: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=tran_hv_frmod&lang=en and national statistics.
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Justification: We propose to introduce the outcome indicator "Modal split of freight transport". Modal split is the key results indicator for support in the transport sector. The desired outcome is a decrease in the use of road freight transport and increase of railway and water transport.

3. Contribution of newly built, reconstructed or upgraded railway lines to decrease of GHG emissions	Units: tonnes of CO ₂ eq.
4. Contribution of newly built, reconstructed or upgraded roads to decrease of GHG emissions	Units: tonnes of CO ₂ eq.

Justification: We propose to complement the indicators measuring the length of built or reconstructed infrastructure with measuring of the immediate effect of such support on greenhouse gases (GHG) emissions. The length of infrastructure as an indicator does not give information about its effects. There should be an indicator in the transport sector to describe



the positive immediate outcome of investments. One of the main goals of the Europe 2020 strategy is the reduction of GHG emissions by 20 per cent. The transport sector is, alongside energy, the key to achieving this. While in the energy sector there are indicators in place related to the consumption of fossil fuels and GHG emissions, in the transport sector such indicators are lacking. The issue cannot be addressed only in urban transport or inland waterways, but has to be covered on a more complex level. Railways have very detailed and precise information on the number of vehicles/tonne/km and therefore there are enough data available to calculate GHG emissions after the completion of projects. Concerning roads, similar data are available from electronic toll collection systems and transport intensity surveys performed by national authorities. Also other methodologies of the assessment of the emission impacts of the transport projects are in place or under preparation, e.g. exploration of a methodology for including climate impacts in project appraisal Delft, CE Delft, October 2011, the EIB carbon footprint methodology or the one from DG Climate Action.

5. Increase of passenger trips using supported public transport service

Unit: number of passenger journeys

Justification: Support in passenger transport should not be limited to urban areas but should cover rural areas as well. This is a very sensitive issue as in rural areas public transport is often the only affordable option especially for elderly or socially excluded people. We propose to widen this indicator to public transport. Concerning data availability this amendment means no change from the original Commission proposal as it is possible to obtain the data from regularly performed measurements of transport levels.



Hungary: Biodiversity

Proposed priorities for Cohesion Policy in Hungary – Biodiversity

Programme 1: Changing existing infrastructure to reconstruct natural habitats and natural water regimes

(In this case infrastructure can be dams, sluices, canals, drainage channels, pumping stations and roads)

Problem statement:

The aim of these man-made installations which change the water balance is to make a particular place suitable for a chosen human activity. Consequently, because of the hydrological regime the original ecological system changes (water cover, water table, surface run-off, micro and meso-climate) and this process also results in the partial or total decline or changes in the biodiversity. These changes also affect the extended environment and its ecological state and its biodiversity.

The construction and reconstruction of the infrastructure require one-time resource use, and their maintenance and operation require further resources. The environment shoulders the burden of this. In most cases these investments are from public funds and their operation is also done by public bodies from public finance but it often serves for private use. As the decline of biodiversity is a negative externality, the public pays twice during the process.

The aim of the programme:

To increase biodiversity and to contribute to the EU's aim of halting biodiversity loss by 2020

Objectives:

- Rehabilitation of wetlands
- To multiply the number and to expand the area of wetlands
- To improve the ecological system's coherence
- To improve the multi-functional and environmentally-friendly use of land e.g.: reintroduce traditional land use practices on flood plains
- To promote changes concerning land use patterns of low fertility arable lands (in Hungary: lands with low golden crown value)
- To improve the habitat mosaic patterns of the land
- To promote the fulfillment of climate-adaptation tasks
- To improve the water balance
- Flexible treatment of the consequences of unpredictable water run-off due to climate change e.g.: floods and drought

Eligible project activities to be supported within the programme

- Revitalization of small watercourses, restoration of natural meanders
- Expanding controlled flood-plains – to ensure natural water regimes
- Moving drainage channels in order to protect natural habitats which are regularly covered by water
- Finding means of multi-functional land use for land with excess surface waters
- Implementing water management methods which help to change land use patterns (preparation for the transformation of arable land with low fertility to grass-, forest-, wetland and semi-natural fish-ponds)
- Creation of wetlands with the intention of water retention



Sustainability criteria for taking part in the programme

- Projects which are included in the programme have to decrease the burden on the environment as a consequence of resource use
- The energy consumption of different activities has to be decreased by at least 30%, including the energy consumption demand of different cultivation types, which occur during the improvement, and also the energy demand of the maintenance and operation of the reconstructed infrastructure.
- The maintenance cost of the new infrastructure has to be lower than the current cost.
- Reconstruction has to be based on self-regulatory capacity of ecosystems, to avoid regular human intervention. Only periodical interventions are allowed.
- Local materials have to be used (local in this context means the closest available) in order to decrease the need for transportation
- Construction has to be adjusted to the environment.
- Construction has to be designed for the whole life cycle concerning energy and material consumption and waste management.
- The use of toxic substances has to be excluded totally.
- The development has to improve the water balance, 10% of the concerned land has to be regularly water covered, 30% has to be wetland, such as swamps, forest wetland, mud flats, bog, wet meadow, etc.
- The diversity of the habitat has to be increased and in the area where the construction takes place a minimum of two new habitats have to be created.
- The diversity of the species has to be improved by at least 50% compared to the current range.
- The development is not allowed to be carried out in areas belonging to the Habitats Directive, except if the site is not endangered because of the construction.
- The development must not decrease employment, and projects are favored which increase labour intensity.
- Before and after the programme, obligatory monitoring activities must be undertaken for 10 years. The expenses for this are to be included in the financial support.
- As far as the indicators are concerned an annual report about the results has to be handed in for 10 years following the construction.
- Those who are participating and affected by the work have to be involved in the preparation of the plans, and transparency has to be ensured.

Compulsory monitoring during the programme

Before the programme is launched a survey has to be carried out about the habitat and the diversity of species in the area. The results must be recorded as the initial state.

- Indicator species are needed, the type of the habitats has to be taken into consideration and when indicators appear they have to be monitored.
- An annual survey of the biodiversity is needed.
- Land use which is involved in the construction has to be surveyed and recorded.
- As the project is finished the new land use circumstances have to be recorded.
- The energy needs of the existing land use have to be examined, including the different types of land use and the energy demand of the existing infrastructure.
- After the development the evolution of total energy demand needs to be monitored.

The indicators of the programme and the required targets

- The total direct and indirect energy consumption of the land use. Target: 30% energy input decrease in the total energy consumption.
- The proportion of land constantly under water which is directly involved in the construction - 10%
- The proportion of wetlands which are directly involved in the construction - 30%
- Species' diversity growth - 50%
- Emergence of flagship indicator species on certain areas - minimum 3 species per year

Costs and savings:

Required finance: 55 billion HUF - 190 million EUR

- We calculate the mitigation of seasonal inland water problems on 20 000 ha by creating 2 000 ha permanent inland water, 6 000 ha wetland, and 12 000 maintained cropland. The cost of levelling soil is 1.5 million HUF/ha. For 20 000 ha, this makes 30 billion HUF altogether.
- Changing, reconstructing and creating additional infrastructures, such as dams, sluices, canals, drainage canals, pump stations and roads would cost approx. 25 billion HUF. These facilities are partly needed to maintain constant water cover, or in other cases to change the water regime to rehabilitate the natural environmental conditions.



- The total energy input into the systems can be decreased by 30% because of the 30% wetland which is a self regulatory ecosystem.

Programme 2: Redesigning and changing public lighting and other light sources to benefit the environment

Problem statement:

Public lighting is related to several environmental problems. The phenomenon of light pollution is the most well-known one. Entomologists claim that light sources attract insects according to the different spectrums of light emissions. Insects flying towards light usually die for various reasons. Since light attracts insects from an area of several kilometers, particular species which live near lit places are likely to disappear. Other species which are attracted by the insects such as, birds, reptiles, amphibians and small mammals can also fall victim to public lighting which makes the situation even worse. This causes whole food chains to evolve, resulting in the emergence of predators, scavengers, etc. Since lighting operates simultaneously with traffic infrastructure many animals also die because of traffic collisions.

It also has to be noted that energy-saving light bulbs may have an adverse impact on biodiversity. The attraction of the light sources depends on the ultraviolet radiation of the light spectrum but even blue light has a significant attractive effect. Bulbs emitting common yellow light are less attractive and the red spectrum is hardly noticed by insects. Recently the replacement of the bulbs used so far has started and the newest generation lighting is LED-based. LED light has low ultraviolet radiation but its blue spectrum is high, and as a result it also attracts insects. This is a representative example of when efficiency is increased without taking biodiversity into account, so it does not improve the latter's situation.

However, the three problems can be handled simultaneously if the light fittings are designed properly. The use of LED bulbs can decrease energy consumption, and the installation of light fittings with light directing plates can focus the light which can also reduce light pollution and lessen the attraction of insects. A yellow or slight red lamp-cover can significantly decrease the attraction of insects, although it also makes the light weaker.

The aim of the programme:

To increase biodiversity and to contribute to the aim of halting biodiversity loss by 2020.

Objectives:

- To decrease energy consumption
- To decrease light pollution
- To decrease the attraction of insects, and to hinder the evolution of secondary food chains and to decrease road deaths of insect-eating animals
- To create a biodiversity-friendly lighting culture and its prototypes

Sustainability criteria for taking part in the programme

- Decrease in energy consumption compared to the current situation by a minimum of 50%
- Decline in maintenance and running costs by a minimum of 20%
- Installation of biodiversity-friendly light fittings - within one project minimum 5000 fittings installed. This should only happen in those places where it is justified e.g.: holiday resorts, suburbs, city peripheries, settlements near water, other sites in city peripheries e.g.: petrol stations.
- All three objectives have to be fulfilled at the same time.
- Can be implemented only if it replaces/improves former facilities which were not environmentally-friendly.

Eligible project activities to be supported within the programme

- Manufacturing of biodiversity-friendly light fittings which decrease light pollution
- Installation and purchasing of biodiversity-friendly light fittings
- Exchanging of bulbs
- Compulsory monitoring

Compulsory monitoring during the programme

- Recording of the initial situation of the biodiversity in the particular environment by the designation of flagship indicator species;
- Following the results over 10 years in the attracting environment, emergence of indicator species or growth in their population.



The indicators of the programme and the required targets

- Fall in energy consumption compared to the current situation by a minimum of 50%
- Decline in maintenance and running costs by a minimum of 20%
- Emergence of 5 designated flagship indicator species out of 10 over 10 years
- 10% growth in the population of current indicator species over 10 years
- approx. 200 000-240 000 light fittings installed, approx. 500 000 GWh savings per year

Costs and savings:

Required finance: 12 billion HUF - 41.5 million EUR

- 3 W LED = 30-35 W incandescentLED bulbs require much less wattage than the CFL or incandescent light bulbs, which is why LED bulbs are more energy-efficient and long lasting than the other types of bulb. We have to calculate the different brightness of LED. LED light is more focused, but there is no additional reflection. Achieving the same brightness, LED saves approx. 75% of energy. We also have to calculate that LEDs are designed for long-lasting operation (LED bulbs last up to 10 times longer than compact fluorescents, and far longer than typical incandescents – up to 80 000 hours), but their brightness will be lost during operation. We calculated 12 000 hours of operation, and with the same brightness after changing bulbs.
- 50% energy saving is a very conservative estimate, but it can be met in any case.
- 20% savings in operational costs results from the fact, that, to have a 12 000-hour operational time we must change incandescent bulbs 7-8 times, while LEDs need changing on 2 occasions only.
- Concerning the total cost including the price of the lamp and the consumption:
- A 35 watt halogen lamp for 12 000 hours operation including 8 changes of bulbs costs 21 900 HUF, while a 3 watt LED including two changes of bulbs costs 3900 HUF.
- For public lighting we need 20 watts (6 bulbs x 3 watt). The price: 60 500 HUF including the light fitting. For a stronger lighting we need 60-150 watt, so the price can go up to 100 000-120 000 HUF.
- There is another option to reshape the light fitting while reusing or recycling the original fitting. For the mitigation of light pollution and insect attraction different lighting properties can be chosen: new LED bulbs are available in 'cool' white light, which is ideal for task lighting, and 'warm' light commonly used for accent or small area lighting.
- A 50% financing intensity of total costs would mean 50 000 HUF support per light fitting, and would mean the installation of 240 000 fittings.

Programme 3: Fostering the development of Green Infrastructure in rural areas

Problem statement

Ecosystems work properly only in 10% of Hungary and in the rest 90% they have deteriorated to various extents. According to conservative calculations natural vegetation heritage can be found only in 2-3% of the country. The relatively high diversity of species comes from the fact that various elements of flora and fauna are accumulated in the Carpathian basin. The diversity of habitats is favourable thanks to the various types which exist, although most of them can be characterised as suffering from fragmentation and are endangered by the decreasing size. In particular, forest wetland, native alluvial forest, loess and sand forest and loess grassland associations are in an unfavourable situation. Degradation and fragmentation is also endangering the diversity of species though hindrance of the natural exchange of genes.

In view of the changes in the climate and the positive temperature anomaly experienced in Hungary in recent years, improvement of the coherence of natural habitats is crucial, and barriers and distances have to be overcome. The most obvious way is the rehabilitation of the habitats and ensuring their proper coherence.

The current land use is extremely unfavourable as far as climate change adaptation is concerned. Concerning land use, competitive agriculture prefers more extended and more intensive arable lands. All of these are highly problematic from the aspect of the climate because of the poorly-structured land cover, which has not only increased soil degradation but contributed to the isolation of natural habitats. Their coherence is also hindered by the increasing traffic infrastructure, especially by the rapid growth in the motorway network.

The aim of the programme:

The EU Biodiversity Strategy in spring 2011 announced the development of a Green Infrastructure 'daughter' initiative (by 2012), as a key element to ensure the restoration of ecosystems and their services to mitigate climate change and adapt to its impacts. The programme aims to contribute to the implementation of the GI initiative.



Objectives:

- To support adaptation to the consequences of climate change
- To increase natural habitats' coherence
- To improve the conditions of the natural exchange of genes
- To increase the stepping stone elements of the natural green corridor system
- To decrease soil degradation, deflation and erosion by ensuring constant land cover

Sustainability criteria to take part in the programme

- Constant improvement in the permanent land cover
- Creation of green infrastructure formations which are self-regulated, fit the landscape and do not need maintenance in the long run
- Use of indigenous species during the reconstruction
- A halt to other activities which endanger the successfulness of the reconstruction
- The involvement of the concerned public and interested parties in the programme planning and preparation - transparency has to be ensured

Eligible project activities to be supported within the programme

- Changing land use patterns of low fertility lands towards constant surface cover with grass and forests
- Creation of habitat types/plant associations adequate to the ecological conditions
- Rehabilitation of habitat-fragments, to reconnect and expand fragments
- Creation of landscape-adequate green corridors near roads with the aim of soil protection from deflation and improvement of the local climate
- Removal of barriers and other isolation factors which prevent connectivity

Compulsory monitoring during the programme:

- Recording of the initial state of the biodiversity in the particular environment by the designation of flagship indicator species
- To follow the results over 10 years in the attracting area - emergence of indicator species or growth in their populations.

The indicators of the programme and the required targets

- Constant improvement in the surface cover
- Emergence of half of the 30 indicator species over 10 years in those areas which are involved in the programme
- 10% increase in the number of the already existing species' population over 10 years

Calculation of costs

Required finance: 20 billion HUF - 70 million EUR

- 1 hectare of GI element costs 500 000 HUF on average;
- 4000 ha GI elements would be satisfactory to achieve a visible and measurable improvement of biodiversity and connectivity.
- One project can target a 300-500 ha mosaic area in cooperation with stakeholders; 10-15 projects would be feasible in the various parts of the country.

Programme 4: Promoting Green Infrastructure in cities

Problem statement

On one hand cities are isolated islands which hinder the exchange of genes, but on the other hand they offer a great variety of diverse conditions because of their mosaics. The closed built-up areas in cities cut gene exchanging corridors, e.g.: watercourses flow across cities but the gallery forests do not 'accompany' them. The peaks of mountains and hills can form intact stepping stones but the ridges and the slopes are built up. Some of the species have managed to adapt to city conditions very effectively but populations of several other species are unstable because of the small range of natural and semi-natural mosaics. Occasionally in some of the fragments species can appear in larger numbers but then they disappear as quickly as they emerged. In other cases the mosaics of closed natural habitats can create refuges and because of the accumulation of the species they can be characterized by high diversity. The existence of these refuges is very fragile because of the ever-present environmental stress, and they are constantly exposed to invasion because of the high number of alien species living in cities. The environmental stress originates from air pollution, light pollution, traffic and frequent disturbance (visitors). One critical condition of the toleration of the stress is the local microclimate. Since climate change is manifested more extremely in cities i.e. there are higher temperatures, the tolerance of species which live in natural fragments is endangered. People in cities also have to tolerate higher exposure to environmental



stress like various other species, and the climate in the cities is also a basic condition for their stress tolerance. Because of this, the normalization of the city climate is crucial not just for humans but also for biodiversity.

The aim of the programme:

To improve the conditions for adaptation to climate change in cities

Objectives:

- To promote better adaptation to climate change by rehabilitating and expanding green areas in the cities
- To increase the coherence of natural habitats by the creation of other green areas
- To improve the conditions of natural gene exchange, and to mitigate the isolating effect of cities
- To conserve refuge-like stepping stone elements of the natural green corridor system through buffer zones and by keeping away invasive species
- To increase biologically active surfaces in the cities
- To extend green areas in order to decrease stress factors
- To mitigate stress generating activities

Sustainability criteria to take part in the programme

- A 5% increase in the number of biologically active surfaces in the areas must be included in the project
- Creation of subsistent green areas which do not need maintenance
- Stress tolerant, indigenous species must be planted
- Local protection for natural fragments must be declared
- Management plans must be designed
- Monitoring activity is compulsory
- Those who are affected by and interested in the project must be included
- Announcement of the results to the community – transparency must be ensured
- Volunteers must be involved in the programme and to the results must be sustained by land stewardship groups

Eligible project activities to be supported within the programme

- Creation of biologically active surfaces: green roofs, vegetated green walls, parks, wetlands, arboreums, botanical garden, closed bushes and avenues, installations providing water retention by using natural materials, school gardens, etc.
- The rehabilitation and reconstruction of refuge-like stepping stone areas and the creation of buffer zones
- The connection and expansion of habitat fragments
- Necessary interventions in the connectivity of regional ecological corridors
- Creation of stress-mitigating green corridors along roads
- The removal or moving of facilities which create barriers and cause isolation in order to ensure connectivity
- Compulsory monitoring

Compulsory monitoring during the programme:

- To record the initial state on a map, to survey the condition of natural and artificial green surface elements
- To record the results over 10 years - the emergence of indicator species, or growth in their population size

The indicators of the programme and the required targets

- Changes in the extension of habitat fragments under rehabilitation and reconstruction compared to their original state – 10% growth is the minimum
- The extension of biologically active areas in the percentage of the whole territory – 1% of the total area
- Emergence of half of the 30 indicator species over 10 years in those areas which are involved in the programme
- 10% increase in the population of the already existing species over 10 years
- The number of volunteers involved in the programme has to be minimum 0.1% of city's residents

Costs and justification:

Required finance: 150 billion HUF - 520 million EUR

To create biologically active surfaces: green roofs, vegetated green walls:

- 1 square meter costs 20 000 HUF on average including installation/insulation/plants
- 500 000 square meters costs 10 billion HUF



To create parks, wetlands, arboretums, botanical garden, school gardens, etc

- 1 ha costs 30 million HUF on average including change of soil, moving waste, rehabilitation of brown areas, pull down facilities, plants, plantation, etc.
- 1000 ha costs 30 billion HUF

Installations providing water retention by using natural materials, rehabilitating small creeks, ponds, etc.

- targeting 20 ha ponds, 30 000 meters of water courses
- 1 ha pond: 50 million; 1 metre water course: 1 million → 31 billion HUF
- costs include constructing and pulling down facilities, creating artificial water beds, dredging and moving sediments, levelling surfaces, rehabilitating meanders, etc.

The rehabilitation and reconstruction of refuge-like stepping stone areas and the creation of buffer zones and connecting and expanding habitat fragments

- target 300 ha
- costs 30 million/ha = 9 billion HUF

To create stress-mitigating green corridors along roads, closed bushes and avenues

- target 700 km long 2 metres wide
- 50 000 HUF/square metre; cost includes removing concrete, changing soil, plants and planting
- 1 400 000 square metres = 70 billion HUF

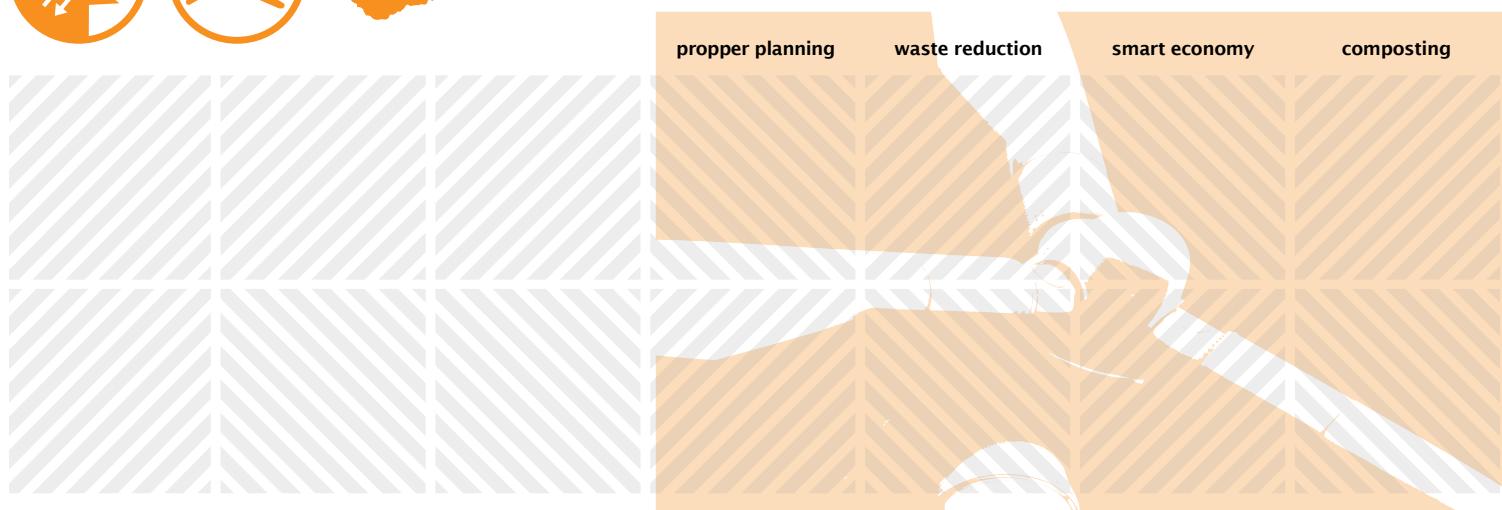
Compulsory monitoring included in all activities as 0.1%

Summary of the programmes and indicators

Priority/ biodiversity	Type of indicator	Indicator	Milestone for 2016	Milestone for 2018	Target for 2022
Changing existing infrastructure to reconstruct natural habitats and natural water regimes	Output indicators	Number of successful cases and the extension of area	2-3 cases	6-8 cases	12-15 cases
			5-10 000 ha	30-35 000 ha	50-60 000 ha
	Result indicators	Decreased energy input	5-10% in the total concerned area	20% in the total concerned area	30% energy input decrease in the total energy input in the concerned area
			2% in total	5-7%	10% of the concerned area is constant water body
		Enhanced biodiversity in the concerned habitats	5-10% in total	20% in total	30% of the concerned area is wetland
			10%	20%	Species' diversity growth - 50%
				8-10	Emergence of flagship indicator species on concerned areas - 20-25



Priority/ biodiversity	Type of indicator	Indicator	Milestone for 2016	Milestone for 2018	Target for 2022
Redesign and change of public lighting and other light sources to benefit the environment	Output indicators	Number of changed light fittings	50 000	100-120	Approx. 200 -240 000 light fittings,
		Decreased energy input			Minimum 50% of the previous consumption
	Result indicators		100000	200 – 250 000	Approx. 500 000 GWh savings per year
	Enhanced biodiversity	-	2	Emergence of 5 designated flagship indicator species out of 10 over 10 years	
				5%	10% growth in the population of current indicator species over 10 years
To promote Green Infrastructure in the cities	Output indicators	Number of people benefiting from the programme	200 000	500 000	1 000 000 people have benefited from the scheme
		Enhanced stress toleration by more resilient habitat fragments	2-3%	5%	10% change in the extension of habitat fragments under rehabilitation and reconstruction compared to their original state
	Result indicators	Better tolerance of climate change effects	0.2	0.5	1% extension of biologically active areas in the percentage of the whole territory
		Enhanced biodiversity	-	7-8	Emergence of 15 - half of the 30 designated flagship indicator - indicator species over 10 years in those areas which are involved in the programme
		Better connectivity, decreasing segregation - population growth	-	5%	10% increase in the number of the already existing species' population over 10 years
		Enhanced environmental consciousness	Number of volunteers involved in the programme has to be minimum 0.1% of residents	Number of volunteers involved in the programme has to be minimum 0.1% of residents	Number of volunteers involved in the programme has to be minimum 0.1% of residents



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/novikovaurge-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

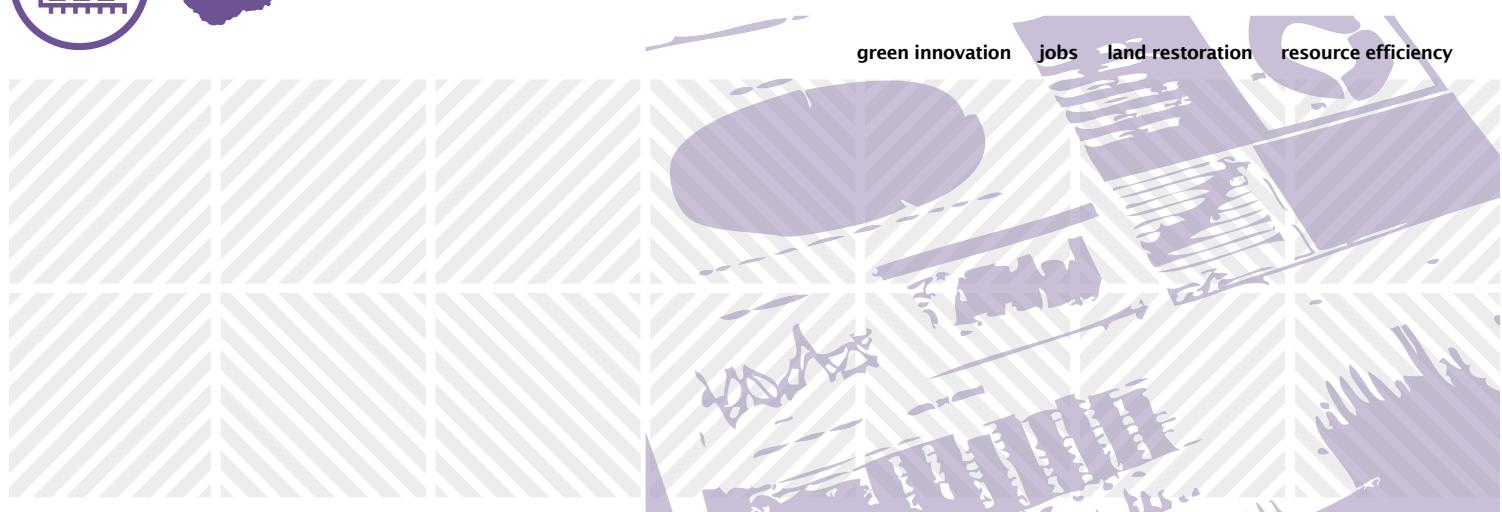
Experts' estimate is 40 billion eur (EE) + 50 billion eur (RES).

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.



Hungary: Research, Development, Innovation

Proposed priorities for Cohesion Policy in Hungary – Research, Development, Innovation 2014 - 2020

Programme 1: Promoting sustainable use of renewable energy sources, work out innovative methods

Problem statement

Nowadays it is clear that the use of renewable energy resources is a must. Earlier investments for research and use of renewable energy sources were hampered by the low price of competing energy sources but because of the ever-increasing price of fossil fuels and climate change there is an urgent need for their substitution. So far, technologies which would enable a very rapid substitution of fossil fuels are not available. Investments are hindered by the rapid development of techniques as investors are reluctant to invest into a solution which can be out-of-date in a short period of time. A further problem is that sustainability aspects are not always integrated during Research and Development (R&D).

Aim of the programme

To speed up technical development in the field of renewable energy use

Objectives

- To work out a wide choice of techniques to find the best and most competitive solution
- To use technologies which consider environmental and sustainable aspects even in the course of their development
- To work out technologies which mitigate burdens on the environment
- To unify and develop research capacity

Eligible RTDI activities to be supported within the programme

- Applied research targeting the use of renewable energy sources which are suitable for being patented in the programmed period
- Innovative developments in connection with those which are already patented

RTDI activities have to consider the following factors

- Sustainability assessment in the course of the programme must be applied
- The development which is the result of the R&D has to minimize the amount of environmental emissions in the total life-cycle of the development. It has to increase the efficiency of the material and energy use in the total life-cycle
- The use of renewable energy sources has to be decoupled from the use of fossil fuels
- The use of renewable energy sources must not endanger the regeneration of natural resources and the life supporting functions which are connected to them (e.g.: water - water ecosystems; biomass - species, habitats.)
- The use of renewable energy sources must not be accompanied by irreversible changes to natural habitats. It must not be accompanied by land take from natural habitats. It must not entail the use of toxic and hazardous substances which are harmful for health and the environment in the total life-cycle e.g.: absorbents, heat exchangers etc.
- The use of renewable energy sources has to be reconcilable with other basic human necessities e.g.: food supply, recreation, cultural heritage has to be preserved
- The use of renewable energies must not have harmful health effects
- The result of the development is allowed to have only a low risk for the environment during the total life-cycle



- Facilities created during the development have to be adjusted to the landscape
- The use of renewable energies is not expected to entail long-distance transportation - an intention of local utilization is necessary
- Avoidance of waste production is needed, byproducts have to be recycled
- Waste production has to be minimized
- Reuse of waste and/or recycling
- Selective waste collection and utilization have to be ensured
- Negative external costs have to be minimized

Indicators for the projects within the programmes:

- Sustainability assessment for the projects - 100%
- Number of patents - 5
- Number of prototypes - 3
- Number of new products on the market - 1

Required finance

5 billion HUF - 17 million EUR

Programme 2: Developing smart grids

Problem statement:

Smart grids can be characterized as up-to-date electricity grids with bidirectional data transfer between the supplier and the consumer, and smart metering and monitoring systems. Smart grids can help to save energy and to reduce carbon dioxide emissions. In the EU their installation is still in its infancy - smart metering devices have been installed only in 10% of the households in the EU and the majority of them do not offer a full service. Consumers who have installed smart meters have managed to decrease their energy consumption by 10%, which still can be improved. The amount of CO₂ emissions can be decreased by 15%.⁸¹ Smart grids offer better environmental performance than conventional systems if electricity generation from various sources is integrated.

Aim of the programme

To exploit further opportunities in smart grids and to make them widespread

Objectives

- To support the implementation of Directive 2006/32/EK about energy end-use efficiency and energy services
- To ensure the continuous financing of smart grid and smart metering innovations
- To promote energy saving
- To promote energy-efficiency objectives
- To decrease CO₂ emissions
- To increase energy supply security
- To make customers environmentally-conscious by measuring their energy consumption (the end user is informed about the real energy consumption and about the real consumption period)
- To provide precise information about grid losses, and to minimize them
- To promote the integration of small energy plants
- To increase the security of grid operation and make it more economical

Eligible RTDI activities to be supported within the programme

- Improving smart grids and smart metering models and carrying out comparative analysis among different models
- Monitoring and implementing small-scale pilot programmes
- (Successful integration of small energy facilities by smart grid and smart metering)

Sustainability criteria for taking part in the programme

- Environmental effects of the planned model have to be assessed during the research
- Preliminary environmental assessment is needed during the demonstrative projects and the development of the prototypes
- The different grid models have to be collectively compared and analyzed by all participants in the R&D.



RTDI activities have to consider the following:

- The development which is the result of the R&D has to minimize the amount of the emissions in its total life-cycle
- It has to increase the efficiency of material and energy use
- The result of the development may entail only low risks in the total life-cycle
- Human health must not be endangered
- Developments are not allowed to shift environmental burdens, e.g.: development should not decrease the amount of waste at the price of increasing the hazardousness of waste
- During the development of smart metering equipment waste generation has to be minimized and the materials used have to be recycled
- Negative externalities have to be minimized
- Developments have to minimize energy loss from the grid
- Developments should avoid extra cost for consumers
- Developments have to increase transparency in energy services and consumption
- Developments have to accurately indicate the careful and wasteful behaviour of consumers

Indicators for the projects within the programme:

- Smart grid models – minimum three models
- Reconciled grid models – minimum one recommended model
- Smart grid prototypes pilot project – equivalent of the number of the accepted models, minimum one
- Smart metering prototypes pilot project – minimum three different types

Required finance

13 billion HUF - 45 million EUR

Programme 3: Decreasing energy consumption by end users by raising the efficiency of energy-utilizing equipment

Problem statement

The 2020 objective of the EU, according to which energy efficiency has to be increased by 20%, is well-known. However this target is facing problems in implementation as in various places some steps have been taken to increase energy efficiency e.g.: the use of energy-saving light bulbs, but in many cases the increase in energy efficiency has come to a standstill. However, energy efficiency can be increased if we develop new working principles.

Aim of the programme

Innovation of new items of end user equipment based on new working principles (household appliances, heating and cooling systems, etc.)

Objectives

- To invent new and energy efficient working principles
- To contribute to reaching 20% improvement in efficiency by 2020
- To contribute to decreasing CO₂ emissions
- To promote to improve energy-consuming devices

Eligible RTDI activities to be supported within the programme

- Research of new working principles
- Improvements of end use equipment based on new working principles and manufacture of their prototypes

Sustainability criteria for taking part in the programme

- RTDI programmes which can reach 20% improvement in efficiency, compared to existing techniques
- Environmental performance assessment

RTDI activities have to consider the following:

- The development which is the result of the R&D has to minimize the amount of environmental emissions in its total life-cycle. It has to increase the efficiency of material and energy use in its total life-cycle. It must have only a low risk for the environment during its total life-cycle. It must not endanger human health. It must not endanger natural ecosystems
- End use items of equipment are needed which are made of recyclable materials and some components can be reused
- Negative externalities must be minimized



Indicators for the projects within the programme

- Invention of new working principles – minimum two new principles
- Innovative end user items of equipment – minimum two new items
- Development has to concern households – in minimum one case
- Savings by the end user have to reach minimum 20% compared to the previous equipment
- The energy saving potential of the development has to reach in the concerned consumer group a 5% decrease in total energy consumption

Required finance

2 billion HUF - 7 million EUR

Programme 4: Promoting sustainable architecture

Problem statement

Increasing energy prices are pushing users to save energy, and subsequently designers to design energy-saving houses. As a result, passive houses are appearing. Another issue is independence from the large energy supplying systems, which is reflected in the building of autonomous houses. The problem is that these trends are not associated with an architecture that is striving to be environmentally-conscious and sustainable in all aspects. Saving energy, increasing energy efficiency and being autonomous often entail burdens on the environment in the form of high energy demand at construction and high use of plastics. Another problem is that in buildings that serve different functions different techniques have to be used so the same environmentally-friendly techniques cannot operate in all of the cases. The fact that all houses have to be adjusted to their environment, and have to be designed and implemented as an integral part of it, makes the matter even more complicated.

Aim of the programme

To promote sustainable architecture through RTDI

Objectives

- To promote environmentally-conscious architecture, material and energy efficiency and savings
- Sustainable architecture to meet with needs instead of wishes
- To promote solutions which entail the use of local construction materials
- To promote the life-cycle view in architecture
- Architecture supports a sustainable life style
- Buildings are environmentally sound

Eligible RTDI activities to be supported within the programme

- Working out criteria for sustainability
- Working out innovative technological solutions
- Developing innovative construction materials
- Developing innovative building engineering
- Patenting innovative solutions
- Introducing prototypes

RTDI activities have to consider the following:

- Preliminary sustainability impact assessment to assess the consequences of innovative solutions
- The minimization of energy and material use in the whole life-cycle (building material, construction, operation, deconstruction)
- Giving priority to renewable resources
- Minimizing the space that is irreversibly used by the construction
- Enhancing the efficiency of energy and material use
- Minimizing negative external costs
- Innovation has to achieve better environmental performance than the existing BAT
- Avoiding risks and considering the precautionary principle
- Considering the long term environmental effects on human health
- Considering local traditions which have proved to be environmentally sound
- Promoting the sustainable use of local materials
- Using the surrounding ecological conditions, instead of changing them
- Minimizing the waste stream in the whole life-cycle
- Avoiding materials which might have toxic impacts



Indicators for the projects within the programme

- The number of patents of innovative construction materials – 5
- The number of prototypes of innovative construction materials – 3
- The number of patents of innovative construction technologies – 3
- The number of patents of innovative building engineering technologies – 3
- The innovation's energy saving potential has to be at least 20% compared to the BAT
- 5% of new buildings apply at least half of the programme's innovative technologies

Required finance

2 billion HUF – 7 million EUR

Programme 5: Innovative practices of sustainable land use

Problem statement

Soil degradation – loss of organic matter, decline in soil fertility, decline in structural condition, erosion, adverse changes in salinity, acidity or alkalinity, and the effects of toxic chemicals, pollutants or excessive flooding – is a serious global environmental problem and may be exacerbated by climate change. Soils host the majority of the world's biodiversity and healthy soils are essential to securing food and fibre production and providing an adequate water supply over the long term. Ecosystem services provided by soils are integral to the carbon and water cycles and include cultural functions.

Soil is lost much faster than it is created through normal geological processes. It takes 200 to 1,000 years to form 2.5 cm of rich topsoil. But on average, farmland in Europe is losing 2.5 cm of topsoil every 16 years, or 17 times faster than it can be replaced.

The loss of topsoil affects man's ability to grow food in two ways. First, it reduces the inherent productivity of land, both through nutrient loss and degradation of the soil's physical structure. Second, it increases the cost of food production. When farmers lose topsoil, they can only increase land productivity by substituting energy in the form of fertilizer, and this increases the costs (inputs). But if productivity drops too low or costs rise too high, they will be forced to abandon their land.

Studies have shown that as much as 20 percent of eroded materials end up in rivers, reservoirs, and irrigation canals.

Aim of the programme

Speed up innovation of sustainable land use practices to prevent soil degradation

Objectives

- To prevent further degradation of top soil by climate change
- To maintain soil ecosystem services
- To rehabilitate and enhance soil biodiversity
- To protect and enhance the nutrient cycle and to enhance soil fertility
- To find innovative tools and techniques to conserve and build soil
- To minimize synthetic fertilizer use
- To find ways to eliminate energy wasting practices
- To find practices to increase water infiltration and prevent rapid surface run-off.
- To find ways for the multifunctional use of ecosystems
- To develop holistic management

Eligible RTDI activities to be supported within the programme:

- Research aimed at innovative sustainable land use practices to prevent soil degradation
- Small scale testing of existing (but not applied in Hungary yet) and innovative sustainable land use practices, such as contouring; cover cropping; crop rotation; contour strip cropping; contour buffer planting; terracing, grassed waterways; farm ponds and checks dams; Sloping Agricultural Land Technology (SALT); alley farming and agroforestry; no tilling, etc.
- Monitoring changes in soil properties due to innovative land use practices

Sustainability criteria for taking part in the programme

Monitoring and measuring activities have to be completed in order to obtain a clear indication of results



RTDI activities have to consider the following:

- Reducing total – direct and indirect – fossil energy input into land use
- Supporting the recovery and maintenance of ecosystems services
- Minimizing artificial chemical input
- Preservation of top soil - top soil loss cannot be faster than regeneration
- The soil's biogeochemistry has to be maintained
- The soil's biodiversity has to be enhanced
- The soil water regime has to be maintained

Indicators for the projects within the programme:

- Change of EROEI (Energy returned on energy invested) due to the innovative techniques compared with the traditional ones – 20% improvement of energy efficiency
- Soil degradation data set – less than 2.5 tonnes of soil loss per ha
- Total biomass in soil – 100% increase compared to the previous practice within the last 5 years

Required finance

3 billion HUF - 10.5 million EUR

Programme 6: Sustainable forest management RTDI

Problem statement

Forests are essential to economic development and the maintenance of all forms of life. Forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations. Sustainable management means “the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems”.

Climate change may endanger natural forest habitats if changes exceed the resilience of forest ecosystems. As most forest structures have been changed in the past, and almost half of the stands consist of non-indigenous species the stress tolerance of forests is a question in general.

Forests differ in the regeneration requirements of their most valuable species and in their sensitivities to different silvicultural treatments. Even good management practices may result in unforeseen losses in non-targeted species, soil, water balance, etc.

RTDI activities are badly needed to find and test sustainable forest management methods.

Another problem is the growing demand for forest products, which extracts a part of the biomass from the forest. There is no known exact method to identify the extent to which biomass can be extracted without compromising the forests' ecosystem services and biodiversity.

The forest industry in most cases manages forests as if they were plantations and not an ecosystem. The resilience of an ecosystem depends on all elements of the system, and not just on the trees. RTDI activities have to consider forest as an ecosystem.

Aim of the programme

To enhance stress-tolerance to climate change and improve biodiversity of forest ecosystems by RTDI activities

Objectives

- To understand the relation between forest management methods and resilience of forest ecosystems
- To develop adequate forest management for adaptation to climate change
- To enhance the resilience of forest ecosystems
- To develop adequate forest management to preserve the multiple and complementary functions and uses of forest ecosystems.
- To reduce risks linked to abandonment, desertification and forest fires
- To protect the soil's carbon supply and fixing cycles to increase the forest carbon stock
- To promote sustainable forest management practices, afforestation and reforestation
- To prevent soil degradation, greenhouse gas emissions



- To identify the raw material of different forest habitats that can reproduce itself naturally and maintain biodiversity in a changing climate

Eligible RTDI activities to be supported within the programme:

- Research on stress tolerance of different forest habitats concerning climate change
- Innovation of new management practices
- Testing new management practices
- Testing existing and applied sustainable management practices
- Research on forest rehabilitation
- Innovation of new rehabilitation methods including reforestation
- Innovation of new methods of afforestation

Sustainability criteria for taking part in the programme

- The RTDI team has to apply an ecosystem approach
- The RTDI team has to represent various fields of expertise
- Monitoring and measuring activities have to be completed

RTDI activities have to consider the following:

- Health and vitality of forest ecosystems
- Soil and water protection of forest ecosystems
- The conservation and enhancement of biodiversity of the whole forest ecosystem, including the genetic diversity of the trees

Indicators for the projects within the programme:

- Innovation of new management practices – 2 practices
- Trial and testing of new management practices – 2
- Testing of existing and applied sustainable management practices – 2
- Research on forest rehabilitation – 1
- Innovative rehabilitation methods including reforestation – 1
- Innovative method of afforestation – 1

Required finance

2 billion HUF - 7 million EUR

Programme 7: RTDI projects on wise resource use for waste prevention through the integration of production and consumption

Problem statement

Production is consumption of resources and creation of waste, while consumption is production of waste. This simple fact provides an opportunity to combine production and consumption into one cycle. The problem is that there is no intentional planning of such cycles - the work is done by the market. The market sometimes fails to manage waste problems, as it does not reflect on the negative external costs, potential partners are frequently not matched, and the management of small amounts of waste is not cost efficient. Information on what to do with the waste, where to take or dispose of it, and who can manage it is poor. Though most waste is a resource, which can bring benefit for the owner, in most cases this asset is lost, and turns into a cost.

Another problem is that the different actors belong to different sectors and cross sectoral cooperation is rare. Some cycles exist in cases where partners have been matched, but there is no overall map to provide information on the opportunities.

Aim of the programme

To promote the planning of an integrated production and consumption cycle in Hungary to minimise waste.

Objectives

- To promote matching of potential partners
- To help cross sectoral cooperation
- To provide knowledge and information for the creation of cycles
- To find solutions for existing waste problems



Eligible activities

- Surveying the production and consumption system
- Mapping recent cooperation among consumers and producers
- Mapping existing cycles
- Developing a data bank for matching partners
- Coming up with concrete proposals for matching

Sustainability criteria to take part in the programme

- The RTDI team has to represent various field of expertise
- The results of the RTDI activities have to be publicly accessible and free of charge

RTDI activities have to consider the following:

- Waste minimisation
- The proposed cycling has to avoid negative environmental side effects, such as long distance transport, or shifting environmental burdens to other sectors or other sites.
- Proposals have to minimise hazards (i.e. hazards potentially caused by waste, e.g. soil and air pollution and the consequences thereof, incl. threat to the health of living organisms; as well as hazards posed by the use of raw materials for unsuited purposes, e.g. plastics containing heavy metals used for toys; hazards implied in the extraction of excessive vegetal waste from the cycle of organic matter as a consequence of biomass-based energy production)⁸²

Indicators for the projects within the programme:

- A study on the Hungarian production and consumption system is completed
- A plan suggesting how to combine production and consumption into a cycle is completed
- A data bank on existing cycles and partners is developed
- A data bank for users to promote new cooperation is developed

Required finance

1 billion HUF - 3.5 million EUR

Programme 8: New, bio-based biodegradable materials RTDI

Problem statement

The availability of cheap oil is predicted to become more and more limited in the near future, and the negative environmental impacts during its whole life cycle are well known. We need materials to replace fossil oil and its products, and to avoid environmental harm.

Sustainability, industrial ecology, eco-efficiency, and green chemistry are guiding the development of the next generation of materials, products, and processes. Biodegradable plastics and bio-based polymer products based on annually renewable agricultural and biomass feedstock can form the basis for a portfolio of sustainable, eco-efficient products that can compete and capture markets currently dominated by products based exclusively on petroleum feedstock. Natural/Biofiber composites (Bio-Composites) are emerging as a viable alternative to glass fibre reinforced composites especially in automotive and building product applications. The combination of biofibres such as kenaf, hemp, flax, jute, henequen, pineapple leaf fibre, and sisal with polymer matrices from both nonrenewable and renewable resources to produce composite materials that are competitive with synthetic composites requires special attention, i.e., biofibre-matrix interface and novel processing. Natural fibre-reinforced polypropylene composites have attained commercial attraction in the automotive industries.

In recent years there has been a marked increase in interest in biodegradable materials for use in packaging, agriculture, medicine, and other areas. In particular, biodegradable polymer materials are of interest. Several new plastics have been launched that are biodegradable.

Using natural fibres with polymers based on renewable resources will allow many environmental issues to be solved. By embedding biofibres with renewable resource-based biopolymers such as cellulosic plastics; polylactides; starch plastics;

82 The proposed programme aims to reduce waste production through the integration of production and consumption processes. I.e. all the outputs (incl. by-products, waste) of a process should be absorbed by other productive processes along a consciously planned cycle. This way, hazards could be eliminated / minimized.



polyhydroxyalkanoates (bacterial polyesters); and soy-based plastics, so-called green bio-composites are continuously being developed.

Bio-based and biodegradable are likely to be fashionable, but these labels do not automatically mean that they are environmentally friendly. Typical problems are as follows:

- When biodegradable refuse ends up in landfills, it breaks down more quickly than ordinary waste does. The result is a more rapid release of methane, a greenhouse gas with a high global warming potential.
- Natural fibre—polypropylene or natural fibre—polyester composites are not sufficiently eco-friendly because of the petroleum-based source and the non-biodegradable nature of the polymer matrix.
- Some bio-based material biodegrades rapidly, and its short life causes frequent use of raw materials. e.g. PLA (Polylactic acid).

The biggest problem is the quantity of bio-based biodegradable materials used by humans. Bio-based materials are always part of the food chain or can be foodstock for humans. The best example is agrofuels, which require huge areas for production and has resulted in fuel competing with food.

Research is urgently needed to combine the idea of bio-based and biodegradable materials and avoid the environmental problems associated with most of the new materials developed so far.

Aim of the programme

To find bio-based and biodegradable new materials to minimise environmental burdens.

Objectives

- To avoid the most common environmental problems associated with bio-based and biodegradable materials
- To find new materials which are both bio-based and biodegradable

Eligible activities

- To assess the environmental performance of existing bio-based and biodegradable materials
- To improve the environmental performance of existing bio-based and biodegradable materials
- To find new bio-based and biodegradable materials, which meet both criteria.

Sustainability criteria for taking part in the programme

- The RTDI team has to represent various fields of expertise
- An overall LCA has to be carried out concerning the new materials
- Results of the environmental assessment have to be publicly accessible in the case of existing materials.

RTDI activities have to consider the following:

- Biodegradable and bio-based criteria have to be applied in parallel
- New materials have to have a better environmental performance during their life cycle than existing ones.
- Shifting environmental burdens has to be avoided during the whole life cycle
- Social aspects, such as the nourishing the human population and job opportunities have to be taken seriously into account.
- Biodiversity and the food chain have to be considered carefully.
- New materials have to be aimed at waste prevention
- The durability of the materials has to be considered properly

Indicators for the projects within the programme

- Environmental impact assessment of existing bio-based and biodegradable materials – 3 cases
- Improved environmental performance of existing bio-based and biodegradable materials – 2 cases
- Patents on new bio-based and biodegradable materials – 2 cases

Required finance

3 billion HUF - 10.5 million EUR



Summary of the programmes and indicators

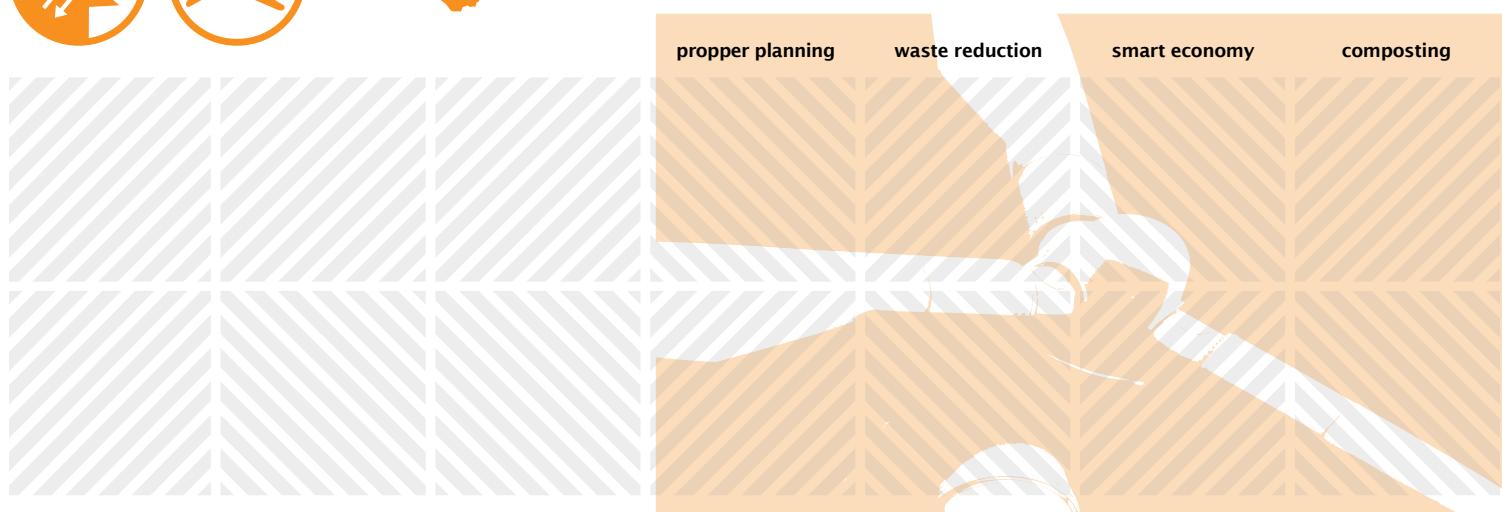
Priority	Type of indicator	Indicator	Milestone for 2016	Milestone for 2018 (cumulative)	Milestone for 2022 (cumulative)
Strengthening research, technological development and innovation					
Sustainable use of renewable energy sources - innovative technology	Output indicators	To carry out sustainability assessment for the projects			100%
		Number of patents		1	5
		Number of accomplished prototypes		1	3
		Number of new products on the market		-	1
	Result indicator	Fossil fuel replacement decreasing energy dependency			
Smart Grid RTDI	Output indicators	Smart grid models - minimum three models		1	3
		Reconciled grid models - minimum one recommended model			1
		Smart grid prototypes pilot project - equivalent of the number of the accepted models, minimum one			1
		Smart metering prototypes pilot project - minimum three different types	1	2	3
	Result indicator	Local production of electricity is feasible from renewables, and integrated into the system, efficient power delivery			
Energy efficient appliances RTDI	Output indicators	To invent new working principles - minimum two new principles	-	1	2
		Innovative end user items of equipment - minimum two new items		1	2
		Development has to concern households - in minimum one case			1
		Savings of the end user have to reach minimum 20% compared to the previous equipment			20%
	Result indicator	Energy saving potential of the development has to reach in the concerned consumer group 5% decrease in the total energy consumption			5%
		Decreasing electricity consumption in households			
Sustainable architecture RTDI	Output indicators	Innovative building materials and technologies			
		The number of patents of innovative construction materials	1	3	5
		The number of prototypes of innovative construction materials	1	2	3
		The number of patents of innovative construction technologies	1	2	3
		The number of patents of innovative building engineering technologies	1	2	3
		Innovation energy saving potential has to achieve 20% compared to the BAT			20%
		5% of new buildings apply at least half of the programme's innovative technologies			5%
	Result indicator	Decreasing energy consumption of buildings			



Priority	Type of indicator	Indicator	Milestone for 2016	Milestone for 2018 (cumulative)	Milestone for 2022 (cumulative)
Strengthening research, technological development and innovation					
RTDI projects on wise resource use for waste prevention by the integration of production and consumption cycle	Output indicators	A study on the Hungarian production and consumption system	1	1	1
		A plan suggesting how to combine production and consumption into cycle		1	1
		A data bank on existing cycles and partners		1	1
		A data bank for users to promote new cooperation			1
	Result indicator	Minimisation of resource extraction and prevention waste			
Sustainable land use – agricultural practices which prevent soil degradation RTDI	Output indicators	Innovative sustainable land use practice – 3 patents	1	2	3
		Test of innovative land-use practice – 1 case		1	1
		Small scale field test of existing practices – 5 cases		5	5
	Result indicator	Prevention of soil degradation and biodiversity loss decreasing GHG from soil cultivation			
Sustainable forest management RTDI	Output indicators	Innovation of new management practices – 2 practices		2	2
		Trial and testing new management practices			2
		Testing existing and applied sustainable management practices	2	2	2
		Research on forest rehabilitation		1	1
		Innovating rehabilitation methods including reforestation			1
		Innovating methods of afforestation			1
	Result indicator	Adaptation to climate change, measured by existing indicators, along with the monitoring of the change of climatic features ⁸³			
New, bio-based biodegradable materials RTDI	Output indicators	Environmental assessment of existing bio-based and biodegradable materials – 3 cases	3	3	3
		Improved environmental performance of existing bio-based and biodegradable materials – 2 cases		1	2
		Patenting of new bio-based and biodegradable materials – 2 cases			2
	Result indicator	Decreasing environmental pressure			

Prepared by: Dr. Iván Gyulai

⁸³ Existing indicators to measure the fitness (adaptability) of forest ecosystems to climate change include: the loss of leaves, shrivelling/desiccation of the tree-top or the whole tree, change in the number/population of the tree's pests, invasion and spreading of invasive species in the forest, change in the diversity of the forest, change in the production of organic matter etc. All these indicators have to be interpreted together with the change of climatic



Latvia: Energy Efficiency and Renewables

Shadow position on energy and climate, use of EU funds for 2014-2020 period

Description of the situation and key challenges

In 2010 Latvia's annual primary energy consumption was 55708 GWh (200.5 PJ), including energy end-use consumption – 49569 GWh (178.4 PJ), non-energy needs – 848 GWh (3.1 PJ) and the energy transformation sector (including losses and energy sector's own consumption) – 5291 GWh (19.0 PJ). Gross domestic energy consumption is 52800 GWh (190.0 PJ). [Source: NEEAP]

Renewable energy sources in the primary energy balance of Latvia account for an estimated 35%, with a national commitment to increase this to 40% by 2020. Also the highest level long-term planning policy document in Latvia i.e. Sustainable development strategy for Latvia 2030 - states that renewable and safe energy should be promoted.

Apart from this, Latvia has undertaken several international commitments in the field of energy and GHG emissions and fulfilment of those should promote green energy:

Area	Target value	Current value
Reduction in energy consumption on the end user side within the period 2009 – 2016	9%	
Reduction in primary energy consumption by 2020	28.1 P	
Share of renewables on energy consumption by 2020 (Directive 2009/28/EC)	40%	33.6% in 2010
Share of RES in transport by 2020	10%	2.3% in 2010
Greenhouse gas emission reduction in non-ETS sector over the period 2013-2020 (compared to 2005):	maximum +17%	
GHG emissions	17.0 Mt CO ₂ equivalent	

During last 10 years there has been a relative de-coupling of GHG emissions and GDP growth. In 2010 GDP had increased by 43 percentage points compared to the year 2000. GHG emissions in the same period grew by 17%. This relative decoupling is mainly attributed to an increase in energy efficiency in all sectors of the economy, whereas the contribution of RES use to this trend has been very small.

Furthermore, limiting GHG emission increase by 2020 and decreasing it afterwards can be seen as an integrated indicator for sustainable development in Latvia. In order to achieve an absolute decoupling of GDP growth and CO₂ emissions, energy policy should be directed

Highly efficient biomass boilers for district heating, such as the one in Tukums, are the way forward to achieve Latvia's high renewable energy target.



Photo: Tukuma Siltums



towards improved energy efficiency throughout the whole cycle i.e. from production to final energy consumption, as well as towards wider use of RES.

Heat consumption in centralised heating supply systems is on a downward trend following the implementation of energy efficiency measures, and also with certain structures being switched off from centralised heating systems. In 2010 heat totalling 7962 GWh (28.7 PJ) was generated in centralised heating supply systems in Latvia, and 53% of this volume was generated in Riga. With the operation of the new cogeneration block being launched in the centralised heating system in Riga, more than 90% of the heat consumed in the city is generated through a highly efficient cogeneration process. The remaining volume of heat required is generated by local and individual producers.

The main directions of official energy policy are aimed at increasing national energy security through promoting a diversification of supply of primary energy resources, creating favourable conditions to increase self-generation of electricity, and with new interconnections, prevent isolation from the regional electricity market. From an environmental point of view these targets are seen as neither good nor bad per se and the environmental impacts depend on the safeguards that are applied to every energy source. However there are some concerns about the sustainability of bioenergy, in particular biogas and biomass, as well as wind energy. Energy experts emphasize that the creation of competitive conditions to promote the use of renewable and local energy resources, besides improving energy efficiency, is also important.

Energy efficiency

Energy efficiency measures produce a positive impact as they reduce overall costs in the energy supply system. The hurdles which prevent using the potential are the rather high initial investments and the long pay-back periods. During the previous period energy efficiency improvement measures were implemented in the energy end-use sectors. The most significant energy efficiency improvement measures in this period were taken in the area of improving the energy efficiency of buildings in both the residential and public sectors.

Despite some improvements being made, energy efficiency has a high potential in Latvia. Energy intensity (in terms of final energy consumption) in Latvia in 2010 was around 3,5 times higher than the EU average and the gap is narrowing at a very slow pace. Even if purchasing power parity is being considered, energy intensity in Latvia is 75% higher than the EU average. In order to improve this indicator, substantial improvements in energy efficiency in all sectors are necessary. In particular, the industry sector should be highlighted, where the energy intensity is around 50% higher than the EU average. Since 2003 this has been a worrisome trend i.e. despite an increase in turnover of the sector, energy consumption in relative terms has been increasing. This means that growth took place at the expense of efficient use of energy sources. Similarly, in the services sectors energy intensity is a lot higher than the EU average. In this sector both state and municipal services play an important role, since these services constitute around 40% of the total energy consumption in the sector. Energy efficiency measures in the public sector will be partly pushed by the requirements of the Energy services directive.

The speed of energy efficiency improvement measures in centralised heating systems is hampered by the large volume of investments that are required, the restricted possibilities of local authorities to take out loans, as well as slow capital turnover. These are the reasons why local authorities continue to operate inefficient equipment which has an increased level of fuel consumption and cannot ensure the supply of heat at the quality required. If complex renovation of the system is carried out, it will be possible to optimise the energy generation process and reduce heat losses in the transmission systems. (Source: 2nd NEEAP)

For an energy efficiency increase in the residential sector, stronger incentives are necessary – asking to ensure compliance with certain energy efficiency levels and at the same time providing the tools to do this. Current legislation doesn't envisage any support mechanisms for energy efficiency increase for individual households. Although there has been some success with moving energy efficiency measures forward with the help of EU funds in the 2007-2013 programming period, in particular in the area of renovating multi-apartment residential buildings, the overall picture is still very grim. There are around 39 thousand multi-apartment houses (including social housing) in Latvia and less than 1% of them have been renovated. According to experts from the Ministry of Economics, around 60-70% of existing multi-apartment buildings can be renovated applying cost-optimal solutions. Energy consumption of 98% of all housing stock is far beyond optimal level and annual heat energy consumption exceeds 150 kWh/m². Thus continued support for renovations of residential buildings is of crucial importance.

Renewable energy sources

Renewable resources should be selected which are commercially justified from the point of view of the circulation cycle analysis, as well as environmentally and climate friendly. The amounts of their use should vary depending upon prices,



availability of resources, development of innovative technologies and impact on climate change mitigation policies. In the long run the use of RES should be widened – both in the heat and electricity generation sectors. The use of biomass in small and medium scale district heating plants stimulates forestry, wood processing and agricultural industries, allowing using residues efficiently. Wider use of local RES would also reduce exports of local energy sources (primarily wood-chips) and decrease dependency on fossil fuel imports.

In the period up to 2020, the main emphasis must be on a more complete use of biomass, without neglecting the use of wind energy after 2020 and the use of solar energy primarily in multi-apartment houses, thus ensuring hot water supply.

Moving towards greater energy independence

Growing energy dependence, apart from growing energy demand per se is one of the central challenges – around 65% of energy is imported. An increase in the use of renewable energy combined with an increase in energy efficiency can contribute to overcoming the vulnerability caused by energy market isolation from EU markets. Apart from this, it will also stimulate local economic activity.

The availability of energy sources, complemented by low voltage grids with necessary capacity, district heating networks, cooling or energy for technological processes are important factors for business activities, in particular, industrial production. Apart from this, local distribution grids allow for a reduction in energy losses which occur when electricity is transported long distances from the producer to the consumer.

Specific measures

Energy efficiency in housing sector

Renovation of existing housing stock: Latvia has to put forward a mix of policy measures addressing energy savings such as energy efficiency in residential buildings. Heat insulation measures in multi-apartment residential buildings should be continued, especially if accompanied by regulations which encourage households to invest in energy efficiency measures. The demand for these types of measures has been steadily increasing; moreover the refurbishment of these buildings contributes to an improved quality of housing. Investment needs significantly exceed available financing.

Further decrease of energy consumption of buildings: In addition there is a need to stimulate the transformation of buildings that are already refurbished into nearly zero-energy buildings, as well as deep renovation of existing buildings to beyond cost-optimal levels. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewables produced on-site or nearby.

Revolving fund for energy efficiency: Support for the establishment of revolving funds should be considered. That would allow the provision of support for energy efficiency measures in a higher number of households. Financing from EU funds should be part of this fund.

Tax discounts for energy efficient houses: To complement public grants and provide additional incentives for housing renovation, there should be a scheme created that allows recovering part of the investment costs through tax discounts for those owners who have made investments in energy efficiency from their own resources. This is particularly important for single-family houses.

Required finance for energy efficiency investments in the housing sector: The estimated amount of overall investment to reach the indicated target would be up to 11.2 billion EUR (at 2010 prices).

If the present ratio of co-financing were to be preserved (45% on average), it would require around 5,04 billion EUR (at 2010 prices). This is, however, an amount which far exceeds the total expected envelope of cohesion policy financing, and there is no agreement on what share of this should be covered from EU funds, but indicates a high potential. Ministry of Economics calculations suggest that around 3.84 billion EUR would be required to renovate 60-70% of the residential sector. In addition, the absorption capacity of the construction sector should also be considered so as to prevent an inflation in costs and low-quality renovations.

Energy efficiency increase in industry

Support for the acquisition of new technologies and modernisation should be given to those companies that can clearly demonstrate a decrease in energy consumption on one unit of production. This criterion can also contribute to a reduction of CO₂ emissions (at least per unit).

In order to reach out to those companies that need support the most and where energy efficiency potential is the highest, the IRR should be used as one of the project selection and evaluation criteria.

Specifically two types of technologies should be considered for support:

- Technologies directly linked to the production process that can be used only in a specific company;



- Technologies that are used widely across the sector: mostly electricity consuming equipment (engines and pumps in different systems), heat and steam generating and using technologies.

Energy efficiency increase in services sector

Services sector: hotels and catering; education and research institutions; wholesale and retail trade; IT, real estate and financial services; state administration and insurance; health care and social care services.

An energy audit is still a tool, but not an obligation for SMEs. For this reason a scheme which provides support to SME's for energy audits and necessary investments is advisable. Audits which are done by external energy experts could be valuable for the proper growth of SME's, especially with regard to an improvement in production processes and other efficiency improvement measures, and thus, in the long term, increase energy efficiency.

District heating

Further development is needed to improve the efficiency of local district heating plants and the recovery of industrial waste heat (e.g. connections to local district heating systems as well as industrial processes, flue gas recovery with condensers).

Support for energy efficiency measures in district heating systems, including distribution networks and an energy efficiency increase in boiler houses and co-generation plants using renewable energy sources.

Support for the replacement of out-of-date biomass plants used in district heating. Many small biomass plants have been in operation for 15-20 years and are reaching the end of their lifespan. They lag behind in efficiency and often their installed capacities are too high for present demand. Estimated costs for these investments: 150 000 EUR/1 MW installed capacity.

Renewable energy sources

Considering that Latvia has to achieve 40% of RES in gross final energy consumption by 2020, measures should be supported to allow movement towards this target.

Support should be directed towards wider RES use in district heating and co-generation systems. Considering that RES use in heat production is already competitive in the market, then intensity of support should be appropriate. The level of support should be dependent on achieved GHG emissions reduction as well as a consideration of the price differences of equipment between RES and fossil fuel technologies.

Also, measures aimed at renewable energy use in SME's, especially in small-scale production and the services sector could be supported.

However, no direct investment support should be envisaged to electricity production using RES. Support to electricity production should be non-discriminatory and hence should be put forward through legislation and Cabinet regulations. This would allow avoiding the situation where some companies receive support from several sources to be avoided. However, support for small and medium scale electricity production from renewable energy sources should be planned as indirect support i.e. supporting costs related to connection to transmission lines etc. In the sector of transport, support should be made available for upgrading the public transport fleet so as to use biogas.

Distribution grids

Investments are needed to develop smart grids (measuring, monitoring, intelligent management and control) and interconnections for integration of the use of renewable energy, controlling the demand response bringing new energy services and to change the attitude of consumers from being a passive player to being an active contributor, empowering local consumers by active energy management and demand response services. Installing of smart distribution systems and upgrading of low voltage level electricity networks are necessary to ensure the uptake of electricity produced at small scale (households, municipalities, and other small entities).

Horizontal issues: green procurement, local energy plans and functioning market

Green procurement:

- Green procurement should be mandatory for all EU funded projects – both in private (industry, services etc.) and public sectors. This way green procurement can be used as a tool to mainstream energy efficiency;
- Specific requirements in the field of energy efficiency (green procurement) should be applied as a standard requirement in all procurement processes related to the spending of EU funds. This would allow for achieving higher energy efficiency and bring synergies of EU funding.



Local energy plans and low carbon strategies:

- The government should define precise conditions for the use of renewable energy resources for heat and electrical energy production in the long-term. These should be based on area development plans incorporating power plans.
- The main effort has to be put into the enhancement of an integrated approach to sustainable urban development, mainly the promotion of sustainable urban mobility, including support for “park and ride” systems, creation of low transport intensity (low emission) areas in cities, development of infrastructure for non-motorised transport modes such as bicycle lanes, pedestrian paths etc. Similarly, upgrading the public transport fleet to use biogas should be supported. It has to be also noted that urban transport has a strong synergy with urban air quality.
- Actions and projects considering urban activities, focused on the production sector, taking into account lifestyle changes and urban sprawl and the consideration that urban consumption must change.
- Support in assistance of energy efficiency increase in districts of buildings, energy networks and local energy supplies (i.e. solar collectors and photovoltaic systems in urban areas), and ICT.

Functioning market and grids:

- In order to promote the use of decentralized energy sources, a functioning market is important and adequate market surveillance necessary;
- Upgrading of electricity distribution networks is necessary so as to ensure an uptake of electricity produced from renewable energy sources;
- Support for the creation of a network for biogas collection and distribution can contribute to the creation of a functioning gas market and foster the development of biogas technologies.

Indicators and targets

Energy efficiency target in industry

Assessments show that the energy savings potential (measures with a pay-off period not exceeding 5 years) by 2020 is estimated to be 87 ktoe (3.6 PJ). This should be accepted as a target and split as follows:

- Primary energy savings: 39 ktoe (1.6 PJ)
- Electricity savings: 48 ktoe (2.0 PJ).

In comparison with the energy consumption of industry in 2010, this would mean a saving of around 15%.

Energy efficiency target in services sector

Assessments show that the economically justified energy savings potential (measures with a pay-off period not exceeding 5 years) by 2020 is estimated to be 56 ktoe (2.3 PJ). This is split as follows:

- Primary energy savings: 9 ktoe (0.4 PJ)
- Electricity savings: 47 ktoe (1.9 PJ).

Energy efficiency measures in residential sector

The target is to ensure that average heat energy consumption in the residential sector is below 100 kWh/m²/year by 2020.

Reference documents:

Second National Energy Efficiency Action Plan of Latvia, 2011-2013 (2011)

National Energy strategy 2030 (draft by the Ministry of Economy)

Latvia's National Reform Programme "EU 2020"

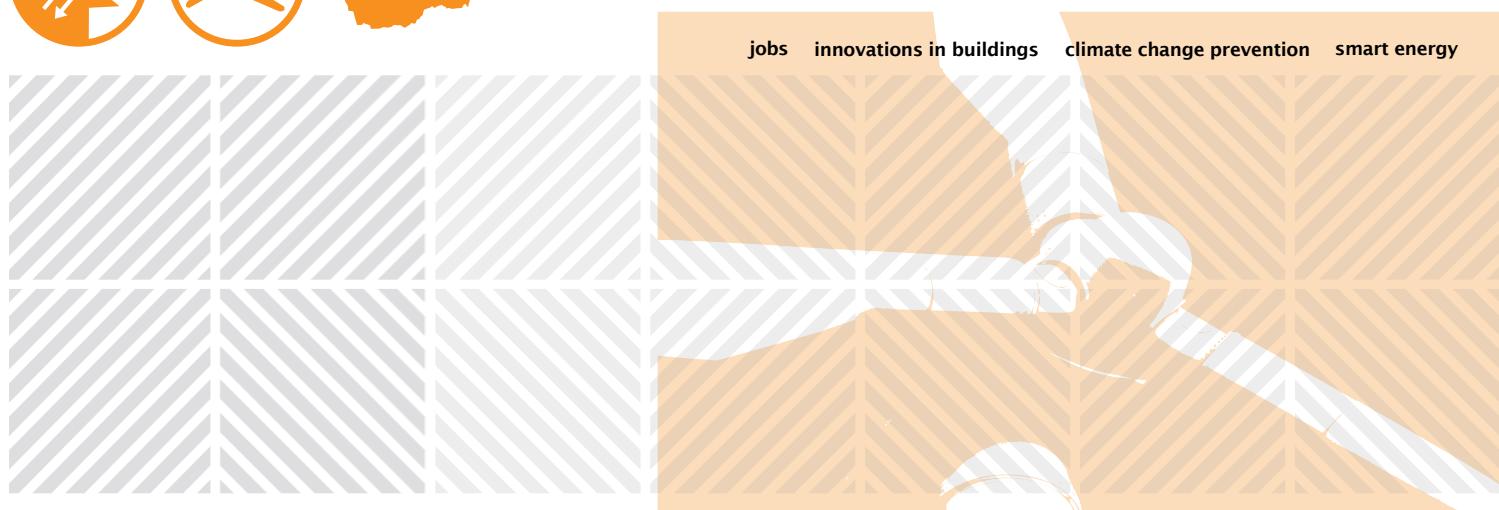
Green energy strategy of Latvia 2050, Riga Technical University Institute of Energy Systems and Environment, September 2011

Country specific recommendations by the EC

Inputs by experts to draft National Development Plan 2014-2020

Spruds A.: Latvia's energy strategy: between structural entrapments and policy choices

Other assessments by energy experts and NGOs



Macedonia: Energy Efficiency and Renewable Sources

Energy efficiency and renewable energy in Macedonia - Civil society position paper

Problem situation

The energy sector in Macedonia is heavily dependent on fossil fuels imports, such as oil and natural gas, in order to be able to provide electricity, heating, and fuel. Every Macedonian denar spent on these energy imports is however a denar that the local and national economy loses. Regarding the current situation with RES, according the State Statistical Office in 2010, the production of renewable energy in the Republic of Macedonia consisted of: wood (wood fuel, wood waste, other solid waste), geothermal heat, hydroelectricity and biodiesel. In 2010, the total primary production of renewable energy comprised of: wood (wood fuel, wood waste, other solid waste), 748 023 m³; geothermal heat, 3,384.243 m³; hydroelectricity, 2,429.283 MWh; and biodiesel 1 999 tonnes. The biggest consumers of wood (wood fuel, wood waste, other solid waste) in 2010 were the households, with a share of 91%, while the other sections accounted for 9% of the final energy consumption (of wood). The biggest consumer of geothermal heat in 2010 was agriculture with 83.4%, while the other sectors participated with 16.6% in the final energy consumption (of geothermal heat). Distribution losses in geothermal heat were 10.45% of the total primary production.⁸⁴

The energy resources mostly used in the total primary energy consumption in 2006 were coal (45.5%), crude oil and imported petroleum products (35%), followed by biomass (6%), imported electricity (5.6%), hydropower (5.1%), natural gas (2.4%) and geothermal energy (0.4%). On the other hand, in the final energy consumption (2006) the most common energy sources were: oil products with 42% and electricity with 32%; followed by biomass (10%), heat (7%), coal (7%), natural gas (2%) and geothermal energy (1%).⁸⁵

The statistics above also show that the existing patterns of energy use in Macedonia lead to significant impacts on the environment, due to high carbon intensity, pollution from fuel combustion, deforestation and land degradation (from excessive use of wood for fuel). These present major issues since the energy sector is unsustainable in the long-term and leads to environmental damage; as well as health issues, high levels of energy losses and low energy efficiency in heating. However Macedonia is rich with agricultural end products and agricultural residues that are underused in the production and consumption of biomass and they represent a potential vast source for heating especially in the rural parts of the country.

Biomass waste from forests, wood production and agriculture which can be economically used for combined production of electricity and heating.

Biomass production from agricultural and forestry residues

	Thousand tonnes per year
Residues from forests	20
Residues from wood production	10
Residues from agriculture	35
Total	65

⁸⁴ State Statistical Office, News Release, Energy No. 6.1.11.92, 30.11.2011.

⁸⁵ Strategy of Energy Development of Macedonia until 2020 with a Vision until 2030, page 8.



From 65 thousand tonnes biomass residues, the estimated total production of electricity could be 50-70 GWh and 120-180 GWh heating energy, depending on the needs and the available consumption of heating.⁸⁶ The feed-in tariffs that producers of electricity and heat from biomass can benefit from are:

Feed-in tariffs in Macedonia, source: Official Gazette, no. 176, December 2011, page 10

Installed capacity of the PP	Feed-in tariff Eurocents/kWh
≤ 1 MW	11
> 1 MW	9

The problems with high carbon intensity of the country and using electricity for heating are exacerbated by the slow development of RES and EE (energy efficiency) on the national and local level. Another major issue arises from the ineffective handling of the district heating (DH) in the capital city - Skopje. In this regard, up until last year, although the DH has been privatized and had its functions separated some time ago it was still largely owned by one 'mother' company, the Toplifikacija Group, which owned the 'daughter' companies responsible for the production, supply and distribution chain for the city of Skopje. Being the one provider of heating for the capital, Toplifikacija was abusing this position leaving residents with an expensive service without improving it. The end result is an increased number of discontented residents who disconnect from the DH and switch either to electricity or wood heating. These are not efficient means of heating for such a large city, and they create even bigger problems such as pollution and increased energy imports as well as numerous side effects such as an increased trade deficit of the country.

However, as of January 1st 2013 the situation has changed and the future trends regarding the district heating in Skopje are unknown for the moment. The latest development is that Toplifikacija was purchased by a company called "Balkan Energy Resource" established in Cyprus. The Energy Regulatory Commission decided to grant the licenses for production, supply and distribution of thermal energy to the daughter firm of "Te-To"⁸⁷ and the Russian "Sintez Group".⁸⁸ It remains to be seen what the new owners will do with the problems carried over from the old company.

Furthermore, even though as a candidate EU member state Macedonia is required to rigorously follow all the trends developing in the Union, the progress in this regard has been moderate. In 2010, three new energy strategies were adopted - the comprehensive "Strategy for the development of the energy sector until 2020, with a vision until 2030", the "Strategy for the use of renewable energy sources until 2020", and the "Energy Efficiency Strategy". At the same time a new Energy Law, which incorporates EU-like provisions for market liberalization, was passed in February 2011. Based on the priorities set in these umbrella documents, numerous bylaws and regulations were adopted, including those that regulate the production of electricity from RES (provisions for preferential users and feed-in tariff for RES). However the main Energy Strategy is disappointing in its vision of renewable power or rather, the lack of it, as the focus is mostly put on large hydropower plants that are unsustainable for a number of reasons including fertile land and biodiversity loss, and resettlement of affected people and not attractive to foreign investors. Much less attention is given to sustainable RES such as biomass from wood waste and/or animal residues. Another controversial part is the nuclear power plant scenario for the country, unrealistic in the economic reality of a country like Macedonia, which was included after heavy lobbying from several experts and academics in this area. This adds to the short-sightedness of the whole document and the institutions responsible for its implementation that need to develop a sustainable and clean energy sector, not highly controversial, expensive and possibly very dangerous plans.

Other issues include severe under-investment in RES and EE on the national and especially on the local level. The problem is multi-layered but mainly comes down to the absence of available credits or funds specifically intended for these projects. For instance, only two banks provide credits for 'green' projects and even those impose high interest rates and a whole range of other conditions. Furthermore, natural persons cannot use the opportunities same as legal entities to invest in RES. There is no legal background that permits natural persons to sell electricity in case they produce it from RES (solar panels for instance) - instead they can only use it for personal means. The distributors of electricity are not obliged to purchase that electricity under the feed-in tariff regulations unless the one providing it is a legal entity. On the other hand, the business sector faces constraints from the slow and ineffective administration even in the cases where there is great interest in investing in RES. The low electricity prices for end-users and the burdensome administrative

86 Strategy for utilizing the renewable sources of energy in Republic of Macedonia until 2020, page 41.

87 TE-TO AD CCP (Combined Cycle Power Plant) is electricity generation and supply of heat PP to the district heating system of the city of Skopje. TE-TO is a joint venture between Toplifikacija, Skopje and Negusneft, Moscow (Sintez Group). More info at: <http://www.te-to.com.mk/index.php>

88 A Russian company with investments in Macedonia.



procedures for authorisation, permitting and licensing continue to be obstacles to the adequate uptake of renewables in the country. Preparations in the area of renewable energy are on track although the country's renewable energy potential is not efficiently harnessed.

In addition, the high number of deprived regions with limited funds at their disposal and the weak purchasing power of the people themselves, makes investing in EE and RES in Macedonia more difficult than in EU countries. Therefore low awareness about the possibilities EE and RES offer for development and growth is not the only problem, but rather also the economic reality of most people: investing in RES or EE technologies is seen as expensive by both households and businesses in a situation when the price of electricity is still heavily subsidized and lower than its market value. Due to this situation, it is more economically viable for them to use electricity for heating, which is getting to a worrisome level, than to invest in energy efficiency in buildings or hybrid renewables heating systems which are more expensive but more environmentally friendly (for example to install solar collectors plus boilers on biomass). The dire situation can be explained by the fact that in Macedonia for the time being the only incentives given for RES are the feed-in tariffs for the investors. There is neither an Energy Efficiency Fund, nor any tax incentives for households willing to invest in EE measure or RES, or any announcements that this will be changed in the foreseeable future.

Furthermore, other problems that Macedonia faces in the energy sector are: low awareness, specifically about the opportunities that biomass offers in the areas where the agriculture is a main activity, alongside the almost non-existent support from the state for greater development of this type of biomass usage. The corruption in the energy sector is another pertinent issue still not tackled on the national or local level.

The aforementioned issues and problems are the main reasons why there is an increased need for EU financing in this sector. The target set in Macedonia's energy strategy to reduce consumption by 21% is very hard to achieve given the current lack of support for renewables. After long discussions and timely considerations, CSOs have come up with several concrete proposals under the Energy Efficiency and Renewable Energy chapter for financial support from the available EU funds that should be delivered in a timely manner. The main point is to use European funds to achieve the objectives of the EU-20/20/20 policy in Macedonia, prioritize the use of solar, geothermal and wind energy, as well as the sustainable use of biomass on the local level, improve energy efficiency in public and residential buildings, as well as the efficiency of district heating, all of which are currently severely under-financed by the state.

Priorities for funding from the Instrument for Pre-Accession in Macedonia

Heat production from renewable energy sources

Geothermal, solar, sustainable local biomass (residues from agricultural production) need to be prioritized when it comes to sustainable and environmentally friendly heating for the whole country. In the case of biomass use, the most efficient cogeneration from biomass technology for electricity and heat production should be prioritized.

There is a need to invest in local sustainable production, processing and distribution of biomass for combined heat and power. The support should be provided for local and regional projects with regular sources of biomass outside the region of the City of Skopje and especially in rural regions across Macedonia where there is a shortage of available alternative heating solutions but at the same time production of agricultural residues exists. Sustainability criteria for biomass cultivation and use should be designed to avoid harmful environmental effects and inefficient use of biomass.

Energy efficiency in housing and public buildings

- Energy retrofits of existing residential and public buildings to high efficiency levels
- Support for construction of new buildings to near-zero energy standard

Energy efficiency measures in district heating

Funds should be available for projects for complex renovation of the whole system including all of the following measures in order of priority:

- Consumption - energy retrofits of buildings, including installation of individual heat meters in apartments
- Distribution - decrease of system losses.
- Production - improvement of effectiveness, shift from fossil to biomass and other renewables, efficient biomass co-generation. Investments in heat production facilities should be scaled to the new situation of lower heat demand in energy efficient distribution system and buildings.

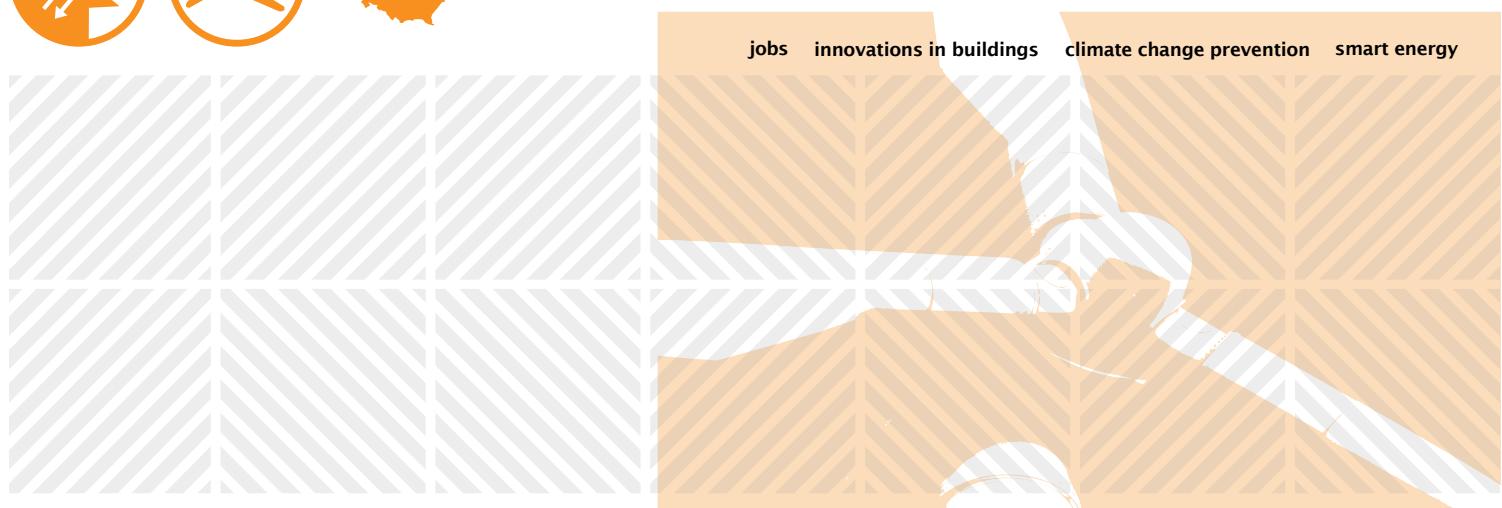


Technical infrastructure - smart grids

- On the regional level in South East Europe as part of the Energy Community Treaty and in the cross border regions. However priority must be given to those connections within the region, not ones designed mainly to export electricity to the EU.
- Assistance in research and development in this area on the national and on regional level.
- Smart grid elements and regional distribution grid improvements to allow connection of RES especially in rural and economically disadvantaged regions.

Strengthening the capacities of local and central administrations

The government and municipal officials as well as households – potential beneficiaries - should gain special knowledge and skills for the preparation of RES and EE projects to be financed by EU funds. The collaboration with the private sector and civil society should be improved, and knowledge transfer should be enabled (private-public, abroad-home). Additional research and studies should be prepared for the future investments in this sector, and they should provide solutions as well as project ideas eligible for EU funding.



Poland: Energy Efficiency and Renewable Sources

Proposal regarding the use of EU cohesion policy funds 2014-2020
for the improvement of energy efficiency in Poland

Introduction

Poland is the biggest recipient of EU Cohesion Policy funds in the 2007-2013 period with an allocation of 67 billion euro. This position is an input to preparations for the new programming period 2014-2020. Poland is likely to receive a similarly large funding allocation under Cohesion Policy, however, priorities for funding are changing, with the transition to low-carbon economy becoming one of the thematic objectives receiving particular attention. Experts⁸⁹, NGOs⁹⁰ and politicians agree that improving energy efficiency is the most beneficial method of reducing Poland's CO₂ emissions, contributing to creation of new jobs, better competitiveness of the economy and energy security. It is therefore essential to use effectively the limited public funds earmarked for the promotion of energy efficiency, including European funds.

This position is based on summary of an expert paper commissioned in the first half of 2012 by Polish Green Network and the Polish Climate Coalition, with input from CEE Bankwatch Network and written by experts of the Polish National Energy Conservation Agency.

Current state: lessons learned and investment needs

Summary of main experiences in using EU funds 2007-2013 for promoting energy efficiency

The limited EU funds for improving energy efficiency in the 2007-2013 period (only 0.7% of the entire Cohesion Policy allocation) were directed to both the private and public sectors, with a clear focus on the latter. Demand for the available funding was high, resulting in tough competitions between projects. The funds were disbursed:

- on national level, under Operational Programme Infrastructure and Environment (measure 9.1 highly efficient co-generation, measure 9.2 effective energy distribution and measure 9.3 thermo-modernisation of public utility buildings), as well as the Operational Programme Innovative Economy;
- on regional level via the 16 Regional Operational Programmes.

Small renewable sources need to be supported as part of achieving high energy efficiency criteria in buildings. Apart from that, they also help create jobs in the country like these solar thermal collectors, made in Poland.



Photo: Watt S.A.

⁸⁹ The Polish National Energy Conservation Agency

⁹⁰ Climate Coalition, an association of nongovernmental organisations, mainly environmental ones, engaged in climate protection activities. It consists of: Aeris Futuro Foundation, Client Earth Foundation, Polish Foundation for Energy Efficiency, Ecological Foundation "Green Action", Ecological Foundation "Arka", Foundation for Sustainable Development (FER), Foundation for Sustainable Development (FRZR), Institute for Sustainable Development, GAP Poland Foundation, Ecological-Cultural Association Gaia Club, Nature Conservation League, Polish Ecological Club – Lower Silesia, Upper Silesia, Mazovia, East Pomerania, Swietokrzyski, Eko Unia Association, Social Ecological Institute, Polish Green Network, Green Mazovia Association



Evaluations have shown that significant improvements could be made in the implementation system of EU funds for energy efficiency, addressing issues raised by beneficiaries which included:

- delays and changes in the timeline of announcing project competitions;
- short duration of the competitions from announcement until the deadline;
- exclusion of enterprises from thermo-modernisation projects;
- high minimum thresholds for grants;
- prolonged project assessment;
- unclear project selection criteria, particularly on regional level

A common problem for many local authorities in Poland is the excessive level of debt, preventing them from applying for EU funds, as it's necessary to provide at least 15% co-financing. A solution for this could be provision of loans e.g. for 5 years, which could be repaid from the savings in energy consumption in public buildings.

Another issue which could be improved in relation to experiences from the 2007-2013 period is enhancing the role of energy efficiency in project selection criteria for all investment and innovative projects, not only those directly aimed at promoting energy efficiency. Benchmarks should be established for different types of investments, allowing the projects bringing benefits in reduction of energy use to score higher in competitions. Otherwise, there is a risk of supporting projects failing to use the potential of improving energy efficiency.

JESSICA (Joint European Support for Sustainable Investment in City Areas) is a new scheme introduced in the 2007-2013 EU funds system, a common initiative of the European Commission, the European Investment Bank and the Council of Europe Development Bank. Revolving funds in the form of loans, guarantees and equity can be implemented on a voluntary basis in the framework of Cohesion Policy. In Poland, five regions have chosen to use JESSICA in their Regional Operational Programmes:

- Wielkopolskie (293.7 million PLN);
- Zachodniopomorskie (160 million PLN);
- Śląskie (617.8 million PLN);
- Mazowieckie (137 million PLN);
- Pomorskie (236 million PLN).

In those regions, JESSICA is implemented in the form of Urban Development Funds managed by banks. Only those investments which are included in local urban rehabilitation plans can benefit from the schemes. The detailed scope of eligible projects varies from region to region, but normally includes a wide variety of measures promoting energy efficiency (refurbishment of housing and public buildings, upgrades of district heating etc.) Nevertheless, it is clear that energy efficiency is not the main focus of JESSICA in Poland and only a limited variety of measures in this field can be financed using this financial mechanism in the 2007-2013 period.

Energy efficiency criteria required to be reached in the project in order to make it eligible for JESSICA funding are not ambitious, they are merely following current Polish building technical norms and do not require extra measures. Public funding through JESSICA thus does not lead to the best possible result regarding the energy performance of the retrofitted buildings.

It is necessary to ensure that JESSICA funding is linked to high energy efficiency requirements, bringing the buildings to near-zero energy standard. Recommendations on benchmarks benefiting projects with higher efficiency performance are valid here as well. Taking a closer look on guidelines for applicants, like in a Mazovia region⁹¹ (JESSICA operates under regional Operational Programmes), we can see no requirements for effects to be delivered – just a list of types of investments to be financed. It is especially vital regarding the fact, that The European Court of Auditors has recently found out that the projects selected by Member State authorities for financing did not have rational objectives in terms of cost-effectiveness, i.e. cost per unit of energy saved.⁹²

Main investment needs concerning improvement of energy efficiency according to strategic documents

Improving energy efficiency is one of part of EU's climate and energy headline targets included in the Europe 2020 strategy. This is reflected in national strategic documents which constitute the basis for programming EU funds 2014-2020 in Poland.

⁹¹ <http://www.jessica.mazovia.pl/efektywnosc-energetyczna/nabor/>

⁹² <http://eca.europa.eu/portal/page/portal/pressroom/Presspacks/PresspackSR212012>



In particular, the following strategic documents relate to the need for improvement in energy efficiency:

- the long-term national development strategy until 2030;
- the medium-term national development strategy until 2020;
- the “Energy Security and Environment” integrated strategy;
- the National Reform Programme. Europe 2020;
- Poland’s Energy Policy until 2030.

All the above listed documents point at very similar priorities in terms of improving energy efficiency, including:

- implementation of integrated smart metering and development of smart electricity networks;
- modernisation of the distribution network aimed at reducing system disruptions and distribution system energy losses, allowing integration of new renewable energy sources;
- development of local hybrid energy systems;
- development of highly efficient cogeneration from biomass;
- development of ESCO (Energy Saving Company) services;
- thermo-modernisation of buildings and district heating networks;
- education programs concerning improvement of energy efficiency;
- support for R&D and innovation;
- introduction of the obligation of using energy performance certificates for flats and buildings;
- reduction of energy use in products and appliances, including setting minimum standards.

Apart from the above, a significant potential for improving energy efficiency and reducing energy use exists in the transport sector. These measures, which should become part of the transport program for EU funds include:

- purchase and/or upgrades of urban transport vehicles;
- construction of bicycle paths;
- construction of park&ride and bike&ride facilities;
- introduction and extension of urban transport connections;
- implementation of traffic management systems in cities;
- development of infrastructure for car-sharing systems;
- introduction of multi-modal transport systems reducing car freight traffic.

Other funds for improvement of energy efficiency

Besides EU funds, a variety of mechanisms of supporting energy efficiency exists in Poland, directed to households, the public sector and the private sector, including SMEs.

The Thermo-modernisation and Renovation Fund for 2008-2016 channels national budget money for the energy efficient refurbishment of housing. The funds are disbursed in the form of premiums covering part of the loan obtained by a household to cover the investment costs. The annual budget is around 200 million PLN, however, it is not stable, e.g. in 2010 no public budget money has been transferred to the fund. This lack of predictability is in fact one of the major barriers in planning investments contributing to energy efficiency.

Other most important relevant schemes include:

- programs managed by the National Fund for Environmental Protection and Water Management: o aimed at improving energy management in public buildings (Green Investment Scheme) o aimed at upgrading heating networks (Green Investment Scheme) o aimed at improving energy efficiency in enterprises (both audits and investment projects); o supporting intelligent energy networks;
- an operational programme financed from the EEA and Norwegian Financial Mechanisms dedicated to energy efficiency and renewable energy, to be implemented between 2012 and 2017, with an allocation of 75 million PLN;
- the Polish Sustainable Energy Financing Facility (POLSEFF) of the European Bank for Reconstruction and development providing credit and leasing up to 1 million euro for SMEs;
- regional programs managed by Voivodship Funds for Environmental Protection and Water Management
- awareness raising campaigns financed by the National Fund for Environmental Protection and Water Management.

In addition, between 2013 and 2016 it will be possible to generate funds for investments in energy efficiency from the system of white certificates. However, the short period of its implementation and lack of certainty about its future can undermine the importance of this system for investors.

EU funds 2014-2020 should complement and extend the programs described above, contributing to achieving Poland’s reduction in energy use. It is particularly important to include those smaller beneficiaries who could not effectively use EU funds for thermo-modernisation so far (households and SMEs).



The potential for improving energy efficiency in industry should be addressed as well. EU funds can supplement national schemes by providing grants for energy audits or grants combined with preferential loans (loans should be prioritized, especially for medium size companies) for investments by enterprises which use under 50 000 MWh of energy annually (which could not benefit from the program offered by the National Fund).

EU funds should also play a demonstration role by promoting the most energy efficient technologies. One of such measures can be the deep thermo-modernisation of public buildings including technologies of heat recovery, high isolation parameters and installation of renewable sources on the buildings, as well as support for construction of passive buildings to be used for public purposes. Private passing buildings should be able to get the funding as well – but as public buildings serve the society sensu largo, they should be prioritized.

Implementation of EU funds in 2014-2020 – priorities, allocations, specific objectives, result and output indicators

According to the Ministry of Economy, energy efficiency of the Polish economy is still around twice lower than the EU average and around 3 times lower than in most developed European countries⁹³. Therefore, the field for EU funds intervention in relation to energy efficiency is very large, with the highest potential in the residential building and public building sectors. The most important strategic directions for action concerning improvement of energy efficiency are outlined below.

Thermo-modernisation of buildings

Improving energy efficiency in residential buildings, as well as in public buildings, is hindered by the low credit score of target groups and the lack of available funding for any investment. This translates into limited opportunities to carry out thermo-modernisation by market forces and the unused potential of energy reduction in buildings. Thermo-modernisation is carried out as part of buildings' renovation and optimal solutions are not being applied – usually, the actions are limited to medium-level isolation of walls and sometimes roofs. Comprehensive thermo-modernisation can lead to a better utilization of the potential reduction of electricity and heat use in the building sector. It is essential that energy audits and the design phase could also be eligible for EU funding in the form of grants; in addition, for small beneficiaries it should be possible to carry out only a simplified audit. Estimated investment needs connected to improvement of energy efficiency in Polish buildings are 426 billion PLN. This amount concerns thermo-modernisation of buildings and their autonomous heating systems, including residential buildings, public buildings and buildings used by SMEs.

Current measures under the Thermo-modernisation Fund lead to an average of 30% reduction of energy use in buildings, while the potential reduction is normally higher. The consequence is “freezing” of the energy efficiency potential for many years, and even if it's used later, this two-stage approach is more expensive. Therefore it seems justified to finance deep thermo-modernisation (such as holistic building renovation approaches, that eliminate the need for costly central heating equipment, passive house design, extensive insulation and installation of heat recovery ventilation system⁹⁴) in public, as well as private, buildings. Apart from the energy results, a synergy with information and promotion results can be achieved, allowing the new and tested solutions to be copied also by individual consumers. However, it is essential to monitor the real savings and widely inform the public visiting those buildings. It is also essential to build up a relevant know-how regarding deep retrofitting, possibly supported by EU funds, as lack of such knowledge and skills Poland contributes to ineffective increase of energy efficiency in Poland.

Nearly zero-energy buildings

In addition, our proposal is to ensure that all buildings constructed from 2013 onwards with the support of public money (EU funds, National Fund for Environmental Protection and Water Management, National Health Fund etc.) are built according to the standard of nearly zero energy buildings. Such measures, similarly as deep thermo-modernisation, will be an important input into building the demonstration role of public administration in relation to improving energy efficiency.

93 <http://www.mg.gov.pl/node/8139>

94 Employment Impacts of a Large-Scale Deep Building Energy Retrofit Programme in Poland; Centre for Climate Change and Sustainable Energy Policy, Central European University, 2012, http://www.europeanclimate.org/documents/raport_eng.pdf



Sufficient funding should be made available in order to move newly constructed public buildings, social housing and housing in disadvantaged regions to nearly zero-energy standard. It is necessary to ensure that this funding is limited to support only the extra costs of effective efficiency measures. One of measures that could ensure proper construction of such buildings could be a designated priority axis.

Awareness raising actions

Actions undertaken towards the reduction of electricity use in Poland are of special importance in view of the domination of electricity production from coal, with technologies of low efficiency and generating high CO₂ emissions. Improving the efficiency of electricity use in households, SMEs and public buildings should be one of the main directions of action. In this context the role of large, national information campaigns for more effective use of energy are crucial, allowing to use the potential of improving energy efficiency among the smallest energy users.

Support for ESCO companies

The operation of ESCO companies is aimed at carrying out energy efficiency measures by private entities, following market rules. Their development leads to implementation of the cost-effective measures concerning reduction of energy use. According to the 2006/32/EC directive, member states have the obligation to promote those companies. Informing about ESCO activity is important especially given the big needs which these companies could address in Poland. However, the barrier to this solution is the low trust among enterprises, as well as the high cost of investment required from ESCOs.

A special fund should be considered allowing ESCOs to give preferential loans, which would allow implementation of the most cost-effective measures by the private sector. It will be in the interest of ESCOs to identify the most promising energy efficiency measures among both private entities and local authorities.

Upgrading networks and introduction of Smart Grid systems

When programming funds for energy efficiency, upgrade of network infrastructure should be particularly supported – including reconstruction of the network to minimize losses, as well as development of intelligent energy networks and installing microsources of energy for energy consumers. The last measure, involving creation of a new group of small producers (prosumers) will help reduce network losses, especially on medium and low voltage sections of the network. However, this will require construction of infrastructure allowing integration of dispersed micro- and small sources. The upgrade should go beyond the needs related to the technical degradation of the network due to its long exploitation.

Outdated energy infrastructure is not only reason of high energy losses in Poland, but also an obstacle for further integration of decentralised renewable sources of energy. Cohesion and Structural funds should be provided for distribution networks upgrades with installations of smart grid elements allowing smart regulation of both supply and demand, creation of clusters of renewable sources or virtual power plants including micro-generation.

Proposal for investment priorities, specific objectives and measures to be financed under Cohesion Policy 2014-2020

The priority directions identified above have been matched with investment priorities according to the menu provided in draft regulations concerning the European Regional Development Fund and Cohesion Fund for 2014-2020. Each investment priority has been divided into priority axes with a dedicated allocation and specific objectives. The selection of specific objectives has been justified in relation to the baseline situation and the identification of necessary measures in EU and national strategic documents. For each specific objective, result indicators have been proposed, taking into account relevant annexes to the above-mentioned draft regulations. The results of this analysis are displayed in following Investment priorities table.

The preliminary proposals for allocation of funds to various priority axes have been made on the basis of estimated investment costs of the elements of each specific objective. The administrative costs of disbursing the allocation and reserves for the fluctuations of the exchange rate have not been taken into account. An exchange rate of 4.2 PLN/EUR has been used in the calculations.



Investment priorities with proposed allocations of EU funds by specific objective

Investment priority	Proposed EU funds allocation [EUR]	Specific objective	Result indicator
Promoting energy efficiency and the use of renewable energy in SMEs	Priority axis 1 580 mln €	Objective 1: Reduction of demand for energy in SMEs	Reduction of energy use [kWh/year]
	Priority axis 2 480 mln €	Objective 2: Reduction of primary energy use in energy production processes in SMEs	Reduction of primary energy use [kWh/year]
Promoting energy efficiency in public infrastructure	Priority axis 1 560 mln €	Objective 1: Reduction of demand for energy in public infrastructure	Reduction of energy use [kWh/year]
	Priority axis 2 140 mln €	Objective 2: Reduction of primary energy use in energy production processes in public infrastructure	Reduction of primary energy use [kWh/year]
Development of intelligent low-voltage distribution systems	Priority axis 1 240 mln €	Objective1: Reduction of network losses	Reduction of energy use [kWh/year]
Promoting low-carbon strategies for urban areas	Priority axis 1 3.9-8.4 bln €	Objective 1: Reduction of energy use in urban areas	Reduction of energy use [kWh/year]
	Priority axis 2 620 mln €	Objective 2: Improvement in air quality through reduction of emissions	Estimated decrease in GHG emissions [tonnes of CO ₂ equivalents]

The next step was to assign measures to be financed for each specific objective. The selection has been made taking into account the draft Common Strategic Framework.

For all measures, main groups of beneficiaries and the foreseen forms of support have been indicated. In addition, output indicators have been assigned to each measure, including the target value for 2022.

Regarding the mechanisms of support, the following principle is proposed: grants should be directed to measures such as energy audits, awareness raising campaigns or investments undertaken by local authorities. For the remaining beneficiaries and measures a combination of grants with preferential loans should be preferred. This will contribute to carrying out the more economically effective actions and will also allow returning the funds from preferential loans to a revolving fund, which can support investments in the following years, significantly extending the impact of EU funds on improvement of energy efficiency in Poland.

Measures for each specific objective with assigned output indicators, target values

Objective	Measure	Output indicator	Value in 2022	Form of support
Objective 1: Reduction of demand for energy in SMEs	Measure 1: Energy audits	Number of enterprises with an energy audit carried out	2000	Grants
	Measure 2: Modernisation measures improving energy efficiency in enterprises, including modernisation of industrial processes			
	Measure 3: Deep thermo-modernisation of buildings in SMEs, beyond cost-effective measures			
	Measure 4: Campaigns raising awareness about energy efficiency			
	Measure 5: Support for creation of ESCO companies			



Objective	Measure	Output indicator	Value in 2022	Form of support
Objective 2: Reduction of primary energy use in energy production processes in SMEs	Measure 1: Audits of heat and energy production installations in SMEs	Number of enterprises with an energy audit of energy production carried out	200	Loans
	Measure 2: Modernisation measures improving energy efficiency in energy production in SMEs, including wider use of CHP based on RES	Number of enterprises with modernisation measures carried out	200	Grants
Objective 1: Reduction of demand for energy in public infrastructure	Measure 1: Demonstration projects concerning passive public buildings	Number of public buildings	50	Grants
	Measure 2: Comprehensive thermo-modernisation of public buildings, beyond cost-effective levels	Number of retrofitted public buildings	2000	Grants
	Measure 3: Information campaigns raising awareness about energy efficiency among public buildings users	Number of campaigns	3	Grants
Objective 2: Reduction of primary energy use in energy production processes in public infrastructure	Measure 1: Modernisation measures improving energy efficiency of energy production and installation of renewable sources in public buildings	Number of modernized installations	1000	Grants
Objective 1: Reduction of network losses	Measure 1: Development of intelligent electricity networks (smart grid) – installation of appliances, installation of network parameter analyzers	Number of projects	70	Grants and preferential loans
	Measure 2: Reconstruction of medium and low voltage networks, new connections of RES to those grids and/or inclusion of smart grid elements.	Number of kilometers of the upgraded network	500	Grants and preferential loans
Objective 1: Reduction of energy use in urban areas	Measure 1: Comprehensive thermo-modernisation of buildings beyond cost-effective levels and installation of renewable sources in buildings	Number of retrofitted buildings	320.000	Grants and preferential loans
	Measure 2: Modernisation of street lighting	Number of projects	200	Grants and preferential loans
	Measure 3: Information campaigns for households raising awareness about energy efficiency	Number of campaigns	6	Grants
Objective 2: Improvement in air quality through reduction of emissions	Measure 1: Development of micro- and small units of combined heat and power production from RES	Number of CHP installations	1000	Grants
	Measure 2: Modernisation of local heating plants and CHP plants improving efficiency of energy production and including conversion to RES, construction of energy reservoirs and installation of additional RES capacities	Number of modernized heat plants	150	Grants and preferential loans



Objective	Measure	Output indicator	Value in 2022	Form of support
Objective 2: Improvement in air quality through reduction of emissions	Measure 3: Development and integration of strategies for CO ₂ emission reduction, as well as plans for sustainable energy use in urban areas	Number of strategies	50	Grants
	Measure 4: Increasing energy efficiency of heating networks and modernisation of heating nodes	Length of modernized heating network in kilometers	300 km	Grants and preferential loans

Ex-ante conditionalities

In line with Article 17 and Annex IV of the draft EU general regulation for CSF funds 2014-2020, member states will need to ensure provision of certain basic conditions ensuring the effective use of European funds. For energy efficiency, these conditions relate to implementation of relevant EU legislation. The table below outlines the necessary steps to be taken in order to fulfill those ex-ante conditionalities.

Ex-ante conditionalities with proposed actions and timeframe

Thematic objective	Ex-ante conditionalities	Criteria	Main actions and timeframe for fulfillment of ex-ante conditionalities
4. Supporting the shift towards a low-carbon economy in all sectors (referred to in Article 9(4))	4.1. Energy efficiency Transposition into national law of Directive (2010/31/EU) of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings in accordance with Article 28 of the Directive	Implementation of minimum requirements related to the energy performance of buildings required in line with Article 3, Article 4 and Article 5 of Directive 2010/31/EU	There exists a regulation of the Minister of infrastructure on the technical conditions for buildings and their location. The regulation should be updated with new minimum requirements regarding the energy performance of buildings (i.e. higher standards in line with the directive 2012/31/EU). - Foreseen entry into force of the updated regulation - 2013
		Adoption of measures necessary to establish a system of certification of the energy performance of buildings in accordance with Article 11 of Directive 2010/31/EU;	An act on energy certification of buildings should be adopted (this form of implementation is a preliminary decision of the Ministry responsible for buildings) - Foreseen entry into force of the act: beginning of 2013
		Realisation of the required rate of renovation of public buildings	According to the directive on energy efficiency, 3% of the total floor area in public buildings would undergo renovation annually in the 2014-2020 period
		Final customers are provided with individual meters	Exchange of electricity meters for intelligent meters by energy retail companies - Deadline for implementation: 2016

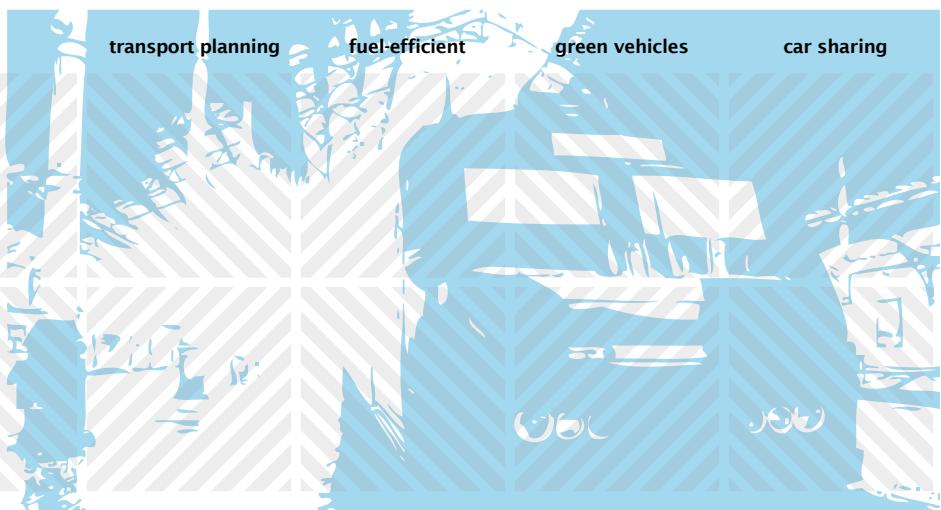


Thematic objective	Ex-ante conditionalities	Criteria	Main actions and timeframe for fulfillment of ex-ante conditionalities
4. Supporting the shift towards a low-carbon economy in all sectors (referred to in Article 9(4))	Transposition into national law of Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services	Introduction of support mechanisms for energy efficiency in line with directive 2006/32/EC	Entry into force of regulations implementing the act on energy efficiency of 15 April 2011 - Deadline for implementation: until the end of 2012
	Transposition into national law of Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the promotion of cogeneration based on a useful demand in the internal energy market and amending Directive 92/42/EEC	Efficiency in heating and cooling is promoted according to Directive 2004/8/EC.	Prolongation for at least 10 years of the yellow certificate mechanism included in the relevant regulation; foreseen time of implementation: end of 2012. The above can be substituted by an equivalent solution of introducing a feed-in tariff mechanism supporting cogeneration.
	Transposition into national law of the 2009/28/WE Renewables Directive	Renewable energy preferential access to the grid Promotion of dispersed renewables and micro-generation	Expected in mid-2013.

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Poland: Transport

Position of environmental NGOs – discussion paper by Polish Green Network
/ CEE Bankwatch Network, June 2012

Introduction

For the 2007-2015 period 67 billion euro from the EU budget has been made available to Poland under the Cohesion Policy. Transport is the sector receiving the most support, amounting to 16 billion euro (24.1% of the total). Negotiations regarding the size and division of the next Multiannual Financial Framework are still ongoing; nevertheless, the Polish government hopes to receive similarly generous support under the Cohesion Policy 2014-2020 (possibly up to 80 billion euro). Proportions of financing differing sectors will definitely change, but transport will remain high on the priority list.

Therefore we are dealing with an unprecedented scale of investment in transport infrastructure, which will shape the future of Poland's transport system for decades to come. Environmental NGOs which promote sustainable development cannot therefore refrain from participating in the discussion on the spending of European funds 2014-2020 in the transport sector. This document is anticipated to be a starting point for the discussion and preparation of a detailed position of environmental NGOs, which will be presented to both the Polish government and the European Commission.

Financing various transport modes – funding allocations

Out of the different transport modes supported by European funds between 2007 and 2015, the main focus has been on road transport. In the Operational Programme Infrastructure and Environment, which is the programme supporting large projects of national importance and has the largest budget, road transport takes up 57% of the available transport allocation (over 11 billion euro). In comparison, the planned support for rail transport is 25% of the transport allocation in this programme (4.8 billion euro).

This disproportion in financing road and rail transport, not limited only to European funds, is reinforcing the last trend of the last two decades of shifting both passenger and freight transport in Poland from rail to road. This stands not only in obvious opposition to the sustainable development principle, but also to European transport policy (e.g. to the 2011 White Paper goal of shifting 30% of road freight transport over 300 kilometers to environmentally friendly modes by 2030 and 50% by 2050).

Environmental NGOs call for a reversal of the proportion of financing road and rail transport under Cohesion Policy 2014-2020, with a 2:1 ratio in favour of rail. In addition, the allocation of funds for public urban transport and promoting sustainable urban mobility must be increased.

Numerous investments in air transport infrastructure have been foreseen under the Cohesion Policy 2007-2013 in Poland (airports in the TEN-T network financed from the Operational Programme Infrastructure and Environment and regional airports financed from Regional Operation Programmes), with EU support reaching 800 million euro. From the sustainable development perspective, the fact that air transport is the most intensive mode in terms of greenhouse gas emissions, at the same time enjoying fiscal privileges, is enough to question public support for this transport mode. In addition, opening new regional airports translates to a burden for taxpayers who need to bear the cost for many years of their financial support. These airports are not able to generate the traffic which would ensure their profitability and for this reason local authorities are forced to support them, both directly as shareholders and indirectly, offering payments to airlines disguised as "promotion of the region", which in reality is compensation for sustaining any passenger connections. The practice of purchasing promotional services from an airline concerns at this moment, for example, airports in Bydgoszcz



and Rzeszów. It is also difficult to expect that without extra incentives, airline companies would offer connections to the newly constructed airports serving cities such as Lublin or Olsztyn. Environmental NGOs resist granting European funds for air transport, particularly for the construction of new regional airports.

Inland water transport is assumed to be an environmentally friendly mode. However, it should be taken into account that its promotion, in the case of Poland, would imply the destruction of naturally valuable river valleys, to a large extent protected under Natura 2000. The development of this transport mode to the level where it would play any meaningful role in modal split would require extensive investments with a high impact on nature. We believe that in Polish conditions European funds should not be directed to the development of inland water transport.

User charges in rail and road transport

Policies regarding user charges are of great significance for the effectiveness of transport investments. Currently, access charges to rail infrastructure in Poland are among the highest in the EU, particularly for freight operators; the situation is the opposite in the case of roads. Investing in railways in such conditions will only deliver limited results, because improving the state of infrastructure in itself is not enough to support a larger share of rail in freight transport.

In addition, EU projects in rail transport in the 2007-2013 period are treated as revenue-generating, which means that the co-financing rate from European funds after calculation of the so-called funding gap is currently a maximum 70%. This is related to the fact that the infrastructure operator PKP PLK SA collects user charges which can be used to partially refund the investment costs.

In turn, road projects receive 85% of EU co-financing, with the assumption that they do not generate revenues. In the case of motorways constructed with EU support, e.g. Stryków-Konin, in early 2012 the government announced a reduction in user charges, in order for the projects not to generate too much revenue, which would translate to reducing the EU co-financing rate.

Environmental NGOs insist that an appropriate user charging policy which benefits rail transport is a foundation for the success of EU transport investments in Poland. Railway projects should not be discriminated against by a lower co-financing rate than road projects; to the contrary, road projects should be financed less from public money and more refunded from user charges.

Problems related to investments in rail transport

Throughout the 2007-2013 period we have been witnessing a systemic inability of the railway infrastructure manager PKP PLK SA to prepare and implement modernization projects financed from EU funds. Unlike the case of road projects, the absorption of funds for rail projects is dramatically delayed and there is a high risk that the money will not be used until 2015. This situation is a consequence of many years of the government's negligence in relation to the institutional capacity, management or strategic planning at PKP PLK.

In June 2011 the government approached the European Commission with a formal request to shift 1.2 billion euro from rail projects to road projects, in this way demonstrating resignation from introducing repair measures which would allow the uptake of funds for rail projects. Until now the Commission's answer has remained negative, supported by environmental NGOs as well as rail and passenger organizations from the entire EU.

Environmental NGOs call upon the government to accelerate the necessary reforms in PKP PLK SA and to ensure the early preparation of a sufficient number of good rail projects which could be financed in the 2014-2020 period.

The difficulties in implementation of EU rail projects were also connected to the focus on comprehensive upgrades raising the parameters of railways to European standards (160 km/h for passenger and 120 km/h for freight trains). Without questioning the need to implement full modernization along many key transport corridors, we support the government's new approach which entails more so-called railway infrastructure rehabilitation projects, bringing back the original parameters, removing bottlenecks and improving the capacity of railways. These types of projects are particularly important for freight operators, whose needs, until now, seem to be relatively poorly reflected in the planning of EU-financed rail projects. The advantages of rehabilitation projects are the relatively short possible time of implementation and lower costs, implying the possibility to cover a larger share of the Polish railway network which otherwise would be undergoing rapid degradation.

In relation to the planned high speed railway, environmental NGOs support the latest position of the government, according to which the project will be significantly postponed, while the current investment efforts will concentrate on upgrading the parameters of the existing railway network.



Concerning purchase of the rolling stock, we would like to emphasize the need to choose solutions ensuring maximum effects for the passenger in relation to costs. An evident contradiction to this principle is the purchase of the expensive Pendolino without the tilting system. The trains will not be suited to run at the maximum speed allowed by the modernization of the Warsaw-Gdansk railway line, which is also a project financed by the EU.

Maximizing the effects of investments in urban transport

European funds 2007-2013 have supported many positive investments in urban transport, such as the construction of the second metro line in Warsaw, the purchase of buses and trams or expanding trams systems. From the point of view of the passenger, the effects of these investments are not always satisfactory in view of making public transport more attractive as an alternative to the car. Upgrading the tram line along Aleje Jerozolimskie in Warsaw can be one such example. After the project was implemented, travel time was not reduced – in fact, it actually increased, as trams are stopped for too long at traffic lights. This has led to congestion on the tram line.

The overall goal of investments in urban transport should be to promote sustainable mobility and decrease the share of travel by car. For this reason, upgrades of tram lines or purchase of new trams should be integrated with actions such as separating tram tracks from car traffic and limiting the possibility to access the city centre by car. This way public transport will really become privileged and more competitive.

Environmental NGOs call for scaling up investment in promoting sustainable mobility in cities, including urban transport. The goal should be to ensure maximum effectiveness of those investments through concentration on results from the passenger's point of view, as well as linking those investments to limiting the access of cars to city centres.

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Slovakia: Resource Efficient Economy

Friends of the Earth-CEPA position paper: Supporting the transition of Slovakia to a resource-efficient, renewables-based economy using EU funds in the programming period 2014-2020

Introduction

The European Union has clearly manifested in its goals and policies the ambition to move its economy towards a resource-efficient, renewables-based, low-carbon one by 2050. Slovakia, which also shares these goals, must set all its strategies and policies to reach this aim. This also refers to the future Cohesion Policy, which is one of the main means to meet these goals.

The most important goals of the Europe 2020 strategy with respect to a resource-efficient, renewables-based low-carbon economy include the energy and climate sectors. In order to meet these goals, systemic transformation is required, particularly of the energy sector, but also of energy and resource management in Slovakia more generally.

The set-up of the new Cohesion Policy will greatly influence the ability of Slovakia to meet these goals.

The Policy needs to be set up so that all measures have a double impact. Measures must both decrease the carbon intensity of the supported activities and the economy as a whole and must create new potential for business and employment in low-carbon sectors.

If interventions are well set up, then both these roles intertwine and support each other.

In addition, measures that are to transform the economy are based on innovation and new knowledge, which is consistent with Slovakia's priority in the area of a knowledge-based economy. Resource-efficient, renewables-based solutions are a vital source of innovation and new knowledge. Hence, the knowledge-based economy and resource-efficient, renewables-based economy complement each other and cannot be viewed as separate priorities.

The most efficient transition to a resource-efficient, renewables-based economy can be achieved by decreasing carbon intensity as a horizontal goal for the whole policy (from the general strategy in the Partnership Agreement to individual projects) and by concentrating investment resources in sectors with the biggest potential for decreasing carbon emissions: energy sector, transport, housing (energy economy of residential buildings), industry, services, agriculture and forest industry.

This position looks at all the main economic sectors through a resource efficiency and sustainability lens and sets out basic principles for inclusion to allow for meaningful support of economic transition from structural and cohesion funds. In further positions we elaborate more deeply on the principles and place proposals in fields that we traditionally focus on, such as sustainable energy, evaluation methods and indicators or bike transport.

Potential of a resource-efficient, renewables-based economy

The potential related to the move to an energy efficient, renewables-based economy is huge, particularly in the following areas: new job vacancies and business opportunities, energy and resource savings (including financial savings), reduction of the influence of human activities on climate change, decrease in expenditures related to adaptation, and innovation potential (such as technology development, introduction of alternative economic activities, new forms of cooperation).



Many studies have shown a clear direct contribution of investments into the reduction of carbon intensity and the so-called green sectors. According to a GHK study on green jobs, the EU has a potential for 162 300 green jobs per €1 billion invested.⁹⁵

The European Commission in its communication about the potential for green jobs quotes an increase in the number of jobs by 300 000 in the period from 2005 to 2009 in the renewable energy sector alone.⁹⁶

In the Czech Republic, two subsidy schemes for the support of energy efficiency in residential buildings have created tens of thousands of jobs. A programme called "Green for Savings" helped to create more than 19 000 positions. The second programme "Panel" was able to create 6553 full-time positions per year. After nine years, the total contribution to employment has been 58 980 jobs⁹⁷. Demands for the "Green for Savings" programme resources was so big that the allocated funds were spent as early as two years before the official closing date.

Slovakia too has a huge potential for measures in the area of energy savings as well as in the development of renewable sources of energy. The National Action Plan for Energy from Renewable Sources calculated that there is potential for 13 per cent savings (836 ktoe) by 2020 when compared with the scenario without any changes in the sector of heat production⁹⁸.

In 1999, the potential for new vacancies was estimated at 10 000 provided that 10 000 flats were renovated yearly (yearly labour productivity then was 16 600 EUR per citizen).⁹⁹ In spite of the increase in the productivity of labour in ten years, the potential is still relevant particularly against the number of residential units which require energy renovation.

According to the energy policy of the Slovak Republic, the usable potential of renewable sources for the production of heat and electricity is 139 200 TJ per year. The Strategy for Higher Use of Renewable Sources of Energy of the Slovak Republic anticipates the potential to be as large as 202 900 TJ per year.¹⁰⁰

The potential for saving public financial resources, particularly now with their acute shortage, is also important. This is one of the greatest benefits when investing into increasing savings, energy efficiency and production of energy from local sources. By investing EUR 1 million into renovating a building, the state's income will increase by EUR 399 948 and its costs will decrease by EUR 130 102, so the total effect is plus EUR 530 050.¹⁰¹

Official documents from the European Commission state that by carrying out energy saving measures households can save an average of EUR 1000 per year a household.¹⁰² The average monthly income in Slovakia is less than 800 Euro, so this is a vital part of the household budget, particularly relevant to the poorest regions and families/people with low wages.

In order to make use of this potential, both the criterion for minimising energy consumption and the condition of investing into the most cost-saving and efficient technologies and solutions must be incorporated into all priorities and measures of new operational programmes.

Officially calculated costs for carrying out this potential show the need to allocate as many resources as possible from the new Cohesion Policy into these areas. According to the Report on the State and Need for Financial Resources to Renovate the Housing Stock in 2007 -2013, EUR 14.25 billion is required in order to reconstruct all high-rise blocks in Slovakia built in the period from 1946 to 2003 (788 300 flats).¹⁰³

⁹⁵ GHK: Evaluating the Potential for Green Jobs in the next Multi-annual Financial Framework. London: 2011. Available online: http://www.birdlife.org/eu/pdfs/Green_Jobs.pdf

⁹⁶ Commission Staff Working Document: Exploiting the employment potential of green growth. Strasbourg: 2012.

⁹⁷ Zámečník, Hlaváč: Reasons for insulating a house: ten thousand vacancies in Czech Republic (Důvody pro zateplování domu: desetitisíce pracovních míst v Česku). Praha: 2011. Available online: http://hnutiduha.cz/uploads/media/zateplovani_zamecnik_studie.pdf

⁹⁸ National action plan for energy from renewable sources (Národný akčný plán pre energiu z obnoviteľných zdrojov). Ministry of Economy of the Slovak Republic, 2010

⁹⁹ Concept for the renovation of building with emphasis on renovating housing stock. Passed by government resolution Nr. 1088 as of 8 December 1999

¹⁰⁰ Strategy for higher use of renewable sources of energy in Slovak Republic. Ministry of Economy of the Slovak Republic, 2007

¹⁰¹ Conception for the renovation of buildings with emphasis on renovating housing stock. Passed by government resolution Nr. 1088 as of 8 December 1999

¹⁰² Communication from the Commission: Energy efficiency: delivering the 20% target. Brussels: 2008. Available online: <http://eur-lex.europa.eu/Lex-UriServ/LexUriServ.do?uri=COM:2008:0772:FIN:EN:PDF>

¹⁰³ Report on the state and need for financial resources to renovate the housing stock in 2007-2013.



A document with a forecast on the amount of renewable sources of energy has estimated that in order to achieve a 14 per cent share of renewables in total energy consumption, the costs in Slovakia will amount to EUR 4.3 billion.¹⁰⁴ EU Funds should significantly contribute to financing projects, which aim to achieve the targets of the Europe 2020 strategy while simultaneously taking into account the above-mentioned principles.

Resource-efficient, renewables-based horizontal principle for the new Cohesion Policy

Future Cohesion Policy must respect the target to decrease carbon intensity at all levels and in all areas of support. Therefore, these targets must be reflected in the whole strategy of the Partnership Agreement and in strategies of individual operational programmes so that every approved project contributes to these targets. In order to achieve this goal, concrete indicators measuring their contribution to this goal must be incorporated into the evaluation system of the Cohesion Policy itself and into its Operational Programmes.

Evaluation of Cohesion Policy

In order to prove the contribution of Cohesion Policy to obligatory goals such as the Europe 2020 Strategy, project indicators must be interconnected with indicators on the level of Operational Programmes and Partnership Agreements. To achieve this, a clear methodology must be approved. In addition, potential applicants must have access to free consultancy paid for through Technical Assistance.

Energy

Indicator	Level	Unit	Source
Decrease in primary energy consumption	Partnership agreement	toe	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nrg_ind_335a&lang=en
GHG emission reduction	Partnership agreement	% in comparison with referential year	http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=de=t2020_30
GHG emission reduction reached within measures/priority axes in the area of energy production	Operational programme	tCO ₂ e/year	Indicator of the Europe 2020 Strategy
Reduction of GHG emissions reached within the project in energy area	Project	tCO ₂ e/year	Indicator of the Europe 2020 Strategy

Transport

Reduction of CO ₂ emissions from transport (in tCO ₂ e/year)	%		The primary target of Cohesion Policy in Slovakia must be to meet the commitment to decrease GHG emissions from transport in compliance with the White Paper on Transport and the Roadmap for Moving to a Low-Carbon Economy in 2050
Modal split in passenger transport	Passenger kilometre	http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=	Modal split is the key outcome indicator in transport. A decrease in the use of passenger cars and increase in the use of public transport is desirable.
Modal split in freight transport	Tonne-kilometre	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=tran_hv_frmod&lang=en	Modal split is the key outcome indicator in transport. An increase in the use of rail in proportion to freight transport is desirable.

¹⁰⁴ Document with a prognosis on the amount of renewable sources of energy - Ministerstvo hospodárstva SR: Dokument s prognózou odhadovaného množstva energie z obnoviteľných zdrojov energie, 2009 http://www.economy.gov.sk/index/open_file.php?ext_dok=132393



Contribution of new, reconstructed or modernized railway to a decrease in GHG emissions	tonnes CO ₂	We suggest replacing indicators, which measure the length of constructed or reconstructed infrastructure by evaluating the direct effect of the support on a decrease in GHG emissions. Length of infrastructure is normally construed in a positive way. However, such an indicator does not inform us about its effects. In transport, an indicator should be available, which would confirm the positive contribution of the investment from the perspective of emissions. One of the main targets of the Europe 2020 Strategy is to reduce greenhouse gas emissions by 20%. Transport and energy are the keys to the achievement of this target. While indicators in energy relate to the consumption of fossil fuels and greenhouse gas emissions, such an indicator is missing in transport. It is not enough to solve the problem in public and domestic water transport only; it must also be solved as a complex. For example in rail transport, detailed and exact data about the number of cars/tonnes/kilometres and consumption are available. Information about the emissions effects after the project has finished can be derived from these data. Regarding roads, similar data is available from electronic toll collection systems or regular research carried out by state authorities. There are also other methodologies to assess the emissions influence of transport projects, see for example Exploration of a methodology for including climate impacts in project appraisal Delft, CE Delft, October 2011.
Contribution of new, reconstructed or modernized roads to a decrease in GHG emissions	tonnes CO ₂	
Increase in the number of passengers per journey by public transport	Number of passengers per journey	Data based on transport surveys. Surveys should be eligible for support from EU funds as well to stimulate a systematic approach to the planning of transport measures.
Increase in the number of journeys made by bicycles	Number of trips	Monitoring of changes in the number of journeys should be part of evaluation of each project before and after implementation. Surveys should be eligible for EU funds within the projects.

Evaluation and selection criteria for projects.

In order to measure the minimization of a project's influence on climate in an efficient way, it is necessary to include carbon intensity tracking of the whole project cycle into the evaluation and selection criteria in all sectors. If investments go into energy production, then it is also necessary to monitor energy return on energy invested (EROEI), which allows us to monitor the energy return of a project.¹⁰⁵

Green public procurement

Technical assistance for every OP must meet the requirements of energy and resource efficiency and these must be incorporated into the principles of public procurement. Rules on green public procurement as recommended by the EC have to be applied horizontally throughout the whole Cohesion Policy.

http://ec.europa.eu/environment/gpp/index_en.htm.

Proposals for measures in individual sectors

Energy¹⁰⁷

Cohesion Policy investments in the energy sector must be based on the hierarchy of three main priorities in the following order.

1. Energy savings (maximum possible decrease in the total energy consumption)

Cohesion Policy must support projects leading to an overall decrease in energy consumption

2. Investments into an increase in energy efficiency in production, transport and energy consumption

Investments into an increase in the efficiency of the energy system (existing distribution networks and consumption sites) must be given priority over investments into energy production. Investment in new equipment for energy production can only be made if the system as such is efficient.

3. Replacing fossil and non-renewable sources with energy efficient, renewable sources of energy

In compliance with this priority, Cohesion Policy resources cannot be used to finance equipment which produces energy from non-renewable sources and fossil fuels, including the decommissioning of nuclear plants.¹⁰⁷ All additional installed production capacity supported by EU funds must come from renewable sources of energy and adhere to binding sustainability criteria.

¹⁰⁵ For more information see: <http://www.priateliazeme.sk/cepa/sk/publikacie/125-uelne-a-efektivne-vyuivanie-biomasy-pozinypodkument>

¹⁰⁶ For more information see the position paper of Friends of the Earth-CEPA "Supporting energy in Cohesion Policy in EU 2014 – 2020 "

¹⁰⁷ Decommissioning of nuclear plants should not be eligible due to the high amount of state subsidies and private ownership and because it does not lead to energy sector transformation per se, being an end of pipe operation connected to production of energy from non-renewable energy sources.



Investments from EU funds in the energy sector must meet the principle of an integrated approach – concurrent measures for consumption decrease, improving efficiency of energy consumption, and change of fuel from non-renewable fossil fuels to renewable sources of energy.

Key for support from EU funds is complexity of project activities. It is important to support projects that deal with the whole energy system and not isolated projects. The setup must motivate applicants to first implement energy efficiency measures and only then invest into new production capacities to prevent investments into redundant capacity.

Indicators on the level of projects must be adjusted to this approach. In the current system, the indicator measuring the sustainability of project results in an energy project monitors the amount of energy produced from renewable sources of energy. In reality, this has often hampered increases in energy efficiency and decreases in total energy consumption.

The following activities should be included into the investment priorities of individual thematic goals:

Transformation of the energy sector (horizontal/systemic measures)

- Decentralizing the energy system and increasing the energy self-sufficiency of regions
- Supporting measures to improve energy absorption from renewable sources of energy through the distribution network (smart grids)
- Collection and elaboration of data related to the use of biomass including thorough inventories of biomass consumption for energy purposes and of energy biomass-based sources in Slovakia as well as summary information about the projects financed from EU funds. These data must be available to the public.
- Supporting a coordinated approach to planning a common energy economy in regions: establishing associations of villages and municipal enterprises with the aim of producing and distributing energy while respecting the principle of sustainable development and energy self-sufficiency of regions
- Research and development of technologies in the energy sector in compliance with the hierarchy of priorities for the sustainable power industry mentioned above.

Energy efficiency

- Measures leading to a reduction of the total final consumption of energy
- Investments into an increase in the energy efficiency of heat and electricity distribution systems
- Investments into increases in the efficiency of street lighting, giving priority to projects which lead to a reduction of the final consumption of energy by introducing progressive systems of lighting (such as street lighting audits, photovoltaic lamps, and regulation of lighting). If projects increase the consumption of energy, then this energy must be covered from renewable sources of energy (while adhering to sustainability criteria for these sources). Costs for covering any additional energy consumption should be considered eligible within the project
- Support schemes for various forms of sharing systems and common use of equipment and infrastructure including schemes for industrial symbiosis and common production chains in micro- and small enterprises
- Support for technical solutions to reduce consumption in offices and plants such as the use of software systems regulating lighting, heating and cooling, or smart systems of street lighting
- Modernisation or introduction of new production processes in micro- and small enterprises with an emphasis on maximizing energy savings during their economic activities under the condition that the total energy consumption does not increase after the end of the project
- Supporting the accessibility of smart energy meters and energy consumption optimization systems for households and enterprises.

Renewable sources of energy

- Supporting small sources in economically disadvantaged regions in order to strengthen energy and economy self-sufficiency of the regions with an emphasis on the use of local resources. The support should make use of mechanisms of decentralized EU funds management (such as Community-Led Local Development) so that the sources are managed as close to the final recipient as possible. Various forms of cooperatives and local partnerships should also be eligible in order to be able to carry out small projects and satisfy their own energy needs. In developed regions and cities, funds should not be used to finance new capacities, but only measures leading to decreases in energy consumption, where there is the biggest potential to reduce GHG emissions.

Transport

Transport in a resource efficient and renewables-based economy must focus on establishing efficient local and regional integrated systems contributing to development of strong regional and local economies. In this way the needs of the



population in the regions can be more efficiently met by local providers using local resources. This system is more stable and sustainable and suitable for any type of region.

Investments into such a transport system must adhere to the following rules: local and regional transport is given priority over long-distance and transit transportation

- public transport is given priority over individual transport
- non-motorized and rail transport is given priority over automotive transport

Following these rules is the only way to efficiently move the transport sector to a resource-efficient and renewables-based system and minimize its influence on climate change in compliance with EU targets by 2050.¹⁰⁸

Transport modes with the lowest total CO₂ emissions per passenger-kilometre or per tonne-kilometre must be preferred.

Modernization of rail roads, and not just in Trans-European Transport corridors, must be given priority. The aim should be to create a system of regional transport based on railways.

The railway network must be integrated into other forms of transport in the region and in residential areas to create an efficient system of public transport.

Such a system must be managed in a smart way so as to increase safety and capacity of transport connections. Public transport must be given priority in traffic over individual transport and wherever possible should be separated by special lanes.

In residential areas, investments must contribute to the minimization of automotive transport by supporting non-motorized passenger transport (cycling or walking) and by integrating this type of transport into public transport. Everyday transport must be given priority to recreational routes by marking or constructing cycle tracks from residential areas to schools and offices.¹⁰⁹

Long-distance transit transportation must be supported with lowest priority. Allocated sources must not limit the support of more important priorities. As for transit transportation, construction and development of services in multi-modal terminals should be the highest priority so that the biggest possible share of transport moves from road to rail.

Support for air transport is not acceptable as air transport is the most carbon-intensive transport mode and the aviation sector is already subject to heavy subsidies.

Buildings

There is a huge potential for energy efficiency measures to reduce GHG emissions and to reduce costs for households and the public sector. We recommend that these measures become an important topic across the new Cohesion Policy.

It is necessary to concentrate on decreasing the energy demand of buildings and to prioritise projects with the most significant decrease in energy consumption in comparison to their starting status;

Another support area is the modernization of public buildings with the aim of minimizing energy consumption (machines and equipment, appliances, lighting management systems);

It is also necessary to support research and development, mainly the use of technologies for passive or zero-emission buildings and natural building and insulation materials with minimal inbuilt energy as a way to prepare the Slovak construction industry to meet the requirements of the Directive on Energy Efficiency of Buildings.

Requirements for minimal or zero energy consumption must be included as a condition for eligibility of expenses related to the construction of buildings financed by EU funds.

Industry

In industry, support must focus on small entrepreneurs and particularly on innovative solutions and processes, on the formation of new skills and on production innovation which leads to efficient use of energy and resources and minimization of energy demands by production and pollution.

¹⁰⁸ Effects on biodiversity are a separate topic not discussed in this position paper.

¹⁰⁹ For more detailed information see "Development of cycling in Slovakia in 2014 – 2020, position paper of Slovak cycle movement, April 2012", available on request at Friends of the Earth-CEPA.



It is necessary to avoid supporting activities creating a so-called lock-in effect, which prevents the move to a resource-efficient, renewables-based economy by investing into processes and technologies dependent on fossil fuels. Projects must be prioritized which reduce the carbon intensity of the whole production cycle in enterprises, that is from the type of used inputs (material efficiency, zero or minimum tolerable toxicity), processing method (energy efficiency) through product parameters (energy efficiency, recyclability) to disposal of the production waste and product.

From the perspective of energy, material, logistic and waste management, priority must be given to supporting industrial symbiosis, other forms of joint resource use, and use of common equipment, mutual processes and systems. Energy and resource intensity in individual sectors or groups of related sectors can be minimised in this way and can lead to general efficiency in industry.

Services

The service sector produces GHG emissions mostly through its offices and through the services it provides (e.g. logistics, computer servers and IT operation, etc). Investments into increasing energy efficiency in energy savings of buildings and offices should be eligible. Help must solely focus on the public sector and small entrepreneurs. Apart from buildings and facilities, investments must be channelled into service processes to achieve the least possible influence on climate and environment. Green public procurement and the application of environmental standards can be included here.

Apart from investments into GHG emissions reduction in the services sector, it is necessary to invest in services which concentrate on reducing influence on the environment and climate such as environmental audits and consultancy, and some forms of tourism.

Agriculture and forestry

Emissions in agriculture are mostly produced by soil cultivation (machinery, production of fertilizers and agrochemicals), processing, transport, and storage (refrigeration). These emissions can be significantly reduced by moving to sustainable ecological agriculture and forestry and by making agricultural and forest production and consumption local.

Investments must be directed towards innovative solutions in ecological economy and sustainable forestry including research and development, testing of new methods, supporting localisation and diversification of agricultural production with the aim of increasing the self-sufficiency of regions and supporting entrepreneurship and employment in rural regions. Support must be targeted to move from industrial agriculture dependent on fossil fuels (heavy mechanisation, use of agrochemicals) towards diversified, localised agriculture, and towards supporting the formation of local markets and cooperation with the aim of supporting local production and significantly cutting down on long-distance transport of products.

Agricultural independence and stability must be the focus. Investments should not support the dependence of farmers on subsidies from the European budget, but create efficient and self-sufficient low-carbon economies tightly connected to regional demands.

In this respect, supporting diversification of agricultural enterprises towards energy production from their own waste and towards agri-tourism are still of great importance.

Self-sufficiency is the ability to satisfy one's own needs connected to production, provide for the necessary inputs either from one's own resources or from resources available in the region. Therefore, it is necessary to support investments which help decrease the costs related to energy consumption mainly by decreasing overall consumption, by localising production and consumption, improving logistics, and by replacing imported fossil and non-fossil fuels by local non-fossil renewable fuels¹¹⁰ etc.

The only way to increase self-sufficiency in agriculture systematically and over a long time is to create mechanisms which help develop local markets, cooperation and joint management of soil use and of crops produced.

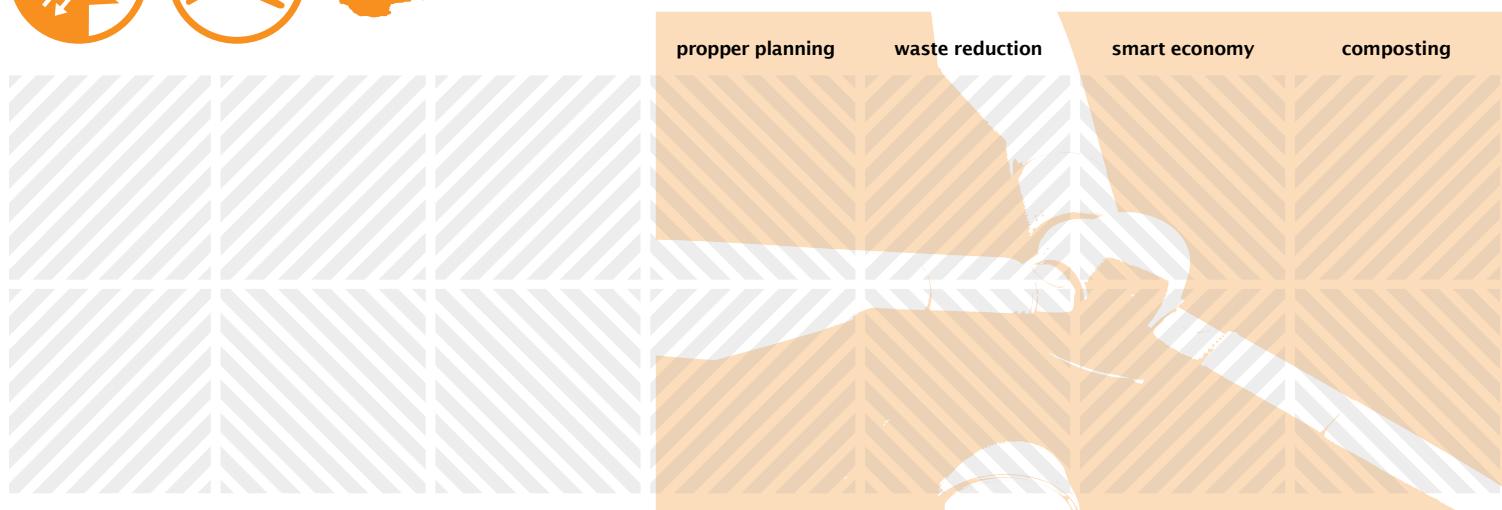
Production of energy from waste biomass is another vital area to be supported by public funds. However, it must be regulated by clear and binding sustainability criteria, which must guarantee that fertile soil is not used for growing energy crops and that waste biomass is not imported from longer distances than is acceptable with respect to climate and the energy return on energy invested. In addition, such energy sources must be conditioned by respecting the energy hierarchy, i.e. renewable sources of energy must be invested in only in facilities with minimum energy consumption and maximum energy efficiency.

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¹¹⁰ The same is valid for water, seed corns, fertilizers, labour and machinery, fuels etc.

¹¹¹ Effects on face of the landscape and biodiversity are another important area, which is beyond this position paper



Slovakia: Energy Efficiency and Renewable Sources

Position paper of Friends of the Earth-CEPA: Supporting sustainable energy in EU Cohesion Policy in 2014 – 2020

Given the economic, climate and energy crisis impacts in Slovakia, it is necessary to set the Cohesion Policy so as to support a systematic transition of the EU's energy system towards sustainable energy. Thus, the Cohesion Policy cannot support neither energy from non-renewable sources of energy like fossil fuels nor the decommissioning of nuclear power stations. Besides, any support for combination of non-renewable and renewable sources of energy such as co-burning of biomass cannot be justified as it would perpetuate the lock-in of our economy in fossil fuels dependency.

Meeting commitments: Investment needs for energy efficiency and renewable energy sources

Slovakia has officially recognized the challenges connected to climate change and is looking at how to transform its energy economy to increase its sustainability and decrease its impacts on climate, environment and society. These actions are not only driven by the dire need to reduce our impact on climate and the environment, but also by clearly distinguishable potential connected to investments into sustainable energy.

Overall potential for energy savings in buildings was estimated to be 19,792,764MWh, with public buildings taking the share of 3,806,946MWh.¹¹² The potential for cost savings are also significant. For example in healthcare buildings 7% of overall costs are associated with energy.

From the budgetary point of view, each million of Euros invested into refurbishment of buildings results in a net positive fiscal effect of 530,050 EUR achieved through 399,948 EUR increase in income and 130,102 EUR decrease in expenditures.

Impacts on employment are also interesting. According to a study from GFK on green jobs¹¹³ each EUR billion of investment can create 25,900 stable long term jobs in energy efficiency measures and 52,700 jobs in the renewables industry.

Several official documents published by the Slovak government and its institutions make clear commitments in line with EU-wide goals and key strategic documents such as the Europe 2020, Low-carbon roadmap 2050, current Unions' energy legislation as well as with Slovak national strategic goals within national energy-related strategic documents.¹¹⁴

Involved state institutions have made calculations and estimations which come to clear conclusions on investment needs associated with these goals and commitments. A report on the state and need of financial resources for refurbishment of housing stock 2007-2013 calculated a need of EUR14.25bn for refurbishment of panel block flats constructed between 1946 and 2003 (80.16% of the overall apartment buildings stock) until 2024.¹¹⁵

¹¹² Midterm evaluation of carrying out the concept of energy efficiency of buildings until 2010 with view until 2020 (2011)

¹¹³ GHK: Evaluating the Potential for Green Jobs in the next Multi-annual Financial Framework. 2011 available at: http://www.birdlife.org/eu/pdfs/Green_Jobs.pdf

¹¹⁴ These include National Energy Strategy, National Energy Security Strategy, National Strategy for Renewable Energy Sources, National Action Plan for Energy Efficiency, etc.

¹¹⁵ Report on the state and need of financial resources for refurbishment of housing stock 2007-2013



The Ministry of Economy made estimates on the total investment costs for private enterprises associated with achieving the 14 percent share of RES in final energy consumption (as committed under Europe 2020 strategy objectives) at 3.3bn to 4.3bn Euros over the period of 10 years.¹¹⁶

Taking this into account requires focusing on systematic programming of EU funds necessary for efficient investments. We propose to base the EU funds spending after 2013 on the following key principles.

Key principles for sustainable energy investments within Cohesion Policy

Investments in Cohesion Policy within the energy sector must be based on a hierarchy of three main targets:

- Energy savings as a horizontal principle

If the Cohesion Policy seeks to achieve the target of the Europe 2020 strategy of reducing energy consumption by 20 per cent by 2020, then it must support projects, which lead to an absolute decrease in energy consumption. Investments financed by EU funds should be part of the effort to achieve the reduction of total energy consumption and as a horizontal principle, should implement energy efficiency measures. In every case where the applicant can reach savings in energy in the area to be supported by the EU funds, the project must include measures to maximize energy savings.

- Investments into an increase in energy efficiency in the area of energy consumption, distribution and production

Investments into the efficiency of energy systems (in sites of consumption, especially in buildings, existing distribution networks and existing energy production) must have priority over investing into new energy production. Furthermore, any investments into new production facilities must follow strict efficiency criteria to prevent wasteful spending and wasting of energy and resources.

- Substituting fossil and non-renewable sources of energy by low-carbon and renewable sources

In accordance with this target, the financial means from the Cohesion Policy cannot be used to finance facilities which produce energy from non-renewable sources of energy including the decommissioning of nuclear power plants. Any additional installed production capacity supported by the EU funds must come from renewable sources of energy and keep the binding principles of their sustainable use.

Despite differing importance these targets form a complex system. Focusing on only one of them and supporting isolated projects and disregarding other elements of the energy transformation will decrease the effects of EU funds investments significantly.

Strategic approach for regional development

The Cohesion Policy should support integrated regional energy planning and stimulate local plans and projects in the area of sustainable energy into common schemes and regional partnerships composed of important players in regional development. This would help forestall preparation of inefficient isolated projects in cases where a joint approach would be beneficial with respect to logistics, economy, and regional development.

This approach is the only way to transform the energy sector efficiently. Fulfilling the Europe 2020 goals in energy and climate is not an automatic guarantee that the energy system will be efficient and sustainable as these targets are quantitative and have no explaining power on the structure and quality of the system.

Thus, to stimulate systematic investment in sustainable energy it is important to base spending on region-specific energy needs and resources and ensure the active participation of all relevant stakeholders. Community led local development approach as proposed by EC could be suitable to boost systematic energy investments closer in the regions.

In accordance with the Cohesion Policy target of reducing regional differences within EU, financial means for creating new production capacities of energy should be directed to disadvantaged or developing regions to support an increase in energy self-sufficiency and the local economy. It is important to support primarily small, decentralised power supplies, which cover local energy demands and use local renewable sources of energy.



In economically developed regions and cities, EU funds should primarily support measures, which bring savings in distribution and energy consumption, with the exception of small renewable energy sources installed on buildings in line with the Energy Performance of Buildings II Directive.

Cohesion Policy priorities in the energy sector

Considering the importance of energy transformation to achieve the targets of the Europe 2020 strategy in Slovakia and the importance of energy for sustainable development of regions, it is necessary to create a separate priority axis within one of the national operational programmes, which would concentrate on supporting energy efficiency and renewable energy production in accordance with the above-mentioned targets and hierarchy.

We propose that the investment priorities of individual thematic goals include the following activities:

Energy efficiency:

- Investments into energy retrofits of public and residential buildings to minimise consumption of heat and power
- Investments into energy efficiency in heat distribution systems together with efficiency measures in the heated buildings and installations of individual metering;
- Investments into street lighting under the condition of a reduction of total energy consumption by introducing progressive lighting systems (street lighting audits, photovoltaic lamps, lighting management systems etc.). Projects that cover energy consumption through RES should be prioritized with costs to introduce new installed capacity eligible within the project.
- Supporting schemes of various forms of sharing systems and common use of equipment and infrastructure including schemes of industrial symbiosis and common production chain in micro- and small enterprises;
- Supporting technical solutions to reduce consumption in offices and plants such as the use of software systems regulating lighting, heating and cooling, smart systems of street lighting;
- Educational and awareness raising projects and educational campaigns concentrated on the reduction of energy consumption by households, enterprises and municipalities;
- Modernization or the introduction of new production processes in micro- and small enterprises with an emphasis on maximizing energy savings during their economic activities under the condition that the total energy consumption does not increase after the end of the project;
- Supporting the accessibility of smart energy meters and energy consumption optimization systems for households and enterprises;

Renewable sources of energy:

- Supporting small decentralized sources in order to strengthen the energy and economic self-sufficiency of regions with an emphasis on the use of local resources should be a priority.
- Support should make use of mechanisms of decentralized EU funds management (such as Community-Led Local Development) so that the financial resources are managed so as to get as close to the final recipient as possible.
- Various forms of cooperatives and local partnerships should be eligible for funding in order to be able to carry out small local projects and satisfy their own energy needs.
- In urban areas, funds should primarily support measures which bring savings in distribution and energy consumption, with the exception of small renewable energy sources on buildings in line with the Energy Performance of Buildings II Directive.

Transformation of the energy sector (horizontal/systemic measures):

- Research and development of technologies in the energy sector in compliance with the hierarchy of priorities for sustainable energy;
- Decentralisation of energy systems and an increase in energy self-sufficiency;
- Support measures, which help improve the energy absorption from renewable sources of energy by distribution networks (smart grids);
- Unify the system of collection and processing of data on the use of biomass to be able to determine its sustainable use. The data should include summary information about projects financed by EU funds, reports focused on how targets and defined indicators are being met and should be the basis for distribution of financial support to sustainable biomass projects only.
- Support a coordinated approach to planning and joint energy economy in regions like the establishment of associations of villages, cooperatives, which aim to produce and distribute energy, while prioritising principles of sustainability and energy self-sufficiency;



Sustainable use of EU funds

In order to use EU funds in a sustainable way, it is necessary to define binding principles of sustainability for the use of renewable sources of energy which would take into account the whole production cycle. Biomass, especially, should be meticulously regulated.

Principles for the sustainable use of biomass should follow a position paper, addendum Nr. 6, written by Friends of the Earth-CEPA "Purposeful and efficient use of biomass".

http://priateliazeme.sk/cepa/images/collector/collection/publikacie/pozicny_dokument_biomasa.pdf

In order to include the sustainable use of biomass in an efficient way, it is necessary to create a framework of conditions and requirements on member states which would be as binding as possible; this can be created in two ways:

- by approving a binding regulation at EU level as is the case with liquid biofuels;
- by introducing ex-ante conditionality in a form of obligation to prepare national strategy for the sustainable use of biomass which would aim to define basic rules and criteria for any investment related to energy use of biomass considering the whole production cycle.

In order to ensure sustainable use of biomass specifically in Slovak energy installations, it is also necessary to set up following limits:

- Maximum installed power capacity of installations
- Allow financing only to installations reaching the best available technologies efficiency thresholds, i.e. highly efficient combined heat and power with secured heat uptake
- Optimal national and regional limits for the production and felling of biomass (refers mainly to wood) in energy use which respect the above-mentioned principles and environmental criteria to provide for a sustainable production including defining regions and areas, in which biomass cannot be used for energy purposes, etc. This would help respect the acceptable capacity of the region, energy and other needs of the local population and minimize GHG emissions from harvesting, processing, transporting and storing of biomass. The European Commission should cooperate with partners and create a basic methodology to prepare the strategy and its content.

Indicators for evaluation of performance of funding

Currently used indicators do not take into account the production cycle of energy production, distribution and consumption. This is why it is not possible to thoroughly evaluate the impact of energy investments on climate and to assess the quality of projects, ruling out isolated unsystematic investments and promoting systematic solutions that tackle the whole energy economy in the location of project implementation.

Any part of future OPs that is dedicated to energy investments should therefore be monitored based on overall climate performance, sustainability and investment efficiency. Suitable indicators for project level include Carbon intensity of project life cycle (tCO₂e/MJ) and Energy Returned on Energy Invested (EROEI). For further indicators see the table below.

Furthermore, a system of indicators must take into account the horizontal character of achieving energy savings and replacing non-renewable sources of energy by renewables. Therefore, indicators monitoring energy savings must be incorporated into every OP in which there are investments into infrastructure, buildings, and equipment.

There must also be a connection between project indicators and indicators both on the level of OP and Development and Investment Partnership Contract so that it is possible to prove the contribution of Cohesion Policy to binding targets, such as the Europe 2020 strategy targets. Therefore, clear methodology must be created and a potential applicant must have the possibility to receive free consultancy paid from Technical Assistance so as to be able to follow it and comply with evaluation requirements.



Proposed indicators for energy investments

Area	Level	Indicator	Unit
Climate impact	Partnership agreement (PA)	Change in GHG emissions	% compared to base year
	PA	Change in GHG emissions per sector	1000t CO ₂ e
	OP	Change in GHG emissions achieved through energy priority/measure implementation	tCO ₂ e, %
	Project	Change in GHG emissions achieved through implementation of energy related projects	tCO ₂ e/yr
Energy consumption	PA	Absolute energy consumption reduction	1000 toe
	PA/	Energy intensity of the economy	kgoe per 1000EUR GDP
	PA/OP	Change in final energy consumption in households	kWh/p.c./yr
	PA	Primary energy consumption in buildings	kWh/m ² /year
	OP	Overall energy savings achieved within the priority/measure	kWh/yr
	OP	Energy savings achieved through refurbishment of buildings	kWh/yr
	Horizontal/Project	Overall energy savings achieved within a project	kWh/yr
	Context	Share of buildings with zero energy consumption	%
Renewable energy sources	PA	Share of RES on gross domestic energy consumption	%
	OP/project	Installed capacity of new RES production facilities	MW
	Horizontal/Project	Carbon intensity of the production cycle	tCO ₂ e/MJ
	Project	EROEI (Energy return on energy invested) of the whole production cycle	value
	OP/Context	Share of buildings with installed equipment utilising RES	%

Setting ambitious targets

Reaching the Europe 2020 energy and climate targets

The overall investment costs of achieving the Europe 2020 target in promoting renewable energy sources were estimated officially to reach 3.8bn EUR.¹¹⁷ If public funds are to cover at least one third of these costs Slovakia will have to allocate at least 1.3bn EUR for the next programming period solely on renewables. As the current allocation in all relevant OPs for all renewable energy sources reaches roughly 130 mil. EUR this would mean a ten-fold increase.

During the 2007-2013 period the demand for EU funds for renewable energy and energy efficiency has been on average 4 times higher than the allocation within the relevant OPs.¹¹⁸

Combined with the low level of contracting in these measures, reaching on average 51.6% of allocation, this shows a wide discrepancy in what is needed on the energy market and what is being provided.

Taking into account the commitments of Slovakia, the supply gap and low efficiency in contracting we recommend allocating 1.3 bn EUR for renewable energy sources development in line with the binding sustainability criteria for renewable energy sources utilisation.

¹¹⁷ Prognosis of estimated amount of energy from renewable energy sources in Slovakia. Variable at Ministry of Economy of Slovakia, online.

¹¹⁸ Total amount of EUR applied for in area of Renewables and energy efficiency within OPs Competitiveness and Growth and OP Environment. In: Annex 7 to Report on implementation and drawing of structural and Cohesion funds within the NSRF, 2011.



Energy efficiency target

To meet commitments resulting from current energy efficiency legislation and to be well on track in achieving the long term strategic goal of de-carbonization of the economy we propose to: construct all public buildings and at least 10% of newly constructed residential buildings to near zero energy standard from 2014 on.

Speed up the energy refurbishment of residential buildings to 5% of housing stock annually with low-energy or higher standards.

Decrease the average overall energy consumption in public buildings to 20kWh/m³.year until 2020.

Meeting the trend – invest into decentralized energy

At least 5 micro-regions will implement a local energy decentralization strategy with the focus on sustainable use of local renewable energy sources, including investments into smart-grid pilot systems with the ability to function in autonomous mode.

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Slovakia: Indicators

Position paper of Friends of the Earth-CEPA: Evaluating the Cohesion Policy in the 2014-2020 period

Introduction

The EU's Cohesion Policy will be one of the most important tools for achieving the goals of the Europe 2020 strategy, as well as other strategic goals set by Slovakia for the next decade. To ensure efficient use of this tool it is necessary to create a system for its evaluation and monitoring how well it is fulfilling set objectives. The main tool for a quality evaluation is a set of indicators which enables the evaluation of contributions of individual investments from EU Funds from the project level up to the strategic one.

The evaluation system cannot remain a mere formal and technical issue but must become an effective tool. The general attitude towards policy evaluation must change from formal, which fulfils the purpose of accounting to the EU as a donor, to full understanding and acceptance of its importance.

In this position paper, Friends of the Earth-CEPA presents recommendations for an efficient quality evaluation system for the Cohesion Policy necessary for reaching EU-wide goals with a focus on environmental sustainability and the fight against climate change.

Recommendations

Investments within the Cohesion Policy must be based on clear strategic goals and evaluated with a quality system of indicators. When setting up the evaluation system it is necessary to follow several basic principles:

Strategic approach: The goals of the Partnership Agreement (PA) must correspond to the strategic goals of the EU laid down in the Europe 2020 strategy. Furthermore, the goals and targets set for individual levels of the Policy must be based on thorough analysis of the situation in regions which goes beyond a basic macroeconomic data analysis.

Consistency: Goals and their indicators on individual levels from the strategic goals of the PA to the objectives of individual projects must be directly interconnected.

For efficient functioning of the system connections between individual levels of goals is the key. The current system does not allow for sufficient evaluation of CP's contribution to the goals set (see below for explanation).

The proposed system of common indicators on the level of the Europe 2020 strategy and on the level of individual funds is a step in the right direction. If these indicators are not translated to the level of operational programmes and, more importantly, to the level of individual projects the evaluation of individual investments and programme strategies will not be possible.

Quality: Indicator selection must follow clear principles, which ensure their quality and representativeness.

Explaining power: All macro indicators used on the level of the PA must be evaluated in respect to the Cohesion Policy investments. The influence of investments carried out within the CP on basic macroeconomic indicators chosen for the main strategic goal of the PA is extremely important. If it is not possible to prove clear contribution of the Policy to the change of these indicators, they are not usable for the Policy evaluation.

119 Energy intensity of the economy, aggregated innovation index, GDP p.c. in PPP compared to EU15 average, Labour productivity compared to EU15 average and Employment rate compared to EU15 average.



Currently, there are five indicators for the strategic goal of the National Strategic Reference Framework.¹¹⁹ However, of these, 'employment level' is the only one for which it is possible to calculate the overall Policy contribution through the number of created jobs. None of the other indicators are connected to the CP's evaluation system and as these are macroeconomic indicators which are influenced by many external factors their explaining power for Policy evaluation is minimal.

Horizontal control: Horizontal principles ensuring that conditions for environmental and social sustainability are taken into account need to be introduced. These must be evaluated by proper indicators. Horizontal control: Horizontal principles ensuring that conditions for environmental and social sustainability are taken into account need to be introduced. These must be evaluated by proper indicators.

Indicators for individual levels of Cohesion Policy

Principles for choosing indicators

The main principles which ensure the quality of the chosen indicators can be summarized as follows:

Criteria	Explanation
Technically sound, feasible and measurable	<ul style="list-style-type: none">• Be transparent and based on a theoretical framework (both in technical and scientific terms)• Be based on international standards and a reasonable level of international consensus about its validity• Be readily available or made available at a reasonable cost/benefit ratio• Be adequately documented and of known quality• Be available or made available in homogeneous and coherent databases allowing to assess interdependencies between the indicators• Be updated at regular intervals in accordance with a reliable procedure
Policy relevant	<ul style="list-style-type: none">• Be useful for national decision-makers• Process the data into concise, policy-relevant information• Allow for communicating the result and the direction a policy should head in• Be either national in scope or applicable to regional environmental issues of national significance.

Partnership Agreement level: Strategic goal indicators

The common indicators proposed by the European Commission, which measure the fulfilling of EU-wide goals are based on a clear and well established methodology and enable the aggregation of values from individual programmes and member states on the European level. This enables the evaluation of the CP's contribution to Europe 2020 targets. We therefore encourage Member States to accept these indicators and the proposed common methodology and to actively participate in its preparation.

We strongly discourage the use of GDP and its derivatives as an indicator for evaluating of CP as it lacks the capacity to comprehensively measure prosperity and well-being improvement achieved through cohesion investments¹²⁰. Its nature and attributes, encompassing the whole economy, do not enable any direct proof the contribution of investments within the PA to changing GDP.

¹²⁰ <http://www.beyond-gdp.eu/background.html2>. http://ec.europa.eu/regional_policy/what/future/proposals_2014_2020_en.cfm



In order to evaluate progress in the transformation of the Slovak economy towards a climate-neutral and environmentally and socially sustainable economy we propose the following additional indicators to accompany the Europe 2020 indicators:

Priority	Indicator	Unit
Employment	Number of jobs created by supported SMEs in the sector of environmental goods and services (EGS) ¹²¹	full-time equivalent
	Justification: The EGS sector has great potential for job creation in an area which helps stabilize and sustainably manage natural resources and the environment. Support for EGS is in line with the Europe 2020 strategy. All necessary data can be obtained from project applications and from monitoring of projects. Support must be limited to SMEs. Aggregated data on employment in the sector are available at Eurostat. ¹²²	
	Proportion of people employed in the environmental goods and services (EGS) sector (including public transport).	%
	Justification: Environmental goods and services is a sector which should expand, receive support and bring increased employment. Therefore it is important to monitor the real contribution of the sector to employment. Employment in EGS is monitored by Eurostat, public transport is monitored in national statistics.	
	Dispersion of regional employment rates by gender	%
	Justification: Regional disparities in employment are one of the key social indicators explaining real convergence of regions. It is monitored by Eurostat.	
R&D/Innovation	Number of innovations in RES, EE and public transport with a positive environmental impact	Number
	Justification: Innovation should not be taken as a universal positive goal. It is important to look in more detail at innovations which are helping to achieve the strategic goals of the Europe 2020 strategy. Innovation can contribute to GHG emissions reduction, particularly in areas like new RES, energy efficiency and public transport. A well-defined methodology for the evaluation of the environmental impacts of innovations is needed for this indicator.	
Climate change/energy	Absolute reduction of energy consumption	1000 toe
	Justification: In addition to energy efficiency which measures the relative change of energy consumption related to production, and energy mix changes in favour of new RES, it is necessary to monitor the absolute energy consumption decrease which shows the sustainability of management in production as well as consumption. Data is available on a detailed level from Eurostat. ¹²³	
	GHG emissions per sector	1000t CO ₂ e
	Justification: Progress in structural transformation of the economy can be effectively monitored only on the level of economic sectors. Emissions of GHGs are monitored at a detailed level and data are provided by Eurostat and EEA.	
	Primary energy consumption in buildings	kWh/m ² /year
	Justification: The energy efficiency criteria shall apply to all construction works financed within projects. A decrease of primary energy consumption shall be made a condition for financing of all projects involving construction or reconstruction of buildings, both public and private.	
Education	Rate of employed university graduates compared to overall number of graduates	%
	Justification: Quantitative indicators cannot evaluate the quality of the educational system or the situation of graduates on the labour market.	
Poverty and social exclusion	Proportion of population in energy poverty	%
	Justification: Energy poverty is defined as lack of access to electricity, heating or other forms of energy/power. It closely relates to quality of life and is an indicator for inequality in energy distribution. It is not part of statistical data, but should become part of European Union Statistics on Income and Living Conditions (EU SILC).	

121 Environmental goods and services are those that serve in management of resources and the environment including decrease, removing and prevention of pollution of the environment and sustainable management of stock of natural resources. Complete overview of EGS is available at Eurostat: http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/EN/env_ac_egss2_esms.htm

122 http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_ac_egss1&lang=en

123 <http://epp.eurostat.ec.europa.eu/portal/page/portal/energy/data/database>



Operational Programme level indicators

On the level of OPs we recommend amending the common indicators proposed by the European Commission for individual funds with several indicators, which can help Member States evaluate the fulfilment of its goals more effectively.

Output indicators are commonly used for evaluating the quality of OPs or fulfilling of specific priorities.¹²⁴ However this should be avoided. Outputs measured by number of supported subjects, implemented projects or the amount of funds allocated are not suitable for evaluating the quality of spending. Mixing output and result indicators was identified by the EC as one of the most common mistakes made when using indicators during the 2007-2013 period.

For the thematic goals¹²⁵ "Supporting shift towards a Low-carbon economy in all sectors", "Protecting the environment and promoting resource efficiency" and "Promoting sustainable transport and removing bottlenecks in key network infrastructures" we propose the following indicators:

Sector	Indicator	Unit
Energy/climate change	Reduction of primary energy consumption	GJ/year
	GHG emissions reduction	% compared to base year
	Reduction of GHG emissions achieved within OPs containing investments into the production of energy	tCO ₂ e
	Decrease in energy consumption related to heating	GJ
	Number of residential buildings with energy efficiency measures brought to standard low-energy, passive or higher	Number
Transport	Reduction of GHG emissions of CO ₂ from transport	tCO ₂ /year, %
	GHG emissions per transport mode	tCO ₂
	Modal split of freight transport	%
	Increase of passenger journeys by public transport	Number of passenger journeys
	Share of people commuting using public and non-motorized transport vs. cars	%
	Increase of passenger journeys by bike transport	Number of passenger journeys
Waste management	Decrease of waste production	1000 tonnes/year
	Efficiency of introduced systems of waste separation	% of separated waste components from overall municipal waste
	Decrease of amount of biologically degradable waste in overall municipal waste	%
	Increase of rate of recycling of municipal waste	%
	Decrease of share of hazardous waste in overall waste	%

Project level indicators

Project indicators must directly correspond to the indicators on the level of OPs and the PA and must enable the results of project activities to be related to the overall goals of OPs and to the overall strategic goals of the PA. Project level indicators must be set up in such a way that enables evaluation of the whole production cycle which is influenced by project activities.

In this way a situation is prevented in which the beneficiary does not have to take into account impacts of the production cycle which is not affected by the project directly. An example from new RES utilization is a project for boiler exchange which enables biomass combustion. Traditional evaluation would count only changes resulting from the exchange and thus would enable support for solutions which rely on unsustainable forestry practices, or which introduce redundant capacity which cannot be supported by local or regional fuel base and requires imports of fuel. The same applies to unsuitable technology choices.

¹²⁴ For example in Slovakia, NSRF indicators for the Specific Priority level include "Number of technically improved facilities of education infrastructure", "...social infrastructure", "Number of projects ensuring sustainability of settlements and increasing their attractiveness", "Number of supported healthcare facilities". The situation is similar on the level of OPs.

¹²⁵ Cohesion Policy Regulations proposal COM(2012) 496 final: http://ec.europa.eu/regional_policy/sources/docoffic/official/regulation/pdf/2014/proposals/regulation/general/general_proposal_en.pdf

