

Improving Access to Green Funding in CEE and
Ukraine

Study on Green Funding

CEE and Ukraine

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2014

The project is funded by Ministry of Infrastructure and the Environment, the
Netherlands



Contents

1.	Introduction	2
2.	Analysing the access to green funding in CEE and Ukraine	2
2.2.	Green jobs programmes and initiatives.....	4
3.	Challenges for green funding.....	7
	Renewable energy	8
	Sustainable transport.....	8
	Eco innovation	8
	Climate Change Adaptation	9
3.3.1	Obstacles to Public-Private Partnerships.....	9
3.3.2	Obstacles to develop venture capital for green investments.....	10
3.3.3	Challenges for green financing in Ukraine	10
4.	Selected Good Practices.....	11
3.4	Financing Low carbon economy.....	11
3.1.1.	Public Financing Schemes	11
3.1.2.	The role of Private financing.....	15
3.1.3.	The role of International financing	16
3.1.4.	EU support	17
3.5	Financing Sustainable Transport.....	17
3.6	Financing Adaptation to Climate Change	18
3.7	Financing Ecosystem protection	19
3.8	Financing Eco-innovation.....	20
5.	Recommendations	23
	Recommendations to public authorities.....	23
	Recommendations for SMEs.....	24

1. Introduction

Green financing is a key enabler for transitioning to a greener economy. Green economy can be defined as an economy that results in enhanced territorial competitiveness and cohesion over the long term, while not exposing territories to significant environmental risks and degradation, through a wiser economic approach that combines place-based and mutually supportive economic and environmental policies.

This report is produced within the project on “Improving access to green funding in CEE and Ukraine”. The project aims to improve access to green funding, such as financing for eco-innovations and environmental infrastructure investments in Central and Eastern Europe (CEE) and Ukraine. This will be achieved by, increasing awareness, analysing bottlenecks and providing platforms for knowledge exchange. The countries that are covered by the project include Bulgaria, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland Romania, Slovenia, Slovakia and Ukraine.

This report provides a summary of the country fiches developed during the course of the project and showcases some of the best practices identified. In addition, it also aims to map some of the challenges for accessing green finance in CEE and Ukraine. The country fiches on access to green funding provide an overview of the situation with regards to the availability of funding for low carbon development, sustainable transport, adaptation to climate change, ecosystem protection and eco-innovation in the 11 selected countries covered by this study.

The information has been collected via desk research and phone interviews with selected identified stakeholders. The data collection aimed to identify good practices as well as the main barriers to green funding in the analyzed region. This report also builds upon the discussions and outcomes of the workshop on “Financing Eco-innovation and Green Investments in CEE: Experiences, new mechanisms, challenges” that was organized at the REC’s premises in Szentendre, Hungary. The background of the workshop was the crucial role of eco-innovation which is increasingly being recognized in the EU and worldwide. Given its potential for reducing environmental pressures while creating economic benefits, eco-innovation is now being addressed at all policy levels in CEE. The workshop provided an opportunity to discuss experiences, new mechanisms and frameworks, as well as the challenges related to investments in eco-innovation activities in CEE. It gathered stakeholders from the region and brought together representatives of the European Commission, policy/decision makers from selected national ministries, innovation agencies and related businesses, and provided a platform for the sharing of lessons learnt, experiences and knowledge.

2. Analysing the access to green funding in CEE and Ukraine

This section presents the types of financing that are important for supporting green investments in CEE and Ukraine. It also focuses on green jobs initiatives and programmes, as well as opportunities for green investments in energy sector, adaptation to climate change, sustainable transport, eco-system protection and eco-innovation.

2.1. Types of financing

The study focuses on several types of financing for green investments, both public and private.

There are numerous post-crisis opportunities for greening a range of sectors of the economy which have the potential of boosting job creation and economic growth at the same time as environmental externalities are reduced. A green economy transition will require substantial financial resources and to channel sufficient private and public financial resources is a major challenge. Some of the important features include:

- Public investments are important in sectors like water, waste, R&D, energy;
- SMEs play an important role for adopting eco-innovation by investing in green products and services;
- EU support for eco-innovation and green investments through the Cohesion Policy;
- The banks play a key role in the process: both IFIs and national and local banks;
- Commercialising and applying environmental technologies requires a broad mix of financial instruments: including classical loans and guarantee mechanisms.

CEE and Ukraine has seen a growth of emerging market instruments such as carbon finance, tax incentives, beneficial loans, among others which are opening up for a growth of a green economic transformation, which is exemplified in this report and which is illustrated in bigger detail in the separate country fiches. These initiatives are nevertheless still too small for the demand and many challenges remain, as it is summarized in this section.

Commercialising and using environmental technologies requires a broad mix of both public and private financing, financial instruments, classical loans as well as guarantee mechanisms.

Public finance can focus on reorienting existing public resources from brown to green economic activities by creating the frameworks needed to catalyse higher levels of private investment across key sectors that underpin green growth and job creation. This can be done by e.g. introducing new environmental regulation, tax incentives and environmental charges, awareness raising and capacity building. The public sector plays also an important role in providing grants and support to green investors and projects proponents.

Both **IFIs and national and local banks** contribute to the process of green economy development. A majority of the funds for the investments that needs to be re-directed to the green economy will need to come from the private financial sector. Private banks or specialised green investments banks have the potential to boost green economy investments by providing favourable loans to investments fulfilling environmental and social objectives. It can also adopt market incentives that reward longer-term green markets. Because of their developmental mandate IFIs dispose of significant funds for the development of energy efficiency and renewable energy among others. Through the sheer volume of available funds IFIs dictate the behaviour of beneficiary states and companies. Therefore, they have a serious responsibility to impose high environmental, social and health standards.

2014-2020 EU Cohesion policy has an important role to play in promoting green investments in all sectors of the CEE and Ukraine economies and in catalysing the specific investments that will be needed to meet green economy targets and to ensure climate resilience. The EU budget can also deliver EU added-value

by facilitating environmental investments in Member States, but which have a relatively low capacity to invest. For the CEE, the Cohesion Policy is a major driver while Ukraine is receiving EU funds channeled under the European Neighborhood Policy, e.g. through the Eastern Europe Energy Efficiency and Environment Partnership Fund.

2.2. Green jobs programmes and initiatives

Most of the environmental policies identified do not explicitly recognise the potential for green job creation or set quantitative targets relating to employment outcomes, while the identified labour market policies do not always recognise the green economy as a potential source of jobs for the unemployed.

EU funding has been a key source of green job support. The current economic crisis has diverted attention, or financial resources, away from the green jobs agenda in many countries. There is evidently a need to improve strategic policy thinking and/or structures in relation to the green economy. Work to promote employment, vocational training, working conditions and the quality of work issues needs to be included in connection with eco-friendly economic growth strategies and programmes. In Lithuania, the National Strategy for Sustainable Development has a separate section addressing employment; however, there are no links to the other activities described in this strategy which is a problem that appears in several of the analysed countries.

At the national level in Poland, a number of strategic documents include measures aimed at increasing the potential for creating green jobs. Some of the documents refer to the creation of green jobs in general terms, without clear or detailed policies. Poland, nevertheless, also have some good examples such as the National Development Strategy 2007-2015 (Priority 3: Employment growth and rising its quality) which underlines that to achieve truly sustainable growth, it is necessary to focus on policies promoting employment in pro-environmental areas of the economy. Also the National Action Plan for employment for years 2012-2014 provides support to green jobs. Annually, each of the 16 province labour offices are obligated to create a Regional Employment Action Plan. During the period 2009 to 2012, 5 out of 16 offices included projects related to promoting employment in green economy, in their regional employment action plans. In 2007, which is the latest available data, the total employment in the field of environmental protection was 373 832 people, representing about 2.5% of total employment in Poland.ⁱ

Some countries have included reference to green jobs in their economic recovery packages. One example is Latvia where the green economy has been recognised as a potential source of employment and a contributor to economic recovery. However, the current economic crisis has diverted attention, as well as financial resources, away from the green jobs agenda in the studied region. In Latvia and Lithuania, the Green Industry Innovation Programme, which is funded through the Norway Grants Programme, supports activities including:

- new green product and material development or modification of existing products and materials to minimise their environmental impact;
- development of new green technologies or fundamental modification of existing technologies in industries in order to reduce waste production, energy consumption and emissions;

- the implementation of green innovative technologies in industries. The Green Industry Innovation Programme, funded by the aforementioned Norway Grants Scheme has only recently started but it is expected to promote the creation of green jobs— indeed it has set targets in this respect. In Latvia these targets relate to: the number of environmental technologies to be improved/developed (20), the number of ‘green’ jobs to be created (80), and the number of identified ideas with business potential in the ‘green’ industry area (70).ⁱⁱ

2.3. Thematic focus of green investments

Renewable Energy (RES)

RES enable communities to diversify the energy supply which increases security of energy supply, improves competitiveness, helps to create new industries and SMEs, jobs and economic growth. The Renewable Energy Directive sets ambitious targets for all EU Member States to reach the Europe 2020 target of a 20% share of energy from RES by 2020 and a 10% share of RES specifically in the transport sector. It also improves the legal framework for promoting renewable electricity, requires national action plans that establish pathways for the development of RES including bioenergy, creates cooperation mechanisms to help achieve the targets cost effectively and establishes sustainability criteria for biofuels.

In addition, 2014-2020 Cohesion policy will focus mainly on decentralized RES electricity production, and RES use in heating and cooling. Decentralized RES that are supported by local businesses, can bring new socio-economic benefits especially in remote areas. Renewable heating and cooling is important for decarbonizing the economy. A shift in energy consumption towards low carbon and locally produced RES, including through district heating systems, is necessary as RES heating and cooling has largely been neglected so far in EU-28. Only some Member States have targeted regulatory or financial instruments to support the use the main one being the feed-in tariff. Regarding RES in electricity production large investments have been carried out using private funding and existing public support mechanisms but in some cases further support is needed when grid infrastructure is insufficient. Regarding the use of RES in transport, Member States have to make investments to meet their binding 10% RES transport target.

Energy Efficiency

EU Member States need to achieve their headline target on energy efficiency. Energy efficiency is an important aspect of the cost structure of SMEs and thus of their competitiveness. As SMEs might face difficulties to access finance, Cohesion Policy supports SMEs to improve their energy efficiency. Buildings are central to the EU's energy efficiency policy, as they are responsible for nearly 40% of final energy consumption and provide a large untapped cost-effective energy savings potential. There are also important co-benefits from making buildings more energy efficient, e.g. in terms of job creation, health, competitiveness, energy security and overcoming energy poverty. However, there are still several market failures preventing improvements to the energy performance of buildings, ranging from technical and financial barriers to informational and behavioural problems. Concerning financing energy efficiency in buildings, a combination of both market-based instruments (loans, guarantees, Energy Performance Contracting schemes) for measures with a shorter payback time and grants for capital intensive measures with a longer payback time should be considered.

Sustainable Transport

Efficient and sustainable transport services and infrastructure are crucial for facilitating economic and social cohesion. The performance of the transport sector is in correlation with market access, quality and efficient use of infrastructure. Although significant funds have been invested in sustainable transport and urban mobility some common challenges in financing such investments remain. These include tight budget constraints, insufficient involvement of private sector through public-private partnerships.

Eco-innovation

Small and Medium Sized Enterprises (SMEs) play an important role for developing a green economy and supporting eco-innovation by investing in green products and services as well as offering greener products and services on the market. Investing into green economy and eco-innovation can give a competitive edge to companies, as well as provide operational advantages as greener, resource efficient measures usually leads to reduced energy and material use; reduced fossil fuel use which is cost efficient. It can also contribute to creating green jobs and an improved image for the company which could create new marketing opportunities. Investing into eco-innovation could also result in safer products in addition to a higher quality. There are still big disparities in eco-innovation performance between the EU Member States with many facing operational challenges that hinders them from applying the right policy instruments.

Adaptation to climate change

Adaptation to climate change is relatively new but rapidly evolving policy field. In particular it requires action mainly at local and regional level as regions and municipalities are first confronted with the potential impacts of climate change. In addition, the cost of inaction is often higher or significantly higher than the required investments for decreasing the overall vulnerability to climate impacts. There are situations of apparent market failure as institutions and citizens cannot afford high risk premiums asked by insurance companies to cover potential losses due to disasters. The need to tackle adaptation leads to increasing possibilities for private sector involvement, especially in areas like building up the knowledge base and data observation capacities (e.g. development of needed ICT tools, detection and monitoring systems, risk mapping and assessment).

Ecosystem protection

Investments in the sustainable use, protection and restoration of biodiversity and Natura 2000 bring direct or indirect socio-economic benefits, including creating jobs. Several economic sectors (agriculture, forestry, agro-food, tourism) are dependent on the provision of a number of ecosystem services. Nature and ecosystem services also play an important role in controlling environmental risk factors such as climate change, floods and droughts. Investments in eco-system protection can focus on:

- Knowledge gap as regards biodiversity and ecosystem services;
- National Parks, Nature Parks, UNESCO Biosphere Reserves;
- Control invasive or non-native species;
- Reducing the impacts of land fragmentation and damages of grey structures, creating and/or maintaining ecological corridors;
- Green Infrastructure projects aimed at connecting habitats;
- Green Infrastructure and biodiversity projects in cities and agglomerations;
- Integrated spatial planning considering the enhancement of multiple ecosystem services;

- Innovative approaches and tests/pilots in Payment for Ecosystem Services (PES) and Innovation systems/models based on natural assets.

3. Challenges for green funding

This section maps some of the common challenges and barriers the CEE countries and Ukraine are facing in terms of financing low-carbon and environmental investments. Although there are differences among the countries there are certain common issues that create difficulties for all of the studied countries and which are highlighted below.

3.1. Overview of main challenges

In general, there is a **common shortage of public finances for supporting green projects** and investment at national level due to the deterioration in the economic situation during the past few years. In many cases, plummeting state revenues makes it difficult to achieve national and European green objectives set out in the policy framework. In the case of Lithuania, there were difficulties in the general funding of business projects due to tightened loan-granting procedures introduced by financial institutions in response to the deterioration in the economic situation. As a result, a number of project applicants had to give up the EU structural assistance they had been granted due to their inability to secure funds for their co-financing (in particular, this reduced opportunities for SMEs to receive loans from commercial banks).

One of the key features creating barriers for the establishment of green funding or green financial mechanisms is the **lack of clear strategy and vision for low carbon development and for other environmental sectors** in the CEE region and Ukraine. This can be illustrated through a lack of specific national strategy, e.g. for renewable energy or climate change adaptation or as of the lack of more specific regulations in terms of e.g. energy efficiency requirements. If strategies and objectives are absent, a consequence is that associated funds and financing mechanisms are lacking or becomes difficult to establish. This is a result of the lack of political will and commitment to green economy development and for carrying out environmental or low carbon investments. For example in Latvia, according to the Eco-Innovation Observatory (2011), the barriers to the development of strategies or measures to support the greening of the economy are located in the political sphere as **eco-innovation and cleantech are not seen by policy-makers as being strategic industries**, which is due to the policy-makers' lack of awareness about green growth.ⁱⁱⁱ

The **lack of political commitment** is mentioned as an obstacle in the majority of the studied countries and is valid across all sectors.

A summary of main barriers identified in the studied countries:

- Lack of information about available financial support schemes and funding opportunities.
- Low visibility of good examples of environmental projects and how they are financed which could attract possible applicants and facilitate their application process.

- Complexity of the project preparation process and low capacity of project proponents to deal with the administrative process which leads to few completed or adequate applications. Delays often occur in terms of problems related to the public involvement aspects (e.g. the need to notify individual projects owners) and the environmental regulations (such as investments by extending protected areas or the need to re-prepare investments in line with new environmental regulations).
- Unclear procedure for consultations and project development which is creating potential for conflicts.
- Structural and procedural problems accessing finance appear in relation to projects where the expeditious implementation of projects has been impeded by public procurement procedures delaying the commencement of the projects.

3.2. Challenges in areas with potential for green investments

Renewable energy

- While adequate financial incentives are in place to overcome cost barriers to market entry, there has been little progress towards addressing barriers such as complicated authorisation procedures or fear of retroactive changes to support schemes. Such high risks, particularly, in countries with stressed capital markets, result in a very high cost of capital, raising the cost of RES projects and undermining their competitiveness.
- Most RES technologies benefit from national support schemes¹, but only a small share of the energy market is affected: less than a third of the 19% of electricity from renewable energy is sheltered from market prices in the EU.
- High levels of feed-in tariffs which were established without proper long-term analysis and financial planning might lead to a situation where the state changes the rules of the game endangering huge volumes of private investments into RES and the banking system in general.

Sustainable transport

- Low institutional capacity of the beneficiary, especially of state owned companies, to apply for funding as well as for executing projects.
- Inadequate application of polluter and user pay principles in all transport modes, and as a result investments in many cases do not integrate price assessment and user charge systems.
- Insufficient planning processes and administrative set-ups resulting in handicapped sustainable transport initiatives, while business as usual approach supports unsustainable operations.

Eco innovation

¹ Exceptions, or partial exceptions include hydropower, some geothermal and biomass sources, heat pumps and solar heating in some markets; EC, Thematic guidance fiche on RES investments.

- Conservative consumption patterns in e.g. choosing for construction materials and other consumer goods creates difficulties in bringing about changes towards a more sustainable consumption and production.
- Division of responsibilities between different institutions, which is sometimes unclear;
- Weak involvement and participation of the private sector;
- A general lack of entrepreneurship.
- A small number of people employed in science and research (ageing of scientists, insufficient number of doctoral candidates);
- Weak commercialization potential of research results, poor cooperation between scientific and industrial sectors;
- The business structure of many of the CEE countries is composed mainly of SMEs with weak capacity to invest in R&D which is combined with a relatively minor high-technology sector;
- Underdeveloped scientific and research infrastructure, insufficient number of up-to-date equipped laboratories for implementing technology-oriented projects;
- Weak link of environmental issues with innovation in EU Cohesion Policy Operational Programmes. The result is a gap in support between these two areas, which halts eco-innovative projects.
- Mismatch between the available forms of assistance and the barriers to innovation (especially excessive use of grants – where the main objective for certain is only to “absorb” grant money rather than to produce real innovative solutions) and inefficient selection of beneficiaries (the dominance of large companies and less ambitious – fully feasible projects- this is largely due to problematic and not transparent enough call procedures and heavy penalties during project implementation).

Climate Change Adaptation

- Knowledge gap among the public as well as decision makers for linking natural disasters to severe weather events related to climate change.
- Difficulties in reaching the acquired level of maturity for projects. The main reasons for this state of affairs is related to both environmental and social issues; the availability of land, and the emerging issues related to the institutional capacity of the beneficiaries.

3.3. Other Obstacles

3.3.1 Obstacles to Public-Private Partnerships

An example from Bulgaria in the field of private public partnership (PPP) show that the primary obstacle hindering the implementation of significant, large-scale infrastructure projects (e.g. with co-financing from the EBRD), has been the lack of political will and the reluctance of the authorities to accept the concept of risk sharing between the public and the private partner, which

is one of the primary features inherent in PPP. The three identified major challenges for the Bulgarian national innovation system in terms of innovation performance, are related to:

- Low level of R&D expenditures and low commercialization of research base;
- Low competitiveness of enterprises due to low level of innovativeness;
- Insufficient cooperation between universities and business.^{iv}

Ukraine has very high potential for PPP in the energy sector as considerable part of energy infrastructure belongs to the state and neither state nor local budget have enough funds for the modernisation of infrastructure. Currently PPP investment potential is clearly underestimated. Main barriers for introduction of PPP in Ukraine include:

- contradictory and inconsistent regulation;
- lack of stable policy and proper management of PPP;
- complicated tariff regulation system;
- low capacity of the government and private business with regards to PPP implementation and its specifics.^v

3.3.2 Obstacles to develop venture capital for green investments

A study of the Latvian venture capital market, Prohorovs and Jakusonoka (2012) identified a number of factors restricting development of the Latvian venture capital market including:

- the small size of venture capital funds as such;
- overall lack of governance and coordination;
- very few companies suitable for venture capital investment;
- lack of skills and experience to be involved in start-ups (i.e. lack of smart money);
- weak links between universities and businesses^{vi}

3.3.3 Challenges for green financing in Ukraine

As Ukraine, not being an EU member state, is facing slightly different challenges, this section is focusing on some of its specific obstacles. Ukraine has a good potential for green growth, but still lack governmental support and favourable investment climate. The main obstacles for low carbon development are the government's intervention in the energy pricing through direct and indirect subsidies, monopolistic structure of energy market, strong lobby of traditional energy producers, and lack of funding and widespread corruption. State control of energy pricing and subsequent pricing below market value creates significant barrier for investment in modernization of thermal power plant and increasing capacity of renewable energy sector. For the same reason consumers have no incentive to invest in energy saving measures. Indirect or hidden energy subsidies create a distortion of energy prices for coal, oil and gas as well as support further development of the nuclear industry based on the full state support. Direct state subsidies are provided to support coal mining sector, which otherwise would be economically unprofitable. The state is hoping to solve the above mentioned problems by gradual liberalization of energy prices, privatization of state companies and number of institutional and regulatory reforms.^{vii}

Developing innovation is still one of the challenges for Ukrainian enterprises in both the high-tech- and low-tech sectors. The weak role of the business sector in the financing and carrying out

R&D is characteristic in Ukraine. In economies where business R&D is at a low level, a vast majority of firms have both low propensities to innovate and insufficient levels of innovativeness. The absorption of foreign technology and the integration of foreign investments within limits of the existing infrastructure also seem very low not only by global standards, but also in comparison with similar countries. The low technology update is interconnected to Ukraine's unfavourable investment climate, which lowers the potential return and raises the costs of fascinating new technology. Only a small portion of firms has put the development of new products and processes at the centre of their competitive strategies. Most firms focus instead on adopting imported technologies and know-how. The perceived obstacles for innovation faced by industrial enterprises in Ukraine include finance, high risk, information on markets and technologies, qualified labour and low demand for innovation. This evidence calls for the need to improve business environment for enterprises aiming to pursue innovation and a positive change in government innovation policy.

4. Selected Good Practices

This section illustrates some examples of available financing mechanisms for supporting green economy transition in the studied sectors; low carbon economy, sustainable transport, climate change adaptation, ecosystem protection and eco-innovation.

3.4 Financing Low carbon economy

3.1.1. Public Financing Schemes

Most of the countries in the region have set up an Environmental fund which often is a public financial institution that supports the promotion of environmental investments by providing favourable loans for investments in e.g. energy efficiency measures, RES and other environmental projects.

Poland's National Funds for Environmental Protection and Water Management

Poland have set up public environmental funds on several governance levels:

1. The National Fund for Environmental Protection and Water Management (National Fund),
2. Provincial Funds for Environmental Protection and Water Management,
3. County funds for environmental protection;
4. Municipal environmental protection funds;

The budgets for the funds are generated mainly from:

- fees for resource use and penalties for exceeding the emission limits;
- repayment of loans granted for environmental purposes and their interest rates ,
- fees for mineral exploration;
- financial operations and share in the companies;
- foreign funds allocated to environment in Poland, originating from e.g. the World Bank, PHARE, PHARE Partnership Fund, the Partnership Fund BITS Finnish Fund.

The funds are allocated by the National Fund for projects that are:

- implemented on a national and regional level;
- having local significance, but the cost of which exceeds the financial capacity of local authorities and local businesses;
- focused on environmental protection.

The National and Provisional Fund are their own legal entities while the county and municipal funds operate within the structure of local government. There are 16 Provincial Funds for Environmental Protection and Water Management that all falls under the umbrella of the National Fund and which supervises the management of provincial funds councils. Municipal and county funds for environmental protection and water management are available to municipalities and counties. 50% of the funding is consisting of proceedings from waste disposal and 10% originates from the county's environmental protection fund. In addition, revenues of the municipal fund originates from revenues of municipal fines and fees. Proceeds from fees and penalties from e.g. modification of the environment, and the special use of water and water facilities which represent 20% of the municipal fund and 10% of the county fund. In total, the districts will have available funds ranging between 9% and 22% (depending on the local impact) of all municipal funds accumulated in the fund created in this way.

Eco Fund, Slovenia

Another example of environmental funds is the Eco Fund in Slovenia which supports (through subsidises) feasibility studies and the preparation of documentation for projects on energy efficiency, RES and CHP. The current calls for applications subsidize the reconstruction and renovation of renewable energy plants and apply to municipalities, enterprises and other legal entities in the Republic of Slovenia as well as entrepreneurs and residents^{viii}. Loan size: 24 million EUR for municipalities, enterprises and other legal entities and 5 million EUR for residents. The maximum credit period is 15 years for legal entities and 10 years for private individuals. The Eco Fund is also available for natural persons or municipalities/enterprises interested in investing in e.g. a water heat pump or a central RES heating systems. The calls invite different technologies, favouring mainly energy efficiency projects; however various incentives are open for RES (the installation of central heating devices that use wood biomass, heating pumps [water- and geothermal energy] and aérothermal technologies).

Latvian Climate Change Financial Initiative (CCFI),

The CCFI launched in 2010, is one of the main national instruments for promoting energy efficiency and renewable energy in construction buildings and transport sector, prevent global climate change, adaptation to the effects of climate change and contribute to the reduction of greenhouse gas emissions. The estimated CCFI budget is EUR 142 million and comprises revenues from the international emissions trading scheme. Within the CCFI, a range of projects has been implemented that promote energy efficiency, increase the use of renewable energy resources in production of heat energy and electricity for enterprises and local governments. In total 49 projects have been implemented, including in 2012 – 44 projects. Data on actual volumes of heat energy and electricity will be available in the monitoring period from 2013 until 2018. At least 1563 projects have been implemented within the CCFI funded tender *Use of Renewable Energy Resources in Household Sector*: 209 projects have been completed in 2011 and 1354 projects have been completed in 2012. The total CCFI financing is LVL 7.9 million. The CCFI co-financing will be granted for development and presentation of innovative products or technologies if such a product or technology has GHG reduction potential or it can be practically used, as well as for national and international experience and knowledge technology transfer by implementing pilot projects to show how innovative GHG emissions reducing technologies operate in practice.^{ix}

FLAG – Fund for Local Authorities and Governments in Bulgaria

FLAG was established in March 2007 by the Council of Ministers with funding provided through the Bulgarian National Budget. FLAG is an instrument of the central government policy for regional development providing financial assistance to municipalities in order to create conditions to absorb as much financial support as possible from the Structural Funds and the Cohesion Fund of the EU. FLAG is an institution of unique status, having no parallel in the Bulgarian financial and legal practice. The Fund is an independent legal entity having the status of a commercial company (joint stock company) which is structured as a revolving mechanism for financing the development and implementation of economically and financially viable projects in the area of municipal infrastructure and for supporting capacity building of municipalities. The Fund is designed as a financial mechanism to overcome the problem of ensuring cash funds to municipalities when they develop project proposals or finance approved projects in the framework of the Operational Programmes, co-financed by the EU funds. FLAG has entered a partnership with one of the most respectable commercial banks in the country – Unicredit Bulbank. The bank's role is to assist the Fund in assessing applicants' creditworthiness and to administer the loan repayment. The risk of the projects is minimised by the evaluation carried out by the Managing Bank; afterwards, the Fund has adopted additional criteria that aim to reduce risks for the Fund itself and ensure the prudent management of its portfolio.

Feed-in tariffs for renewable energy

A main support for energy produced from renewable energy sources in the analysed countries is a feed-in tariff (FiT) system with purchase obligation at the national level.

Slovenia implemented a sophisticated system of feed-in tariffs in 2009 in order to meet its target of 25% renewable electricity generation by 2020. The revised policy has increased the length of contracts and caps to the sizes of projects, including a review of technology costs to be completed every five years. It has also implemented a 7% solar PV tariff digression through to 2013. The FiT applies only to RES plants with a capacity of <5 MW^x. The price is based on the reference price applicable on the day on which the contract is concluded and will be paid for no more than 15 years.^{xi} In addition, Slovenia offers bonus payments for biogas plants using high percentages of farm wastes and "operating support" to CHP plants fired with wood biomass. Operators of renewable energy plants with an installed capacity of up to 5 MW may choose to sell their electricity directly on the market instead of receiving the guaranteed purchase price (FiT). In this case, they will receive the so called "operational support" (i.e. a premium tariff). Power plants with a capacity >5 MW may only opt for this support scheme. The premium tariff is paid for the net amount of generated electricity which the producers themselves sell on the market or use for their own consumption, provided that the production costs of this energy are higher than the market price.

In **Lithuania**, the FiT system was introduced in 2002. RES-E support scheme in Lithuania consist of a fixed FiT for wind energy in the amount of 63.7 €/MWh and a relatively high fixed FiTs for hydro (<10 MW), wind and biomass; are guaranteed for ten years. FiTs are combined with purchase obligation. Investment programmes are limited to companies registered in Lithuania. The operators of renewable electricity generation plants are entitled against the electricity company designated by the Ministry of Energy - a public electricity supplier serving the area in which the RES producer is operating or an independent electricity supplier - to payment for electricity exported to the grid. For purchasing renewable electricity the obliged parties are remunerated from the Funds of Public Service Obligations. All electricity produced by RES plants whose total installed capacity does not exceed 10 kW shall be purchased at the feed-in tariff

set by the National Control Commission for Prices and Energy (NCC). Feed-in tariff contracts for the operators of RES plants with a total installed capacity exceeding 10 kW are awarded through tenders. Tariff rates for RES plants with a generating capacity of up to 10 kW and maximum tariff rates for RES plants exceeding 10 kW on a quarterly basis shall be set by the NCC.

Green Investment Schemes

As the CEE countries have a surplus of assigned amount units (AAU) to sell, in principle all studied countries have developed Green Investment Schemes (GIS), to collect proceeds from the sale of national emission rights under the Kyoto Protocol. The AAUs constitute an additional source of financing that can be reinvested in environmental and climate mitigation projects. However, the delay in setting up a GIS has in many CEE countries (e.g. in Slovakia) hindered the effective and transparent use of the trading mechanism (*OECD 2011*). The most successful sellers in terms of concluded deals have been Estonia and the Czech Republic – both countries have a credible GIS in place with transparent rules for monitoring and verification of emissions reductions and financial flows. In addition, none of them complements existing national subsidy programmes with the AAU funds preventing additionality concerns.^{xii}

The **Czech GIS programme** provides funding for a range of energy efficiency measures and is expected to provide at least 21 billion Czech crowns (€870 million) from AAU sales made over the 2009-2011 period. As of 2012, around 75 million AAUs have been sold to different parties, with the majority of allowances sold to Japan, but also to the World Bank, Austria and Spain (GIS report, 2010), representing a revenue stream of €960 million (Valentova, 2009). The actual sale of AAUs is negotiated by the Ministry of Environment, while decisions regarding allocation of the revenues raised are taken by the State Environmental Fund. The quality and effectiveness of the Czech programme is largely attributed to the transparency of the revenue recycling programme.^{xiii} The fruitful, **Czech Green Savings programme** which is financed from proceedings from the sale of AAU was launched in April 2009. It provides householders grants of up to half of the cost of insulating their homes. It also provides grants for new construction meeting passive house standards, as well as for the installation of heating equipment using renewable sources of energy. Improvement measures must result in specific annual heat savings to qualify. A bonus subsidy amount is provided when insulation (full or partial) or new construction is combined with the installation of renewable energy heating equipment, or if more than one renewable energy-source equipment is installed in new construction. The bonus is of CZK 20 000 for single houses and CZK 50 000 for apartment buildings.

Tax incentives for green energy

Analyzing the energy policies on a EU-28 level, it can be observed, that the main tax incentive to promote green electricity is the exemption of the payments of excises duties for electricity when the electricity is generated by RES. Romania is among those 7 countries in the EU who have this sort of incentive. Romania has included an exemption from the payments of excises duties for energetic products and electricity when the electricity is generated by RES. In the Slovak Republic, renewable energy is promoted through the exemption of the excise duty on electricity. Also, the new Polish legislation continues to exempt from excise duty electricity from RES.^{xiv} In the Czech republic, operators of renewable heating plants are exempt from real estate tax.^{xv}

Municipal tax relief in Cluj-Napoca, Romania

The Cluj-Napoca City Council delivered a positive example at the national level being the first municipality in Romania to adopt specific measures for encouraging green building development. The City Council

voted on May 24 to provide a 50% reduction in property taxes for buildings earning a green certification and achieving the top score on the energy efficiency rating. This decision shall apply only to buildings that are certified by three certification systems recognized worldwide:

- LEED;
- BREEAM;
- DGNB.^{xvi}

3.1.2. The role of Private financing

MagNet Bank community deposits, Hungary

The MagNet Community Bank in Hungary allocates strong rights to the customers in influencing where their deposits should be invested deliberately promoting the attainment of a given objective:

Community deposits - Customers are given the right to make their own choices regarding what projects to be promoted with their savings. Funds held in *Sphere deposits* finance only those loans that belong to the following spheres: 1. *Organic farming*, 2. *Green energy*, 3. *Environmental protection and nature conservation*, 4. *Job creation*, 5. *Research and development*, 6. *Health and social care* and 7. *Culture and education*. By means of the decisions of Sphere deposit holders, MagNet Hungarian Community Bank finances those organizations, initiatives and projects that create environmental, cultural and social values for their immediate environment or the wider society. MagNet carries the credit risk.

Mentor deposit - The Mentor deposit, brings together the deposit holder, the bank and the borrower. A holder of a Mentor deposit can choose which borrower to support – the Bank will include it the deposit agreement - and MagNet will provide financing from the Mentor deposit solely for that borrower. In addition, the customer can choose the interest rate of the deposit within a certain range. They can opt for a below market interest rate if they wish to improve - by means of the interest they are willing to give up - the conditions of the Mentor loan of the borrower.

Community Donation Programme (CDP) – provides customers the opportunity to decide on the use of 10% of the MagNet Bank's yearly profit and the right to choose which foundations that should share that profit. This way they provide financing to foundations and civil organizations engaged and delivering results in the field of health care, environment and culture. ^{xvii}

Bulgarian credit line for energy efficiency and renewable energy sources

BCLEERES credit facility operates on the basis of partnership between the European Bank for Reconstruction and Development, the European Union and the Bulgarian government. Loans amounting to € 2.5 million are distributed by six Bulgarian commercial banks acting as intermediaries in the scheme. In addition, eligible projects can take advantage of the opportunity to receive consultant services. Every successfully completed project can receive grants amounting to 15% of the disbursed loan. The grant is provided by the Kozloduy International Decommissioning Support Fund (KIDSF).

Polish Bank of Environmental Protection - Bank Ochrony Środowiska S.A.

The Bank is a leading financial institution that specialises in the financing of various environmental protection investments, e.g. water protection, air protection or land surface protection. Together with KfW, the bank has prepared subsidised loans under the following two programmes:

- Programme for energy efficiency in buildings;

- Boiler modernisation programme.

The most important conditions for both programmes are as follows: an investment applying for such a loan cannot be supported from public funds (e.g. National and Regional Funds for Environmental Protection and Water Management, Thermo-modernisation and Renovation Fund). Loans are provided for up to 10 years, depending on the investment's implementation period and the client's credit rating (a standard investment loan is granted for 5-8 years).

ESCO financing of panel building rehabilitation in Hungary

A good example for a new kind of financial possibility for panel building rehabilitation is the renovation of a block of flats in the Hun street in Budapest. The Energy Service Companies (ESCO) GEO-NRG Kft. has invested 100 million HUF into the renewal of a ten-story panel building with 256 flats. Before the investment the building got connected to the local district heating system, the building was insulated and new energy efficient windows, and adjustable heating were installed. The contractor built the system at its own charge, operates and maintains it, and the owners have committed to buy the heat for the next 20 years. The joint agreement is beneficial for the house, because the residents do not pay immediately for the development, the monthly heating charge will instead be paid as flat rates, as part of the common charges. It is also ensured that the quality of the equipment installed by the company will be good, as continuous improvement by the company would not be in their interest. The condominium has so far spent 120 million HUF by means of different tenders on energy efficiency modernization (approx. 500 000 HUF per apartment). Out of the 120 million, 40 million HUF was non-refundable state aid, HUF 80 million own funds; this latter includes HUF 24 million interest-free loan from the local government and HUF 16 million non-refundable subsidy from the local government.^{xviii}

3.1.3. The role of International financing

EBRD support to wind power in Hungary

Boarded in 2010 the EBRD is providing an equity investment of the HUF equivalent to up to EUR 50 million for a 25% stake in Iberdrola Renewables Magyarország Kft by subscribing for new shares in the Company following a capital increase. Proceeds of the investment will fund the development, construction, and operation of the Company's current portfolio of wind power projects in Hungary. IBR Magyar currently has one wind farm with 50MW of installed capacity in operation whilst two additional wind farms, Scott and Csoma I, are expected to start operating in 2H2010, bringing the total installed capacity to 124MW. The Company will also develop additional projects in the country during the next five years. EBRD Finance: 25% equity investment in IBR Magyar of the HUF equivalent to up to EUR 50 million, by subscribing for shares following a capital increase.^{xix}

Boosting the energy sector in Latvia

In 2010 the EBRD signed a €150 million loan to Latvia's state-owned energy company Latvenergo to finance the replacement of obsolete gas-fired production units at the company's Riga plant, with a new combined cycle gas turbine (CCGT) unit of 400 MW electric and 270 MW thermal capacity. Some €85 million of the loan was on the Bank's own account while the remaining €65 million was syndicated. The project – also co-financed by the European Investment Bank (EIB) – is the second stage of a combined heat and power (CHP 2) reconstruction programme that was launched in 2005 to improve energy efficiency and electrical capacity at the plant. The first stage was completed in December 2008 with the successful commissioning of a CCGT unit similar to the one used for the second stage. Overall, the CHP 2

reconstruction programme will result in a major increase in generation net efficiency from 26.5 per cent up to 56.5 per cent in condensing mode, as well as a significant reduction of environmental pollution in Latvia.^{xx}

Risk-sharing facility: IFC/GEF Commercializing Energy Efficiency Finance (CEEF)

One of the most important barriers to energy efficiency financing by commercial banks and financial institutions is their perception that EE projects are inherently more risky than traditional investments. Risk-sharing facilities address this perception by providing participating LFIs with partial risk coverage in extending loans for EE projects. The risk-sharing facility directly facilitates increased financing of EE projects by overcoming the barriers to structuring the transactions and by building the capacity of LFIs to finance EE projects on a commercially sustainable basis. The most common examples of risk-sharing facilities are publicly-backed partial risk guarantees or partial credit guarantees (Mostert, 2010). One example of successful implementation of a risk-sharing facility was the Commercializing Energy Efficiency Finance (CEEF) Programme offered as a joint programme of the International Finance Corporation (IFC) and Global Environment Facility (GEF), with IFC acting as the Executing Agent for the GEF (Danish Management Group, 2010). The CEEF programme was designed to meet the GEF objectives to promote and enhance commercial financing of EE projects, thereby leading to reduction of GHG emissions and creation of a sustainable market in the CEEF countries for EE project development and financing. The programme covered six countries in Eastern and Central Europe (Hungary, Czech Republic, Slovak Republic, Latvia, Lithuania, and Estonia). The CEEF Programme was launched in April 2003 as a joint programme of the IFC and GEF, with IFC acting as the executing agent for the GEF. CEEF was initiated, based on the experience from the “Hungarian Energy Efficiency Co-Financing Program” (HEECP), which had been initiated in Hungary in 1997. The countries included in CEEF were the Czech Republic, Slovakia, Estonia, Latvia, and Lithuania. In 2005, Hungary was added, and HEECP was merged into CEEF. The CEEF Programme was successfully completed in December 2008. 14 banks and 41 ESCOs participates in the 700 projects that have been implemented. The project investment is 208 million USD which will result in *145 700 tons CO2 reduction per annum.*^{xxi}

3.1.4. EU support

ILUBE: creating biomass market in Slovakia

The ILUBE project from Slovakia (“Integrated logistics for use of biomass energy” - LIFE03 ENV/SK/000577) provides an excellent example of how LIFE funding can assist in the development of markets for new energy-related products. The project was the idea of a former mayor of the small town of Rajec who introduced the country’s first woodchip boiler. His aim was to create a Slovakian biomass pellet market similar to the Austrian market. The first step was to form a project with the Slovak ministry of environment to build a pellet producing mill and to reconstruct more than 40 boiler rooms in schools and public buildings. LIFE funding was central in the reconstruction of boiler rooms, and the construction of the mill.^{xxii} The success of the project has been recognised internationally with two awards, the European ‘Climate Star’ award in 2004 for local climate protection activities, and, more recently, the 2006 National Energy Globe award for Slovakia.

3.5 Financing Sustainable Transport

Complementing financial instruments for sustainable transport in Slovenia

In Slovenia a combination of financial instrument is supporting the development of sustainable transport:

- 1) **Biofuels development** is encouraged by two instruments: complete exemption from excise duty for motor fuels in purified form and a maximum 5% exemption in the case of standardised fuels with biofuel content; and target shares for biofuels in the total energy of motor fuels placed on the market for an individual calendar year for fuel distributors for motor vehicles (*Fifth National Communication*).
- 2) In order to ensure the availability of funds for transport infrastructure investments, Slovenia envisages the introduction of an environmental **tax on motor fuels** of up to EUR 0.02/litre (*EEA 2010*).
- 3) **Motor Vehicle Tax Reform**: the substance of the reform is a double tax rate (which is quadruple in the long run. It was introduced in 2010, and the reform linked the tax rate to vehicles' CO2 emissions instead of to their sale price, as had been the case between 2000 and 2009. Hybrid and all-electric vehicles are subject to the same rates as petrol powered ones, placing them at the bottom of the tax rate scale. The highest tax rates apply to any vehicle on which CO2 data are lacking.^{xxiii}

Public-private partnership for increasing sales of hybrid electrical cars in Estonia

In July 2012, the government of Estonia signed the contract with **Mitsubishi Corporation** and prolonged the support scheme of electric cars until the end of year 2014. Plug-in hybrid electric vehicles were added to the selection of models. The electrical mobility programme (ELMO) makes it possible for both private and public institutions to acquire an electric car with a state grant provided by KredEx, in the amount of up to 50% of the price of the car. The maximum grant amount per one fully electric car remains at EUR 18,000, in addition to which KredEx compensates for the cost of home charger up to EUR 1,000.

3.6 Financing Adaptation to Climate Change

Slovak Landscape revitalisation and integrated river basin and landscape management programme

The programme (under the National Reform Programme) has three main focus points: flood prevention, harvesting rain water in the landscape, and the restoration of damaged landscapes (of at least 250 million m³), and is a truly integrated management programme, with the aim of changing society's approach to water and its use. Funds are received from several sources; (i) EU funds (ERDF, EARDF, ESF, Cohesion Fund) and those provided for the for flood prevention measures and (ii) funds from the state budget of the Slovak Republic as well as (iii) other funds defined for the programme within the legislative process shown in this point of the programme.^{xxiv} The Government allocated approximately €34 million to be spent in the 2010-2011 period. In addition, the project implementation generates new job opportunities. The project will follow up with the introduction of an allowance to support employment through the implementation of flood prevention measures and removing consequences of emergency situations.^{xxv} The costs or financial aid from public funds were set at 4 EUR per cubic meter of water retention capacity of an element, measure or system. In a short period of 18 months, 488 villages and towns involved in the Programme carried out about 100 thousand different water retention elements in degraded landscape. The landscape water retention capacity of total 10 million m³ was built or restored, which amounted to 4% of total plan during the expected 10-year implementation period. The implementation projects provided total of 7,700 seasonal jobs for local people. In some cases the investment returned within six months after the measures were implemented before torrential rains in spring and summer 2011. The

retained water was gradually released over the period of extreme drought that affected Slovakia in the second half of the same year. The measures should repeatedly bring benefits in the following years.^{xxvi}

The **Latvian Environment Protection Fund** supported in the period 2007-2008 a nationwide project undertaken by METRUM Ltd.⁵ entitled 'Coastline erosion and coastal area contraction monitoring'. The aim was to examine recent changes in Latvia's coastline. New maps of Latvia were produced allowing the identification of areas suffering from accretion or erosion and the rate of illegal construction works in the 300 m coastal protection zone. Currently, METRUM Ltd. is conducting an erosion assessment for the next 10 years along with the identification of risk areas in which construction has to be restricted. These actions are funded again by the Latvian Environment Protection Fund.^{xxvii}

Insurance companies safe-guarding damages from climate change, Czech Republic

Insurance can be a valuable tool for adaptation in three main ways: helping to manage climate change risks; providing incentives for risk prevention; and providing information on risk (Courbage and Stahel, 2012). The insurance sector is arguably the most advanced in evaluating risks and opportunities. Major adaptation initiatives in the insurance sector, to date, have focused around building institutional networks that address the common risks to the industry through collaboration. It is likely that the insurance sector leads in this area due to its vulnerability, but also because of its historical experience in risk management and climate-related risks. Although multiple small disasters can slowly erode a nation's budget, all it takes is one major catastrophe to severely affect the economy. In 2002 in the Czech Republic, flooding caused €3 billion in damages. Fortunately for the Czech Republic, 40% of losses were insured—a lesson the country learned from the floods of 1997. The Czech Republic, however, is unique for the ECA region. In general, ECA countries have budget but not insurance funds for such eventualities and have yet to develop more sophisticated financial instruments to cope with such losses on a systematic basis, especially since climate change effects may be increasing the frequency and intensity of hazards.^{xxviii}

3.7 Financing Ecosystem protection

Public-private partnership for preserving natural and cultural heritage of Secovlje Salina, Slovenia

The well-known landscape park Secovlje Salina which is a designated Ramsar site, Natura 2000 site and cultural monument of national importance is the first protected area managed by a PPP in Slovenia. It is managed by a special-purpose private company, Soline, owned by the country's largest mobile phone company, Mobitel. The government awarded Soline a 20-year concession to manage the Park, specifying its roles and responsibilities, including preparation of an annual management and financial plan requiring government approval. Ownership of the protected area remains with the government, including responsibility for all investments in the park's infrastructure. The government contributes about 20% of the protected area's annual operating cost, and support is also provided by Soline and Mobitel. Income is generated from entrance fees and the sale of salt and related products. Two of the park's conservation projects have received EU LIFE funding. For the government, this type of arrangement has the advantage of lowering management costs, moreover, the park has increased local employment opportunities: the number of employees in the company grew from fewer than 15 to 86 during 2002-11.^{xxix}

Support for organic farming in Ukraine

As the Ukrainian government has not made efforts in bringing its large number of organic farms up to international standards, private investors begin to establish joint ventures with Ukrainian farmers through financing organic certification for them and trading the healthier organic food at 25-30% premium prices.

Many old farms in Ukraine lack financing to buy agricultural chemicals which puts them into the organic category but are notable grant an official status of an organic producer. Investing in the organic certification process for many farmers is just as costly as buying new equipment.^{xxx} Another initiative is led by the Swiss Agency for Development and Cooperation which has implemented 'EcoFinLan' (2010) project that focused on organic farming and provides rural inhabitants with a genuine alternative. By working with private industry and agricultural colleges, the project helped to generalise organic farming techniques. The 'EcoFinLan' project had lent support to an organic farmers' federation which helps smallholder farmers market their products. It had also set up a platform for the exchange of information and experiences. Finally, the project was working with two Ukrainian banks on an initiative to provide affordable financial services to organic farmers.^{xxxi}

The Romanian Forest Fund

In Romania there are about 500,000 individual forest-owners and most of them own only 1 or 2 ha of forest and they need to be supported by the state budget for their forestry work. There is a need to establish Forest Districts, financially sustained by the state in order to create and to strengthen a sense of forestry among the people. In order to save these forests and their owners, and to develop and maintain lasting forests it is necessary to elaborate special laws, the Forest Code which should bring solutions as it was by Romanian foresters. The total surface of the forest fund in Romania is about 6.4 million ha.

- 4. 25 million ha of forest owned by the State
- 2. 15 million ha owned by private landowners

In the years 2006-2007, after retroceding about 2 million ha from State to owners of forests, the juridical situation will be as follows: forests owned by State: 2 million ha and 4.4 million ha of private forests owned by individual persons, communities, and associative organizations.^{xxxii}

3.8 Financing Eco-innovation

All CEE countries have renewed Research, Development and Innovation (RDI) strategies for 2014-2020 integrating eco-innovation objectives, directly or indirectly. Several CEE countries have introduced eco-innovation priorities in Enterprise Development Strategies or programmes for 2014-2020 (e.g PL, EE).

Although below EU-average, eco-innovation indicators for Slovenia is among the best performing countries among the new Member States. There is however no specific eco-innovation policy strategy and no significant incentive for eco-innovations apart from general innovations and R&D support programs, entrepreneurship support measures. The implementation of low-carbon technologies in Slovenia is being promoted through a **draft Green Tax Reform**, which, among other things, adjusts purchase prices and premiums for green electricity; the consideration of energy-efficient, low-carbon and environmental technologies in public investments; and the streamlining of Cohesion Funds and national funds into green technologies (*Ecorys 2011*).

- The Slovenian Government has established a number of new institutions promoting environmental technologies. These include the **Environmental Technologies Excellence Centre**; **the Slovenian Environmental Cluster**; **the Technological Platform for Waters**; **the Agency for Technological Development**; and **the Competitiveness Council** (*Ecorys 2011*).
- Public support for innovation is ensured primarily through the **Public Agency for Entrepreneurship and Foreign Investments** (*Eco-Innovation Observatory 2010*).

GreenEvo Accelerator for Green Technology in Poland

GreenEvo is an initiative of the Ministry of Environment in support of Polish eco-innovators entry on the global market. The aim of the accelerator is to make it easier for companies to find the appropriate sources of co-financing for the projects which they wish to undertake. Due to their cooperation with the National Fund for Environmental Protection and Water Management, the Ministry of Economy and the Polish Agency for Enterprise Development, entrepreneurs get guidance through a the maze of legislation, rules and regulations in order to use the forms of support available to the producers of environmental solutions. Some of the key features, and success factors of GreenEvo includes:

- Internationalisation of green tech companies
- Business coaching and marketing
- IPR protection advice
- GPP & innovation procurement
- Commercialisation missions^{xxxiii}

The Baltic Innovation Fund

In September 2012, the European Investment Fund (EIF), Estonia, Latvia and Lithuania created the Baltic Innovation Fund (BIF) with a goal to increase equity investments into the enterprises of the area. The total volume of the fund is 100 million EUR, The EIF is investing 40 million EUR alongside investments of 20 million EUR each from the national agencies of Estonia (KredEx), Latvia (LGA) and Lithuania (Invega). Money will be invested into private equity and venture capital funds over the next four years to further developing equity investment into SMEs.^{xxxiv}

Promotion of clusters

In Latvia, the aims of the cluster programmes have been to promote cooperation between businesses and other actors including scientific institutions in a given sector. In the first phase of cluster support, which ran from 2009-11, quite modest support from the state budget was provided for nine clusters. In the second phase (2012-15) more significant support was available from the EU funds and two clusters operating in the eco-industry sector have been supported: an 'Industrial Energy Efficiency Cluster' and a 'Clean Technology Cluster'. The source of funding is the European Regional Development Fund. The 2012-15 cluster programme has total funding of LVL 3.4 million (EUR 4.28 million) with a maximum funding of LVL 300 000 (EUR 426 000) for each cluster organisation for a period of three years. The funds may be used to support cooperation, research, acquisition of markets, and development of new products and services.^{xxxv}

In Lithuania, the **Solar Energy Cluster** is supported by the Agency for Science, Innovation and Technology (MITA), which is responsible for the implementation of the innovation policy in Lithuania. At the regional level, the cluster is supported by the Vilnius City Municipal Government. The municipality agency Siaures Miestelis, an active regional developer of the RE ecosystem, is a founding member. The cluster is managed by the Applied Research Institute for Prospective Technologies (PROTECH). Currently, 26 industry members participate in the PV cluster. Since the start, 20 spin-off companies and 100 high-tech jobs have been created. 18 collaborative R&D projects (co-funded by FP7 or ERDF) have been implemented together with partners from the region and abroad. Some 500 new jobs are expected to be created by 2016-2018 along with investments reaching up to EUR 58 million and industry's share amounting to EUR 434 million in the Lithuania's export portfolio.

ENVIT Ltd., Slovenia, turning remediation into business opportunity

ENVIT Ltd., specialized in the remediation of contaminated sites, won the most promising Slovenian start-up in 2010. In Europe alone, there are currently at least 90,000 sites contaminated with heavy metals that require immediate action. The total estimated remediation costs for these sites amount to €7,500 billion. The main obstacle to the remediation of is the lack of applicable technologies, which the founders perceive as a business opportunity. The company's patented technology outperforms existing remediation solutions. The team has succeeded to obtain sources from a P2 call also with the help of Ljubljana University Incubator, what was sufficient to start a company, now they plan to acquire European means to finance the creation of first cleaning machine with the use of new technology. They have three currently ongoing projects, two is financed by the Slovenian Research Agency, one is co-financed by the Slovene Enterprise Fund.^{xxxvi}

Public-Private Partnership supporting eco-innovations in Lithuania

Until recently there were few options in Lithuania for financing public-private research partnerships in which universities, research institutes and the productive sector come together to jointly work on specific research projects. This situation changed in 2008 when the Ministry of Economy made funding available for individual cross-sectoral projects. To ensure commitment on both sides, the requirement is that 50 percent of the total financing comes from private sources. Networks have been established in several countries in order to promote innovation and knowledge transfer and to exploit synergies between the organisations involved. By joining together, the partners can reduce the risks associated with making investments in (the development of) new technologies. These networks bring together private enterprises and also other relevant partners such as local authorities, universities, chambers of commerce etc. On 24 October 2012 an updated concept of the creation and development of Integrated Science, Studies and Business Centres (Valleys) was approved. On the basis of this concept the separation of the Lithuanian "Smart Specialization" directions and the development thereof is planned while implementing large joint projects initiated by science and business entities, financed by combining the funds of both public and private capital.

5. Recommendations

There are post-crisis opportunities for greening numerous sectors of the economy which have the potential of boosting job creation and economic growth at the same time as environmental externalities are reduced. To channel sufficient private and public financial resources for needed investments into resource efficiency and eco-innovation is key for a transition towards green economy.

The following bullet points summaries some of the key recommendations for improving access to green funding in the CEE countries and Ukraine.

Recommendations to public authorities

- To meet challenges of financing green economy projects, there is a **need to raise awareness** among policy makers and politicians for green economy in general and to create a more favourable climate to implement green economy measures.
- **Strengthening financial and policy governance structures** is paramount for making use of available funding. One of the biggest barriers in the studied countries are the lack of clear policy framework and green economy goals. Transition to green economy should be addressed on a sectoral basis through the design of comprehensive policies and economic instruments;
- There is a need to **design appropriate policies** which unleash green economy investments and to create a balance of supply and demand policies. It is necessary to take an integrated approach to policy-making, coordinating policy instruments across sectors and mainstreaming green economy development and eco-innovation in the sectoral policies. For instance, policies to create markets for cleantech (e.g. feed-in tariffs & certificates) are associated with higher private investment levels than short term fiscal policies (e.g. tax incentives) and cleantech enterprises that patent are more likely to receive private funding.
- It is important to **support green innovation across the innovation cycle**, e.g. by supporting demonstration and pilots projects and by building market acceptance. Venture capital accounts for only a small share of the financing needs, and especially cover low-capital intensity projects, with returns in the shorter term. Some evidence shows that public funding is better placed in financial engineering mechanisms and market-based systems, rather than through direct funding for the later stages of technology development. Government funding is in many cases most relevant for early-stage technology development.
- **Facilitating administrative processes**, and easing the administrative burden, for applying for financing for environmental investments is needed as it is currently hindering the realization of many investments in the CEE and Ukraine.
- **Better cooperation among civil society, SMEs, administrations of cities/towns and regions** would improve the use of opportunities provided by the various national and EU programmes in place to support green activities. For example, the creation of green tech incubators is a key element in supporting and developing a regional innovation ecosystem and can encourage the road to market of green start-ups.
- Governments should **involve the private sector in establishing clear, stable and coherent policy and regulatory frameworks** to facilitate the integration of green economy objectives into financial

and investment decisions. In addition, governments and multilateral financial institutions should use their own resources to leverage financial flows from the private sector and direct them towards green economic opportunities

- There is a need to boost the market for green economy products by **introducing demand side measures**. Currently the most common demand side measures in the EU are environmental regulations, Green Public Procurement, standards and certification, awareness raising campaigns, financial & fiscal support for environmental technology adopters.
- In the energy sector many of the CEE countries have overall introduced solid programmes regarding both energy efficiency and renewable energy. The **disincentives to energy efficiency** improvement in residential buildings should be examined and reduced. In addition, the necessary support instruments for energy efficiency in the building sector will vary in CEE, depending on the national or regional circumstances, e.g. ownership structures and social situation, and the design of the schemes will have to be tailor-made on this basis. Energy Performance Contracting is a possible way to trigger private investments in the sector with a relatively small contribution from the public budget.
- With regards to RES, CEE countries should take further steps in **encouraging technology competitiveness** by adjusting their support schemes. It is also important to ensure coordination with already existing instruments, including both funding and non-funding instruments. Support from Cohesion Policy funds should complement national support schemes for RES.
- With regards to adaptation to climate change **external funding is required** at regional and local level, particularly when research and assessment is necessary as a basis for decision making. The LIFE programme will dedicate funds for this for 2014-2020 under the climate sub-programme. Other EU funds, including the Cohesion Policy and rural development programmes also offer potential support for regional and local authorities to support their efforts on strategic planning on adaptation to climate change. This needs to be taken into account in the programming of funds.

Recommendations for SMEs

- The shift to low-carbon development is an opportunity for SMEs to critically assess their potential to improve energy efficiency. As energy costs are important part of the cost structure in an enterprise such investments will increase competitiveness of SMEs and thus trigger economic growth. Specifically, investments in energy efficiency can lead to significant energy productivity improvements in production processes as well as significant reduction in grey energy and raw material consumption per product. To do that SMEs should take advantage of the available funding opportunities such as instruments that support energy efficiency, i.e. state and regional subsidies and innovative financing mechanisms.
- SMEs and public sector can explore **new areas of public-private cooperation**. For example, the private sector is entering into climate adaptation areas that have traditionally been exclusively in the public domain, such as weather and storm warnings or land-use planning. The private sector's involvement can lead to provision of such services at lower costs.

- SMEs can take advantage of the opportunities that entering the growing markets of green products and services can offer. To increase their competitiveness in these markets SMEs can conduct strategic planning and assessment of new market opportunities for such products and services.
- To improve their eco-innovativeness SMEs need to consider **getting technical support** offered under various programmes and schemes such as training, energy and resource efficiency audits, innovation and research grant programmes.
- In the EU and especially the New Member States there is **a huge margin for improvement in turning scientific knowledge** into patented processes and products. Therefore, it is important that SMEs increase cooperation with the research institutes and knowledge providers in this regard. In addition SMEs can establish stronger links with other clean-tech SMEs and use available incubators or networks in order to benefit from the infrastructure and support it can offer.
- SMEs often have difficulties in **marketing innovation developed in-house** and steps are needed in fostering innovation marketing. Clustering is an efficient approach to increase market innovation as it enlarges the network of enterprises and the visibility of an innovation.

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- i <http://www.greenpeace.org/poland/PageFiles/351912/pracujac-dla-klimatu.pdf>
- ii http://www.eu-employment-observatory.net/resources/reviews/DGEMPL_EEO_Review_Green_Jobs_v3%2001.pdf
- iii http://www.eu-employment-observatory.net/resources/reviews/DGEMPL_EEO_Review_Green_Jobs_v3%2001.pdf
- iv http://www.iisd.org/pdf/2012/harnessing_ppp.pdf
- v Institutional Environment for Public-Private Partnership in Ukraine
- vi http://www.biceps.org/assets/docs/bje/bje2013_no1/Policy_paper_1
- vii Resource efficiency gains and green growth Perspectives in Ukraine
- viii [res-legal.eu](http://www.res-legal.eu)
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