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INTRODUCTION

The global interconnectivity and the visible environment degradation create a context of "mutual vulnerability", when there is an urgent need to adopt international environmental protection standards by reconsidering the means used in the economy and increasing public awareness about the importance of approaching the environmental issues. Moldova needs to address global environmental challenges and to keep up with the new competitiveness standards generated by energy efficiency optimization in order to ensure a sustainable environment and socioeconomic development, which is possible through the implementation of eco-innovation.

Eco-innovation refers to all forms of innovation – technological and non-technological, new products and services and new business practices – that lead to the creation and development of new business opportunities and benefits for the environment by preventing or reducing their impact, or by optimizing the use of natural resources. Eco-innovation is closely related to the development and use of environmental technologies and also to the concepts of eco-efficiency and eco-industries. Their common aim is to contribute to more sustainable production and consumption patterns.

The purpose of this report is to build the capacities of Moldovan institutions for the environmental fiscal reform that will produce increased national and global benefits by adopting taxes, subsidies, fines or other specific instruments in this field. This was attained by analyzing the market of financial instruments to facilitate eco-technologies available in Moldova by analyzing regulatory, legal, fiscal and financial mechanisms as well as the opinion of interested parties on these mechanisms. The analysis is supported by a model that quantifies the perception of the main categories of stakeholders and beneficiaries on the financial mechanisms supporting eco-technologies, the use of eco-technologies, and the main incentives, needs and constraints in implementing eco-technologies.

The research methodology consisted of secondary research of the national context, which included consultation of institutions, legal and financial mechanisms present in Moldova and the European Union, and examples of good practices. The qualitative research consisted of in-depth interviews with representatives of relevant institutions, stakeholders and suppliers. The quantitative research involved beneficiaries and potential beneficiaries of eco-technology solutions: public institutions, businesses and individuals.

A preliminary report on the study was discussed at a round-table on environmental technologies, organized in Chisinau on 29 July 2014. This publication presents the results of secondary research, the primary research and the conclusions of the round table discussions.

I. NATIONAL CONTEXT

The analysis of the key environment indicators and the representative indicators for research and development in the Republic of Moldova are required in order to:

- draw on the background of Moldovan reality regarding the environmental aspects, energy efficiency, education and the activity of research and development;
- identify and understand the sectors in which eco-innovation is present.

I.1. Key environment indicators, research and development indicators

I.1.1 Environment indicators

The energy balance (2012-2014) (measured in thousands of tons of coal equivalent) of the Republic of Moldova shows a considerable dependence on energy and fuel imports. From the total resource volume of 3,373 thousand tons of coal equivalent, only 177 thousand tons of coal equivalent were represented by internal sources, while 2,918 thousand tons of coal equivalent were imported and 278 thousand tons of coal equivalent represented stocks of fuel at the start of the year.

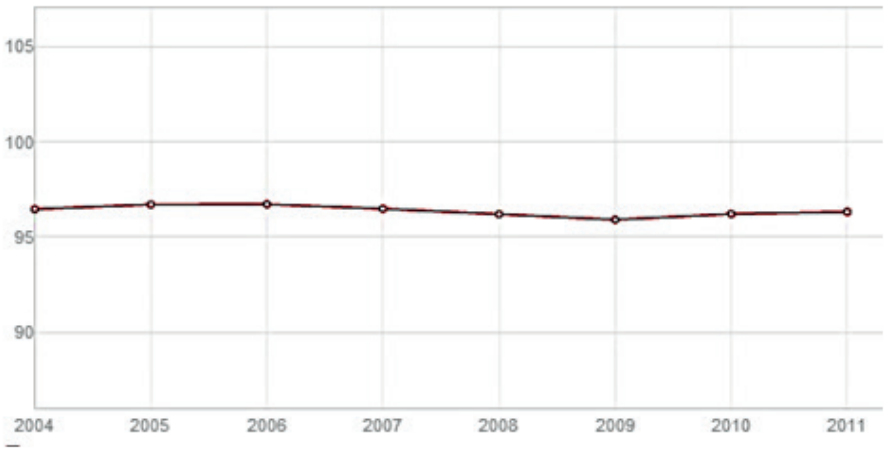

Figure 1. Energy imports, net (% of energy use)[1]

In 2012, the biggest consumers were the following sectors, noted down in order: the population – 914 thousand tons equivalent coal; transport - 525 thousand tons equivalent coal; trade and communal facilities - 224 thousand tons equivalent coal; industry and construction - 178 thousand tons equivalent coal; agriculture – 61 thousand tons equivalent coal; and other sectors together 158 thousand tons equivalent coal.

1- http://data.worldbank.org/indicator/

Starting in 2005, in the evolution of the structure of final energy resources and fuel consumption in the main national economy sectors, an increase in the energy consumption in the residential sector, which became the biggest energy consumer, followed by industry, trade and public services can be observed.

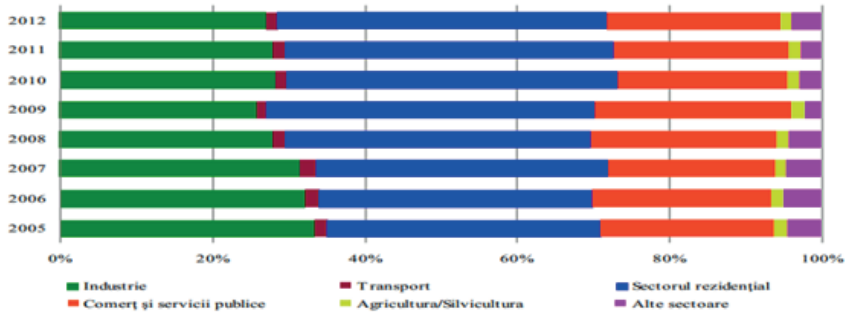

Figure 2. The structure of the final consumption of energy resources and fuel on the main activity sectors of the national economy[2]

In 2012 the structure of the main types of energy resources was largely determined by traditional sources of energy: 38.1% natural gas; 19.2% diesel fuel; 12.0% electricity; 8.6% motor gasoline; 7.1% coal; 4.2% liquid gas; 3.4% firewood; 1.3% residual fuel oil and 6.1% other cumulated resources.

From the share of total primary energy supply in 2011, only 2.5% represented biofuel and waste and 0.9% hydro-energy. This almost 2.5% share of RSE (renewable sources of energy) is almost incomparable with the almost 17% average in the European Union.

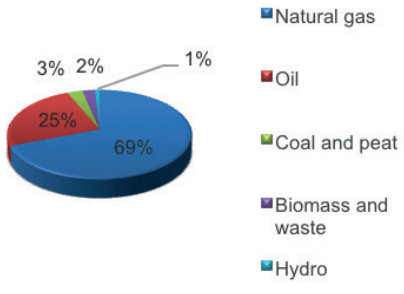

Figure 3. The Share of total primary energy supply in 2011[3]

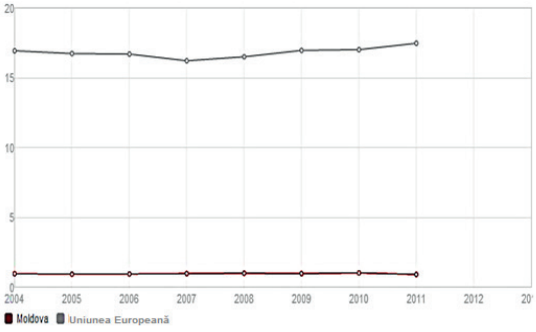

Figure 4. Alternative and nuclear energy (% of total energy use) in Moldova and in the EU[4]

2 - National Bureau of Statistics of the Republic of Moldova, Energy Balance of the Republic of Moldova, Statistics 2012, http://www.statistica.md/public/files/publicatii_electronice/balanta_energetica/BE_2013_eng.pdf
3 - International Energy Agency, http://www.iea.org/stats/WebGraphs/MOLDOVA4.pdf
4 - http://data.worldbank.org/indicator/EG.USE.COMM.CL.ZS/countries/MD-EU?display=graph

Total GHG emissions in 2010 were 2.6% higher than in 2005. Between 2005 and 2010, GHG emissions from the energy industry and transportation increased by 29.6% and 15%, respectively. The emissions of CH4 and N2O are diminishing, mostly due to decreases in the use of synthetic and organic nitrogen fertilizers, but also because of the declining number of domestic livestock. Between 2005 and 2010, CH4 and N2O emissions decreased by 6.6% and 3.3% respectively. The total volume of air pollutants emitted from stationary sources decreased by 24% between 2005 and 2010. However, the United Nations Economic Commission for Europe observes that this positive development is not attributable to industry becoming cleaner than before, but, rather, to the reduction in total volume of industrial production. This observation does not bode well for the future – when industrial production picks up again, increased emissions will follow[3]

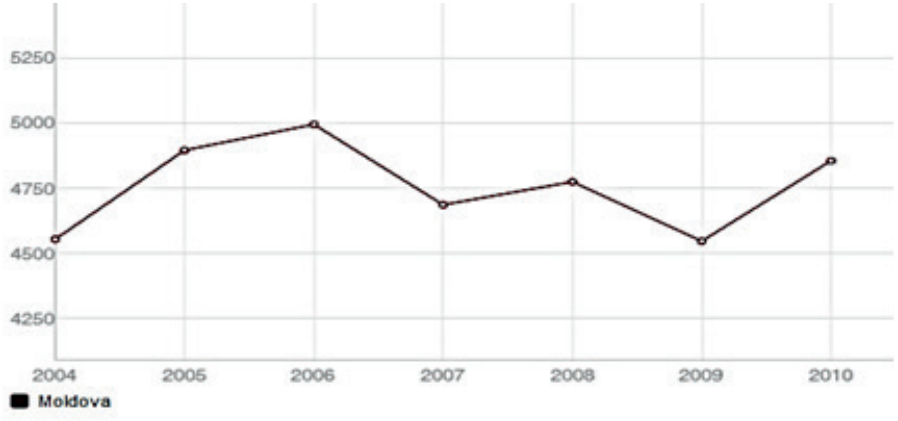

Figure 5. CO2 emissions (kt) in the Republic of Moldova[6]

Drinking water quality is deteriorating despite the fact that total wastewater discharges decreased by 7.3 percent from 2005 to 2011. The percentage of samples not meeting sanitary standards grew from 52% to 72% in the case of water taken from the centralized sources of water supply, while for the decentralized water sources, a level of 83% of the samples do not meet the standards.

The amount of generated **municipal household waste** in 2012 was about 1.9 times higher than in 2005. The recycling rate decreased from 30% in 2005 to 22% in 2011.The end-of-year waste stock increased from about 4.3 million tons in 2005 to 7 million tons in 2010. The volume of toxic waste generated and recycled decreased, fact that could be explained through the diminishment of industrial activity and not necessarily through the implementation of eco-innovation.

5 - Republic of Moldova, Environmental Performance Reviews, Third Review, United Nations Economic Commission for Europe, Geneva, New York 2014, http://mediu.gov.md/images/ECE_CEP_171_En.pdf
6 - http://data.worldbank.org/indicator/EN.ATM.CO2E.KT/countries/MD?display=graph

I.1.2 Indicators for research and development

There are aspects of environmental education in the school curricula from pre-school up to university level in the Republic of Moldova. The environmental education is present in the school curricula throughout the whole education process, but its importance is often viewed as limited. At the level of high education the concept is approached through the realization of research on environment and ecology as well as the involvement in international cooperation projects in this field. The number of studies and projects, however is limited, especially in comparison with European and North American universities.

Expenditures for activities of research and development

In 2013 the budget for Science and Innovation was 349,922 MDL, with a considerable part allocated to applied scientific research (58.11%), followed by fundamental scientific research (23.82%), 0.77% for institutions and activities targeted on science and innovation attributed to other groups and 12.68% for administrative bodies.

The research and development expenditure represent less than 1% of GDP, compared to the expenditures for R&D in the European Union, which on average are more than 2% of GDP.

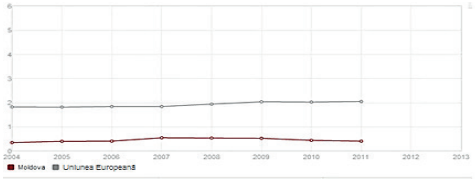

Figure 6. Research and development expenditure in Moldova and EU (% of GDP)[7]

Out of the total volume of 340.7 thousand MDL expenditure in 2013, 24.33% was allocated to fundamental research, 57.5% for applied research and 18.17% for technological research. According to the scientific domain, the 2013 expenditure structure was as follows: natural sciences - 35.6%; technical - 23.7%; agriculture - 16.8%; medical - 9.6%; social - 7.5% and humanities - 6.8%.

Figure 7. Structure of expenditures in the scientific domain

7- http://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS/countries/MD?display=graph

Research and Development Activity

The activity of research and development is conducted by 64 units, including 40 research centres and institutes, 15 higher education institutions and 9 units of another type.

The number of researchers in R&D (per million people) is fluctuant in Moldova, being almost 800, as presented in Figure 1.1.2.3.a). Thus, this number is small compared to the EU average (Figure 1.1.2.4 b)), where the number of researchers per million people is almost 3000.

Figure 8. a) Researchers in R&D (per million people) in Moldova[8]

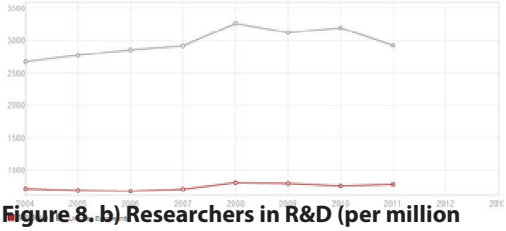

Figure 8. b) Researchers in R&D (per million people) b) Moldova and EU [9]

Distribution of researchers

Most of the researchers in 2013 were active in the field of natural sciences (35.9% - 1,168 researchers), followed by medical science – 14.1%, technical science – 13.8%, social science – 12.6%, agriculture – 12.3% and humanities – 11.2%.
The distribution of researchers based on different domains for 2013 is presented in Figure 1.2.6. It can be observed a prevalence of natural science researchers and a small percent of technical and agriculture researchers, fields which should be developed as they contribute, to research for eco-innovation.

Figure 9. Structure of researchers on domain (%)

8 - http://data.worldbank.org/indicator/SP.POP.SCIE.RD.P6/countries/MD?display=graph
9 - http://data.worldbank.org/indicator/SP.POP.SCIE.RD.P6/countries/MD-EU?display=graph

I.2 Relevant strategies, plans and legislation for eco-technology

I.2.1 Relevant strategies and plans

In the Republic of Moldova, the current underdevelopment stage in the field of eco-technology and eco-innovation, together with the low standards of environmental policy, the flawed technological capacities in the industry domain, the lack of competitiveness and incapacity to respond to international environmental challenges motivated the Republic of Moldova to adopt and highlight in its strategies and plans the environmental and energy issues. Although the documents of the Republic of Moldova recognize the technical obsolescence of industry and of the mechanism for dealing with environmental and energy issues, the term eco-innovation is not used directly. It is referred to in complimentary terms such as "measures that deal with pollution," "energy efficiency," and "environmental management."

- **Moldova 2020, National development strategy, 7 solutions for economic growth and poverty reduction** recognizes environmental issues as one of the causes for the drawbacks of economic sustainable development and a cause of poverty, emphasizing the necessity for the alignment with European environmental standards. Although the strategy does not refer directly to eco-innovation, it mentions the need for increasing energy efficiency and for using renewable energy sources. The document focuses on the fact that the Republic of Moldova engages in undertaking all necessary efforts to ensure the transition to a green economic development, to promote sustainable development principles and to contribute to poverty reduction, by ensuring better governance in the field of sustainable development. All these aspects can be achieved by integrating and strengthening environmental protection aspects in all social-economic development domains of the country[10], by adopting new energy legislation which is harmonized with EU requirements, by strengthening institutional capacity in this area, by implementing measures that are promoting energy efficiency and by attracting investment in this sector. In the field of reducing energy consumption, the main goal is the removal of critical barriers that prevent the optimal use of resources.
- **The Energy Strategy of the Republic of Moldova until 2030**[11] provides concrete guidelines for the Republic of Moldova's energy sector development. The main goal is to provide the required basis for economic growth and improved social welfare, which will lead to an efficient control of energy consumption through the introduction of new technologies that will conduct to a competitive level of implementation costs. The strategy predicts that by 2020 the existing power generation technologies based on renewable energy sources will become more competitive, while the new energy production and storage technologies, as well as the carbon capture technology (which are currently in an experimental stage) will eventually be developed. Special attention will also be paid between 2021 and 2030 to the development of the distribution network by using the concept of intelligent power networks in order to integrate in the best way possible the control over renewable sources and energy efficiency.

10 - http://www.gov.md/public/files/Moldova_2020_ENG.pdf
11 - Energy Strategy of the Republic of Moldova until 2030, http://www.serviciilocale.md/public/files/Energy_Strategy_2030_Final.pdf

- **The Research and Development Strategy of the Republic of Moldova until 2020** underlines the importance of the implementation of the "knowledge triangle" - education-research-innovation for ensuring sustainable development. The strategy underlines that through research and innovation, the implementation of secure, ecologic and efficient energy sources, biodiversity and the preservation of natural resources and raw materials could be achieved. Eco-innovation dimension is included in the objective of combating climate change, and the objectives of the efficient use of resources and raw materials. From this point of view, the aims are to develop and to evaluate: innovative, profitable and sustainable measures of adaption to climate changes; measures of limiting these effects, through which to target both CO2 and the gases with the greenhouse effect (others than CO2). The implementation of innovative technologies, achieved through a higher mobilization of public administration institutions, research institutes and universities, is perceived as one of the premises for creating sustainable green building societies, for increasing the Republic of Moldova's economic competitiveness and domestic quality of life.
- **The Strategy for national Security of the Republic of Moldova (Decision no. 153 from 15.07.2011)** identifies the energy security as a component part of the economic security and proposes solutions like the diversification of the energy sources, development of energy transport and distribution infrastructure, the increase of energy efficiency and promotes the use of national renewable resources according to the EU regulations. Overall, the prevention, management and the elimination of the effects of natural calamities, pollution and technological accidents are to be addressed in correlation with other national strategic plans and measures.
- **The Environmental Policy Concept of the Republic of Moldova** connects the major objectives of environmental policy with the social and economic changes in the country and the regional programmes and the global trends in the field, to prevent environmental degradation. The main objective of environmental policy is: to prevent and to reduce the negative impact of economic activity on the environment, natural resources and public health in the context of sustainable development of the country and the ecological security of the country. The priorities of the environmental policy, which create the framework for eco-innovation of the Republic of Moldova are: environmental management in enterprises and organic certification; the regulation of the impact and pollution prevention (the implementation of environmental audit in enterprises, the certification of environmental auditors; introduction of ensuring ecological and integrated environmental permits; ensuring biological security; efficiency of energy resources through the implementation of energy conservation technology; use of non-traditional sources of energy).
- **National Environmental Strategy of 2013-2023** - The vision of the strategy is to conduct the harmonization of national environmental legislation with the acquis communautaire and institutional reform, in order to develop an institutional mechanism capable of implementing the new environmental regulations. This system will ensure environmental sustainability and improve the quality of environmental factors. Among the objectives of this strategy are: to integrate the environment protection, sustainable development and green economic development principles in all sectors of the economy; to increase the level of awareness of pupils, students and em-

ployees regarding environment protection by at least 50% until 2023 and to facilitate the access to environment information; to reduce the negative impact of economic activity on environment and to improve the measures of preventing environmental pollution; to create the system of integrated monitoring and environment quality control - to ensure the rational utilization, protection and conservation of natural resources; to create an integrated air quality management system, to reduce the emission of air pollutants by 30% by 2023 and of GHG by at least 20% by 2020, compared to the current situation; to create the integrated waste management and chemical substances management system for reducing the deposited waste by 30 % and to increase the recycling rate by by 20 % by 2023.

- **The National Programme of Environmental Safety for 2007-2015** creates the framework for regional and international cooperation and aims to ensure environmental security by reducing environmental risks, to prevent negative impacts on the environment and human health, including cross-border context and to improve the legislative and institutional system.
- **The Republic of Moldova's National Programme for Energy Efficiency (NEEP) 2011-2020** sets the priority policies and actions which shall be implemented from 2011-2020 in order to meet the challenges emerged as a result of the increase of energy prices, the dependency on imported energy resources and the impact of the energy sector on climate change. The objectives of this programme are: to increase the efficient use of overall primary energy by 20% by 2020, a goal adopted in accordance with the "Europe 2020" aim of increasing the share of renewable energy in the final energy consumption up to 20% and moving toward a 20% increase in energy efficiency; to cut the greenhouse gas emissions by at least 25% by 2020 relative to the 1990 baseline - objective compatible, and even more ambitious than the "Europe 2020" headline of reducing greenhouse gas emissions by 20% compared to 1990 levels by 2020.
- **The Government Action Plan for 2012-2015** - traces general objectives for the infrastructure and transport sector, including the energy sector by ensuring energy safety and promoting energy efficiency in all the national economy sectors; enhancing energy efficiency by 1.8% to 2% annually, on average; developing the constructions sector and promoting up-to-date technologies in this area.
- **The National Energy Efficiency Action Plan (NEEAP) for 2013-2015** - proposes to ensure energy safety and to promote energy efficiency in the entire national economy, enhancing on average energy efficiency by 1.8% to 2% annually, developing the sector of constructions and promoting up-to-date technologies. From 2013-2015 it is suggested that a series of actions are organized aimed at providing advice and information for energy efficiency in order to facilitate the collaboration and communication among the main actors, target-groups and strategic partners; in order to disseminate information and data on the market and the development of the capacities involved in the implementation of relevant measures.

I.2.2 Relevant legislation

Legal framework measures that support the implementation of eco-innovation

Law no. 1515 from 16.06.1993 concerning the protection of the environment – establishes the general framework for environment protection, with specific long term mentions for each domain (art. 2) and enounces the principles of environmental protection (art. 3). The article 3 refers directly to the use of eco-technology, focusing on the stimulation of the implementation of the „energy-saving technologies" (merely eco-technologies) would be stimulated through preferential credits and through other methods. Article 23 refers to eco-innovation by including in the area of expertize the verification of programmes and projects. Article 32 creates the legal obligation of economic actors to use new production technologies to minimize waste by using raw materials as efficiently as possible and introduce recoverable, reusable, recyclable or easily degradable packages onto the market. Eco-innovation is mentioned in art 68., whereby the Government recommends the implementation of top technologies for the rational use of water and limiting the use of raw materials, for the limited use of components with negative effects on the environment and human health in the production processes and their substitution with alternative inert materials, for the obtaining of recyclable final products, energy and recyclable components from industrial and domestic waste.

Law no. 1525 from 19.02.1998 concerning energy - Among the regulations of this law, article 4 mentions the powers of the central authority on energy management, fact which is relevant for the legal framework regarding eco-innovation, because it offers freedom to the public authorities' opportunities for implementing eco-technologies.

Article 6 ensures the fact that the principles of activity and the development of energy targets are performed only on the basis of studies, programmes, schemes and projects.

Law no. 160 from 12.07.2007 concerning renewable energy - The object of the Law, as resulted from the art.1. is the legal operational framework of the renewable energy sector, the economic and social relations that are constituted in the exploitation of renewable energy sources and the ways of organizing the production and commercialization of fuel and energy sources. Regarding eco-innovation measures,art. 22. mentions the means and devices of technical renewable energy which should ensure the respect of standards and other regulations; the compliance requirements for production and rules for storage, transportation and use of energy and renewable fuels; supervising the operation and functioning state means and technical devices; ensuring compliance of technical and economic indices of the means and technical devices with the requirements of national and international legal acts. Eco-innovation subject is convergent with the article 27 on ecological protection and security requirements.

Law no. 142 from 02.07.2010 concerning energy efficiency - ensures the general background for the implementation of eco-innovation and new technologies, creating the legal obligation for cooperation with other countries for promoting advanced

technologies, implementing scientific achievements and for raising citizens' awareness on energy efficiency activities. The law establishes the competent authorities for dealing with issues correlated with the improvement of energy efficiency. Article 15 states the main directives for the programmes and the action plans that aim to improve energy efficiency: the use of the most energy efficient technologies and production that reduce energy intensity and the environmental impact; the application of this law and of the state energy strategy (…) for the growth in energy efficiency and efficiency of fuel consumption; to motivate investors to invest in the implementation of projects, to improve energy efficiency; to create specialized capabilities in energy efficiency; to assess the impact of energy sources on the environment.

Law from 02.2012 [12] **concerning the promotion of energy originating from renewable resources –** aims to create a legal framework for the promotion and use of energy from renewable sources. The law aims (article 6) to diversify primary energy sources; achieving a share of energy from renewable sources in final consumption 2020 Gross energy of at least 17%; achieving at least a 10% share of energy from renewable sources in the final energy consumption in transport in 2020. The law encompasses regulations for certain domains that are correlated to renewable energy in art. 20, art. 21, art. 22, art. 23, art. 24, art. 27, art. 29, art. 31 and art. 32.

Legal financial instruments that support eco-innovation

Art. 83. of **Law no. 1515 from 16.06.1993 concerning the protection of the environment creates the ecological funds**, which represent the financial incentive and support for eco-innovation. The Ecological Funds: the National Environment Fund (to the central authority for natural resources and environment) and Local Environmental Funds (to the territorial bodies of the central authority for natural resources and environment) are created in order to gather additional financial resources for the reconstruction of the environment and the ecosystem. The activities for which these funds can be used are mentioned in art.85.

Regarding financial issues, article 10 of the **Law no. 1525 from 19.02.1998 concerning energy** establishes the regulations for **investment funds** (to ensure the rhythmic functioning of energetics and its development). Article 11 gives the legal notice for creating special funds for the purposes from art. 10: the energy sector development fund; the insurance fund; the reserve fund; the fund for the social protection of workers; the energy conservation fund.

Article 15 of **Law no. 160 from 12.07.2007** encompasses measures for boosting the production and the utilization of renewable source of energy, which are premises for eco-innovation: determining priorities in the use of renewable energy; ensure the functioning of economic mechanisms and incentives provided by law, the development and implementation of green technologies or those with reduced waste and hazardous in the use of renewable energy; granting tax breaks (fiscal facilities) and lending under the law for individuals and businesses that produce or reuse technical means and devices functioning on the basis of renewable energy sources.

12 - There are articles in the Moldavian press about this law, but it is not yet included on State Register of Legal Acts of the Republic of Moldova (http://lex.justice.md/)

Art. 16 creates the **Energy Efficiency Fund**, whose main activity object is to promote the management of financial resources which promote financing activities in the field of energy efficiency and renewable energy in accordance with the strategies and programmes developed by the government.

Article 20 of **Law no. 142 from 02.07.2010** creates the **financial instruments** for the **energy economy**: the companies that are implementing projects for improving energy efficiency may qualify for loans or guarantees of investments from funds of the Energy Efficiency Fund; for implementing the major programmes and energy efficiency projects can be allocated funds from the state budget. Moreover, energy efficiency measures can be financed from third parties, as resulted from the art. 21.

Legal framework in support of eco-innovation through informing and raising public awareness

Art 3. of **Law no. 1515 from 16.06.1993 concerning the protection of the environment** focuses on the raising the population's awareness about the necessity of establishing a harmonious relation between humans and environment and for the importance of the environment protection activities. The right for a healthy environment is mentioned in article 30, strengthened through the right to education and ecological instruction.

GD (Government decision) No. 72 from 2000 approving the regulation on public involvement in development and adoption of environmental decisions implements public participation requirements under the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters.

In the direction of creating the value matrix for the implementation of eco-innovation, Art. 5 of **Law no. 160 from 12.07.2007** ensures the provision of access of legal persons and individuals to information concerning the use of renewable energy; the public education in the spirit of valuing and use of the renewable energy. As a horizontal dimension of the legal framework, art 6 creates the stimulants for international scientific and technical cooperation, implementation of international scientific and technical performance of renewable energy and informing on the capitalization of the renewable energy sources.

Special attention is given to informing and raising public awareness on the renewable energy source use, in the **Law concerning promotion of the energy originating from renewable resources (Chapter VI. of the Art. 36).**

Incentives for international cooperation in support of eco-innovation

The incentive for international cooperation in environmental protection is supported by these funds as well by the regulations of the Art. 85. g) of the **Law no. 1515 from 16.06.1993** concerning the protection of the environment. Moreover, the dimension of international cooperation in the field of renewable energy production is encompassed in art. 28 of the **Law no. 160 from 12.07.2007**, under the obligation to ensure

compliance with national and international law regulations and standards and in the **Law concerning promotion of the energy originating from renewable resources, which focuses on the international cooperation in Chapter VII, article 40.**

Coercive measures

The violation of environmental measures or actions that harm the environment are punished by Moldovan legislation ,for example: the **Contravention Code of the Republic of Moldova. No. 218 from 24.10.2008, in Chapter IX** establishes the contraventions and sanctions in environmental protection violations, while the **Penal Code of the Republic of Moldova No. 985 from 10.04.2002** lays out the penal punishment for violating environmental regulations. **Law no. 1540 from 25.02.1998** on payment for environmental pollution includes in article 1 as the aim of the law, the creation of a system of economic activity in which it becomes inconvenient to cause any environmental damage. Article 2 names the subjects and subject of the law which constitute the relations with respect to emissions (discharges) of pollutants into the environment and disposal of production. The law established the penalties for actions which harm the environment.

Research results show that in general, the Moldovan legislative framework encourages the implementation of eco-technology. Funds, grants and credits are identified by 35% of respondents beneficiaries/public institutions/companies as the main legislative incentive for implementation of eco-technology. Project and programme are considered a legal stimulant for eco-technology by 28.44% of beneficiaries/public institutions/companies, while fiscal facilities are considered stimulants by 16.44% of respondents. Of the total number of beneficiaries/public institutions/companies respondents, 8.89% believe that the legal framework does not encourage the implementation of eco-technology in the Republic of Moldova.

Nevertheless, from research conducted, it emerges that a significant part of beneficiaries/public institutions/companies do not have information about the legislative framework that regulates the eco-technology domain in the Republic of Moldova.

Other identified legal measures that encourage the implementation of eco-technology were informative campaigns (7.56% of respondents), the tax for pollution, market regulation, facilitation of cooperation of stakeholders, high quality standards, import facilitation, injection of green energy in energy network, monitoring, National Strategy 2020, Environment Protection Plan and green tariff. Thus, 4.4% of respondents consider that the legal attempts to encourage the implementation of eco-technology in the Republic of Moldova are superficial.

The stakeholders and the institutions that manage financial mechanisms have shared opinions regarding the legislative framework regulating eco-technology in the Republic of Moldova. Some respondents consider that the legislation is good and is improving in order to be in accordance with the European legislation, declaring that the new laws are in accordance with the European Directives regarding the Communitarian Acquisitions. According to them, the legislation regarding these issues improved in 2010 when the Republic of Moldova became a member of the Energetic Community.

An almost equal proportion of the respondents consider that the legislation does not include specific laws about eco-technologies and that this kind of technologies are not well promoted.

I.3. Institutions and stakeholders

The institutional framework of the Republic of Moldova which administrates environmental and energy efficiency implementation use is described mainly by ministries and their subordinated agencies.

1. The Ministry of Environment

The Ministry of Environment develops and promotes state policy in the field of environmental protection and rational use of natural resources geared toward creating beneficial conditions for life, development of the country, international cooperation, the correlation of the national legislation toEU standards and coordinates the implementation of the multilateral agreements on environment.

The competences of the Ministry of Environment are determined in the 2009 GD No. 847 approving the Regulations on organization and functioning of the Ministry of Environment, its structure and central staff numbers. The **Strategic Development Programmeof the Ministry of Environment for 2012–2014** is the main medium-term document that describes the Ministry's activities to achieve the government policy priorities reflected in the national strategic documents. The institutions subordinated to the Ministry of Environment which have attributes in eco-innovation are:

- the National Ecologic Fund;l
- the State Environmental Inspectorate;
- the Agency for Geology and Mineral Resources.

2. Ministry of Economy

The Ministry of Economy develops and promotes the state policy in the field of economy. Among its strategies, it aims to achieve energy efficiency, competiveness and sustainable development, which create the framework for the implementation of eco-innovation. The Ministry of Economy bases its activity in the eco-technology field on the *Energy Strategy of the Republic of Moldova until 2030* and on the *National Action Plan for Energy Efficiency for 2013-2015*.

The Directorate General Energy Efficiency Safety promotes state policy on energy efficiency and renewable energy domains, the electricity at the thermal gasification fields and the development and improvement of the legislative framework.

The Direction for Energy Infrastructure, which is a component of the General Direction is dealing with promoting the state policy in the domain of natural gas is monitoring this process; with the coordination of exploration and exploitation of oil and gas; the construction of gas pipelines and underground gas tanks and implementation of energy efficiency and renewable energy projects.

3. Ministry of Agriculture and Moldova's Food Industry

This Ministry coordinates several agencies which include in their goals or highlight the necessity of eco-innovation: it develops and promotes organic production; enhances food safety; organizes plant protection and plant quarantine; controls the presence of GMOs (Genetic Modified Organisms) in food of animal origin and feed, together with the Ministry of Health and Ministry of Environment; develops plant and veterinary control systems.

The Directorate of Agro-chemistry, Ecology and Plant Protection is the Ministry's structural subdivision for the promotion of the uniform state policy, which contributes to the competent solution of the problems connected with the environmentally friendly agriculture, plant protection and soil fertilization. The prerogatives that correspond to eco-technology of this directorate are: the implementation of modern technologies in agriculture for the improvement of the agricultural production efficiency; the monitoring of the efficient use of phyto-sanitary products and fertilizers; the development of state programmes and policies regarding environmental farming; and the prevention of the environment pollution.

4. Regional Development Agencies

The regional development agencies of the Republic of Moldova are the North Development Agency, the Central Development Agency and the South Development Agency.

One of the main responsibilities of RDA lies in drafting strategies for Regional Development by conducting consultations with expected beneficiaries. „Beneficiaries" may be communities, municipalities, districts, groups of districts, organizations etc. In order to develop robust financial management RDAs in accordance with Article 8 of the Law on regional development 438 of December, 28th 2006 manage in their region, the procurement, payment and accounting for all transactions. From the legal point of view, ADR is the only body responsible for coordinating expenses regional development funds provided by the Government and donor community beneficiaries. Funding of projects and programmes and the costs for the establishment and ADR operation are in accordance with estimates of expenditure coordinated by the Regional Council together with the Ministry of Regional Development and Construction and approved by the national authority for the implementation of regional development policy.

5. The Agency for Energy Efficiency

The Agency for Energy Efficiency is responsible for the implementation of the state policy in the field of creating prerequisites for improving energy efficiency; supports the structures involved in the development and implementation of programmes, plans and energy services; and other efficiency measures connected to energy consumption. The mission of the Agency includes:

- the monitoring of the development of the situation in the field of energy efficiency and of the renewable energy sources;
- the ensuring of the preparation and submission of summaries or programmes;
- the evaluation of investment projects in the field;
- the development of projects for normative acts;
- the development of an information database in its areas of activity.

For the accomplishment of its mission, the Agency for Energy Efficiency is responsible for ensuring the achievement of the objectives and to support the national programme for improving the energy efficiency, to offer the necessary assistance to the development of local plans of energy efficiency and monitoring their completion. The Agency offers technical assistance for companies on energy efficiency. For private households and end consumers the agency offers technical assistance to reduce energy costs (including financing possibilities, calculators for end consumers), approves the qualifications for energy auditors Curriculum for Energy Auditors.

6. Moldova's Academy of Sciences

The Academy of Sciences of Moldova (ASM), is the most important public institution of national interest in the sphere of science and innovation. It is a plenipotentiary coordinator of the scientific and innovation activity, being the scientific consultant of the public authorities of the Republic of Moldova and has an autonomous statute and acts on the basis of self-administration principles. The main directions of activity of the Academy of Sciences, relevant for the present study are: the elaboration and the promotion of the strategy in the sphere of science and innovation; identification of strategic directions of the sphere of science and innovation development; organization and realization of fundamental and applied scientific research; elaboration of advanced technologies and new techniques; organization of elaboration of concepts, state programmes and projects, international scientific and technical-scientific programmes and of the mechanisms of their realization, as well as of those for stimulating the implementation of scientific researches results in the national economy; the distribution of budget allocations, according to the strategic directions of the sphere of science and innovation development; training of scientific personnel of high qualification, supporting and promotion of the autochthonous scientific schools; supporting and promotion of the relations of scientific collaboration on internal and external level.

7. The Agency of Innovation and Technology Transfer

The Agency of Innovation and Technology Transfer (AITT) is a governmental agency for policy implementation in the field of innovation and technology transfer. It administers measures approved and financed by the Academy of Sciences of Moldova (ASM), to which it is subordinated. AITT acts as a research funder for applied research and innovation activities, and coordinates and supports innovation infrastructure (e.g. technology parks).

AITT also has an important role in awareness raising and promotion actions. Furthermore, the agency may provide policy advice and suggest improvements to legislation for innovation and technology transfer activities.

The Agency of Innovation and Technology Transfer serves as an intermediary between scientists, on the one hand, and public authorities, entrepreneurs on the other hand, their collaboration being implied by the challenges of the modern world and commitments undertaken by Republic of Moldova toward the international community. In order to enhance the process of adapting to the standards of the European Union, an area where innovation is the main driver of socio-economic development, AITT has the goal to enable the fast implementation of innovations and transfer of advanced technologies into the production process, bringing its contribution to the modernization of the Moldovan economy, socio-economic growth of the country and increase the quality of life in Moldova.

8. The Division for Strategic Planning, Policies and Aid Coordination

In order to provide strategic thinking and better public policy coordination, within the State Chancellery was created the **Division for Strategic Planning, Policies and Aid Coordination** was established in the State Chancellery. This direction is responsible for the coordination of all public institutions in monitoring the implementation of the National Development Strategy, sectorial strategies and development programmes, and revising all public policy documents and, together with the Ministry of Finance, coordinating them with the medium-term expenditure framework[13] .

The Division is working closely with the National Participatory Council established by the Government in 2010. This council is composed of representatives of the 30 most active civil society organizations (two are environmental NGOs) and represents a forum where civil society can monitor the implementation of policy and consult/influence the government on public policy initiatives.

I.4. Eco-technologies "In use"

I.4.1 Eco-technologies solutions "in use"

Eco-technologies are represented by all technologies from all socio-economic activities whose use is environmentally friendly. According to the existing legislation, the environmental protection consists of all the actions that protect and improve the environment and that judiciously manage resources (including air, water, flora, fauna and representative samples of natural ecosystems).

13 - Republic of Moldova, Environmental Performance Reviews, Third Review, United Nations Economic Commission for Europe, Geneva, New York 2014, http://mediu.gov.md/images/ECE_CEP_171_En.pdf

Eco technologies can be classified as follows:

a) *Pollution control technologies* - include wastewater treatment, soil decontamination, and air treatment. The role of these technologies is to reduce pollutant concentration from air, water, and soil below the legal limits set by the standards.

b) *Cleaner process technologies* - new manufacturing processes that are less polluting and/or use resources more efficiently. All economic sectors need upgrading by replacing old equipment and installations based on the principle of Best Available Techniques.

c) *Waste management* - collection, transport, storage, recovery, recycling or disposal of waste, recovery technologies for extraction of useful substances from waste, the machineries used in waste management.

d) *Non-invasive monitoring of the environmental and monitoring tools* - environmental monitoring activity is performed mainly by research institutes and consulting firms specialized in environmental issues or environmental engineering.

e) *Technologies for obtaining "green energy"* - electricity and heat from renewable resources – solar panels, biomass, LED bulbs, hydroelectric, wind, photovoltaic systems, geothermal energy, pellets.

f) *Noise and vibration control* - Noise pollution is an increasingly common phenomenon, but there is interest in reducing its intensity. Activity in the area is limited to monitoring noise and vibration and noise making maps.

g) *Ecological building materials and technologies*: ecological systems for construction, insulation, passive house, green building. Green building refers to a structure and use process that is environmentally responsible and resource-efficient through a building's life cycle: from planning to design, construction, operation, maintenance, renovation and demolition.

From the activity reports of the specialized institutions from this area can be observed that in the Republic of Moldova the greatest emphasis was placed on green energy and eco-technologies for sustainable development in agriculture. The emphasis on green energy is based on solid biomass potential and solar potential. Biomass is considered to be one of the most important renewable energy sources, having the capacity to cover approximately 22% of the total volume of energy necessary for the Republic of Moldova.

The energy potential in each district is presented in the following map[14] . Squares represent the heating systems installed in rural public institutions and triangles represent producers of pellets and briquettes.

14 - http://www.biomasa.aee.md/potentialul-energetic-din-biomasa-total-pe-rm/

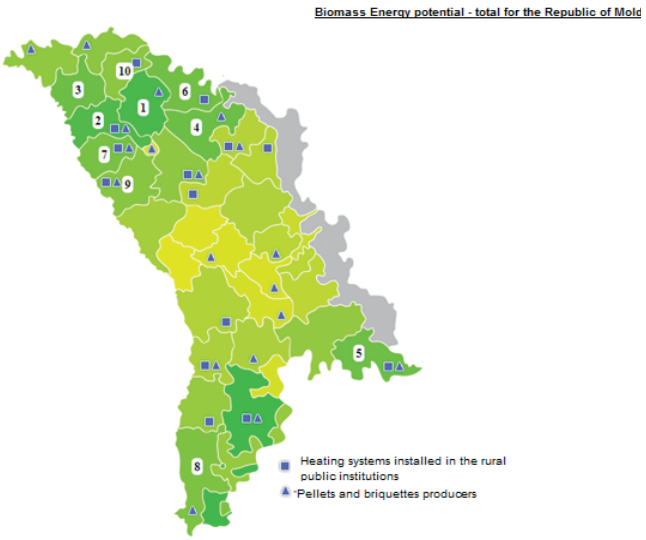

Figure 10. Total biomass energy potential of the Republic of Moldova

Another important source of energy is solar energy[15]. The Republic of Moldova is located in an area with a moderate flow of solar energy; there are about 2,200 hours of sunshine annually The Republic of Moldova has very favourable conditions for solar energy: the annual solar flux on horizontal surface is about 1m280 KW/m2/year. To these two important sources of energy it can also be added the wind energy potential with important values.

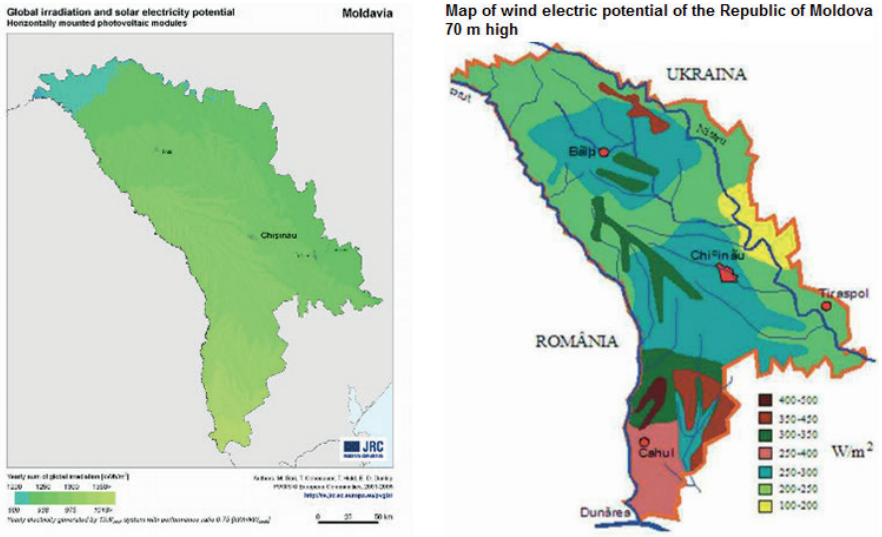

Figure 11. Irradiation and solar electricity potential/ Wind energy potential

15 - http://prutix.ro/index.php?route=information/faq&topic=4

From the total respondents in the conducted study 64.3% implemented eco-technology solutions.

Figure 12. Use of eco-technology

The main eco-technologies used by the beneficiaries/institutions/companies respondents are "green energy technologies". (68.6%) Environment monitoring instruments are used by 13.1% percent of the beneficiaries/institutions/companies. 9.5% implemented "clean" process technology, 9.5% waste management, 6.6% pollution control technologies, 2.2% ecological building materials.

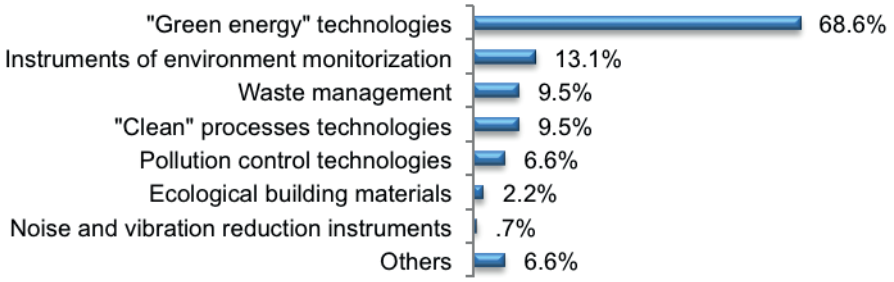

Figure 13. Eco-technologies in use

The eco-technology solution providers declare that the most required eco-technologies for purchase are: biomass boilers, solar panels, heating pumps and photovoltaic panels. The majority of the eco-technology solutions providers sustain that the demand of such products is covered. The situation when some products are not available is explained by the fact that firms cannot allow, from the financial point of view, to have large stocks of products.

The results of the research show that 86.2% of respondents/beneficiaries/public institutions/companies are very satisfied by the acquired eco-technologies. 9.2% of entities have a medium degree of satisfaction and only 1.5% of actors declared that they are dissatisfied by their investment in eco-technology.

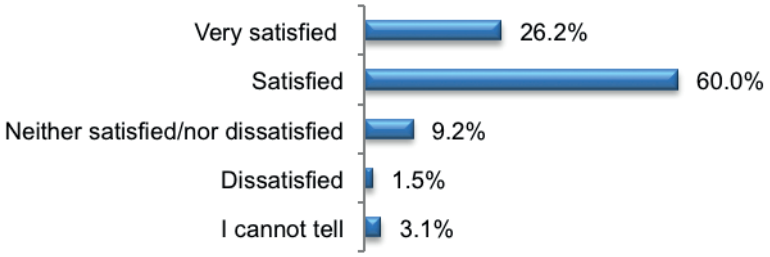

Figure 14. Degree of satisfaction of eco-technology implementation

I.4.2 Availability of the eco-technologies on the Moldovan market

The stakeholders and the representatives of institutions that manage financial mechanisms consider that most eco-technologies are available on the market, with a relatively rapid delivery. When some eco-technologies are not available on the market, they can be imported, at a higher price, though. Another aspect is the lack of information and incomes of farmers, a fact that prevents this category from implementing eco-technologies in their daily activity. Some representatives mentioned the existence of biofuel on the national market, which is available because it is easy to obtain (obtained from household, forestry, livestock), even by private households, in small quantities. However, the use of biofuel for commercial purposes is inaccessible because of the provisions in the national legislation which are governing the use of such energy source in a similar way with the use of fuel obtained from petroleum and therefore is taxed by excise and becomes unprofitable.

I.4.3 The potential and the interest for using eco-technologies

The potential and interest for use of eco-technologies can be seen in the first place by judging the market trends.

Needs on use of eco-technologies

According to the stakeholders and the actors that manage financial mechanisms, the needs for the implementation of eco-technology are related with four direction of utilization: political, reducing costs, utility and environmental protection.

From the political point of view as the Republic of Moldova realized the Development strategy of energy sector until 2020 and the action plan provisioning "to reduce CO2 emission to 20 percent and increase renewable energy use by 20 percent by 2020" an intensive promotion and use of eco-technologies are required. They also mentioned the Russian – Ukrainian war from 2009, speaking of a possible gas crisis in the winter as a result of the Association Agreement signed with the EU.

From the costs of an eco-technology point of view, the stakeholders and the actors that manage eco-technology mentioned that due to a lack of finances, more and more institutions seek solutions to save energy and heat by insulating the exterior walls and replacing doors and windows. The population can also reduce expenses by almost 50 percent, in the same way.

From the utility point of view they mentioned that the eco-technologies have better performance, better efficiency and generate lower costs for consumers (in comparison with classical technologies).

The stakeholders and the actors managing financial mechanisms think that they need to use eco-technologies in order to protect the environment and public health and to keep intact "the taste, color, smell and appearance of the Republic of Moldova".

Opinion about the market of eco-technology in Republic of Moldova

The majority of beneficiaries/public institutions/companies that participated in this research (40.89%) believe that the eco-technology market in the Republic of Moldova is increasing, 16.44% of respondents believe that the market is underdeveloped and almost 10% believe that the market is in the incipient stage. Moreover, 16.44% of respondents perceive the fact that the market is affected by the lack of environmental education and information of the participating actors, 9.78% of respondents identify a high interest for eco-technology on the market, while 7.56% of respondents believe that the prices of eco-technology solutions are too high. Other ways the eco-technology market was characterized were stagnation, the lack of a sufficient offer, the low quality of eco-technology and the lack of transparency.

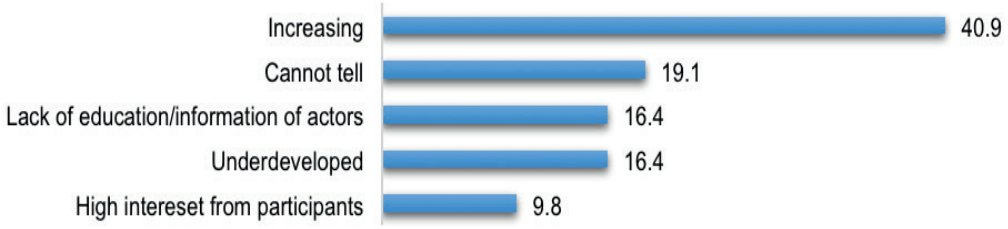

Figure 15. Opinion about the eco-technology market (%)

The market trend is presented from the stakeholders and eco - technologies solution suppliers' point of view.

Table 1. Market trends

1. STAKEHOLDERS AND INSTITUTIONS MANAGING FINANCIAL MECHANISMS
The actors and institutions that manage financial mechanisms mentioned the fact that the trend for the use of alternative energy is increasing, due to the high price of gas and of the tensioned regional political situation. This category of actors observed that in the recent years in Republic of Moldova the trend is to use the biomass energy. This growth trend is explained by the fact that Moldova has forest resources and areas of agricultural feedstock generating biomass. Besides biomass another growth is observe in the case of solar panels, photovoltaic systems and wind turbines. Also the stakeholders observed the tendency for ecological production in agriculture.
2. ECO – TECHNOLOGIES SOLUTIONS PROVIDERS
The eco-technologies providers mentioned both positive and negative trends of the market. They mentioned that the highest point of selling of boilers on pyrolysis, wood and coal was registered 2-3 years ago, while at the moment this domain registers a decrease and is identified with an increase in the commerce of fireplaces, solar panels and geothermal pumps. The market of solid fuel is perceived as being in the process of development, though it faces several barriers, among which: poor quality of pallets and briquettes, a fact that makes the consumers go back to other energy products such as coal and wood chips; the lack of sufficient knowledge and unqualified staff in biomass production conduct to the failure of a big number of companies in the firsts 3 years of activity; limited raw materials in the Republic of Moldova (particularly sawdust) leads to a high competition between existing companies.

Eco-technology users' intention to purchase other eco-technologies

The research presents that the majority of beneficiaries/public institutions/ companies that use eco-technology at the moment (78.4%) and a significant percent of entities that do not use at the moment eco-technologies (42.6%) intend to procure other eco-technologies in the future.

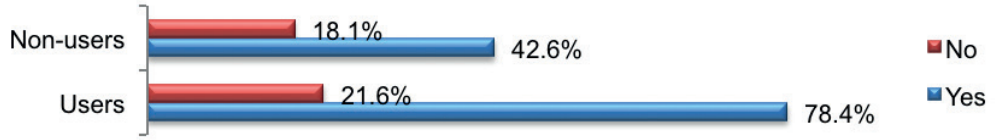

Figure16. Intention of eco-technology purchase – eco-technology users (%)

The reasons that determine the respondent entities that use at the moment eco-technology for purchasing in the future eco-technology are:

- The efficiency of eco-technology in reducing costs (38.8%);
- Environment issues awareness, the need for respecting legal regulations in the field (9.2%) and the need of harmonization with European standards;
- The fact that eco-technologies can assure energy independence (6.1%);
- Participation in the future projects;
- Improving the labour conditions;
- The facility of use;
- Development of new production lines or new business fields.

Intention to purchase eco-technology during the next year – entities that don't use eco-technology

From the total beneficiaries/public institutions/companies that do not use eco-technologies at the moment 42.6% intend to implement eco-technologies during the next year. It can be observed that an important percent, 39.4% of population is not sure regarding this decision. Therefore, there is anopportunity for stimulatingthis category in order to increase the use of eco-technology in the Republic of Moldova.

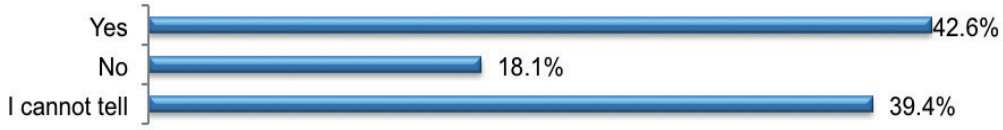

Figure 17. Intention of eco-technology purchase in the next year – eco-technology non-users

II. FINANCIAL MECHANISMS

The financial mechanisms which are facilitating the implementation of eco-innovation in the Republic of Moldova are highly important in the context of the economic, environment and energy dependence situation. This section analyses the main financial mechanisms in the Republic of Moldova, classified in national and foreign funds.

II.1 National funds

1. National Environmental Fund

In the Republic of Moldova there is a two-tier system of environmental funds, which consists of the NEF and 36 local environmental funds. The NEF is under the direct supervision of the Ministry of Environment; it is not a separate legal entity. The general mandate of the NEF is to provide grants for supporting environmental protection projects and environmental research, as well as supporting environmental NGOs. Between 2010 and 2012, the total expenditures of NEF accounted for, on average, only some 0.5 per cent of total government expenditure, corresponding to 0.2 per cent of annual GDP.

It can receive grants local government bodies, institutions, businesses and civil society organizations from the Republic of Moldova. Organizations already benefiting from a grant from the National Environmental Fund and are in the process of the project are not eligible.

The financial contribution must be at least 30% of the total project cost and may be offered both by the grant applicant, as well as other donors: district councils, businesses, municipalities, community, other funds, etc.

Areas of funding:

- Funding of projects to implement strategies, programmes and plans for environmental protection, standards and regulations for construction and participation by through shared-parts in the construction of the environmental protection objectives;
- Scientific environmental investigations commissioned by the Ministry of Ecology and Natural Resources; participation by shared-parts in the research and development work, drafting of protected areas and natural heritage of the built national and international importance;
- Organization and management of information and advertising eco-system, environment knowledge propagation;
- Awarding experts, regardless of their department (up to one percent of the income fund), bearing the costs for creating material and technical base and keeping statistical environmental funds;

- Organization of international cooperation in environmental protection, including through training for foreign specialists to assist advisory expertise, country representatives in international environmental conventions work to which Moldova is part, payment of member organizations environmental interstate, organization implementation and performance of CITES (CITES - Endangered species of wild fauna and flora - permits developing, procuring special stamp CITES etc.);
- Liquidation of consequences of natural disasters, accidents production situations can bring other environmental damage;
- Provide financial support to non-governmental environmental organizations under a special programme of grants for projects aimed at environmental protection.

2. The National Fund for Regional Development (NFRD)

The National Fund for Regional Development (NFRD) was established in 2010 and became operational in 2011. It is the major domestic source for the financing of regional development priority projects. The Fund is administered by the Ministry of Regional Development and Constructions. As from 2013, the Fund also engages in energy efficiency projects. There are currently three regional development agencies (Centre, North and South) that are responsible for the implementation of projects and for reporting to the Ministry of Regional Development and Constructions on activities and results achieved.

Among the priority areas are:

- the rehabilitation of physical infrastructure, including water supply and sewerage networks;
- environmental protection;
- solid waste management.

The Fund provides grant finance, and projects are selected by an inter-ministerial committee. The eligible beneficiaries are local public administration, public and private entities.

The actions and areas which are funded are:

- institutional and human capacity building at regional level in order development and implementation of regional development policies and strategies;
- sustainable economic growth - support small and medium attracting investment, export promotion; development of regional infrastructure (roads, water supply system sewer, gas insurance, public services, communications, etc.);
- environmental safety: - protection and conservation of natural resources, prevention environmental pollution, the relevant non - polluting technologies and so on;
- other related fields to achieve the goals of regional development policy.

Beneficiarii și potențialii beneficiari ai sectorului industrial și non-industrial sunt de părere că activitatea Agențiilor de Dezvoltare Regională, care gestionează FNDR, este bună, însă bugetul nu este suficient în comparație cu numărul de solicitanți. Critica adresată vizează activitățile practice și procesul lent de atribuire a resurselor financiare.

The main objective of the Energy Efficiency Fund (EEF) is to attract and manage financial resources to finance and implement energy efficiency and renewable energy projects, in accordance with the strategies and programmes developed by Government, by:

- promoting investment projects in energy efficiency and renewable energy sources;
- providing technical assistance for energy efficiency and renewable energy projects development;
- providing financial assistance to the projects;
- direct financial contributions;
- acting as the agent or mediator for other sources of financing;
- providing full or partial guarantees in case of financing by banks;
- providing assistance in identifying optimal combinations for projects funding.

The Fund will provide financial support for approved projects that were submitted to the Fund by businesses in the private sector in the form of grants and will fulfil the payment obligations of the beneficiaries from participating financial institutions issuing financial guarantees.

The projects approved by the Fund shall be financed by participating financial institutions in the form of a credit or financial leasing, whereof the Fund's contribution shall make up 30% of the financed amount (capital) in proportional rates for each payment date according to the repayment schedule provided successful implementation of the investment project, as well as on the condition the beneficiary making all the due payments in strict conformity with credit/leasing rates repayment schedule; or 15% of total project costs in case of investment projects.

The Energy Efficiency Fund is perceived by the beneficiaries /potential beneficiaries of industrial and nonindustrial sector as having a good activity, thus with critics. Among the main critics that the respondents formulated is the fact that it is not focused on renewables or on eco-technology. The necessary reports for projects are perceived as being too expensive. The bureaucratic process is criticized.

II.2 Foreign Financial Support

The Republic of Moldova was integrated in the EU's Neighbourhood Policy, which aims to promote closer relationships with the new neighbouring states. The overarching objective is to tangibly improve the political, social, economic and ecological situation, with a mutual commitment to sustainable development.

1. There has been considerable foreign financial support provided to the Republic of Moldova aiming, in general, at helping promote the country's various medium-term development strategies. Among the most important donors were EU, the U.S.the EBRD and the World Bank. However, only a very small share (less than 5 percent) of these funds was allocated to environmental protection.

2. The total value of foreign assistance projects across all sectors which were launched from2009–2013 amounts to €1.6 billion, of which the water supply and sanitation sector accounts for €91.5 million (5.7%) and the "Multi-sectoral /Cross-sectional issues" for €27.7 million (1.7%).

1. Moldova Social Investment Fund

The Social Investment Fund (MSIF) was created with the support of the World Bank and donors (Germany, Sweden and the European Commission) and became operational in 1999. The central objective is to contribute to the implementation of the national development strategies by building the capacities of poor communities and their institutions to manage their own priority development needs.

The goal of the MSIF is to create better conditions for the poor in order to overcome poverty. It involves social mobilization and participation of the poor in the design and implementation of development initiatives.

Some of the financed projects have also direct or indirect environmental benefits, such as a recent demonstration project for the production of low-cost energy based on solar energy and the use of agricultural wastes from rural communities, which benefits many public facilities, such as schools and kindergartens.

MSIF actions based on three main components that describe the main direction of action: component *1 - Community development; component 2 – Development of social services, component 3 - Capacity building, communication, monitoring and evaluation.*

MSIF is working with beneficiary communities on partnership principles. The role of MSIF is to support financially 70%-85% of the sub-project proposals and to monitorand facilitatecommunity groups wishing to implement sub-projects. The community is responsible for the preparation of subproject proposals, collecting of at least 15 percent of the investment form the project proposal, managing the selection competitions of the contractor and local inspector, overseeing the implementation of community subprojects and sign payment documents, ensuring sustainability of renovated social infrastructure.

The Social Investment Fund Moldova is identified by the interviewed beneficiaries or potential beneficiaries of industrial and nonindustrial sector as having a good activity and very efficient financing mechanisms with permanent assistance for implementation of projects.Criticism of this fund are that it does not provide permanent funding, because it works on the principle of call for projects and that it focuses only tangential on eco-technologies when it aims to achieve energy efficiency. Thus, a part of the respondents have not heard about this fund.

2. Trust Funds

The multilateral approach in the form of multi-donor trust funds for the country allows the priorities of the national government to be taken into account, together with the development partners' priorities. Multi-donor trust interventions, including project-based ones, directly contribute to the implementation of existing national programme and strategies. Two multi-donor trust funds assist the Moldovan authorities in achieving its strategic goals:

(i) the multi-donor trust fund managed by the World Bank for the implementation of the Central Public Administration Reform;

(i) the Neighbourhood Investment Facility (NIF), which is blending grants from the EU budget with loans from multilateral European development banks like EIB (European Investment Bank), EBRD and CEB (Central European Bank), as well as the contributions from the partner countries. It supports infrastructure projects in the transport, energy, social and environment sectors, as well as private sector initiatives (in particular SMEs) in the EU Neighbourhood region[16]

The strong emphasis on partnerships with other donors has proven effective in leveraging substantial co-financing. Noteworthy example is the Rural Investment and Services Project and the Moldova Social Investment Fund, which attracted the support of other donors, with additional financing of US $24 million and US $36.4 million, respectively.

Development partners (DFID, Governments of the Netherlands and Sweden) have looked to the World Bank to administer the Multi-Donor Trust Fund for Central Public Administration Reform and the support to the Supreme Audit Institution. These partners have also provided US$5.5 million to the recently closed Public Financial Management Project (US$8.5 million IDA credit)[17]

16 - http://www.ncu.moldova.md/public/files/AE_REPORT_2012_eng.pdf
17 - http://www.worldbank.org/content/dam/Worldbank/document/Moldova-Snapshot.pdf

3. Global Environment Facility

The Global Environment Facility (GEF) was established in October 1991 as a $1 billion pilot programme in the World Bank to assist in the protection of the global environment and to promote environmental sustainable development. The United Nations Development programmeme, the United Nations Environment Programme, and the World Bank were the three initial partners implementing GEF projects. The Global Environment Facility is a partnership for international cooperation where 183 countries work together with international institutions, civil society organizations and the private sector, to address global environmental issues.

The GEF would provide new and additional grants and concessional funding to cover the „incremental" or additional costs associated with transforming a project with national benefits into one with global environmental benefits.

The GEF work focuses on the following main areas: biodiversity, climate change (Mitigation and Adaptation), chemicals, international waters, land degradation, sustainable forest management, Ozone Layer Depletion. The GEF also works on several cross-cutting issue and programme Results & Learning; Earth Fund and Public Private Partnership; Capacity Development; Small Grants Programme Country Support Programme etc.

Since the Republic of Moldova joined and applied for grants, it received GEF grants totaling US$ 28,751,770, leveraging U.S. $57,087,108 in co-financing resources for 18 national projects (projects in biodiversity, in climate change, for international waters, in land degradation, in persistent organic pollutants and two in multi-focal areas)[18].

The GEF is also providing financing for the project implemented by the United Nations Development Programme (UNDP) on strengthening capacities to undertake environmental fiscal reform to meet national and global environmental priorities in amount of US$ 475,000 with co-financing of US$ 610,000 by UNDP and other partners.

4. German International Investment Support

German International Investment Support (GIZ) has been assisting the Republic of Moldova with the difficult process of socio-economic transition since 1994. It is conducting these activities on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) and other federal ministries. The Republic of Moldova is not a regular partner country in German international cooperation. GIZ projects there are generally financed out of supra-regional BMZ funds, by other federal ministries or by international organizations. German international cooperation with the Republic Moldova focuses on promoting modernization in the agricultural sector and the food processing industries, as well as on improving vocational training and municipal services.

18 - http://www.thegef.org/gef/sites/thegef.org/files/publication/Moldova.pdf

The majority of the interviewed beneficiaries and potential beneficiaries of industrial and nonindustrial sector believe that the general activity of GIZ is good. The drawbacks in implementing projects funded by GIZ is the fact that it offer funds only through the public authorities and does not offer direct support to beneficiaries (SMEs). However, a large number of respondents do not have much knowledge about the activity of GIZ.

5. Swedish International Development Cooperation Agency

SIDA cooperation with Moldova has a strong emphasis on EU adjustment and amounts to approximately SEK 115 million (approximately 31 million EUR) per year. Efforts are being made in the areas of democracy and human rights, energy and market development. Transnistria, the breakaway eastern region, is included in all activities financed by Sweden, to the extent that it is possible.

Sweden has successfully contributed to the establishment of an Energy Efficiency Agency and to the development of a long-term strategy (2013 – 2030) to assist Moldova in improving national energy security. Efforts are on-going to increase investments in energy saving technology and to implement the measures identified in the energy strategy.

Since late 2008, SIDA finances EBRD Business Advisory Services Programme in Moldova (BAS Moldova) in the Republic of Moldova. The main objective is that small and medium size enterprises with the help of subsidized consultant services will decrease their energy consumption through energy efficiency. The main goal is that the republic Moldova will be more self-sufficient in the energy sector as well as increased competitiveness among Moldovan enterprises.

The majority of beneficiaries and potential beneficiaries of industrial and nonindustrial sector in our study have no information of the activity of SIDA in Moldova. However, those that know the activity of this institution believe that it is a trustfully donor for financing and implementing eco-technologies.

6. UN Resident Coordinator System

The UN Country Team includes UNDP, UNICEF, UNHCR (United Nations High Commissioner for Refugees), UNFPA (United Nations Population Fund), WHO (World Health Organization), ILO (International Labour Organization), WB (World Bank), UNIFEM (United Nations Development Fund for Women), FAO (Food and Agriculture Organization), IFAD (International Fund for Agricultural Development), IMF (International Monetary Fund), UNAIDS (Joint United Nations Programme on HIV/AIDS), IOM (International Organization for Migration); the International Fund for Agricultural Development (IFAD), the United Nations Centre for Human Settlements (UNCHS), The United National Drug Control Programme (UNDCP), the United Nations Environmental Programme (UNEP), the United Nations Industrial Development Organization (UNIDO), the United Nations

for Project Services (UNOPS) and the World Food Programme (WFP) are represented by the UNDP Resident Representative, who also holds the position of the Resident Coordinator of the UN System's Operational Activities for Development in the Republic of Moldova. In the Republic of Moldova, as well as in other countries, the UN Agencies, Programme and Funds that have formal resident representation are named Resident. Those which support the country through programmes and activities, but do not have resident representation are named Non-Resident.

The main strategies for inter-agency cooperation include the UN system-wide advocacy, information sharing and joint project implementation work, joint and coordinated programming and maintenance of common services. The United Nations Development Assistance Framework (UNDAF) is the operational framework, guiding the work of all agencies toward a common vision of human progress in the Republic of Moldova, with an emphasis on reduced socio-economic disparities and exclusions, protection for the most vulnerable, and securing greater market, political and cultural ties with the European Union.

The UNDAF aims to make UN assistance more effective, with increased national leadership, alignment with key national priorities and harmonization among UN Agencies and accountability - to further evidence-based policy making, strengthen government capacities and ultimately to improve the lives of the people of the Republic of Moldova.

6.1 UN in the Republic of Moldova joint Programmeand projects

Within the framework of the UNDAF (The United National Drug Control Programme) progress was made toward joint project design and implementation and inter-agency work. Good practices of joined UN Agencies projects and Programmes were UN Drought Response project design (2007) and the implementation, monitoring and evaluation, design of the Joint Rural Development project;

The joint UN response to the drought brought together best practices from the theory and practice of humanitarian assistance. The independent evaluation concluded that the response was highly cost effective as its economic impacts were multiplied manyfold. This experience served as an example for the elaboration and implementation of the 2008 Joint Floods Response Project.

Example of projects funded and developed in collaboration with UN institutions:

- Support to Environmental Protection and Sustainable Use of Natural Resources;
- Moldova Energy and Biomass Project.

6.2 United Nations Development Programme

UNDP is an active partner to the Government of the Republic of Moldova, of other donors and other UN agencies in harmonization of development assistance. The UNDP aims to attract more external assistance to help the Republic of Moldova to deal with these economic, social and environmental issues. The UNDP houses the Resident Co-ordinator system for mainstreaming the UN country team. As a partner organization to UN agencies working in the country, UNDP participates in the implementation of joint UN Programme and joint UN Thematic Groups discussions and decisions.

At a corporate level, the UNDP's goal is to strengthen the national capacities to manage the environment in a sustainable manner while ensuring adequate protection of the poor. Specific focus is given on building local capacity to better manage the environment and deliver services, especially water and energy. Over the past 15 years, UNDP assistance in environment and energy has evolved from supporting technology demonstration projects to promoting market development for environment-friendly technologies[19]. In the framework of its environment and energy Programme, UNDP Moldova is supporting the country's transition to low carbon and climate resilient economies and ecosystems which involves the promotion of energy efficiency and renewable energy sources, both at the level of policies and the level of concrete interventions on the ground.

6.3 United Nations Environment Programme

UNEP collaborates with the Government of Moldova on various themes ranging from environment and security assessment and monitoring to support planning and pilot projects for cities' climate change mitigation actions. As regards the country's transition to a green economy, the UNEP has worked with stakeholders through national consultations to assess the opportunities and challenges in organic agriculture, which is considered to be one of the significant sectors in the country's economy.

7. The European Bank of Reconstruction and Development

Through Sustainable Energy Financing Facilities (SEFFs), the EBRD extends credit lines to local financial institutions that seek to develop sustainable energy financing as a permanent field of business. Finance for sustainable energy projects is provided for two key areas: energy efficiency and small-scale renewable energy.

Local financial institutions on-lend the funds to their clients including small and medium-sized businesses, corporate and residential borrowers. For Moldova, the Programmes supported are:

- Moldovan Sustainable Energy Financing Facility (MoSEFF);
- Moldovan Residential Energy Efficiency Financing Facility (MoREEFF).

19 - http://www.undp.md/projects/Biomass/Project%20Document.pdf

7.1 Moldovan Sustainable Energy Financing Facility

În septembrie 2009 a fost lansată prima Facilitate de finanțare a energiei durabile în Moldova (MOSEFF) pentru a susține investițiile vizând eficiența energetică în întreprinderile din Republica Moldova. O linie de credit de 42 milioane Euro, combinată cu o componentă de grant de 5-20%, a fost oferită pentru acordarea împrumuturilor pentru companiile moldovenești prin intermediul băncilor partenere ale BERD.

Împrumuturile MOSEFF sunt oferite de băncile-partenere locale companiilor moldovenești care solicită finanțare. Împrumuturile MOSEFF încep de la 10 mii până la o maximă de 2 milioane Euro. Finanțarea este condiționată de investiții pentru stimularea economisirii energiei durabile și producerea energiei regenerabile. O echipă de experți tehnici și financiari acordă asistență solicitanților în ceea ce privește evaluarea și optimizarea proiectelor lor. Băncile partenere moldovenești sunt responsabile de diligență financiară și decizia finală cu privire la debursarea împrumutului. Pentru ca investițiile vizând eficiența energetică (EE) și energia regenerabilă (ER) să fie și mai atractive, MOSEFF oferă granturi pentru proiecte eligibile. În funcție de economiile energetice și reducerea emisiilor de CO_2 a unui proiect, grantul ar putea reprezenta între 5% și 20% din suma împrumutului. Un obiectiv al facilității ține de stimularea aplicării tehnologiilor avansate în Moldova[20].

Majoritatea beneficiarilor și potențialilor beneficiari ai sectorului industrial și non-industrial nu cunosc activitatea MOSEFF. Totuși, cei care au auzit despre această facilitate sunt de părere că MOSEFF are parte de o activitate bună.

7.2 Moldovan Residential Energy Efficiency Financing Facility[21]

To help Moldovan households reduce their energy bills and consumption, the European Bank for Reconstruction and Development have developed the Residential Energy Efficiency Financing Facility (MoREEFF) to provide credit lines to reputable Moldovan banks to make loans to householders, Condominiums/Associations of Apartment Owners, Housing Management Companies, Energy Service Companies or any other eligible service companies providing maintenance, operation, construction and refurbishment services for the purpose of implementation of eligible energy efficiency projects.

To help stimulate the uptake of residential energy efficiency projects, the MoREEFF credit lines are complemented by grant funding from the European Union Neighbourhood Investment Facility (EU NIF) and the Swedish International Development Cooperation Agency (SIDA).

20 - http://www.moseff.org/fileadmin/files/doc/MoSEFF_presentation/Engl/MoSEFF-presentation-short-engl-2014-04-03.pdf
21 - http://moreeff.info/en/about-us/

8. Eastern Partnership Technical Assistance Trust Fund

Eastern Partnership Technical Assistance Trust Fund EPTATF aims to enhance the quality and development impact of the European Investment Bank's (EIB) Eastern Partnership operations. It is a multi-donor, multi-sector trust fund established by the EIB in December 2010 in response to the need for specific technical assistance support to its lending activities in the Eastern Partnership Countries.

EPTATF fills critical gaps for investment projects through a variety of instruments: financing pre-feasibility and feasibility studies, institutional and legal appraisals, environmental and social impact assessments, project management and borrower support throughout the project implementation process, financing upstream studies and horizontal institutional activities.

Technical assistance needs are identified through dialogue with the partner countries, the European Commission and other international financial institutions. The Bank receives requests from the Eastern Partnership Countries and then proposes technical assistance operations to EPTATF contributors for approval.

The stakeholders and the personnel form public institutions identify the EEF of Agency for Energy Efficiency, which is formed by grants and budgetary resources, as a fund aimed for projects in the field of eco-innovation. The fund of the Moldova Science Academy from national budget which sustains the projects of innovation and technological transfer is known at the level of stakeholders and the personnel from public institutions which were interviewed. The projects are financed on the 50/50 condition (50 percent from the national budget, 50 percent contribution from beneficiaries). It gives finances for diverse projects, including those for the implementation of the renewable energy sources and for eco-technologies. Other financing sources are the projects developed by the Ministry of Economy within the Moldovan Organization for SMEs Sector Development which offer grants with the condition of 50/50, with the maximum amount of 200 000MDL. The EBRD and UNDP are identified as institutions that make efforts to fund eco-innovation projects for reducing pollution and encouraging the use of renewable sources of energy. IFAD (International Fund for Agriculture Development) is considered as having a good impact in stimulating renewables and eco-innovation in agriculture. The EEF, MoREFF and MoSEFF are identified as good financing mechanisms.

Cooperation with funding mechanisms

In working with the Agency for Technology Transfer 100% of respondent beneficiaries described the relation as being efficient.

The respondents beneficiaries/public institutions/companies that implemented eco-technology through funds offered by the Energy Efficiency Fund described the collaboration as being positive: 60% of beneficiaries described the relation as being efficient, 40% of beneficiaries mentioned that the relation with this fund was good, without any problems.

The respondents that implemented eco-technology through funds offered through the United Nations Environment Programme funds described the relation with this institution as being positive: 66/7% beneficiaries describe the relation as being efficient.

The cooperation with the Moldovan Social Investment Fund was described by 57.1% of beneficiaries as efficient, by 14.3% as respecting deadline and providing all the necessary information in time.

In working with SIDA 50% of respondents described relation as efficient.

In collaborating with the Energy and Biomass project the respondent beneficiaries mentioned that was good (40%) and efficient (40%).

In accessing funds from MoSEFF 52.9% of the respondent beneficiaries mentioned that the cooperation was good and fast, respecting all the deadlines, and 35.3% identified the cooperation as efficient.

Funds for Research and Development

1. EU funding

The participation in the EU's Framework Programme for RTD (Research and Technological Development) (FP7 and Horizon 2020) and integration in the European Research Area are considered a strategic priority for the Republic of Moldova, through the stimulation of the main research and development fields, which could conduct to the increase of the eco-innovation system. Moldovan organizations can participate in the European Programme COST (European Cooperation in Science and Technology) having so-called "third country" status. Some research related funding from the EU is provided to Moldova via the Structural Funds. Moldova participates in the EU regional support Programme South-East Europe.

2. International (non – EU) funding

International (non-EU) Programmes relevant for R&D funding in Moldova are the NATO (Nord Atlantic Treaty Organization) Science for Peace and Security Programme and the Science & Technology Centre in Ukraine (STCU).

Bilateral funding sources for R&D funding for Moldova are available, for example: the Soros Foundation-Moldova, the Moldovan Research and Development Association (MRDA), the Swiss National Science Foundation (SNF) which runs the funding Programme Scientific co-operation between Eastern Europe and Switzerland (SCOPES), cooperation with Romania, Germany, Italy, France, Estonia etc.

As it can be observed in Figure 18, the external assistance contracted in the Republic of Moldova concentrates on several main dimensions, as energy generation and supply, business and other services, transport and storages, which encompass compulsorily eco-innovation measures, as the implemented projects must respect international standards.

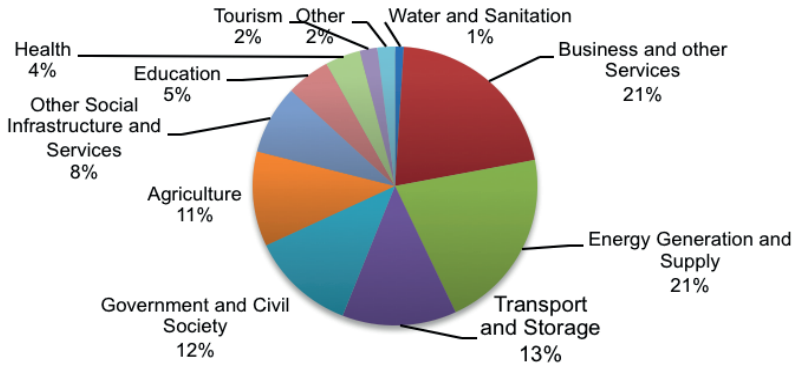

Figure 18. The distribution of contracted assistance by sectors in 2012, % of the total[22]

As it can be observed in Figure 19, in the environmental protection field, most of the issues, 63.2% are covered by external assistance, which means that Moldova has strong incentives in implementing projects in this area. Thus, the government should compensate the rest of 36,8% not covered by the strategic priorities through national plans and Programmesthat support eco-innovation trough green public procurement, energy efficiency and environmental friendly attitude as a horizontal dimension in all the national and international projects.

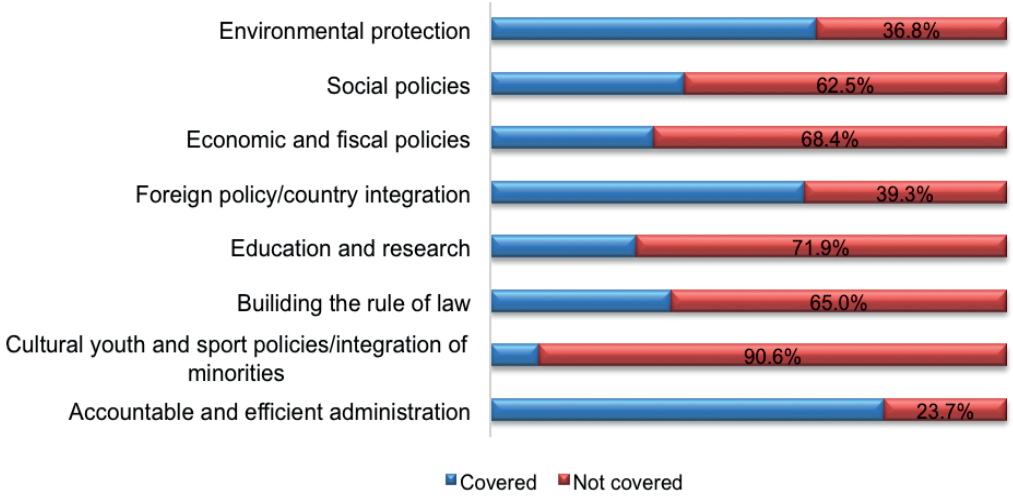

Figure 19. Strategic priorities for external assistance in 2012 based on the 2011-2014 Government Activity Programme (GAP)[23]

22 - State Chancellery of the Republic of Moldova, Development Cooperation, 2012 Annual Report, July 2013 http://www.ncu.moldova.md/public/files/AE_REPORT_2012_eng.pdf
23 - Cancelaria de Stat a Republicii Moldova, Cooperarea pentru Dezvoltare, 2012 Raport anual, iulie 2013, http://www.ncu.moldova.md/public/files/AE_REPORT_2012_eng.pdf

The beneficiaries and the potential beneficiaries interviewed identified as principal source of funding for acquisition both private and public funds. For example, the bio-mass heating system from Ialoveni was installed form the City Hall budget and the Council District Ialoveni, which was implemented within the project „Energy and biomass in Moldova", with the sustainability ensured by the community involvement in the realization of this investment.

The named implemented projects were financed by UNDP, ISAR (Initiative for Social Action and Renewal in Eurasia), DDC.

The vast majority of the beneficiaries and the potential beneficiaries of industrial and nonindustrial sector have not formulated any opinion about the aspect of existing financial mechanisms in Moldova, fact that can be interpreted in the lack of interest or information about these mechanisms. Thus, the respondents underlined that although the efforts for promoting eco-technologies in the Republic of Moldova are considerable, the financial mechanisms are necessary to be more promoted and accessible for SMEs.

The respondents from the eco-technology solutions providers identified among the financing sources of financing of their clients: private funds and EEA subventions, MoREFF and MoSEFF credits (the last two are accused of weak results and as being unprofitable for the beneficiary), bank credits with 20% grant.

II.3 Funds used for the purchase of eco-technologies

The majority of beneficiaries/public institutions/companies (67.4%) used public funds, grants or state subventions for implementing eco-technologies, while 32.6% used own funds for the acquisition of eco-technologies.

Figure 20. Funds used for the purchase of eco-technologies

Regarding the sources of funding used for the purchase of eco-technologies it can observed that most used were the United Nations Environment Programme– 19,8%; MoSEFF -18.7%; Moldova Energy and Biomass Project – 16.5%; the Social Investment Fund – 15.4%; followed by the Energy Efficiency Fund – 5.5%; the Agency for Technological Transfer – 2.2%; the United Nations Organization for Industrial Development – 2.2%; SIDA - 2.2% and other sources – 31.5%.

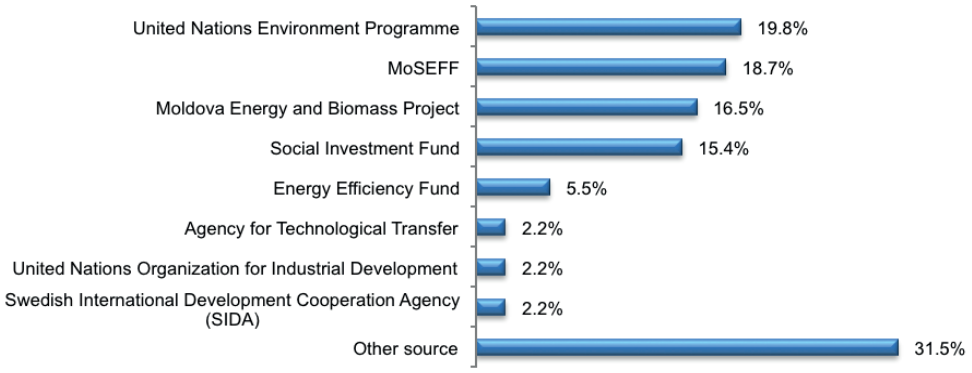

Figure 21. Sources of funding

The reasons that determined the beneficiaries to use the selected financial mechanism for the implementation of eco-technology were:

- recommendation from an institution (ex: PNUD);
- efficient and trustfully collaboration;
- the fund was the most focused on environment from all the available funds;
- meeting the criteria of eligibility;
- the financial mechanism conducted the main effort for implementation of project and provided advisory support for documents;
- it was the only financial mechanism available;
- the lack of information about other financing opportunities.

Other considered financial sources for projects

From the total of respondents, a proportion of 38.1% of eco-technology financial mechanisms beneficiaries considered as well other potential source of funding before choosing the financing mechanism. Other sources taken into consideration for funding by the eco-technology users are presented in the next table:

Table 2. Other sources taken into consideration for funding eco-technology

Financing source	%
Local Public Authorities	31.3
Citizens contribution	12.5
Local Public Authorities and citizens contribution	9.4
Local Public Authorities Ministries	6.2
Others (Local Public Authorities and the Government, European Development and Reconstruction Bank, loans, Environment Fund, Environment Ministry, Health Ministry, partners from Austria)	

Proportion of grants

A large part of beneficiaries/public institutions/companies (40.4%) benefited by a proportion of 51-80% of funding from national/external funds or grants for the implementation of eco-technology.

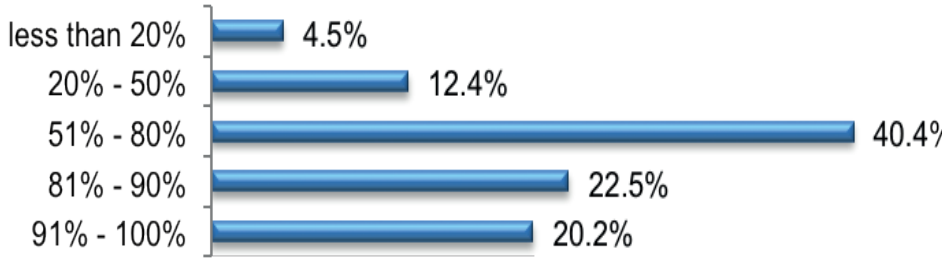

Figure 22. Proportion of grants

III. GREEN PUBLIC PROCUREMENT

Green Public Procurement (GPP) is defined in the European Commission's Communication Public procurement for a better environment as "a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured.[24]"

GPP can be a major driver for innovation, providing industry with real incentives for developing green products and services – particularly in sectors where public purchasers represent a large share of the market. GPP can also provide financial savings for public authorities – especially if you consider the full life-cycle costs of a contract and not just the purchase price. GPP requires effective co-operation between different departments and staff members within an organization.

To be most effective, such a policy should: include clear targets, priorities and timeframes; indicate the scope of the purchasing activities covered; indicate overall responsibilities for implementing the policy, include a mechanism for appropriately monitoring performance.

The GPP policy should be aligned with every existing policies and strategies and should be developed in consultation with the key stakeholders such as internal users, suppliers and management.

To successfully implement GPS, the personnel must have appropriate practical skills, knowledge and access to information. The staff should know:

- how to integrate environmental consideration into tender procedure;
- where to find assistance in developing environmental criteria;
- how to assess and verify environmental claims made by tenderers;
- how to evaluate life-cycle costs in tendering.

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24 - Buying green! A handbook on green public procurement.", 2nd Edition, European Commission
25 - http://ec.europa.eu/environment/gpp/benefits_en.htm

The EU has developed GPP criteria for a number of products and service groups, which are regularly reviewed and updated. The current products and service groups covered are: copying and graphic paper; cleaning products and services; office IT equipment; construction; transport; furniture; electricity; food and catering services; textiles; gardening products and services; windows, glazed doors and skylights; thermal insulation; hard floor-covering; wall panels; combined heat and power; road construction and traffic signs; street lightening and traffic signals; mobile phones.

The EU GPP criteria include two levels for each sector covered:

- *The core criteria* – are those suitable for use by any contracting authority and address the key environmental impacts. They are designed to be used within minimum additional verification effort or cost increases.
- *The comprehensive criteria* – are for those who wish to purchase the best environmental products available on the market. These may require an additional verification effort or a slight increase in cost compared to other products with the same functionality.

The benefits associated with GPP are not limited to environmental impact, but can include everything from social and health to economic and political benefits[25].
A classification of GPP benefits is presented in the next table:

Table 3. GPP benefits

Environmental benefits	
GPP allows public authorities to achieve environmental targets.	
Public procurement can be instrumental in addressing environmental problems such as:	
• deforestation; • greenhouse gas emission; • water use; • energy efficiency and resource use;	• air, water and soil pollution; deșeurile • waste; • sustainable agriculture.
GPP sets an example to private consumers	
Green purchasing means setting an example for the general public and the private sector, and influencing the marketplace. Establishing a GPP policy, and communicating initiatives and their results, demonstrates that action in this area is possible and that it leads to positive outcomes. It can also encourage private sector organizations to use green criteria for their own procurement.	

GPP raises awareness of environmental issues
GPP can also act as a useful channel for raising environmental awareness by identifying the environmental impacts of a particular product/service throughout its life-cycle and providing information on the benefits of greener alternatives.
Social/health benefits
GPP improves quality of life
Policies on GPP can improve services to the public and thus enhance quality of life. Cleaner public transport, for example, improves air quality. Reduced use of toxic chemicals in cleaning products provides a healthier working environment.
GPP helps establish high environmental performance standards for products and services
GPP can help drive higher quality standards for products and services, delivering better performance for public authorities and ultimately citizens.
Economic benefits
GPP saves money and resources when life-cycle costs are considered
GPP often leads to savings over the whole life-cycle of a purchase - both for public authorities and for society in general.
GPP provides incentives to industry to innovate
Promoting green procurement gives important incentives for industry to develop ‚green' technologies and products and promote them in the market place.
GPP can reduce prices for environmental technologies
Introducing ‚green' tendering criteria can influence the marketplace and result in new entrants in the field of environmental technologies and products - potentially resulting in increased competition and reduced prices.
Political benefits
GPP is an effective way to demonstrate the public sector's commitment to environmental protection and to sustainable consumption and production

In Republic of Moldova the legislation for EEPP (Energy Efficiency Public Procurement) describes the following four measures, out of the list Annex VI ESD (Directive on energy end-use efficiency and energy services):

- requirements concerning the use of financial instruments for energy savings, including energy performance contracting, that stipulate the delivery of measurable and pre-determined energy savings (including situations when the public administrations have outsourced responsibilities);
- requirements to purchase equipment and vehicles based on lists of energy-efficient product specifications of different categories of equipment and vehicles. The lists have to be drawn up by the authorities or agencies referred to in Article 4 using, where applicable, minimized life-cycle cost analysis or comparable methods to ensure cost effectiveness;
- requirements to use energy audits and implement the resulting cost effective recommendations;
- requirements to purchase or rent energy-efficient buildings or parts thereof, or requirements to replace or retrofit purchased or rented buildings or parts thereof in order to render them more energy-efficient.

Relevant documents on EEPP are the following:

- Law No. 142 of July 2, 2010 on energy efficiency Renewable Energy;
- Law No. 160-XVI of 12 July 2007;
- Law 117 – 18th of December, 2009 for Moldova's accession to the Treaty establishing the Energy Community;
- Energy Strategy of the Republic of Moldova until 2020, approved by Government;
- Decision nr. 958 of 21 August 2007;
- National Energy Efficiency Programme for 2011-2020, approved by Decision No. 833 of 10.11.2011.

Most of these measures foreseen in NEEAP 2011-2020 for adoption of ESD Art.5 provisions, refer to the electricity sector, the natural gas sector, the heat energy sector and the construction sector. The Republic of Moldova did not develop yet a NAP for GPP.

Regarding guidelines, handbooks or other useful instructions for EEPP and/or GPP, the Republic of Moldova has a "Guide for energy electricity consumer," developed in 2009 under the technical assistance of the National Agency for Energy Regulation and by the Agency for International Development Cooperation of Sweden and a similar document, "Your Guide regarding energy efficiency," produced in the project „Increasing the energy efficiency of Chisinau and Sevastopol on existing positive experience".

26 - Transnational Energy Efficient Public Procurement Procedures Catalogue ", October 2012; http://www.adrnord-est.ro/user/file/effect/Catalog%20Transnational%20al%20Procedurilor%20APEE%20-%20Proiect%20EFFECT.pdf

This project was implemented by the Chisinau City Hall and funded by the European Commission through CIUDAD programme[26].

Table 4. Procurement practices and regulation

1. STAKEHOLDERS AND INSTITUTIONS MANAGING FINANCIAL MECHANISMS
An important part of the stakeholders and institutions managing financial mechanism claimthat they don't know or haven't heard about the public procurement practices and regulations with focus on promotion of eco-technology use. Others claim that there are no regulation regarding this type of acquisitions. In the Republic of Moldova, public acquisition is oriented toward price.
2. ECO –TECHNOLOGIES SOLUTIONS PROVIDERS
In the case of eco-technologies solutions providers we can observe two aspects: • in the first instance, some of the providers can't participate at the acquisition procedures even if they want to because of lack of experience on the market; • in the second instance, some of the providers think that public procurement is corrupt and they will only participate when they think the acquisition made by the public institution is correct. There are also providers that said that in Republic of Moldova there are no separate auctions for eco-energy products or auctions with accent on eco-technologies. From the examples given by the providers we can observe the same dissatisfaction that the price is the principal criterion of winning the bid. The negative examples given by the providers are: • "EU no longer uses inert gas lamps, but in Republic of Moldova the providers of these kind of lamps are winning the auctions because these are cheaper, " • the geothermal pumps does not appear anywhere in the procurements, the state ignores them because they seem like "science fiction" and expensive."
3. BENEFICIARIES /POTENTIAL BENEFICIARIES OF INDUSTRIAL AND NONINDUSTRIAL SECTOR
A large number of beneficiaries and potential beneficiaries participating in the study have no knowledge about the public procurement practice. Other beneficiaries/potential beneficiaries think that currently in Republic of Moldova, there is not much emphasis put on eco-technologies. They think that usually the main conditions in this respect concerns about expenses optimization and in no way about the impact on the environment. In addition, they are dissatisfied that the main criterion in public procurement is represented by price. In their opinion the legislation must be change in order to obtain qualitative products and their responsibility is only to make proper specifications and contract compliance.

IV. CHALLENGES AND BARRIERS IN THE IMPLEMENTATION OF ECO-TECHNOLOGY

IV.1 Education and research barriers

The beneficiaries/institutions/companies that participated in this study revealed the fact that the most important barriers from the category "education and research in the implementation of eco-technology" are the lack of environmental education (28.1% – significant barrier; 45.7% – somewhat a barrier) and the lack of specialized personnel of public institutions (24.2%- a significant barrier, 51.2% somewhat a barrier). Only 16.7%, respectively 14.7% of respondents did not believe that these two issues are barriers to implementing eco-technologies.

The fact that the lack of environmental education is a barrier to the implementation of eco-technologies is supported by stakeholders, too. They point out that the lack of environmental education can be identified in the customers' behaviour, who focus only on the financial benefits of eco-technologies, without being aware about the positive aspects of these eco-technologies.

The suppliers of eco-technologies solutions believe that environmental education in the Republic of Moldova does not. They point out how resources are wasted in the Republic of Moldova, because it could, in the case of biomass, cover about ¾ of heating necessary for Moldova. In addition, the eco-technologies solutions providers believe that a proper environmental education, which would be reflected in the use of eco-technologies, could assure national energy efficiency.

Two other barries identified by the beneficiaries / institutions / businesses participating in the study are the lack of qualified personnel (19.5% - a significant barrier, 19% - somewhat of a barrier) and the lack of skills in writing projects (19% - significant barrier; 42.9% - somewhat of a barrier).

In addition, the lack of research and innovation Programme is considered a significant barrier to the implementation of eco-technologies by 17.1% of the beneficiaries/institutions/businesses. 45.5% of respondents perceived lack of such Programme as somewhat of a barrier to the implementation of eco-technologies in the Republic of Moldova, while 18% of respondents do not perceive this barrier.

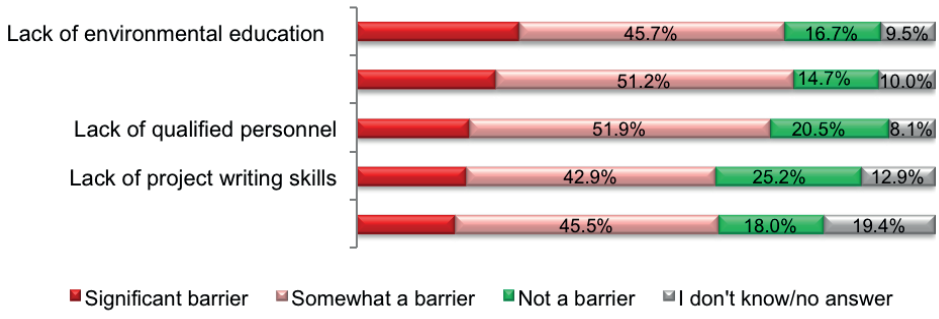


Figure 23. Education and research barriers in the implementation of eco-technology in the Republic of Moldova (%)

IV.2 Barriers in the implementation of eco-technology

Barriers connected with the availability of eco-technology

The majority of the beneficiaries/institutions/companies that participated in this research consider the availability of eco-technology a barrier in the implementation of eco-technology in the Republic of Moldova (16% – significant barrier; 42.5% somewhat a barrier). Thus, 31.1% of respondents do not perceive the availability of eco-technology as a barrier for eco-technology in the Republic of Moldova.

Figure 24. Perception on the availability of eco-technologies on Moldovan market

Regarding the barriers correlated with the perception about eco-technology, the beneficiaries/institutions/companies identified as the most important the low quality of Moldovan eco-technologies, generated by no-quality standards (14.8% – significant barrier; 41.4% - somewhat a barrier) and the distrust in the sustainability of green energy sources (9%– significant barrier; 39.3% - somewhat a barrier).

Eco-technology providers believe that the stakeholders interested in eco-technologies do not have many opportunities for comparing quality, because the market of eco-technology is very small. Thus, they declare that their clients are satisfied by the quality of eco-technology and that they perceive the products as being useful and helping them to save money.

The maintenance cost of eco-technologies is perceived by beneficiaries/public institutions/companies as an obstacle in the implementation of eco-technology in the Republic of Moldova (14.2% - major barrier; 44.5% - somewhat a barrier). Only 29.4% of respondents do not consider the cost issue a criterion for the implementation of eco-technology in the Republic of Moldova.

Regarding the price of eco-technology, the eco-technology providers observed that the clients are searching for good quality products, but not too expensive, a fact that underlines the poor purchasing power in the Republic of Moldova.

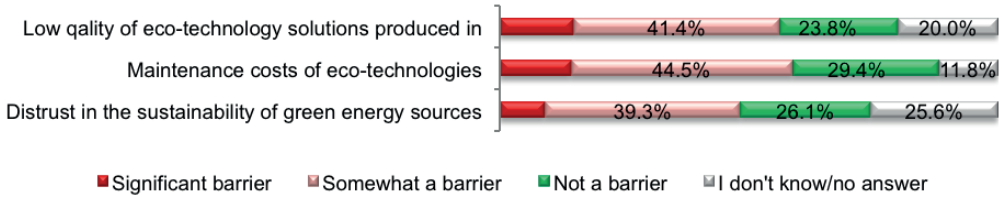


Figure 25. Barriers of the use of eco-technologies in the Republic of Moldova

From this research it can be observed that the type of eco-technology implemented depends on the specific activity (public institutions tend to implement green sources of energy, while private entities' investment varies on the type of needs to be covered). Private entities perceive more barriers than public institutions in implementing eco-technology solutions. Furthermore, private entities are more satisfied by the purchased eco-technology products, a fact that could be explained by the capacity to monitor easier their costs

Reasons for not implementing eco-technology

The results of research on the reasons of beneficiaries/public institutions/companies are not currently using eco-technologies identify the lack of funds (52.6% of respondents) as the main impediment. The lack of information on eco-technology use or on the manner to access funds for eco-innovation was identified as a constraint by 31.6% of respondents who do not currently use eco-technologies. Some 15.8% respondents consider that it is not necessary to use or implement eco-technology.

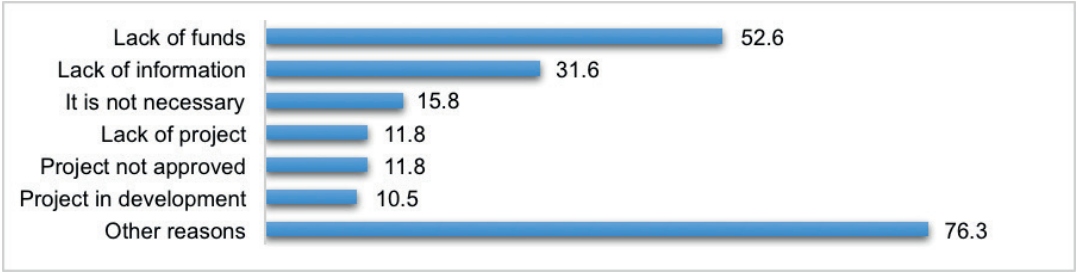


Figure 26. Reasons for not using eco-technologies (%)

Other constraints that impede the beneficiaries/public institutions/companies in implementing eco-technology solutions are: the lack of projects (11.8% of respondents), the project is not approved by the funding institution (11.8% of respondents), the project is underdevelopment or still being planned (10.5% of respondents).

The constraints on the use of eco-technology identified by stakeholders and the actors that manage financial mechanisms in the Republic of Moldova are:

- prices are too high;
- eco-technologies are not a priority for funding from state budget;
- applicants to the ADR Centre projects are not informed and do not know the possibilities they offer;
- low quality of pellets – biomass;
- poor training of the technical personal;
- a lack of mobile environmental laboratories;
- a low number of environmental inspectors;
- a lack of clear distribution of environmental institutions' responsibilities;
- bureaucracy in commercialization of eco-technologies;
- few funding mechanisms;
- ecological education of the population;
- a lack of information;
- political and geopolitical interests.

The *eco-technology providers* in the Republic of Moldova identify as a barrier in the implementation of eco-technology the low purchasing power of the population from Republic of Moldova.

IV.3 Strategic documents. Legislation. Institutional barriers

Strategic documents

Although strategies and plans had been adopted in the environmental field in Moldova, the results of research demonstrate that the beneficiaries/public institutions/ companies consider that a barrier in the implementation of eco-technology is the perception the fact that the state does not honestly encourage the use of eco-technologies (17.1% - significant barrier; 41.1% – somewhat a barrier) and the lack of a long term strategic vision regarding eco-technology (15.2% – significant barrier; 37.6% – somewhat a barrier).

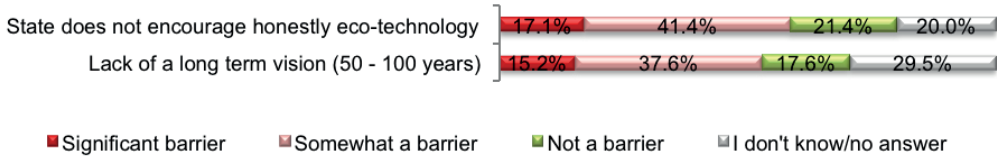


Figure 27. Opinion on the national strategy and plans (%)

Legislative framework

When asked how the legislative framework hampers the implementation of eco-technology in Moldova, a concern of the majority of beneficiaries/public institutions/companies identified overall the *legislative framework* as a barrier (34.8% - significant barrier; 39.5% - somewhat a barrier).

Regarding the legal framework, the beneficiaries/public institutions/companies mentioned the *lack of legislative*, normative and technical regulations (17.1% - significant barrier; 41.4% - somewhat a barrier) and the *poor implementation of the existing legal framework and regulation* (16.2% – significant barrier; 39% – somehow a barrier) as obstacles in the implementation of eco-technologies. Only one-fifth of the respondents does not consider that the Republic of Moldova faces a problem in the implementation of the existent legislative framework in the field of eco-technology (20.5%) or in the existence of regulations regarding eco-technologies (20%).

High *import taxation*, regulated by the legal framework is not identified as a barrier in the implementation of eco-technology in the Republic of Moldova in according with majority of respondents. Even so, 19% of beneficiaries/public institutions/companies consider it an impediment for implementation of eco-technology solutions in the Republic of Moldova.

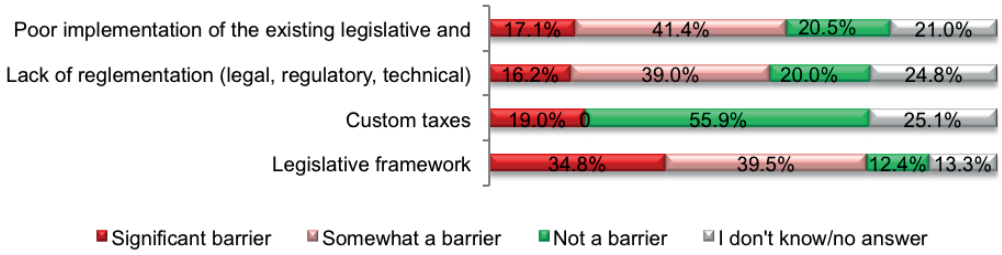


Figure 28. Legal framework barriers in implementing eco-technology

High taxes are identified by 16.44% of beneficiaries/public institutions/companies as a weakness of the legal framework for the implementation of eco-technologies. A *lack of fiscal facilities/support/incentives/assistance from the state* is referred to by 11.56% of respondents as barriers in the implementation of eco-technology, while 8.44% of them believe that there is a *lack of adequate legislation for the environment and eco-innovation.*

Other identified correlated with legal framework barriers were: bureaucracy (7.11%), *interest rates/instalment loans too high (6.22%), costs/prices too high for implementation or purchase of eco-technology, lack of fines or fees for polluting technology, the difficulty of accessing financial mechanisms, legal and economic instability of the country, lack of quality standards for technology, lack of control mechanisms, lack of green tariff, the market monopoly.*

Table 5. Gaps on the legislative framework that regulates eco-technologies

1. STAKEHOLDERS AND INSTITUTIONS MANAGING FINANCIAL MECHANISMS
- a lack of efficiency in money use; - a lack of environmental structures in city halls and county councils to manage ecological territories; - the procedure of harmonization with EU directives is very bureaucratic; - a lack of the process of projection – testing – certification; - a lack of a body to certify the quality of solid fuel in a specialized laboratory.
2. ECO – TECHNOLOGIES SOLUTIONS PROVIDERS
- Long procedures, bureaucracy and corruption; - The legal framework does not help the suppliers of eco-technologies; - When importing eco-technologies the Custom service of Republic of Moldova sets prices according to the Russian market which are higher than the European ones; - The production and quality of biofuels are not established by law and this results in an unnecessary competition between firms and confusion of consumers; - Few funding mechanisms, especially for the consumers (households); - The tariff set by ANRE for commercialization of WAT is too small – only 1.92 MDL. If the rate will be higher, will stimulate this kind of eco-technologies.

Institutional framework

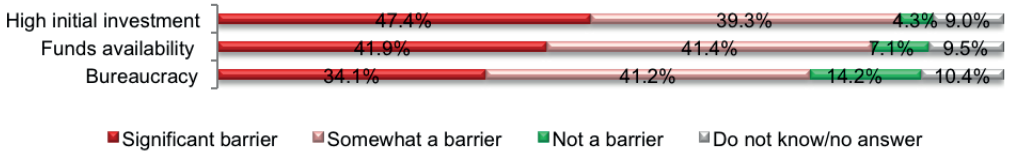
The institutional framework in the correlated field of eco-innovation is varied in the Republic of Moldova. Ministries and agencies are well organized and their strategic plans constitute roadmaps that create the opportunity for the implementation of eco-innovation. These institutions elaborated and implemented Programmes and projects for developing environmental and environmental friendly solutions. Thus, it can be observed that there is an overlappingof functions between institutions and ambiguities in dealing directly with the main sectors of activity concerning eco-innovation or environment.

IV.4 Economic and financial barriers

The high initial investment is considered by beneficiaries/public institutions/companies as a significant barrier in the implementation of eco-technology in Republic of Moldova (47.4% - significant barrier; 41.4% - somehow a barrier). Only 4.3% of the respondents do not believe this factor an obstacle for the implementation of eco-technology.

The availability of funds is considered a significant obstacle in the implementation of eco-technology in Republic of Moldova (41.9% – significant barrier; 41.4% – somehow a barrier).

Among the obstacles that impede the implementation of eco-technology in the Republic of Moldova, bureaucracy is perceived as an important barrier (34.1% – significant barrier; 41.2%– somewhat a barrier).



Figue 29. Financial mechanisms barriers to implementation of eco-technologies in Republic of Moldova

The personnel from public institutions and stakeholders' critics regarding the financial mechanisms were that these are focusing more on credits and not on grants. The drawbacks in accessing these credits are that the banks have high interest rates and the loans are with conditions a fact which is not advantageous for the investors. A lack of competent financial experts in banks who could offer realist financial predictions and advice on loans is another issue that affects the process of accessing financial mechanisms for eco-innovation. Another critic opinion pointed out that these financing mechanisms are corrupt and are based on political criteria. Moreover, people interviewed believe that there is a lack of simulative mechanisms for accessing grants, credits for implementing eco-innovation projects. An obstacle in accessing funds for eco-innovation, especially in agriculture is identified by the stakeholders and the personnel form public institutions as the lack of responsibility and interest of farmers, especially those that run small and medium-sized farms.

IV.5 Information barriers

The lack of communication between the beneficiaries of funding mechanisms and potential beneficiaries is considered a barrier by the majority of beneficiaries/public institutions/companies (11% – significant barrier; 41.1%– somewhat a barrier). Thus, 23% of the respondents do not consider this aspect as being an obstacle for eco-technology.

Regarding the lack of information that impedes the implementation of eco-technology in the Republic of Moldova, the beneficiaries/public institutions/companies consider as a barrier *the lack of information on the existence and o the methods of accessing funds (24.1% – significant barrier; 48.6% – somewhat a barrier).*

In addition, the entities that participated in the research identified as obstacles that impede the implementation of eco-technology *the lack of information on the usefulness of eco-technologies for business/households/institution (17.5% – significant barrier; 49.3% – somewhat a barrier), the lack of information on how to use eco-technologies (17% – significant barrier; 51.4% – somewhat a barrier)* and the lack of information on the environment effects of eco-technologies (21.8% – significant barrier; 45.5%– somehow a barrier).

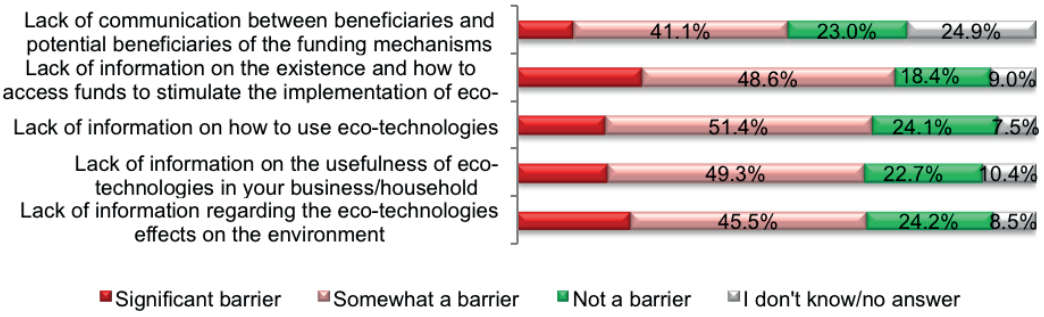


Figure 30.Information barriers to implementation of eco-technologies in Republic of Moldova

The eco-technology providers consider that in the Republic of Moldova there is a lack of information sources about eco-technologies. They consider that firstly, the population should understand the possibilities and the benefits of eco-technology.
The majority of the eco-technology non-users consider that eco-technologies are not sufficient promoted in the Republic of Moldova. This category of respondents consider that for obtaining information about eco-technology individual research is necessary and that the advertising on eco-technology does not usually include the price list and the technical solutions specific models, which should be used by potential users for their needs and particularities. In terms of the funding mechanism – if they talk of loans offers by commercial banks they consider that is enough information on the market, the main problem is represented by the higher rates and by the fact that the banks do not accept the real estate from rural areas as a guarantee. Regarding the grants and project they consider that the promotion is superficial and that bureaucracy is an impediment.

V. GOOD PRACTICE EXAMPLES

V.1 European Strategies, leader states and similar states

European strategies

The Europe 2020 Strategy aims to stimulate a smart, sustainable and inclusive growth, which is to be mutual reinforcing with the economic, social and territorial cohesion growth. The innovation and the climate change (the 20-20-20 targets) objectives are included among the five EU headlines. The prerogatives of Europe 2020 in the climate change and energy sustainability field are: the greenhouse gas emissions 20% (or even 30%, if the conditions are right) lower than 1990; 20% of energy from renewables and 20% increase in energy efficiency. Boosting research and innovation, modernizing industry and greater energy, solutions to climate change and resource efficiency are the intersection points of the Moldovan strategies (Moldova 2020, Energy Efficiency, Security strategies) with the European framework.

General Union Environment Action Programme to 2020 - The 7th Environment Action Programme (EAP) - Living well, within the limits of our planet includes the EU's objective of becoming a smart, sustainable and inclusive economy by 2020, by adopting a set of policies and actions aimed at making the EU a low-carbon and resource-efficient economy[27] .

The Programme aims to reach this objective through the implementation of the climate and energy package measures and the innovation in environmental performance of products over their life cycle and on their consumption, and the efficient use and re-use of resources, through increasing awareness on the environmental issues, fact which could be improved through increased information on scientific research, monitoring and reporting environmental developments and investments for filling up the knowledge gaps. This Programme draws the attention on secured investments, stressing that „green incentives mean green innovations", through adequate investments and innovation in products, services and public policies that can properly impact the environment and through the implementation of the true costs of environment on market signals.

The Eco-innovation Action Plan (EcoAP) summarizes in seven lines the actions needed to build stronger and stable market demand for eco-innovation, focusing on research and industry and on policy and financial instruments [28].

Table 6. EcoAP Actions

The actions included in EcoAp are designed to bring together stakeholders, the private and public sectors, and the European Commission for:
• using environmental policy and legislation as a driver to promote eco-innovation (Action 1);
• supporting demonstration projects and partnering to bring promising, smart and ambitious operational technologies to the market that have been suffering from low uptake, in accordance with the Horizon 2020 Programme(Action 2);
• developing new standards boosting eco-innovation, based on dialogue with the member states (Action 3);
• mobilizing financial instruments and support services for SMEs through an European network of eco-innovation financiers (Action 4);
• promoting international cooperation (Action 5);)
• supporting the development of emerging skills and jobs and related training Programmeto match the labour market needs with focus on green jobs (Action 6);
• promoting eco-innovation through the European Innovation Partnerships foreseen under the Innovation Union, which brings together public and private actors in key sectors where eco-innovation could contribute to create greater resource efficiency (Action 7).

27 - COM(2010)2020 and European Council conclusions of 17 June 2010 (EUCO 13/10).
28 - http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0899&from=EN

The Environmental Technologies Action Plan (ETAP), adopted in 2004, is created to make eco innovation an everyday reality throughout Europe and covers a wide range of activities promoting eco innovation and use of environmental technologies. Its goal is to improve the European competitiveness and to transform the EU in a recognized world leader in the field of environmental technologies. Its priority is to implement the research findings in the field of environmental technologies in the market by attracting more private and public investment, in line with the EU objective of 3% of GDP for research. It proposes the environmental technology verification mechanism by establishing a procedure to validate the performance of products objectively to increase purchasers' confidence in new environmental technologies, which are advisable to be implemented in the Republic of Moldova.

The European Strategy for sustainable development entails a specific long-term objective to limit climate change and its effects by meeting commitments under the Kyoto Protocol, pursuing in the same time energy efficiency, renewable energy and transport efficiency. In order to promote more sustainable modes of production and consumption, in order to establish a balance between economic growth and the deterioration of the environment, the strategy proposes as a solution the promotion of green public procurement, defines environmental and social performance targets for products in cooperation with stakeholders, the expansion of the distribution of environmental innovations and environmental technologies, the information about products and the appropriate labelling of products and services.

The European Energy Policy is a commitment for the EU to a low consumption economy based on more secure, more competitive and more sustainable energy. Priority energy objectives involve ensuring the smooth functioning of the internal market in energy, security of strategic supply, concrete reductions in greenhouse gas emissions caused by the production or consumption of energy. The diversification of supply sources and transport routes and the reduction according to the other European strategies of the greenhouse gas emissions to be done by using more clean energy. This policy mentions specifically the renewable energies that propose to be used - wind power, solar and photovoltaic energy, biomass and biofuels, geothermal energy and heat-pump systems – as solutions which cancontribute to limiting climate change. Its subsequent Renewable Energies Roadmap establishes the target of increasing the proportion of renewable energies in its energy mix by 20% until 2020, through progress in the following domains: use of renewables in electricity production, use of biofuels and heating and cooling systems.

Leader states in eco-innovation

Finland, Sweden and Denmark are the top three European states in implementing eco-innovation measures, according to the composite Eco-innovation index, which is based on 16 indicators which are aggregated into five components: eco-innovation inputs, eco-innovation activities and eco-innovation outputs, as well as environmental outcomes and socio-economic outcomes.

Finland[29] has a good socio-technical knowledge base and the know-how in different environmental sectors is multilateral, which is evident in the leading eco-innovation areas.

The leading areas of renewable energy – sustainable water and waste management – have a turn toward the sustainable use of natural resources. Finland's success can be traced in the R&D government expenditure allocation, R&D personnel, clean-tech investment and in the heavy investment in green early-stage investments.

With regard to the promotion of eco-innovations, the core strengths of Finland lie in its funding mechanisms, in environmental education and cultural values.

Finland has an extensive amount of strategies aimed at improving eco-efficiency and facilitating the development of markets for eco-innovations, among which the most important is the National Innovation Strategy (2009). The latest research and innovation policies include guidelines for development from 2011–2015/2020, among which: the focus on the development of integrated models for technological and social and the innovative and sustainable use of natural resources. Generally, policies concerning eco-innovations in Finland have already had a first generation and, more commonly, represent second generation policies . Several supply - and demand-side policy measures have been implemented to support eco-innovations. These policies[30] cover a wide range of different strategies and action plans related to resource efficiency.
The strength of **Denmark**[31] in the eco-innovation domain are: the *strong environmental profile* - because the national identity inherently demands a strong environmental profile of the Government and it supports the global recognition of the country as a driver in development of environmental technologies; *the high market demand* - the increasing demand for greener products and services, especially in the domestic market has stimulated companies to think green and to explore more resource-efficient alternatives; *the strong national innovation system* - Denmark has developed a clear action plan for eco-innovation, supported by multiple funding schemes, which invest in research of eco-innovation products and makes it possible for even smaller players to test their pilot ideas. Denmark generally has a sound environmental regulation, which is based on a comprehensive policy mix that deals with environmental problems from a life-cycle perspective. The first plan, elaborated for the period between 2007 and 2009 focused on broadening cooperation among important eco-innovation stakeholders, and on establishing an eco-innovation framework. The current partnership model aims to gather stakeholders within the most important eco-innovation areas, in order for them to identify and develop together new strategies for eco-efficient technologies.

29 - Leena Saarinen, Anne Karjalainen, Jarmo Vehmas, Eco-Innovation Observatory Country Profile 2011: Finland, Eco-Innovation Observatory, http://www.eco-innovation.eu/media/EIO_Country_Brief_2011_Finland.pdf
30 - First generation policies support mostly innovative solutions improving pollution control and other end-of-pipe environmental technologies; Second generation policies support eco-innovation resulting in greater resource and energy efficiency in production processes. There is a realisation that eco-innovation can have both economic and environmental benefits; Third generation policies support systemic (transformative and radical) eco-innovations aiming at changing production and consumption patterns. Measures include value chain management, re-designing cities, industrial ecology/symbiosis, new business models providing alternative solutions (e.g. product service systems).
31 - Jens Kristian Nørgaard, Eco-Innovation Observatory Country Profile 2011: Denmark, Eco-Innovation Observatory, http://www.eco-innovation.eu/media/EIO_Country_Brief_2011_Denmark.pdf

The Ministry of Environment established a secretariat for eco-efficient technology in the Danish Environmental Protection Agency, which supports the coordination of eco-innovation in Denmark and handles tasks related to information-sharing, dialogue, and maintenance of knowledge networks.

Eco-innovation is an important component of **Sweden's**[32] national environmental policy strategy. The Swedish approach includes not only technologies and technical systems in themselves; it also involves holistic ideas on integrated systems solutions.

The strengths of Sweden stand in the common understanding that the environmental issues are important and that technology is a cornerstone in the development of a more sustainable society. Several demand and supply policy measures are in place to support the development of eco-innovations.

The strengths of Sweden are the general understanding that environmental issues are important and that technology is a cornerstone in the development of a more sustainable society; a high degree of innovation at Swedish research institutes and companies; and the availability of an initial seed funding.

The areas in which Sweden was successful were waste management, water and sewage treatment, renewable energy, air purification and increasing energy efficiency. There are implemented measures regarding the request and offer for development of eco-innovation. Eco-innovation is an important component of Sweden´s national environmental policy strategy. In general Sweden's eco-innovation policy is represented by a mix of first, second as well as (to some extent) third generation policies. The research and innovation bill "A boost for research and innovation" (Bill 2008/09:50) is a core instrument in the government's support for eco-innovation research Programme in Sweden and includes relevant regulations for eco-innovation, as technology, sustainable use of resources, energy and research of marine environments. The Action Plan for Swedish Cleantech was an attempt to address the main deficiencies in the governmental efforts bearing significance to allow companies to thrive in the environmental technology area. The 2011-2014 Strategy for the Development and Export of Environmental Technology aims to support the development of the environmental technology market.

Eco-innovation in countries with comparable to the Republic of Moldova structure

In **Poland**[33] the eco-innovation index is more than twice lower than the EU average and four times lower than in Finland, the EU eco-innovation leader state in eco-innovation. The subject of eco-innovation is addressed in numerous documents, reports and strategies following EU proposals. The scientific and technological base is strengthening slightly backed by the establishment of numerous local initiatives that can evolve into a strong wave of eco-innovation promotion.

32 - Peter Repinski, Eco-Innovation Observatory Country Profile 2011: Sweden, Eco-Innovation Observatory, http://www.eco-innovation.eu/media/EIO_Country_Brief_2011_Sweden.pdf
33 - Andrzej Kassenberg, Piotr Kassenberg, Eco-Innovation Observatory Country Profile 2011: Poland, Eco-Innovation Observatory, http://www.eco-innovation.eu/media/EIO_Country_Brief_2011_Poland.pdf

The aim of the National Reform Programme for 2008-2011 and the subsequent National Reform Programme to Implement Europe 2020 Strategy, adopted in 2011, is to establish a basis for improving the standard of living of Polish citizens, through application of innovative solutions in the area of environmental protection.

One of the aims of the National Environmental Policy for 2009–12 and its 2016 Outlook is to enhance the role of the Polish research units in implementation of eco-innovations in industry and in manufacture of environmentally friendly products as well as to lead to a satisfactory status of the environmental monitoring system.

The Strategy - Energy Security and Environment, 2020 Outlook gives importance to utilizing all the opportunities for developing Polish environmental technologies.

The Road Map for the implementation of the EU Environmental Technologies Action Plan (ETAP) in Poland (KETAP) specifies activities related to environmental technologies and innovations, the way they should be coordinated and methods of improvement of information exchange in this area. One of the overarching themes of the Strategy for Economic Innovativeness and Efficiency is Poland's transition to a green economy. The National Renewable Energy Action Plan perceives RES technology development as a component of the state innovation policy.

Eco-innovation is approached horizontally in **Romania's**[34] policies to ensure that the potential for better environmental performance is used wherever possible, thus a strong incentive for eco-innovation has not been registered. For supporting eco-innovation Romania is implementing first and second generation policies, which mainly tackle pollution control and resource efficiency. An initiative aimed at systemic transformation through development of industrial ecosystem in regional development was launched in 2011. Important steps have been made in promoting green procurement and sustainable production and consumption throughout the life cycle of products and services. The market for eco-innovation is an emerging concept in Romania. Leading areas in this direction are related to energy efficiency in buildings and use of renewable resources. The most important driver for eco-innovation in Romania is related to the Integrated Pollution Prevention and Control Directive. Technological innovations are mainly directed to finding solutions to improve pollution control and implementing the best available techniques.

The National Strategy for Sustainable Development – Horizons 2012-2020-2030, which is indirectly supporting eco-innovation. The National Action Plan for Environmental Protection (2008) supports national and regional projects which aimto gradually improve the quality of environmental factors in Romania. In order to meet the objectives of the Europe 2020 Strategy, Romania adopted the National Reform Programme2011-2013. The Industrial Policy document for 2011-2013 dedicated a chapter to clustering activities, specifically competitiveness and innovation clusters. The National Strategy on R&D and Innovation (2007-2013) has as main objective to increase the share of innovative enterprises.

34 - Andrzej Kassenberg, Piotr Kassenberg, Eco-Innovation Observatory Country Profile 2011: Poland, Eco-Innovation Observatory, http://www.eco-innovation.eu/media/EIO_Country_Brief_2011_Poland.pdf

The National Action Plan for Energy from Renewable Sources adopted in 2010 sets the national and sectorial goals for energy efficiency and the measures to increase the availability of biomass. The National Strategy for Rural Development 2007-2013 introduced economic measures aimed at reducing the use of nitrogen and nitrogen compounds in agriculture, including giving farmers compensatory payments for reducing the quantities of fertilizers used and introducing subsidies for farming "green" fields. The Biomass Master Plan (2010) contributed to the meeting of the provisions of Directive 2009/28/EC on the use of renewable sources.

V.2. European Funding Mechanisms

Good practice examples regarding the funds for eco-technology

The good practice models of financial mechanisms which exist at the regional and European levels are highly relevant for analyzing alternative instruments for encouraging eco-innovation in the Republic of Moldova. The good practice examples are analyzed in order to find a way of improving the financing mechanisms, which are currently underdeveloped in the field of eco-technologies in Moldova. The main good practice mechanisms analyzed in this section are the European funds and projects. The Association Agreement between the European Union and the Republic of Moldova offers increased cooperation and financing opportunities, inclusive in the eco-technology domain and for the environment protection.

The EU's assistance to Moldova takes mainly the form of Annual Action Programme under the European Neighbourhood Instrument (ENI) 2014-2020, which is based on the principle "more for more": the more a country is committed to and makes progress in reforms, the more assistance it can expect from the EU. The ENI allocated in 2014 to the Republic of Moldova €30 million, among which was a significant part for energy and environment Programmes . Other good practice funding sources are the thematic assistance Programme[34] focused for example on human rights or civil society. The Neighbourhood Investment Facility (NIF) provides additional funding for investment[35] .

To benefit from the NIF, a project has to be submitted by one of the following European Public Finance Institution recognized by the NIF Board as „eligible": European Investment Bank (EIB) – with implemented Programme as ELENA, JASPERS, the European Bank for Reconstruction and Development (EBRD), the Council of Europe Development Bank (CEB), the Nordic Investment Bank (NIB), Agence Française de Développement (AFD), KreditanstaltfürWiederaufbau (KfW), Oesterreichische Entwicklungsbank AG (OeEB), SocietàItaliana per le Impreseall'Estero (SIMEST), Sociedade para o Financiamento do Desenvolvimento (SOFID), Agencia Española de Cooperación Internacional para el Desarrollo (AECID).

35 - http://ec.europa.eu/europeaid/where/neighbourhood/country-cooperation/moldova/moldova_en.htm

a) European Investment Fund (EIF)

EIF is Europe's leading developer of risk financing for entrepreneurship and innovation. EIF is a public private partnership with shareholders being the European Investment Bank, the European Commission and 24 public and private financial institutions. EIF has a share capital of EUR 3bn and is AAA rated. EIF is policy-driven with the objective to support innovation and entrepreneurship in Europe. At the same time, EIF is committed to financial sustainability and delivering a risk commensurate returns to its shareholders.

b) Directorate General for the Environment

The Commission provides funding to projects and initiatives that promote its policy priorities throughout diverse funds and Programmes The Directorate General for the Environment makes funding available through two different Programmes the LIFE fund and the Eco-Innovation and Competitiveness and Innovation Framework Programme, and operating grants to environmental non-governmental organizations (NGOs).

c) LIFE 2014-2020[36]

LIFE is an European Union's financial instrument that is supporting environmental and nature conservation projects throughout the bloc, in some candidate and neighbouring countries, including the Republic of Moldova. Since 1992 LIFE has co-financed some 2,750 projects worth a total of €1.35 billion.The LIFE Programme will contribute to sustainable development and to the achievement of the objectives and targets of the Europe 2020 Strategy, the 7th Union Environmental Action Programme and other relevant EU environment and climate strategies and plans.

The structure and the budget for 2014-2020 lead to the creation of two sub-programmes[37] :

- LIFE sub-Programmes for Environment, including as priorities areas environment and resource efficiency, nature and biodiversity, and governance and information;
- LIFE sub-Programmes for Climate Action, including as priorities areas adaptation, mitigation and governance and information.

36 - http://ec.europa.eu/environment/life/about/documents/life2014-2020.pdf
37 - http://ec.europa.eu/environment/life/about/documents/life2014-2020.pdf
38 - http://www.eib.europa.eu/attachments/documents/elena_faq_en.pdf

d) Horizon 2020

Horizon 2020, for which the Republic of Moldova is eligible, is the biggest EU Research and Innovation Programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment that this money will attract. Horizon 2020 is divided into 3 three pillars corresponding to its main priorities [38]: excellent science, industrial leadership and societal challenges. In the field of energy, the Horizon 2020 Energy Challenge is designed to support the transition to a secure, clean and efficient energy system for Europe and the first Work Programme for ‚Secure, clean and efficient energy' is split into three focus areas: Energy-efficiency; Low carbon technologies; and Smart Cities & Communities.

e) Climate action EIB (European Investment Bank) Programme

Between 2009 and 2013, the EIB invested over €88 billion in climate change mitigation and adaptation projects. The EIB supports low-carbon and climate resilient growth in Europe and in developing and emerging countries outside Europe. Moreover, EIB funding acts as a catalyst to mobilize finance for climate action, encouraging others to match its long-term investment. The EIB complements innovative financing instruments with a range of technical assistance tools to provide rounded solutions for commercially promising climate initiatives. In 2013, the EIB›s climate action lending reached 19 billion, which was 27% of the overall lending volume. Most of the lending went toward renewable energy (€6.4 billion) and sustainable transport (€6.2 billion), followed by Research, Development and Innovation (€ 2.5 billion), energy efficiency (€2.2 billion) and climate change adaptation projects (€1.2 billion).

f) ELENA (European Local Energy Assistance)[39]

ELENA este o facilitate europeană derulată de BEI care, prin asistență tehnică, își propune să susțină autoritățile regionale sau locale în ceea ce privește accelerarea programelor lor investiţionale în domeniul eficienţei energetice şi surselor de energie regenerabilă. Acest suport de grant este oferit în cadrul Programului vizând energia inteligentă pentru Europa II.[40]

ELENA covers up to 90% of the technical support costs needed to prepare, implement and finance the investment Programme.

This could include feasibility and market studies, Programme structuring, energy audits and tendering procedure preparation. With solid business and technical plans in place, this will also help attract funding from private banks and other sources, including the EIB.

39- http://www.eib.europa.eu/products/jaspers/index.htm, http://www.jaspers-europa-info.org/
40 - http://www.margueritefund.eu/fund-overview/overview/
41 - http://www.eib.europa.eu/products/jaspers/index.htm, http://www.jaspers-europa-info.org/

g) JASPERS (Joint Assistance to Support Projects in European Regions)[41]

JASPERS provides technical expertise for any stage of the project cycle, covering technical, economic and financial questions. It is geared to providing advice, ensuring coordination, developing and reviewing project structures, removing bottlenecks, filling gaps and identifying problems. This helps increase the quantity and quality of requests for EU funding. The total investment cost of the more than 550 projects supported so far is more than EUR 60bn.

h) MARGUERITE[42]

The 2020 European Fund for Energy, Climate Change and Infrastructure ("Marguerite") was established with the backing of six major European financial institutions to make capital-intensive infrastructure investments and will target attractive long-term and stable risk-adjusted returns. Each of the six Core Sponsors has committed €100 million to the Fund. In addition, three further investors (including the European Commission) have committed an incremental €110 million to the Fund, bringing current commitments to €710 million. Marguerite is an independent fund investing in European infrastructure: Greenfield: new projects and facilities, with typical development risks largely mitigated (minimum of 65% of the Fund), brownfield: replacement, modernization and capacity enhancement of existing assets (maximum of 35% of the Fund).

Examples of projects to which the Republic of Moldova can participate

a) ENPI Shared Environment Information System (SEIS)[43]

Modernizes and simplifies the collection, exchange and use of the data and information required for the design and implementation of environmental policy in third countries, among which the Republic of Moldova, between 2010-2014 and it has a budget of €5.7 million. The project aims to promote the protection of the environment in the countries of the ENPI area by extending the principles of the Shared Environmental Information System (SEIS) to the Neighbourhood area, and developing the capacities of the relevant authorities responsible for environmental data management and reporting. The SEIS is an EU initiative to modernize and simplify the collection, exchange and use of the data and information required for designing and implementing environmental policy. The project is implemented by the European Environment Agency in collaboration with Eurostat, DG Environment and the EU's Joint Research Centres.

42 - http://www.margueritefund.eu/fund-overview/overview/
43 - http://www.enpi-info.eu/maineast.php?id=489&id_type=10, http://enpi-seis.ew.eea.europa.eu/east

b) Clima East[44]

The Programme supports partner countries so that they are better equipped for greenhouse gas emission reductions and better prepared to deal with the impacts of climate change in Armenia, Azerbaijan, Belarus, Georgia, Moldova, Ukraine, Russia from 2012 to2016, with a budget of €18 million. The overall objective of the Programme is highly correlated with the eco-innovation implementation goal. The Programme aims to foster improved climate change policies, strategies and market mechanisms more in line with the EU *acquis* in the partner countries, by supporting regional cooperation and improving access to information regarding EU climate change policies.

c) Greening economies in the Eastern Neighbourhood[45]

This Programme supports Eastern Partnership countries in their efforts to move toward a green economy by separating economic growth from environmental deterioration and the depletion of resources and by promoting sustainable consumption and production strategies in Armenia, Azerbaijan, Belarus, Georgia, Moldova, Ukraine, between 2013 and 2016, having a budget of €10 million (EU contribution out of total budget of €12.4 million).

Other energy, environmental and eco-technological Programmes to which the Republic of Moldova is the target beneficiaries and to which it could apply are:

- Air quality governance in the ENPI East countries (2011-2014, €7 million);
- National Policy Dialogues on Integrated Water Resources Management (2012-2015, €3.2 million);
- Environmental protection of international river basins (EPIRB) (2012-2016, €7.5 million);
- Energy saving in the building sector in Eastern Europe and Central Asia (ESIB) (2010-2014, €5 million).

Opinions of good practice funds and projects for eco-technology

The stakeholders and personnel from public institutions interviewed identify a few mechanisms which could be implemented in the Republic of Moldova: state subventions for eco-technologies users, the modification of legislation in order to permit the selling in the frame of an energy network the photovoltaic energy in less than 10kw quantity, fact that would permit the using on a larger scale of this technology. Currently there are only 3 energy providers in the national energy network.

44 - http://www.enpi-info.eu/maineast.php?id=452&id_type=10
45 - http://www.enpi-info.eu/maineast.php?id=437&id_type=10

One example of good practice is the „Innovation support fund" that would finance the projects that implement eco-innovation technologies. The impact of this fund would be added value in environmental issues and energy efficiency, would promote the use of eco-technologies and would increase the public interest for this type of technologies.

The project Green House Romania is one of the most mentioned good practice example of eco-technology by the interviewed stakeholders and public institutions personnel. In the area of automobiles a good practice example is the RABLA Programme from Romania.

The Orhei Hospital is considered to be an internal good practice example, because its implementation was funded by the MIFS with 60,000 euro for the roof and the photovoltaic panels together with an investment of 1.4mln euro from GIZ, NEF, EEA and Orhei District Council. Constant mechanisms for monitoring water and air and environment indicators should be implemented. The respondents highlight the importance of implementing a constant mechanism to monitor the environmental, air and water indicators. Moreover,the stakeholders and personnel from public institutions focus on the need for creating specialized institutions for each environmental factor. In this sense, the Environment Guard Romanian institution is considered to be a good practice model of institution. A good practice example is the implementation of e-governance instruments for reducing bureaucracy and the creation of a general information system for centralizing the environment information. Another good practice example is the Argentina system, where the farmer gives 35% of soya production, 25% of corn, 10% wheat and to the state and where 85% of land is used on a conservative principle.

V.3 Successful projects. Platforms and networks

Successful projects

a) Crowdfunding for eco-innovators[46]

Crowdfunding is a peer-to-peer funding model that offers transparency and a sense of community for both funder and entrepreneur. A pitch for funds is made to a crowd of "investors" who commit either small or large amounts in return for rewards, equity or loan repayments if the funding target is reached and the project goes forward. Impact investment is investment assessing not only the financial return on investment, but also the environmental and social impacts in the course of the operations of the business and the consumption of the product or service, which the business creates. Impact investing is expected to reach $9 billion worldwide in 2013/14. Currently, several crowdfunding platforms, such as www.ImpactCrowd.com (NL) and www.crowdmission.com (UK), specialize in impact investment for ventures that aim to create environmental, social and economic impact.

46 - EIO and CfSD (2013) Eco-innovate! A guide to eco-innovation for SMEs and business coaches. Eco-Innovation Observatory.Funded by the European Commission, DG Environment, Brussels, p. 55.

b) Green Funds Scheme in Netherlands[47]

Launched in 1995, the scheme is an innovative way of encouraging private individuals to provide capital for green projects. Individuals are incentivized through the tax system to invest in "green funds" managed by banks. The normal capital gains tax rate in the Netherlands is 1.2% of the amount invested, but when green investments are realized, the tax is waived for investments of up to €55,000. In addition, income from green funds is taxed at a reduced rate. Since May 2012, this benefit has been 0.7%, reduced from 1% in 2011 (and 1.3% in 2010). The combined benefit for investors is thus currently 1.9%. Despite cuts to the tax benefit, the tax advantages are still sufficient to attract investors, according to the Dutch government. Banks then lend the money to green projects on favorable terms, asking for returns that are about 1% lower than the going rate.

c) Green House Romania[48]

"Green House", aimed at stimulating the development of renewable energy technology. The "Green House Programme, launched by the Romanian Government in 2010, through the Ministry of Environment and Forests and the Environmental Fund Administration, continued in 2011 with the launch of a second session of applications for individual persons. The Programme's aim is to improve air quality and energy efficiency by reducing water and soil pollution caused by burning wood and fossil fuels used for heating and hot water and by stimulating the use of renewable energy sources and clean technologies.

The financing was granted for replacing or supplementing traditional heating systems with installations using solar, wood waste and geothermal energy sources. Grants for households varied according to the selected heating system, from €1,300 to €1,800.

The overall budget for households was €23,000 in 2011, distributed at a county level. In 2011 the Programme addressed the public sector as well. Local administrations, public institutions and religious institutions can receive grants up to 90% of the total eligible costs to invest in replacing or supplementing heating systems with installations using renewable energy sources. The eligible expenses were acquisition costs for heat production plants, including plants to replace or supplement conventional heating systems using renewable energy systems; costs of installation and commissioning of system performance verification tests and trials; value added tax (VAT).

47 - http://ec.europa.eu/environment/ecoap/about-eco-innovation/business-fundings/netherlands/13112012-promoting-investment-in-sustainability-green-funds_en.htm
48 - http://www.eco-innovation.eu/media/EIO_Country_Brief_2011_Romania.pdf

Other examples of national good practice initiatives are VIVES II[49] , Corporate Innovation Platform (CoriP)[50] , Venture capital, NISP in UK (National Industrial Symbiosis Programme, Isle Utilities in UK, the Ellen MacArthur Foundation, Eco Commerce Hub Helsinki Blue Orange Programme developed by Suez Environment in France and the Swedish Business Leaders' Initiative on Climate Change (BLICC).

Platforms and networks

a) EMAS – The European Eco-Management and Audit Scheme[51]

The EU Eco-Management and Audit Scheme (EMAS) is a management instrument developed by the European Commission for companies and other organizations to evaluate, report, and improve their environmental performance. EMAS is open to every type of organization eager to improve its environmental performance. It spans all economic and service sectors and is applicable worldwide.

EMAS is a voluntary tool available for any kind of organization aiming to: improve its environmental and financial performance and to communicate its environmental achievements to stakeholders and to society in general. Currently, more than 4,500 organizations and approximately 8,150 sites are EMAS registered worldwide. Among them are many multinational enterprises and smaller companies as well as public authorities.

b) LiMaS project[52]

The EU-funded LiMaS project has developed a web-based tool to facilitate eco-innovation in SMEs, leading to the development of products with an improved environmental performance.

Many small and medium-sized enterprises (SMEs) have limited knowledge of environmental regulations or tools they can use to improve the environmental performance of their products. The LiMaS project helps to overcome this by providing a simplified and user friendly approach to addressing different environmental issues during the product design process.

49 - http://ec.europa.eu/environment/ecoap/about-eco-innovation/business-fundings/eu/20130114-venture-capital-for-eco-innovation_en.htm
50 - European Investment Fund, Corporate Innovation Platform (CorİP), EIB – 02/2013 – EN, http://www.eif.org/news_centre/publications/eif_flyer_corip_en.pdf
51 - http://ec.europa.eu/environment/emas/about/index_en.htm
52 - http://ec.europa.eu/environment/ecoap/about-eco-innovation/business-fundings/eu/769_en.htm

c) BIOCHEM[53]

The Europe-wide BIOCHEM project offers SMEs the market insight, business and technical tools, and access to people and resources to drive their innovations with bio-based products. The BIOCHEM project, which started on 1 February 2010, supports companies, and especially SMEs, to enter the emerging and highly promising market for bio-based products in the chemical sector. In biotechnology, the greatest potential for innovation lies in small and medium-sized enterprises (SMEs).

This is why the European Commission funded BIOCHEM project seeks to help SMEs to innovate in the bio-based products market. The partnership is run by 17 innovation-focused organizations from eight countries under the Europe INNOVA umbrella. BIOCHEM is attempting to overcome communication barriers by developing a software-based toolbox to help SMEs innovate, setting up an online partnering platform and working with 250 individual SMEs to help them make the most of this platform.

VI. CONCLUSIONS AND RECOMMENDATIONS

VI.1 Conclusions

National context

The energy balance, the way energy and fuel resources are structured and the structure of the main types of energy resources show that Moldova is highly dependent on imports in the energy domain and its main sources of energy consist of traditional, pollutant energy (natural gas, coal). The most important energy consumers are the production-technological needs, are population, transport and industry and construction. Therefore, based on these statistics, sectors can be easily identified where the implementation of eco-innovation solutions (renewable energy, technologies for energy efficiency) would constitute a solution for reducing Moldova's external dependence on energy resources and for adopting environmental friendly solutions which will respond to climate change and to international challenges in the field.

The above presented data demonstrate that there is a great need for supplementing funds for R&D by increasing the percentage of GDP for this domain in order to achieve a number that is comparable to EU countries for technological development, applied research and to encourage people to pursue a career in science.

Although the education system and the research development expenditure intersect at a certain point with the area of eco-innovation, there is a high need for improvement both through coherent and long term development, sustainable and environmental education policies and through an increase in the expenditures focused on eco-innovation.

53 - http://www.biochem-project.eu/http://ec.europa.eu/environment/ecoap/about-eco-innovation/business-fundings/eu/769_en.htm

Research conducted demonstrated that the lack of environmental education, and trained personnel in the field of eco-technology (both for use of products and for providing information about the products), the lack of project management skills and national research and innovation Programmes are major barriers that obstruct the implementation of eco-technology in Republic of Moldova.

The availability of eco-technology on the market in the Republic of Moldova

In the Republic of Moldova, the concepts of eco-innovation and eco-technologies started to become popular in 2010. The greatest emphasis was placed on green energy and eco-technologies for sustainable development in agriculture. The emphasis on green energy is based on solid biomass potential and solar potential.

The main eco-technologies used in the Republic of Moldova are biomass boilers for city halls, schools, kindergartens; LED bulbs for street lighting, solar collectors for heating water, sewage pumping stations and systems for waste management. The population perceives them as being qualitative and avantageous,but expensive.

The use of eco-technology in the Republic of Moldova is highly conditioned by numerous defined factors. The core role and sustainability of eco-technology are questioned in the Republic of Moldova, as observed by the conducted quantitative research.

In general, users of eco-technology in the Republic of Moldova are satisfied by the investment for eco-technology. The reasons for satisfaction of eco-technology use are: cost savings, profit increase, a high quality of services, high level of efficiency, energy independence, improvement of activity/production activities, financial support, reducing environmental pollution, the reduction of energy loss and solving existing problems with production or activity. The users who were undecided on how satisfied they were regarding the use of purchased eco-technologies were motivated in their choice through: high price of eco-technology, the poor quality of eco-technology, low yield and poor return.

The main barriers for the implementation of eco-technology in the Republic of Moldova are the maintenance cost of eco-technology, the perceived low quality of eco-technologies produced in Moldova and distrust in the sustainability of green energy sources.

Development of the eco-technology market in the Republic of Moldova

The intention for purchasing eco-technology solutions is determined by the market. The eco-technology market in Moldova is not sufficiently developed, although it is increasing. The respondents mentioned both positive and negative trends and characteristics of the market. The majority of users and non-users, from all categories of participants intend to repeat the acquisition of eco-technologies solutions. The main incentive for using eco-technology solutions is represented by the efficiency in cost reductions.

Necessity for eco-technological use

The needs for using eco-technologies are related to four areas:: political, cost reduction,, utility and environmental protection. The population must use eco-technologies in order to: avoid political risks, reduce costs, reduce energy consumption and protect the environment.

The common denominator that correlates the main needs, constraints and incentives for using eco-technology in the Republic of Moldova is a financial issue. The actors that participated in this research consider that the implementation of eco-technology is a dependent variable that is strongly correlated with the availability of funds and financial regulations.

The main constraints are related to the lack of funds, the lack of information on the use of eco-technology and on the methods for obtaining funds, unfinished projects, and the fact that the legislation framework is not well adapted to the European normative or is not applied.

The main incentives are represented by grants and funds, subventions, reducing costs but also by an increase in gas prices, and respect for laws.

Environmental strategies and plans

The results of quantitative research demonstrate the need for the elaboration of long-term vision plans and strategies focused on the use and utility of eco-technology. Moreover, considering the fact that among the barriers in the implementation of eco-technology, 53% of public institutions and by 60.2% of private entities say eco-technology is not sustainable and steps should be taken to communicate information about the use and utility of eco-technology.

Legislative framework

The legislative framework of the Republic of Moldova encompasses measures for regulating the implementation of eco-innovation. The measures aimed to increase public awareness and which create environmental funds are clear, but there is room for filling the legislative – reality gap. The legislative framework in the field of punitive measures for the violation of environmental measures should be further developed for coercive further environmental violation and to encourage the implementation of eco-innovation solutions. Funds, grants and credits are the main legislative incentive for the implementation of eco-technology. Projects and Programmes, fiscal facilities, informative campaigns, the environment law and the tax for pollution are considered a legal stimulant for eco-technology.

The main legal barriers for the implementation of eco-technology are the lack of a legal framework and the lack of regulation (legislative, regulatory and technical) for waste management/emissions of harmful substances, which should be adequate for the current situation and the requirements of EU legislation.

Financial mechanisms

The existing international financing instruments for encouraging the development of environmental and energy efficiency projects, which encompass eco-innovation solutions, are varied for the Republic of Moldova. A large number of international donors (states and institutions) had a coherent relation with Moldova in funding this type of projects over the past years. If we look at the priorities of the Government Programme of the Republic of Moldova, it can be seen that most foreign assistance is provided in areas such as an accountable and efficient administration, foreign policy, the reintegration of the country, environment protection, while less foreign assistance is provided for culture policies, youth policies, education and research, economic and financial policies etc.

The proportion of entities that implemented eco-technologies from their own funds is not much different from the proportion of those that implemented this type of technology through available funding mechanisms. Therefore it can be assumed that there is a large segment of available funds for eco-technology which is not accessed by Moldovan entities.

In choosing a specific financial mechanism, beneficiaries rely mostly on the recommendations received from a legitimate governmental institution. Respondents are satisfied by the cooperation with funding institutions, appreciating the efficiency and availability of funds which arrive on time.

Model states

The examples of national public or private good practice in the field of eco-innovation demonstrate the window of opportunity for implementing these types of projects in the Moldovan national framework. Although for obtaining a good result public authorities should make an effort together with private actors and funding institutions, as presented in the chapter dedicated to institutions and in the one that analyzed the financial mechanism, the necessary conditions exist for developing these types of projects in the Republic of Moldova.

Poland and Romania are closest to the conditions in Moldova(although the differences are undeniable), that reinforce the leaders' conclusions, although their level of eco-innovation ranges from incipient to average in comparison with the EU's leader states indicators. These countries have strongly correlated strategies within the national policy and specific national plans that target every dimension that could include eco-innovation, being recognized its importance for sustainable development and competitiveness.

Green Public Procurement

The best practice in EU regarding the acquisition is GPP. Green public procurement is an effective instrument in promoting environmentally-friendly products and services and in encouraging eco-innovation, thus contributing to sustainable development. The Republic of Moldova did not yet develop a NAP for GPP.

Most of the stakeholders, beneficiaries, eco-technologies providers do not have knowledge about public procurement practices. The main problem in the public procurement practices is that the price is the principal criterion taken into consideration. In the opinion of relevant Moldovan actors and stakeholders the legislation must be changed in order to obtain qualitative products. Thus, they could implement GPP through making proper specifications and contract compliance for public acquisition with environmental standards.

Promotion of eco-technology

Eco-technologies are not yet very well known in the Republic of Moldova. Some users consider that there is not enough information about eco-technologies and their benefits on the Moldovan market. Others consider that the information is available on the internet, but it all depends on people's awareness, skills and individual development.

The research revealed a higher number of perceived barriers by private entities in the field of the lack of information on eco-innovation. The information barriers that impede the implementation of eco-technology in Republic of Moldova are: the lack of information on the environmental effects of eco-technologies, the lack of information on the usefulness of eco-technologies for business/household, the lack of information on how to use eco-technologies, the lack of information on the existence and ways to access funds and the lack of communication between beneficiaries of funding mechanisms and potential beneficiaries.

Financial, economic and ecological criteria for making eco-innovation more attractive for use

The financial, economic and environmental criteria for making eco-technologies more attractive for use are presented in the next table:

Table 7. Financial, economic and environmental criterial

1. STAKEHOLDERS AND INSTITUTIONS MANAGING FINANCIAL MECHANISMS
• Financial criteria
- decreasing price of eco-technologies; - subventions; - more funding mechanisms.
• Economic criteria
- increase the purchase power.
• Environmental criteria
- promotion campaigns; - ecological education of the population; - introducing the notions in kindergartens and schools.
2. ECO –TECHNOLOGIES SOLUTIONS PROVIDERS
• Financial criteria
- increasing prices for green electricity (currently ANRE established a price of 1.62 lei (?)paying the VAT on sales of the product, not at import; - exemption/reduction rate payment of VAT for import of eco-technologies.
• Economic criteria
- decrease the costs with the commercialization of eco-technologies; - decrease the taxes paid.
• Environmental criteria
- being in accordance with the legislation.
3. BENEFICIARIES /POTENTIAL BENEFICIARIES OF INDUSTRIAL AND NONINDUSTRIAL SECTOR
• Financial criteria
- more grants and funds allocated for eco-technologies; - subventions for both firms, and households for buying eco-technologies; - gas price increase.
• Economic criteria
- decrease of expenses of firms and households.
• Environmental criteria
- decrease of resources consumption; - environmental pollution; - being in accordance with the legislation.

VI.2 Recommendations

VI.2.1 Education and research

In order to overcome the environmental indicators, consume traditional energy sources and reduce import dependency, the use of alternative source of energy and eco-innovation should be encouraged.

For overcoming the perceived educational barriers and the gaps concerning eco-innovation in the field of research and development, significant steps should be taken, especially by the implementation of ecological education.

Ecological education should be implemented in the compulsory studies and as horizontal action in all the economic, industry and public sectors of the Republic of Moldova, through seminars, conferences and public campaigns, youth simulative activities, research centres and national research and development Programme

Awareness raising campaigns should be developed as a manner to improve awareness and knowledge about eco-technology are recommended by 59.56 percent of respondents.

The **establishment of new research and development centres** created for the particularities and potential of each region of the Republic of Moldova in the field of eco-technology can help in overcoming the identified barriers in the field of education, research and development.

Universities, research centres and researchers should access European funds for research and development available for the Republic of Moldova for development of eco-technology.

VI.2.2 Recommendations for increasing the availability of eco-technology solutions

In order to increase the availability of eco-technology solutions on the Moldovan market, the following measures should be implemented:

- Reduction of import taxes for eco-technology solutions;
- Facilitation of export component of the market in the field of eco-technology;
- Facilities and stimulants for national eco-technology manufacturers in order to increase eco-technology products availability on the market;
- Specific grants f+or developing new business based on eco-technology production in Moldova (tax reduction, facilities for reduction of the high initial investment);
- Public-private partnerships for developing eco-technology solutions production lines that use waste;
- Partnerships between education institutions and entities that use eco-technology for providing students with practical experience for managing eco-technology.

VI.2.3 Recommendations for development of eco-innovation market

Recommendations for stimulating the development of eco-innovation market and to increase the intention of eco-technology purchase in Moldova are:

- Increase awareness about the efficiency of eco-technology in ensuring energy independency;
- Better and extended advertisement for eco-technology products;
- Dissolution of market monopoly of foreign or national companies in the field of energy and technology;
- Facilitate the eco-technology implementation process and financial support for purchase of eco-technology;
- Special and increased support for household in implementing eco-technology;
- Increase diversity of supply on domestic market;
- Improve the quality of national eco-technology by imposing quality standards;
- Products or demonstrative lots of eco-technological products;
- Periodical showrooms for eco-technological products;
- Facilitation of visits of interested entities to good practice cases of eco-technology implementation.

VI.2.4 Incentives for using the eco-technology

Incentives for using the eco-technology – users of eco-technology

In order to encourage the implementation of eco-technology in the Republic of Moldova, the needs for using eco-technology, constraints and incentives that determine the Moldovan entities to decide on the use of eco-technology should be analyzed and included in state fiscal, development and environment policies. Strategies and specific implementation plans should be carried out for including the identified needs, constraints and perceived incentives.

According to the results of conducted research, in order to facilitate the use of eco-technology in Moldova, steps should be taken in order to:

- increase state subsidies and grants for eco-technology;
- facilitate the possibility for interested entities to receive information and counselling; from public authorities in the field of eco-technology (e.g., regional information centres, possibility to provide required information through email,

communication platforms, etc.);

- facilitate the access to funding mechanisms;
- adopt a fiscal policy for lowering rates for accessed loans for eco-technology equipment purchase, to VAT reduction, fiscal facilities;
- elaborate the environmental regulations/fines for the use of pollutant technologies;
- increase ecological funds through higher taxes for traditional energy sources;
- perform a periodical environmental audit;
- conduct information campaigns adapted for regional particularities.

The beneficiaries/public institutions/companies participating in the research identify the *reduction in costs* as the main reason for using eco-technology (71.5% of respondents). The need for tackling environmental issues was the reason of 62% of entities for using eco-technology. Furthermore,38.7% of actors implemented eco-technology solutions as the result of the local *community encouragement*. The reason that 33.6% of the entities implemented eco-technology was the *availability of financial mechanisms* for eco-technology. 32.1% of respondents implemented eco-technology due to the *need to respect environmental regulations* and 11.7% of actors implemented eco-technology *due to available fiscal facilities.*

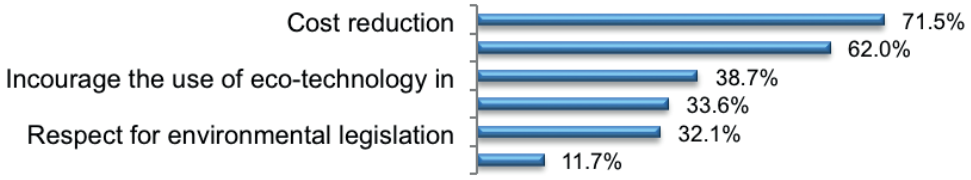


Figure 31. Reasons for using at the moment eco-technology (%)

Incentives for using eco-technology – eco-technology non-users

For the beneficiaries/public institutions/companies that currently do not use eco-technology the main incentive that would motivate them to implement this type of technology is subsidies or grants from the state (72.3 percent of respondents). Furthermore, advisory support from public authorities in the field of eco-technology is considered by 63.4 percent of respondents as being necessary for implementing eco-technology.

The respondents identified VAT reduction (49.6 percent of respondents), the deduction of invested profit (44.6 percent of respondents), lowering rates for accessed loans for purchased equipment (48.6 percent of respondents), and environmental regulations/fines for the use of pollutant technologies (31.7 percent of respondents) as incentives that would determine them to implement eco-technology.

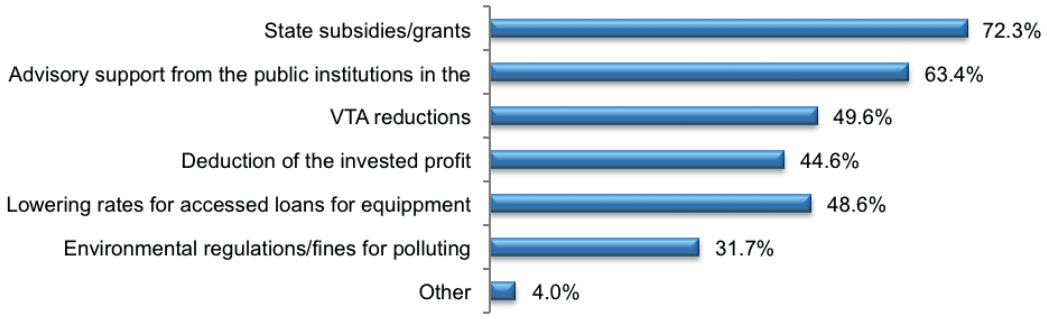


Figure 32. Incentives for implementation of eco -technology – Non eco-technology users (%)

According to the research conducted, private entities are more likely to implement eco-technology solutions if offered state subsidies and grants. Therefore, private entities should be stimulated more through these types of measures to implement eco-technology.

VI.2.5 Environmental strategies and plans

In order to develop the framework of strategies and plans in the environmental field in the Republic of Moldova, it is recommended that the following criteria are eleborated:

- Long term strategies for the implementation of eco-technology in the Republic of Moldova;
- Public comparative studies on the sustainability and efficiency of eco-technology and traditional energy sources;
- Feasibility studies for the implementation of eco-technology on specific regions in the Republic of Moldova;
- Public studies on the effects of eco-technology for the environment;
- Information campaigns on the utility and sustainability of eco-technology.

The fact that results of the study demonstrate a concern among Moldovan entities on the true commitment of the state for eco-technology sounds the alarm for:

- Improving political measures on eco-technology and environment;
- Creating fiscal and policy incentives for the implementation of eco-technology;
- Improving the visibility of the measures taken for environment and eco-technology.

Therefore, the following measures are highly recommended for the Republic of Moldova in order to reach its environment and energy efficiency objectives:

- Applying the polluter-pays principle more systematically;
- Phasing out environmentally harmful subsidies;
- Shifting taxation from labour toward pollution[54] ;
- Expanding markets for environmental goods and services[55].

VI.2.6 Recommendations for the improvement of the environmental legal framework

In order to improve the legal framework in the field of eco-technology, respondents participating in the quantitative research (28.44%) suggested that the first step that should be taken is to implement fiscal facilities, to give support, stimulants or other type help from state for implementation of eco-technology.

Other recommendation for improving the legal framework in the field of environment, energy and eco-technology is to reduce the taxes and contributions, suggested by 22.22% of respondents.

Another recommendation for facilitating the legal incentives for eco-technology is the elaboration and harmonization of environment legislation. This is a compulsory measure that should be tackled for meeting the entire perceived barrier in the implementation of eco-technology in the Republic of Moldova.

54 - http://www.ex-tax.com/share/quotes/european-commission/
55 - http://ec.europa.eu/environment/newprg/proposal.htm

The main recommendations related to the legal framework are:

- To implement institutional reform in the Environment Ministry by separating environmental control expertise and regulatory tasks;
- To merge the components to the Environment Ministry (ex. Moldosilva is subordinated directly to the Government);
- To revise the legal framework for the use of eco-technologies by facilitating the generation of electricity from these technologies (production, distribution);
- To carry out extended efforts for the implementation of the day/night tariff at energy supply;
- To develop/extend the specialized sections/department within the district councils and assuring specialized training in the field of eco--technology for the working staff;
- Implementation of information campaigns regarding the existing legal regulations;
- Reduction of bureaucracy;
- Establishing tougher penalties for environmental prejudice;
- Elaboration of legislation for selective waste collection;
- To ensure a system to manage agriculture;
- Ensuring laws on production and quality;
- Simplification of the methods for accessing financial mechanisms;
- Implementation of good practice examples;
- Implementation of European environmental regulations;
- Energy, environment and eco-technology specific strategies and plans;
- Reduction of the eco-technology prices;
- Implementation of legal regulations depending on regional particularities;
- Monitoring of the implementation of eco-technology;
- Facilitation of the cooperation networks in the eco-technology field.

VI.2.7 Recommendations for the improvement of financial mechanisms

The mobilization of finance - ranging from classical loans to guarantee mechanisms to venture capital for environmental technologies and the market-based instruments (e.g. tax incentives) are necessary procedures for increasing eco-innovation and are good practice examples for encouragingeco-innovation in the Republic of Moldova.

The green public procurement objective and the specific actions for raising awareness and for training in the environmental friendly technologies are as well models for the Republic of Moldova in this field.

In order to improve the financial mechanisms in Republic of Moldova, steps should be taken in order to meet the main barrier identified by participants in research:

- The financial mechanisms should elaborate Programmesthat would decrease the initial investment which is perceived as too high;
- Financial mechanisms should simplify the methods for accessing funds;
- Financial mechanisms should elaborate financial Programmes betteradapted to categories of potential beneficiaries from the Republic of Moldova;
- The availability of funds should be improved through mechanism adaptation to potential beneficiaries needs and through media advertisement campaigns to describe the steps and necessary document for accessing funds;
- Bureaucracy should be reduced extensively, in order to increase the efficiency of financial mechanisms;
- Financial mechanisms should promote public-private partnership for implementing eco-technology in Republic of Moldova
- Reduction of the co-finance proportion, especially for the categories of potential beneficiaries that have reduced financial capacities for the implementation of eco-technology. Thus, this measure should be taken carefully, because if the rate of co-financing is reduced too much, the beneficiaries could lose their interest and responsibility for the projects.

Stakeholders and interested personnel from public institutions interviewed recommended an improvement of the financial mechanisms:

- Development of a synergy between donors, because the measures of energy efficiency should be approached complex and comprehensive;
- Creation of mechanisms and financial mechanisms for using eco-technology from the „pollution rate" according to the Kyoto protocol;

- Reducing the financial burden for the ecological label producers;
- Offering preferential credits with vacation for the first years or in which the state should cover the first part of interest or the last part of the credit;
- The creation of guarantee funds;
- Implementation of preferential credits for SMEs and for custom facilities for eco-technology suppliers;
- Better financing for rural areas.

Although these measures are aimed to facilitate the access of investors to eco-innovation,the stakeholders also stressed the need for a co-financing rate from the beneficiary for increasing its responsibility in the project implementation.

Other recommendations are the plantation of the energy cultures in wet areas („energetic willow") for biomass, water purification, regeneration of flora and fauna in rivers basins. Collecting and recycling the auto batteries is one of the measures for eco-technology.

Another proposed measure is that the eco-technologies are compulsory. In the transport sector, Programmes that promote the cars with a reduced consumption would be one method to reduce the environmental impact.

The main recommendations for improving financial mechanisms mentioned by stakeholders and the institutions that manage financial mechanisms are:

- Taking into consideration good practice projects, as "Greenhouse" from Romania;
- Creating a legal framework for improving the custom facilities for suppliers;
- Creating special credits with no rate payment for the initial years;
- Creating an informational system for all ministries and agencies;
- Improving the bank system;
- Creating a synergy between donors;
- Directing the financial mechanisms and funds on districts;Scutirea de TVA a proiectelor vizând eco-tehnologiile;
- The projects on eco-technologies to be exempt from VAT;
- Preferential loans with vacation for the first years which the state should cover the first or the last part of the interest for loan;
- A regional approach of investors and a better financing for rural areas than urban areas.

VI.2.8 Recommendations form the good practice examples

As the success stories in eco-innovation presented above show, the most important premise for eco-innovation is the general understanding about environmental issues. Therefore, the Republic of Moldova should construct a solid base for eco-innovation by building a "national environment personality," through good environmental education by raising public awareness about environmental issues. Government investment in R&D infrastructure and personnel are among the horizontal measures which can be identified as sources of success in eco-innovation and for increasing market demand for these products; therefore it is highly advisable for the Republic of Moldova to increase its expenditures in this field.

The availability of initial seed funding, of multiple funding schemes for supporting research in eco-innovation products and their implementation in the market, together with correlated fiscal measures and integrated strategies elaborated by public authorities are also measures that the Republic of Moldova should implement in order to increase the development and implementation of eco-innovation solutions. Moreover, demand and supply policy measures are to be implemented in order to support the development of eco-innovations.

The Republic of Moldova should be more specific in its strategies and plans on the dimensions of eco-innovation, by tackling the environmental issues directly and proposing specific, gradual solutions. In addition, regional eco-innovation solutions should be implemented for a better result in eco-innovation. The strategies of good practice example states include second and third generation innovation policies. First generation policies support mostly innovative solutions improving pollution control and other end-of-pipe environmental technologies, which can be found some of the Moldovan strategies presented above. Thus, Moldova has made important steps in adopting second generation policies to support eco-innovation, resulting in greater resource and energy efficiency in the production processes, by acknowledging that eco-innovation can have both economic and environmental benefits, mostly being elaborated and correlated to European Union standards. Thus, for achieving a high-level of eco-innovation measure implementation, the Republic of Moldova should adopt third generation policies support systemic (transformative and radical) eco-innovations aiming at changing production and consumption patterns.

Measures include value chain management, re-designing cities, industrial ecology/ symbiosis, new business models providing alternative solutions (e.g. product service systems), as it was presented in the good-practice model leaders strategies. Thus, the Republic of Moldova should not rush this type of policy implementation until the previous strategies were properly and fundamental implemented, as for example in Poland and Romania. It is highly important for Moldova to not skip steps in the process of eco-technologies implementation and to allocate the necessary time and attention for every implemented environmental or energy efficiency policy.

After the global financial crisis, which had a major impact especially in states with negative productive out-turns and with flawed technological lines, there was a window of opportunity for environmental policies to be reconsidered, to raise people's awareness on environment issues and to pursue a conjugated strategy to change the used technology toward a more eco-friendly.

In the process of implementing eco-technologies Moldova can learn from the good practice examples of Programmes and projects implemented in states with similarhistorical backgrounds, such as the former soviet republics which have the same level of economic underdevelopment.

In order to achieve a smart economy, based on eco-technologies and to reach a sustainable development, Moldova is, as described above, assisted by the European Union, through large Programmes which give complex framework for development through assisted financial aid, loans and investment in the public and private sector. The Union has set itself the objective of becoming a smart, sustainable and inclusive economy by 2020 with a set of policies and actions aimed at making it a low-carbon and resource-efficient economy.

Thus, although international assistance for Moldova in implementing eco-technologies and eco-innovation as well as for research and development are consistent and coherent, Moldova should stimulate economic and actors – through financial measures, raising awareness – to access this funds for sustainable development.

Moldova needs to improve the strategic planning of revenues and expenditures, to divide the roles and responsibilities on environmental management, to strengthen the legislative framework and internal control mechanisms, to strengthen the procedures of project cycle management, to strengthen the potential for maintaining the level of incoming sources and to raise the level of public access to information[56] .

56 - http://www.oecd.org/env/outreach/34711355.pdf

VI.2.9 Recommendations for green public procurement

The public procurement practices should be adapted to GPP and in the selection of the offers should be introduced more environmental criteria which should be prioritized compared to the price criteria. For a better public procurement procedure is recommended::

- to include in the national legislation clear targets, priorities and timeframes;
- to indicate the scope of the purchasing activities covered;
- to indicate overall responsibilities for implementing the policy; Includerea unui mecanism pentru monitorizarea cuvenită a performanţei;
- to include a mechanism for appropriately monitoring performance.

It is also is recommended that in every agency and local authority staff should be hiredwith appropriate practical skills. The stakeholders and the institutions managing financial mechanism recommended that:

- the law regarding the acquisitions should contain facilitation regulation on promoting the use of eco-technologies;
- in the procurement process, specifications developed by environmental experts should be accepted;
- strict control on products with negative environmental impacts should be made.

VI.2.10 Recommendations for promoting eco-technologies

Recommendations for popularization of eco-technology

In the Republic of Moldova, all types of eco-technologies should be popularized, not only the green energy ones.

Water sustainability

- To implement the 2011 Law No. 272 on Water;
- The Ministry of Environment, in cooperation with the relevant authorities, should ensure that the State Water Cadaster is fully operational and publicly accessible;
- The Government should develop an action plan for the water sectors;

- The Ministry of Environment should promote a wider integrated water resource management process coordinated with the implementation of the revised Water Supply;
- The Government in cooperation with local authorities should assess the current situation of sewerage systems in urban areas and wastewater treatment plants and, based on the results, ensure adequate funding for the rehabilitation and modernization of sewerage systems and WWRP.

Waste Management

- The Government in cooperation with local authorities should: promote the adoption of laws on waste management by the parliament; develop the relevant secondary legislation to implement the internationally recognized waste management priorities and good practices; implement the 2020 strategy;
- The Government and local authorities should decrease the taxes for waste collection;
- Local authorities should make a programme of waste collection from each household;

Green energy

- The legal framework should be simplified for the providers;
- The funds should be adapted for households;
- The Government should establish some quality standards for biomass pellets and briquettes.

In order to increase the degree of eco-technology use and improve users' satisfaction on the eco-technologies in use, specific measures should be taken on two levels: raising awareness on the utility of eco-technology and the removal of the perceived barriers in the use of eco-technologies. These objectives could be improved through:

- Awareness-raising campaigns on the sustainability of eco-technology, on the available funding mechanisms and to present specific advantages for the use of eco-technology for each category of potential users (for public institutions, private actors, households);
- Seminars, conferences, round tables organized by public institutions and private entities for presenting the achievements of implemented eco-technologies;
- Demonstrative showrooms with eco-technology products and demonstrative lessons for potential users of eco-technologies;
- Meetings between beneficiaries and interested entities to facilitate know-

how transfer on the achieved benefits of implemented eco-technologies, on methods to facilitate the use and maintenance of eco-technology products; Dezvoltarea de platforme on-line de comunicare între constituenţi privind eco-tehnologiile;

- Developing online-platforms of communication between stakeholders of eco-technology;
- Exchange visits at the national level and abroad for observing good practice eco-technology implementation examples;
- Introducing state subsides/aid or facilities to compensate the high costs of eco-technology maintenance;
- Developing a specific section within technical schools for training personnel for the use and maintenance of eco-technology;
- Imposing quality standards for Moldovan eco-technology producers in order to rally to European standards and to increase the trust of users in this type of technology.

Promoting eco-technology

In the first place it is important that the population understands the possibilities and benefits of eco-technology solutions. The main recommendations of the beneficiaries/ public institutions/companies are:

- mass-media campaigns for the available financial instruments that fund eco-technology (91% of respondents);
- information meetings – round tables, seminars, conferences, trainings on raising awareness on the utility, necessity and possibility to access eco-technology funds (89%);
- mass media campaigns for raising awareness on the positive impact of eco-technology (83.6%);
- meetings organized by public institutions for facilitating the communication and know-how sharing between users of eco-technology and interested entities and between beneficiaries and potential beneficiaries of eco-technology financial mechanism/funds (83/1%); Information campaigns regarding the utility of eco-technology organized by NGOs (78.8%); Information campaigns for promoting the available financing opportunities for eco-technology (72.5%);
- organization of information campaigns regarding the benefits of using eco-technology in the private sector, not only for public institutions, but especially in rural areas where the population is less informed about the existing types

of eco-technologies;

- compensation Programme for the costs with eco-technology acquisition;
- direct information on the usefulness of these technologies must occupy 25-30% of the entire promotional information;
- present opinions about the financial mechanisms;
- hiring experts in energy domain in Local Public Administration;
- encouraging the cooperation between donors (for example collaborations between Romanian Government and Republic of Moldova);
- Elaboration of a clear policy in eco-technologies field.

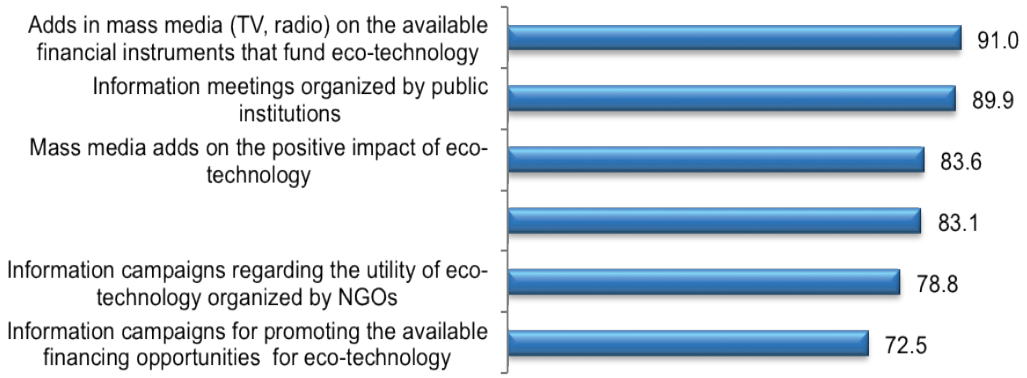


Figure 33. Recommendations for increasing the public awareness on eco-technology and on the available financing mechanisms (%)

The main activities recommended for improving communication concerning the availably and usefulness of eco technologies, identified both in quantitative and qualitative research are:

<u>Information campaigns and seminars</u>

- information campaigns and public awareness on the benefits of using eco-technologies;
- promotion campaign at the state level (kindergartens, schools, universities, public transport) in order to develop cross-cultural use of eco-technologies and mechanisms for funding;
- organization of seminars with the beneficiaries and potential beneficiaries;
- organization of training courses, especially for farmers;
- promoting ecological education in kindergartens, schools;
- promoting the good practice in these areas and the results of the implemented projects.

Information through mass-media

- tv shows, radio campaigns about the eco-technologies solutions.

Recommendations for making eco-technologies more attractive for use

In order to make eco-technologies more attractive for use, participants in the quantitative research suggested the following are implemented:

- Awareness raising campaigns, seminars, round tables (44.4% of respondents);
- Fiscal facilities, support, stimulants and state aid (30.7% of respondents);
- Training of public institutions personnel in order to be able to provide efficient advisory consultation in the field of eco-technology for interested entities; and training of specialists that assure the maintenance of the new implemented eco-technologies (13.8% of respondents);
- Implementation of compulsory environmental education is schools (11.6% of respondents);
- Increasing the number and availability of funds, investments and grants for eco-technology (10.7%);

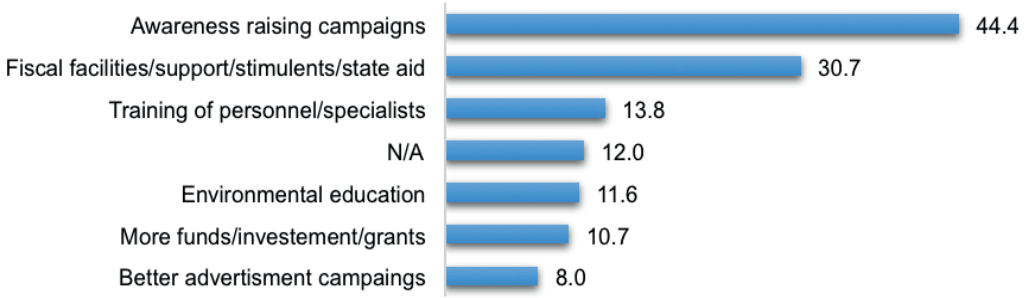


Figure 34. Recommendations for making eco-technology more attractive for use (%)

- *Extended and more efficient advertisement for eco-technology (8%);*
- *Adjustments of the legal framework to the national particularities of eco-technology implementation (6.2%);*
- *More research and development Programmes (6.2%);*

- *Fines for polluters;*
- *Simplification of the mechanisms of accessing funds for eco-technologies;*
- *Technical quality standards;*
- *Increased eco-technology funds;*
- *Fines for polluters;*
- *Simplification of the mechanisms of accessing funds for eco-technologies;*
- *Technical quality standards;*
- *Increased eco-technology funds;*
- *Development of regional information and monitoring centres;*
- *Meetings between beneficiaries of eco-technology funds and potential beneficiaries;*
- *Implementation of good practice examples;*
- *Decrease on interests on loan;*
- *Environment strategies and plans;*
- *Increase of eco-technology offers on the market;*
- *Encouragement of the development of eco-technology projects in rural areas;*
- *Establishing partnerships with states that are leaders in the implementation of eco-technology solutions;*
- *Implementation of eco-technology adapted to national particularities;*
- *Public study that analyze the sustainability of eco-technologies on the national particularities of Republic of Moldova;*
- *Improvement of communication between institutions that are involved in the implementation of projects or funds for eco-technology;*
- *Recycling factories with state capital;*
- *Legal constraints for the implementation of eco-technology;*
- *Increasing taxes for traditional pollutant technologies;*
- *Public-private partnership for eco-technology projects;*
- *Trainings, study visits and exchanges with countries that implemented successfully eco-technology solutions.*

ABBREVIATIONS

AECID	Agencia Española de Cooperación Internacional para el Desarrollo
AFD	Agence Française de Développement
ANRE	National Agency for Energy Regulation of the Republic of Moldova
ASM	Academy of Sciences Moldova
BLICC	Swedish Business Leaders' Initiative on Climate Change
BMZ	German Federal Ministry for Economic Cooperation and Development
CEB	Central European Bank
CITES	Endangered species of wild fauna and flora Convention
CIUDAD	Cooperation in Urban Development and Dialogue Programme
CoriP	Corporate Innovation Platform
COST	European Cooperation in Science and Technology
DFID	Department for International Development
DG	Directorate General
EBRD	European Bank of Reconstruction and Development
EcoAP	Eco-innovation Action Plan
EE	Energy Efficiency
EEF	The Energy Efficiency Fund
EEPP	Energy Efficiency Public Procurement
EIB	European Investment Bank
EIF	European Investment Fund
ELENA	European Local Energy Assistance
EMAS	The European Eco-Management and Audit Scheme
ENI	European Neighbourhood and Instrument
EPIRB	Environmental protection of international river basins
EPTATF	Eastern Partnership Technical Assistance Trust Fund
ESD	Directive on energy end-use efficiency and energy services
ESIB	Energy saving in the building sector in Eastern Europe and Central Asia
ETAP	Environmental Technologies Action Plan
EU	European Union
FAO	Food and Agriculture Organization
FY14-17	Fiscal Year 2014-2017
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GHG	Green House Gas
GIZ	German Investment Support
GMO	Genetic Modified Organism
GPP	Green Public procurement
H2020	Horizon 2020
IDA	International Development Assistance
IFAD	International Fund for Agricultural Development
ILO	International Labour Organization
IMF	International Monetary Fund
IOM	International Organization for Migration
ISAR	Initiative for Social Action and Renewal in Eurasia
JASPERS	Joint Assistance to Support Projects in European Regions
kt	Kilo tons
LEF	Local Ecological Funds

Marguerite	European Fund for Energy, Climate Change and Infrastructure
MDL	Moldovan Lei
MoREEFF	Moldovan Residential Energy Efficiency Financing Facility
MoSEFF	Moldovan Sustainable Energy Financing Facility
MRDA	Moldovan Research and Development Association
MSIF	Moldova Social Investment Fund
NAP	National Action Plan
NATO	Nord Atlantic Treaty Organization
NEEAP	National Energy Efficiency Action Plans
NEF	National Environmental Fund
NFRD	The National Fund for Regional Development
NGO	Non-governmental organization
NIB	Nordic Investment Bank
NIF	Neighbourhood Investment Facility
NISP	National Industrial Symbiosis Programme
ODA	Official development assistance
OECD	Organization for Economic Co-operation and Development
PPP	Public-private partnership
R&D	Research and Development
RES	Renewable Energy Sources
RTD	Research and Technological Development
SCOPES	Scientific co-operation between Eastern Europe and Switzerland
SEI	State Environmental Inspectorate
SEK	Swedish krona
SET Plan	Strategic Energy Technology Plan
SIDA	Swedish International Development Cooperation Agency
SIMEST	Società Italiana per le Imprese all'Estero (Italian Society for Enterprises Abroad)
SME	Small and Medium Enterprise
SNF	Swiss National Science Foundation
SOFID	Sociedade para o Financiamento do Desenvolvimento
STCU	Science & Technology Centre in Ukraine
TITA	Technological Innovation and Transfer Agency
UN	United Nations Organization
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNCHS	United Nations Centre for Human Settlements
UNDAF	United Nations Development Assistance Framework
UNDCP	The United National Drug Control Programme
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	The United Nations Populations Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNIFEM	United Nations Development Fund for Women
UNOPS	United Nations for Project Services
USAID	U.S. Agency for International Development
WB	World Bank
WFD	Water Framework Directive
WFP	World Food Programme
WHO	World Health Organization

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