

INVESTMENT FOR ENVIRONMENTAL PROTECTION IN THE EUROPEAN UNION

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Abstract

Investment decision can be regarded as one of the most important decisions taken by the management company. By the correct foundation of investment decisions depend the market position of the company, increasing its market share and gain a competitive advantage over competitors.

Investments for environmental protection brings together all available money-makers, private and mixed distribute to finance activities and actions aimed at the prevention, reduction and elimination of pollution and other forms of environmental degradation resulting from production processes or consumption of goods and services.

Key words: environmental protection, environmental protection investment, public and private specialized producers, efficiency of environmental protection investment, environmental projects

1. Key elements of for environmental protection investments

Investments may be regarded as "an exchange between present monetary expense, certain, and the future hope of cashing a flow of money." [1]The investment is considered to be represented by "all expenses incurred for expanding existing fixed assets, the creation of new productive capacities, reconstruction and modernization of existing ones, thus ensuring business development and create conditions for achieving higher incomes." [2]

Investment decision is based on complex and accurate information on the need, opportunity, during the construction and operation of investment, the amount of expenditures and financial resources, input and output flows of funds throughout the investment operation, ensuring profitability and liquidity, while recovering capital invested, etc. [3]

According to the definition of the National Institute of Statistics of Romania "environmental protection investments include expenditures for construction work, installation and assembly, purchasing equipment, transportation and other expenses for the creation of new fixed assets for development, modernization, reconstruction existing ones, in order to protect the environment." They also include the value of services related to the transfer of ownership of existing fixed assets and land (fees, materials fees, travel expenses for loading and unloading). The efficiency of environmental protection investments is reflected in the report of the effects derived from the investment and financial efforts made to achieve these investment.

The defining elements of the investment term are:

- Investment effort or resources that are involved in a project;
- Time, reflects the life of the investment;
- Return on investment, which reflects the future effects are higher than initial costs;
- Risks arising from the actual timing of the expected effects on future periods; these effects, however, are future hopes and uncertainties.

Environmental protection investments are made by the public sector, public and private specialized producers and industry.

The "production" sector includes:

- Specialized producers - units that perform environmental activity as main activity;
- Unspecialised producers - units performing an environmental activity as a secondary or ancillary activity to their main business. These sectors participating with the largest share in the total investment costs for environmental action.

The public sector includes central government units and local funding environmental actions. Specialized producers can be public or private entities that provide environmental services such as waste management and wastewater management, as main activity.

The industrial sector includes all activities in mining, manufacturing and electricity, gas and water supply sectors. Apart from legislative duties, the public sector monitoring environmental performance, provides grants and subsidies to encourage behavior change towards the environment and society to stimulate research and development.

In most European countries, public authorities such as municipalities may also provide directly, environmental services such as waste management and wastewater treatment activities. These services are generally provided by public companies whose activities are differentiated from other government administrative tasks.

In some countries, governments delegate the supply of environmental services joint ventures or private ones, whose main activity is aimed directly providing environmental services (specialized producers).

Industry also plays an important role in environmental protection activities. Most industrial enterprises implement internal measures to reduce the impact of production processes that they carry out their environment: invest in clean technologies to reduce emissions to air, water and soil and organize their own waste management services, etc.

How an entity grows and develops, its ability to remain competitive and survive depends on its ability to generate constant streams of ideas for new products and new ways to improve existing products or to produce them at a cost reduced but to ensure environmental compliance requirements at national and international level. In other words, entrepreneurial ability is a key factor in generating viable proposals for investment projects.

The most important environmental protection investment projects are: [4]

- Replacement projects production technology refers to projects for the replacement of equipment still running but are obsolete, their purpose being, in addition to reducing labor costs, and reduce consumption of natural resources and utilities (electricity).

- Projects to expand into new markets with new products - developing economic competitiveness in the context of global challenges (economic globalization, the opening of international markets, rapid technological change and the limits imposed nationally and internationally on the quality of goods and services in relation to environmental protection and human health) are an incentive for businesses to invest in the production of goods and services to meet the requirements of environmental protection and of course consumer demand. From this point of view, the European Commission proposed the creation of a single market for organic products, with recommendations about the manner in which you have provided information on the environmental impacts of products to win, so consumer confidence.

- Environmental projects - refers to expenses necessary to comply with environmental legislation, often called the investment mandatory (mandatory Investments) or projects without substantial additional income, but rather have a positive effect in terms of impact work environment.

An important aspect that is in a "standard" in making the decision to invest in projects aimed at environmental protection is the costs of financing projects. The acceptance of investments to reduce pollution will increase as the cost of financing the investment project will be lower than the potential benefits, according to the diagram below:

Costs and benefits of reducing pollution for investors	
$VP (P) + VP (T(p)) + PV (M(s))$	$(C,I) + VP (Q,M) - S$
Benefits	Costs
Polluters will prefer investments where the benefits outweigh the costs	
<p>$VP (P)$ – present value of the profit flow of investment;</p> <p>$VP (T(p))$ – present value of avoided pollution taxes (T) and other environmental payments throughout the life of the investment, the likelihood of application (p)</p> <p>$PV (M(s))$ – present value of the difference between average avoidable costs (due to environmental liability) with probability (s) in the case with and without investment;</p> <p>(C,I) – capital cost (equipment and installation cost)</p> <p>$VP (Q,M)$ – present value of operating and maintenance costs during the life of the investment</p> <p>S - Subsidies</p> <p>Interventions on the left side of the equation are much more effective ways to influence investment behavior of polluters</p>	

Source: V. Platon, *Finanțarea activităților de protecție a mediului*, Ed. Economică, București, 2004, pag. 20

2 Financing environmental protection investments in the European Union

At EU level, the financing required for a transition to a green economy is substantial and can be mobilized by developing public policy 'smart' and innovative financing mechanisms oriented public financial support to ensure the development of market instruments necessary openness to emerging financial markets able to support the implementation of investment projects that characterize national initiatives to support transition to eco-efficient economy.

Since all economic activities inevitably affect the environment to a certain level, all sectors have a role but also responsibilities to prevent or control these activities. According to the "polluter pays" the difficult task of investing in shares and environmental protection objectives should translate into a higher weight, heavy polluters detrimental environmental quality. Financing environmental protection investments and expenditures are revenue allocation mechanism to prevent and control the negative effects caused by activities socioeconomic environment.

Even if the change management practices could lead to a decrease in negative externalities for the environment, it is no doubt that investment and current expenditure on environmental protection are key variables that can positively influence environmental actions.

Investment decisions are influenced by environmental regulations, which leads to the separation of investors motivation of distributing financial resources or to provide only a pollution control, or to fund the productive component. In this case, the situation would be conceptual integration of environmental considerations into productive investment decisions (buying or upgrading production technologies to ensure production processes with low environmental negative externalities) leading practice, both financial and environmental benefits .

To analyze the amount of environmental protection investment by all sectors, we used data from official statistical website of the European Union. Eurostat regularly collect data on environmental protection investments through joint questionnaires Eurostat / Organization for Economic Cooperation and Development. Eurostat also classifies economic units that invest in environmental protection in four main sectors: specialized producers (eg, public entities and private enterprises), public sector (other than specialized producers), industry and households. This grouping of entities based on a number of distinctions between types of environmental activities are involved. Eurostat distinguishes two categories of investment spending: spending as deviations principle (EXP I) and expenses in accordance with the funding (EXP II), according to table no. 1.

Table no. 1

Expenditures according to the principle of deviations (EXP I)	
Variables	Description
Investment expenditure	Capital expenditure and land acquisition
+ Internal current expenditure	Intermediate consumption and compensation of employees for environmental protection activities
- Receipts from by-products	Economic benefits related to the environmental protection activities
= EXP I	Expenditures according to the deviations principle

Source: Expenditures of environmental protection in Europe, Eurostat, 2011, p. 9

Environmental protection investment expenditures include all expenditures in a given year (purchases and own production) for machinery, equipment and land used for the purpose of financing environmental actions.

Total expenditure on environmental protection investments are directed to two destinations:

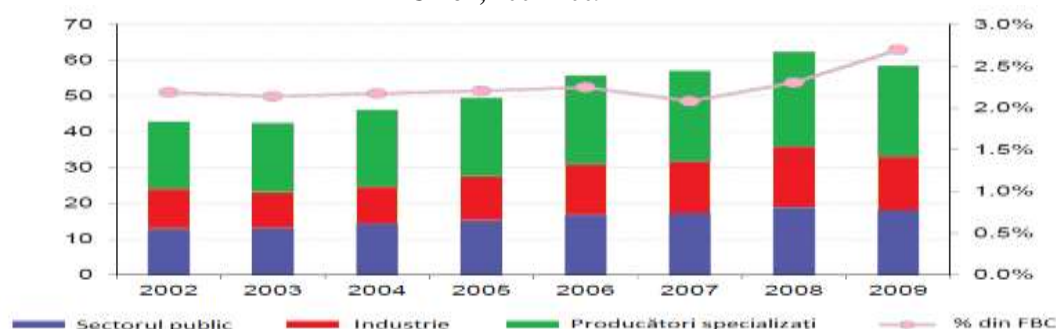
- Investment in pollution treatment (end-of-pipe investments). These investments do not affect the production process itself, they serve to reduce pollution already generated.
- Investments in integrated technologies (pollution prevention investments). These are investments leading to a modified or adapted production process and lead to a reduction of pollution at source.

Environmental protection investments had a share of 2.7% of gross capital formation in the European Union in 2009.

As can be seen from Fig. 1, the environmental protection investments during the years 2002 to 2009, had an upward trend. Regarding the share of environmental protection investments by sectors of the economy, we can say that there is a significant change: the investments made by specialist producers accounted for about 43% of environmental protection investments made during the period, industry and the public sector accounted for approximately 25% and 31% of the total investment for environmental protection.

Fig. no. 1

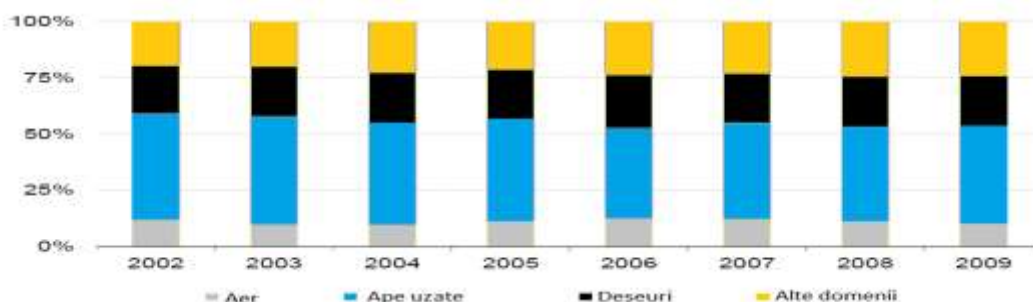
Share of total investment environmental protection sectors in gross capital formation in the European Union, 2002-2009



Source: <http://epp.eurostat.ec.europa.eu/environmental/investments,2011>

Regarding the fields to which they were targeted investments for environmental protection, wastewater treatment activities drew most of them during the years 2002-2009, but their share in total investments environmental protection decreased slightly from 48% to 44% in fig. 2 The value of investments in shares to reduce emissions of greenhouse gases in the air and waste management remained almost unchanged during the years 2002-2009. The share of environmental protection investments to other areas of environmental protection has increased in the period under review, mainly reflecting an increase in investment for soil remediation.

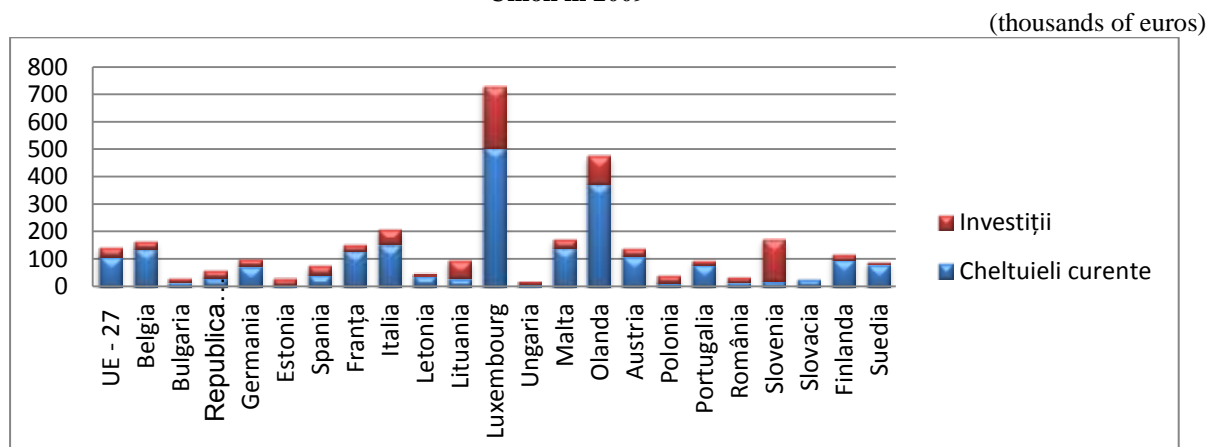
Fig. no. 2

Investments for environmental protection environmental areas in the EU, 2002-2009 (% of total investment for environmental protection)

Source: <http://epp.eurostat.ec.europa.eu/environmental/investments,2011>

In Fig. 3 is presented a breakdown of environmental investments and current expenditure on environmental protection in the Member States of the European Union. This demonstrates that environmental protection investments in the European Union accounted for a quarter of total expenditure for environmental protection. The share of environmental protection investments in total expenditure for environmental protection generally exhibited an increase in most Member States that joined the EU in 2004 and 2007. This increase can be justified by the increase in fixed asset expenditures necessary to comply environmental legislation imposed by the EU.

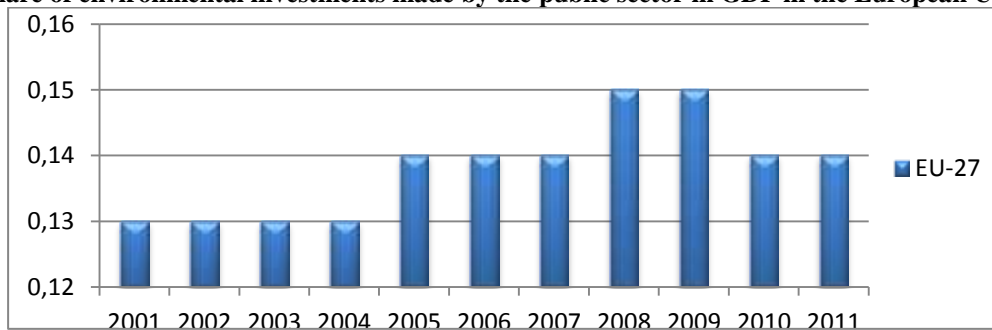
Fig. no. 3

Investments and current expenditure on environmental protection in the Member States of the European Union in 2009

Source: <http://epp.eurostat.ec.europa.eu/environmental/investments, 2011>

Regarding the share of environmental protection investment in GDP, financed by the public sector we can see from Fig. 4 that during the period 2001 to 2011 there were four evolve. The share of investments financed by the public sector in GDP has been an upward trend in the period 2004-2009, followed by a period of decline. An argument justifying the increase between the years 2004-2009 refers to investments that candidate countries had to finance the adoption of the environmental acquis and rallying the main targets imposed by the EU on environmental quality.

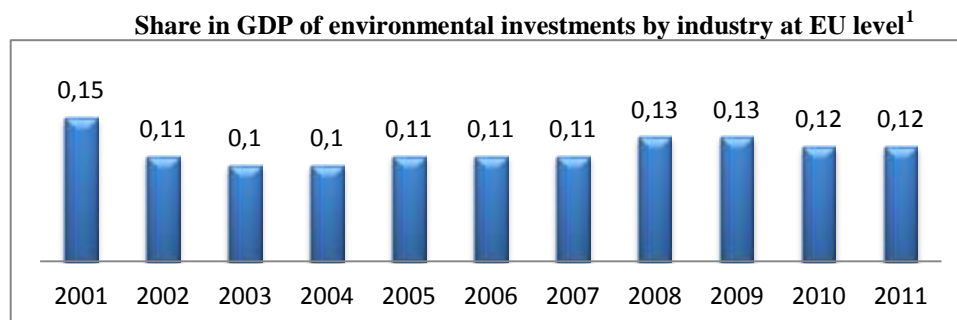
Fig. no. 4

Share of environmental investments made by the public sector in GDP in the European Union

Source: <http://epp.eurostat.ec.europa.eu/environmental/investments,2012>

Environmental protection expenditure by industry include domestic investment and current expenditure for the production of environmental services. In addition, the environmental services industry buys from specialist manufacturers (purchases) and public sector (taxes), hence they encompass and fees and procurement costs. Neither in the case for environmental protection investments by industry are not noted substantial changes during the period, the share of industrial investments environmental protection in GDP ranging between 0.11 in 2002 and 0.13% in 2009, with the exception of 2001 the share of GDP was 0.15%, according to fig. no. 5.

Fig. no. 5

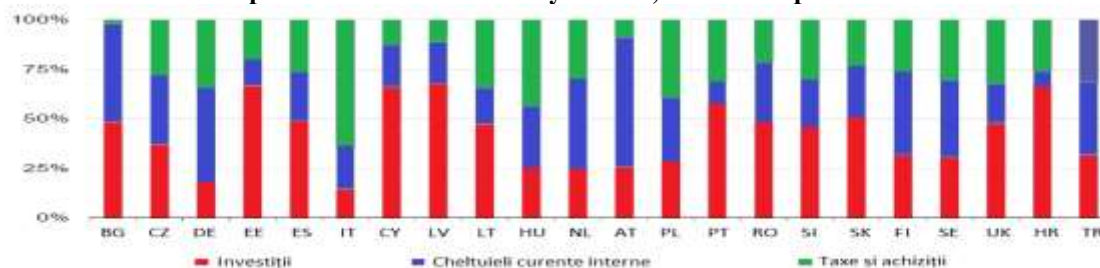


Source: <http://epp.eurostat.ec.europa.eu/environmental/investments,2012>

In most countries for which data are available, funds distributed by the industry to purchase environmental services from specialized manufacturers and the public sector is between 20% and 40% of the expenditure for environmental protection, according to fig. no. 6.

Fig. no. 6

Share of total expenditure for environmental protection investments, current domestic spending and taxes and procurement from industry in 2012, in the European Union



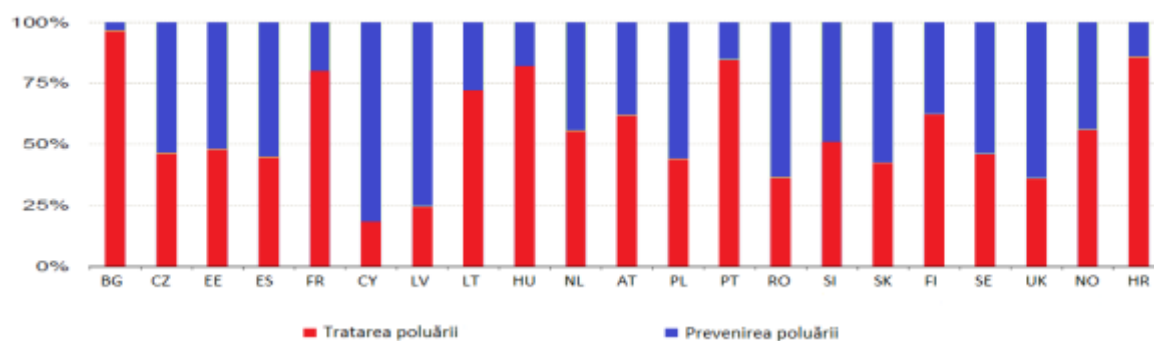
Source: <http://epp.eurostat.ec.europa.eu/environmental/investments,2013>

From Fig. no. 6 it can be seen that industries in countries that joined the EU in 2004 and 2007 have made the largest investments for environmental protection, because they must comply with the standards imposed by the EU environmental acquis, in particular those with on the limitation of emissions and waste management. Data on investment by industry can be further broken down into two main parts, namely investment for pollution treatment (integrated investment) and investment in pollution prevention. Integrated investments are investments that lead to a modified or adapted production process and serve to reduce the amount of pollution generated. From fig. no. 7 it can be seen that investment in pollution treatment were higher than investment for its prevention in 10 of the 21 countries for which data are available. The largest investments in pollution prevention were recorded in Cyprus and Latvia, while Bulgaria, Portugal and Croatia are primarily invested in pollution treatment technologies.

Fig. no. 7

Industrial investments for environmental protection by type in 2012 (% of total investment for environmental protection) in European Union

¹ Data are taken from the Eurostat website and environmental investment data for 2010 and 2011 forecasts, because many European Union countries have not submitted the information needed for the actual estimates

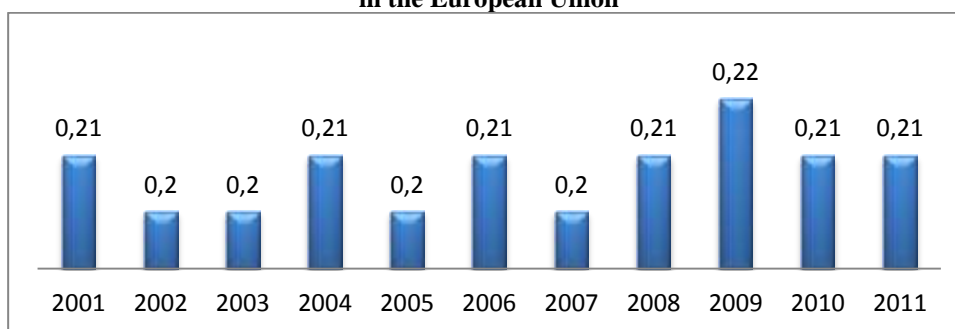


Source: <http://epp.eurostat.ec.europa.eu/environmental/investments,2013>

In terms of share of GDP for environmental investments financed by public and private specialized producers in fig. 8, it remained almost unchanged in the period 2001-2011, ranging between 0.20 to 0.22% of GDP. Specialized producers are leading providers of environmental services that are distributed in the market. This sector also includes, and entities engaged in environmental protection as a secondary activity. Between 2001 and 2011, both current spending and investment as specialized producers increased at the same rate in the European Union, maintaining a 20% share of the total environmental expenditure during

Fig. no. 8

Share in GDP of environmental investments of public and private specialized producers in the European Union

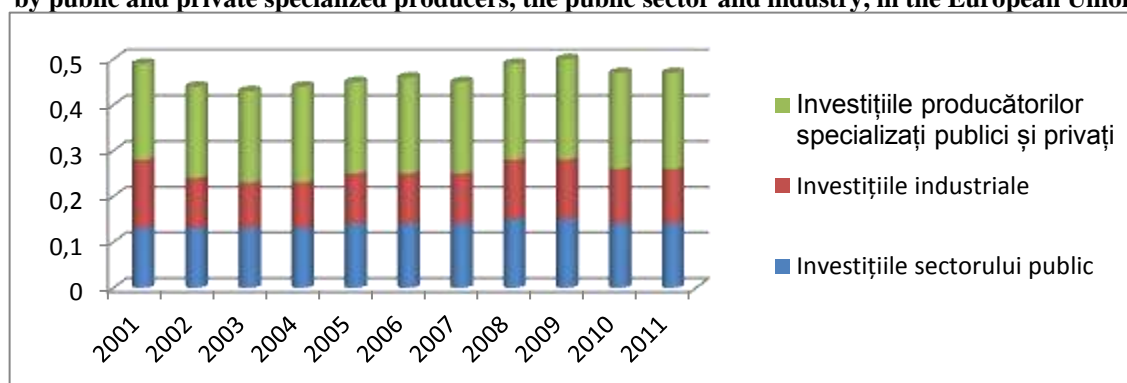


Source: <http://epp.eurostat.ec.europa.eu/environmental/investments,2012>

In comparison, we estimate based on figure no. 9, that in the period 2001-2011, the EU investment by public and private specialized producers had the largest share in total investments for environmental protection, the share maintaining constant throughout the period.

Fig. no. 9

Comparison between the investments in environmental protection by public and private specialized producers, the public sector and industry, in the European Union



Source: <http://epp.eurostat.ec.europa.eu/environmental/investments,2012>

Given the need for socio-economic development should be based on in-depth knowledge of the ecological implications and consequences in this area, economists concerned with environmental issues, will attempt to harmonize economic development goals - social rational management perspective environment. In appreciation of environmental issues to ensure sustainable development must weigh the costs of applying a policy of investment for environmental protection, its likely positive results, thus providing a basis for ordering the action alternatives.

3. Conclusion

Developing a green economy will require reallocation of public and private capital. Will be necessary to invest in research and development to support the rational use of natural resources such as water and soil, to promote the development and implementation of eco-efficient solutions (sustainable consumption of resources and energy efficiency systems low-carbon transport, renewable energy and recycling facilities and waste management), as well as raising awareness and educating people about the environment. We can say that financial incentives should be given social and / or environmental both public and private sector and consumers to invest in a greener economy. For example, better access to venture capital would act as an incentive for start-up companies to invest in green products and services.

An environment conducive to attracting investment is characterized by appropriate policy conditions - including legislative regulations, objectives, and regulations - and the ability of institutions, public or private, to implement the investment policy for environmental protection.

Institutional and political conditions to attract high levels of investment for environmental protection requires a broad set of activities and programs and appropriate governmental and institutional capacity to support viable investment projects.

In this sense, we can say that the following conditions are essential to create a sustainable investment environment:

- plans and environmental objectives developed through inclusive participatory processes. Plans based on energy consumption, favorable planning process transparent and inclusive and specific objectives set by optics makers are the first steps toward substantiating public investors certainty about the long-term vision of the impact of of environmental protection actions on the policy mix a country;

- institutional arrangements and capacity to implement investment policies effectively;

- drafting legislation to support investment in environmental projects. A viable legal framework that explicitly promotes environmental protection, sets objectives and policies binding and instructs appropriate institutions to implement policy and of environmental protection objectives can help boost investor confidence about the fact that the investment climate is stable and provides continuity regardless of political changes;

- the existence of regulatory instruments. Regulatory tool provides a set of rules that guide or restrict industrial activities and other activities that have an impact on the environment, in accordance with relevant laws.

- regulation of economic instruments. Economic instruments applicability translate policy objectives into price incentives to increase the attractiveness of investment options in of environmental protection projects. Incentives include tax cuts, subsidies to deter actions detrimental environmental activities in the form of tax exemptions, removing environmentally harmful subsidies, establishing uniform tariff structure for consumption negatively affects the environment, fines, etc.

- capacity development projects eligible investment for environmental protection. Bringing together public and private funds, for example, or as a public-private partnership (PPP) or public-private cooperation could help eliminate some inaccuracies market. For example, energy performance contracts are a market-oriented mechanism that can be used to provide improved energy efficiency in the building sector. In this sense, energy service company agrees to improve the energy efficiency of an installation and energy savings to use for investment.

European political context, particularly developing the strategy "Europe 2020" or proposal for the Multiannual Financial Framework, stressed the need to mobilize private funds and develop new financial instruments to meet the huge investment needs facing Europe today. In the current economic context, public-private partnerships seem to be an interesting tool to overcome budgetary constraints and to finance public investment needs in Europe. Public-private partnerships provide also an excellent means for private operators to ensure efficient use of public revenues. Cooperation between the private and the public sector can also generate, make more research and innovative solutions and provide solutions to issues raised by public policies, including those related to environmental issues and the use of resources.

European Commission introduced in the 7th Environment Action Program the concept of "common technical platform" as a new way to stimulate the growth of "public-private" partnerships in Europe. Platforms were created to find synergies between the public and private sectors and to address technological challenges considered to contribute to the conceptualization of a series of key policy objectives which are essential for Europe's future competitiveness. European Commission reiterated its intention to "improve the framework for public-private partnerships" and proposed various financial instruments such as bonds for EU projects, to facilitate the use of public-private partnerships.

Innovative financing mechanisms are needed to make more sustainable Europe by 2020 and generate investment needed to achieve green growth objectives of the European Union. EU funding programs and the "Connecting Europe" will help finance major investment projects with a positive direct effect on the environment. They are not sufficient, requiring new ways to create real partnerships between stakeholders. Even if public-private partnerships are not always effective to provide cover investment needs, they promote knowledge and become leverage private capital in certain circumstances. To create a viable framework to stimulate private investment and achieving the Europe 2020 strategy, the EU must assess the circumstances in which public-private partnerships are adequate to develop other forms of cooperation "public-private" going beyond traditional models and create a suitable policy framework that private companies can provide a stable long-term investment.

Investment decisions are determined primarily by market considerations, ie the expected gains from investments. However, environmental investment decisions are deeply affected by the stability of the economic, political and legal framework of any economy.

A common international investment is not the only determinant of FDI flows. However, it serves the fundamental aim of ensuring investors can operate in a business environment openly, accurately and fairly regulated, both inside and outside the host country. In this respect, openness to investment should continue to serve as a touchstone to determine European policy priority for achieving a common framework for financing environmental investments. The European Union will continue to be an open environment to support investment in environmental activities, supporting cooperation with foreign investors, especially in view of their contribution to the economy and development of European society as a whole. At the same time, the EU must ensure that foreign investors enjoy a level playing field, ensuring uniform and optimal conditions for investments by phasing out restrictions on investments. Therefore justifies a more activist in terms of developing common policies on safety and efficiency of investment to ensure that EU investment relations with third-party partners is a possible way to facilitate economic and environmental progress.

A prerequisite for accelerating the process of reconciling economic growth with environmental protection is the overall coordination of policies, initiatives and existing instruments at EU level. In this regard, the next period, the European Union aims to promote a range of mechanisms in terms of financing investment projects aimed at protecting the environment and in particular those aimed at the rational use of energy. To facilitate the adoption of environmental technologies, promote the concept of eco-innovation and improving market conditions, key initiatives include the following segments community:

- energy (rational use of energy / energy efficiency and increased use of electricity from renewable sources);
- eco-innovation;
- competitiveness;
- innovation;
- transfer of technology;
- convergence in the European Union.

The extent to which these issues have been explored and exploited the strategic objectives of the various of environmental protection programs must be further explored, especially where there are opportunities for greater consistency and alignment segments. Anticipated benefits of this coordinated effort includes a growing number of green technologies, the adoption of the concept of eco-innovation in all sectors of the EU economy, and ensuring the efficient use of natural resources.

Every instrument of investment funding for environmental protection in the European Union is generally aimed at a different stage of the chain "objective-track" process innovation specific and expected effects on economic outcomes of innovation are:

- Employment - innovation will stimulate production and employment in the sectors concerned, including recycling sectors, renewable energy, sustainable construction and bio-products, and by providing a competitive position will lead to job protection current work, which would otherwise be subject to an increased risk of global competition.
- Increasing productivity by shifting production processes and product quality change;
- Balance of trade - environmental innovation will create new export opportunities in global markets and ensure the competitive position of the European Union in relation to manufacturers abroad;
- Core capital - environmental innovation will increase its capital base by stimulating investment in cleaner technologies and growth sectors;
- The volume of financial resources - EU already committed substantial budgetary resources to finance environmental innovation;
- Economic - environmental innovation programs can play an important role in developing regional cohesion;
- The transition to a sustainable economy - innovation in energy and eco-technologies will contribute to the strength of the EU economy and reducing dependence on imported energy and material resources.

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