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Green economic growth premise for sustainable development

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Abstract. *Accelerating the global issues such as natural resource depletion, damage to the natural environment, economic and financial crises and consumption growth led to the shift of the development paradigm from consumption to sustainable development and recognition of the new path, namely green economy.*

At the European level a number of international organizations discussed issues of transition to green economy (EC, UNEP, OECD). In 2008, UNEP launched "Green Economy Initiative to Get the Global Markets Back to Work", aiming to mobilize and re-focuse the global economy towards.

This is the twin challenge of moving towards a green economy: radically reducing the footprint of developed countries, while simultaneously raising levels of social and material well being in developing countries.

Without public intervention, the related market failures (i.e. market prices that do not fully reflect the environmental degradation generated by economic activity) may delay or even prevent the development of environmentally-friendly technologies.

Furthermore, in sectors such as electricity, network effects arising from existing infrastructures create additional barriers to the adoption of alternative sources of power, further hampering incentives to invest in new technologies.

Given that the transition to a green economy requires increasing of investment in economic sectors that contribute to enhancing of natural capital and reduce environmental risks, we intend to analyze the main measures taken by Romania to ensure transition to green economy.

Keywords: green economic; sustainable development; natural resource; Environmental Performance Index – EPI.

JEL Codes: Q01, Q58.
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Introduction

Accelerating the global issues such as natural resource depletion, damage to the natural environment, economic and financial crises and consumption growth led to the shift of the development paradigm from consumption to sustainable development and recognition of the new path, namely green economy. UNEP defines a green economy "as one that results in improved human well-being and social equity while significantly reducing environmental risks and ecological scarcities" (UNEP, 2010).

The new paradigm requires decoupling economic growth from excessive use of natural resources by limiting the extraction of natural raw materials. The transition to a new economic system based on sustainable development is recognized as the best response to global crises, especially in managment of social and environmental issues.

At the European level a number of international organizations discussed issues of transition to green economy (EC, UNEP, OECD). In 2008, UNEP launched "Green Economy Initiative to Get the Global Markets Back to Work", which aims to mobilize and re-focuse the global economy towards.

In 2011, UNEP Green economy report demonstrates that a transition to a green economy is possible by investing 2% of global GDP per year (currently about US 1.3 trillion) between now and 2050 in a green transformation of key sectors, including agriculture, buildings, energy, fisheries, forests, manufacturing, tourism, transport, water and waste management. However, such investments must be spurred by national and international policy reforms.

Besides relevant international bodies numerous studies reveal the need for green growth as the basis for sustainable development (Robins, 2010, Ocampo, 2011, Stern, 2009).

Studies in the filed (Ocampo, 2011) highlights four different macroeconomic issues that must be taken into account in the analysis of the green economy.

- how the welfare of future generations is taken into account in current economic decisions, an issue that is relevant for savings and investment decisions today, but has broader implications, as the social discount rate chosen should be used in cost-benefit analysis at the microeconomic and sectoral levels;
- effects that the degradation of the environment has on aggregate supply, as well as the effects of environmental spending and protection policies on both aggregate supply and demand;
- the fact that economic growth is always a process of structural change, a fact that is highlighted by the significant changes in the patterns of

production and consumption that must be put in place in the transition to the green economy, which in this regard can be characterized as no less than a new technological or industrial revolution;

- how global initiatives in this area are going to be financed.

The first of these issues relates to the discount rate that is used to value in welfare of future generations and the environmental damages that are being created today but which will fully affect economic activity only in the future, the damages generated by climate change, the loss of biodiversity or the deterioration of water systems, to name a few.

The importance of this issue can be best understood in terms of the debates surrounding the Stern Review on the economics of climate change. For example, environmental damage worth $100 half a century from now would be valued at $49.90 today using the Stern Review's discount rate of 1.4% a year.

Therefore, using a high discount rate significantly reduces the social profitability of taking mitigation actions today, favoring delayed action or even no action at all. For this reason, a high rate of discount reduces the attractiveness of savings and investing today to benefit the welfare of future generations. A complementary argument is that strong action today insures future generations against the asymmetric and non-linear effects that certain developments can have on the ecosystem.

Relevant environmental investment analysis should be assessed using low discount rates. Moreover macroeconomic considerations also indicate that green investments have a dual positive economic effect, on aggregate supply and demand.

Transition to a green Economy is characterized by substantially increased investments in economic sectors that build on and enhance the earth's natural capital or reduce ecological scarcities and environmental risks. Thus, these investments and policy reforms provide the mechanisms and the financing for the reconfiguration of businesses, infrastructure and institutions, and the adoption of sustainable consumption and production processes.

Such reconfiguration leads to a higher share of green sectors contributing to GDP, greener jobs, lower energy and resource-intensive production, lower waste and pollution, and significantly lowers greenhouse gas emissions. It can also assist in the reduction of persistent poverty through targeted wealth transfers, new employment, as well as improvements in access and the flow of ecosystem goods and services to the bottom of the economic pyramid. The latter is particularly true in the case of agriculture, where green technologies will tend to improve the agricultural productivity of rural smallholders.

Some countries have attained high levels of human development, but with the expense of their natural resource base and reduction of their per capita

ecological footprint. Other countries still maintain relatively low per capita ecological footprints, but need to deliver improved levels of services and material well-being to their citizens.

This is the twin challenge of moving towards a green economy: radically reducing the footprint of developed countries, while simultaneously raising levels of social and material well being in developing countries.

Without public intervention, the related market failures (i.e. market prices that do not fully reflect the environmental degradation generated by economic activity) may delay or even prevent the development of environmentally-friendly technologies.

Furthermore, in sectors such as electricity, network effects arising from existing infrastructures create additional barriers to the adoption of alternative sources of power, further hampering incentives to invest in new technologies.

Appropriate pricing of externalities and general innovation policies can go a long way in addressing these market failures, but the emergence of new technologies is a process that generally requires considerable and long-term investment, often initiated in public research institutions before being picked-up by firms. Hence, more specific and possibly temporary support for clean technologies may be needed to break path dependence effects that favor existing, dirtier technologies.

While there may be a case for public policies aimed at supporting the transition to greener technologies, the scope, timing and magnitude of the required interventions are generally hard to establish.

Concerning the transition towards climate-friendly technologies, some quantitative elements derived from model simulations can however provide tentative benchmarks.

To reach ambitious emission reduction targets, the high development and deployment costs of largely untested zero-carbon emission technologies such as fuel cells, advanced biofuels or advanced nuclear technologies are estimated to require large investments in research and development at the initial stage.

These sectors include renewable energy, low-carbon transport, energy-efficient buildings, clean technologies, improved waste management, improved freshwater provision, sustainable agriculture and forest management, and sustainable fisheries.

A wide range of indicators can help to the measurements to the transitions to a green economy. The governments are able to choose from depending of their national circumstances

- Economic indicators: for example, share of investments or the share of output and employment in sectors that meet a sustainability standard.

- Environmental indicators: for example, resource use efficiency or pollution intensity at either the sectoral or economy-wide level, for example, energy use/GDP.
- Aggregate indicators of progress and well-being: for example, macroeconomic aggregates to reflect natural capital depreciation, or broader interpretations of well-being beyond narrow definitions of per capita GDP.

To support green growth, European Commission has developed a series of strategy documents on sustainable development, energy security for the need to produce a new industrial revolution. One of the relevant documents is the Europe 2020 strategy based on sustainable growth, smart growth, inclusive growth.

Within "Europe 2020 Strategy", a strategy for smart, sustainable and inclusive growth", it is included the initiative on efficient use of resources, important objective in the context of climate change and diversification of energy resources. Strategy that establishes as the main priorities, a series of objectives regarding the sustainable development concept:

- 20% reduction in EU greenhouse gas emissions;
- 20% improvement in the EU's energy efficiency;
- Raising the share of EU energy consumption produced from renewable resources to 20% by 2020.

The combating of poverty and social exclusion is one of the specific goals of the Strategy, i.e. reducing the number of Europeans living below the national poverty line by 25% and lifting over 20 million people out of poverty.

Given that the transition to a green economy requires increasing of investment in economic sectors that contribute to enhancing of natural capital and reduce environmental risks, we intend to analyze the main measures taken by Romania to ensure transition to green economy, as follows:

- Increasing of the degree of exploitation of renewable energy sources for electricity and heat production by improving the green certificates market, promotion of mechanisms to support renewable energy resources. According to the commitments assumed by Romania, the share of energy from renewable sources in gross final energy consumption should be 24% and the national target for energy efficiency is to reduce primary energy consumption by 19%. Romania has significant and diversified renewable energy, estimated at 1.2 TW for solar, 23 TW for wind power, 36 TW for hydropower. Hydro potential is exploited at a rate of approximately 48%, while in the wind sector there is currently an installed capacity of 500 MW. The analysis of the energy potential of renewable energy sources reveals that to achieve the target set for 2020,

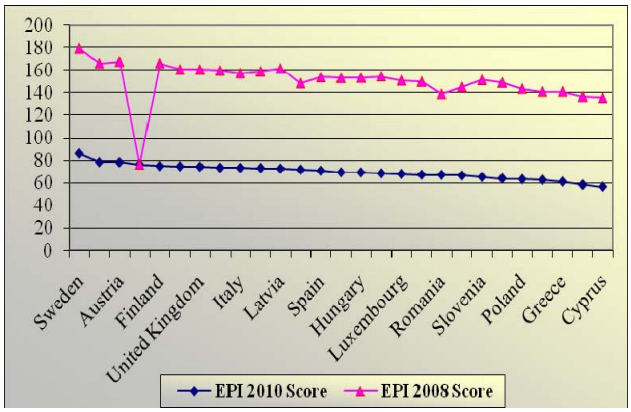
Romania will have to capitalize 63.5% of the total potential of renewable energy sources, which involves investment in modern technologies.

- Solving the issue of energy-intensive buildings, which account for 40% of carbon dioxide emissions by energy audit certification, building thermal rehabilitation program, developing a methodology for computing interest subsidy on loans requested by owners. It is also expected that the revised building Directive on energy performance of buildings, which entered into force in July 2010, will result in a decrease of approximately 5% of final energy consumption in the EU by 2020. According to the estimations in Romania, if there are implemented the necessary policies, the infrastructure and technology and market will have positive evolution, the estimations show that electricity, residential and industrial sectors should be able to reduce by 80% greenhouse emissions, the transport sector with about 60% and about 40% agriculture.
- Increasing of energy efficiency, initiative "An efficient Europe" in terms of resource use it is estimated that the first nine measures adopted under the Eco-design Directive will reduce consumption by about 340 TWh by 2020, the equivalent of energy produced by 77 power plants. In this respect we mention investments to modernize thermal power plants, investments financed through the Environment Sectorial Operational Programme.
- Action to improve the environment in rural areas and biodiversity through sustainable management of agricultural land, investment financed by National Development Rural Programme.

Thus, environmental investment contributes to the creation of new green jobs economy specific, we mention the environmental services including development and maintenance of necessary infrastructure (e.g. waste management, pollution control, maintenance of protected areas, energy production from renewable resources, risk prevention natural, even, non-environmental activities such as protecting natural heritage) that offers an important prerequisite.

In addition to creating new jobs needed to achieve and maintain infrastructure, special attention is paid to the potential of activities producing goods and services for prevention, monitoring, quality control of water, air, soil, waste recycling and reducing noise pollution.

To provide an overview of the objectives set by national environmental policies, we will present the Environmental Performance Index (EPI) that covers information on environmental health and ecosystem vitality, including air quality, environmental health, biodiversity and habitat, water resources management, fisheries, forests, climate change and agriculture.



Source: http://www.epi2010.yale.edu/Countries/Romania**.**

Figure 1. *Environmental Performance Index – EPI*

Romania ranks on 45 position, and the classification by regions is ranked 19 in Europe. There is thus an increase of 7 positions for Romania than in 2008 (No. 26) against the backdrop of influence national environmental policy and compliance with EU standards. The main positive aspects related to environmental health, which received a score of 72.67. However, it is necessary to improve existing environmental structure so that it becomes the basis of a green economy development.

An improvement of environmental objectives is reflected by share of environmental costs at national level that increased to about 18.6 billion in 2011, representing 3.2% of gross domestic product GDP, compared with 3% of GDP in 2010. Thus, the share of environmental expenditure in GDP is considered as one of the indicators that reflect the transition to the green economy. Environmental costs reflect environmental and financial flows and include payments for economic activities aimed to product specific services to prevent, reduce and control environmental damage. They are grouped into: investment and current expenditure which includes internal current expenditure (salaries and social security contributions, consumption of raw materials, fuel, energy, water and other auxililary expenses for research and development, training, information and management environment) and external current expenses (expenses for environmental services purchased from third parties for environmental costs) (INS, 2010).

Table 1

Environmtal protection expenditure in 2011

Environmental domain	Total	Non specialiyed producer	Specialiyed producer	Public administration
Air protection	1.102.269	727.966	197.597	176.706
Water protection	4.384.595	419.372	1.405.365	2.559.858
Waste management	9.672.800	372.288	8.554.415	746.097
Soil and ground water protection	352.959	242.123	93.138	17.698
Resources protection and biodiversity conservation	1.087.943	350.855	1.158	735.930
Other environemntal domanin	2.048.966	1.701.222	139.768	207.976

Source: INS, 2012.

Based on environmental domain, the biggest expenses were recorded for waste management (51.9% of total expenditure for environmental protection), followed by water protection expenditure (23.5%) and other areas of environmental costs (11.0%). Nationally, the share of government investment accounted for 46.6% of the total investment of environmental protection, followed by specialized producers (27.5%) and non-specialized producers (25.9%). Manufacturing have made 56.7% of expenditures for environmental protection, while mining has absorbed 16.9%, and the production and supply of electricity, gas and hot water - 14.7%.

Conclusions

As a general conclusion we can say that the main stages in the transition to a green economy can be considered as follows:

1. Development of institutional structures able to set clear targets to ensure green economy.

2. Society as a whole to recognize the limits imposed by the capacity of ecosystems.

To realize the transition to green economy it is needed to sensitize all market forces so that all people to understand the need for a green economy. The main challenges are related to the ability to create political and economic measures to help to balance the needs of society with the capacity of ecosystems. In the context of multiple crises, economic growth is possible, but with limits, being necessary to achieve a correlation between economic growth and the sustainable use of natural resources and sustainable production and consumption.

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