

## The Rethinking of the Economic Activity Based on Principles of Eco-Efficiency\*

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**Abstract.** *Drought, floods, damaging storms, heat waves, acid rain, climate changes are but a few of the consequences of human action upon the environment. Can we possibly live against the environment? The answer is NO, and as such we must run an economy which respects the principles of eco-efficiency because only so can economic progress go on. Green economy is a great opportunity for all of the world's countries, and is a real economy which keeps the resource-needs and environment relation in balance, aims towards quality and not quantity, lays emphasis on regeneration, recycling, reuse and creativity. Eco-efficiency implies both innovation towards a high degree of product dematerialization, services and systems, alongside with greatly changing current production and consumption practices. If we produce based on the principle of eco-efficiency we can reduce the effects of the profound economic, ecological, socio-political and cultural-spiritual crisis which marks our planet and countries.*

**Keywords:** eco-efficiency; green economy; innovation; competitiveness; sustainable development; sustainable economic growth.

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For two centuries, the idea of accumulating capital has created a strong process of industrialization which led to the diversification of goods and services made in new enterprises about which mankind didn't even dream of, all these becoming not only doable, but also, in great numbers, leading to a continually increasing consumption of natural resources, raw materials and energy. Nowadays, the growth of industrialization is reaching its absolute limits by the negative consequences (the ecological, social, human and economic crisis), but also by having used up the resources, which imposes a slowing down of the rate of growth and in some cases even a crash. As such, the idea according to which economic growth is the best way for human growth proved to be an illusion, for as long as it's unexpected and unwanted consequences were not taken into account. As such we must rethink our current economic activity, keeping other economic processes in mind, so that the economic system cushions with the natural system and works on the principle of boats with sails, pushed by the ecological processes and not by natural resources which are limited and can be used up.

The world's natural resources may be used up and are limited, and as such we must use them as rationally and efficiently possible without endangering the environment for future generations. Nowadays increasing the efficiency with which the world's resources are used has become profitable, and without eco-efficiency you cannot speak of a durable production system. The transition towards an energetic system based on efficiency and regenerating energy requires that we replace a whole complex system.

Eco-efficiency means that we must reduce the intensity at which we use up raw materials, materials and the consumption of energy per unit of product, improving the possibilities of recycling and reusing, the best use of regenerating resources, increasing the durability of products and the chances that they decompose in easy to recycle components, reducing the dispersion of toxic substances in the environment, etc.

Eco-efficiency is motivated not only by concerns related to the protection of the environment, but also by the perspective of important financial economy under the form of lower bills for energy and water, less expenses with raw materials, materials, fuel, etc. The new economy must be the economy of the modern world, the economy of the labor market, of human needs, of raw materials and of how these come together harmoniously, so as to create a cushioning between human needs and the needs of the environment. The new economy must emphasize the use and reuse of values and not change them, on the qualitative side of products and less on the quantitative side, on regeneration, recycling, reuse and less on accumulating money or material goods.

It is not only rich states which are responsible towards society and the environment, but every one of us. Us people should think of how to save energy and raw materials; consumers need to learn how to clean the environment of the hazardous effects of waste; producers must think and produce in a more healthy manner while polluting less, etc. The success of the rethinking of the economic activity requires innovation and competitiveness. The new economy needs pioneering companies which can change this hostile economic landscape and prepare the domain so that it attracts more economic agents towards producing on the principle of eco-efficiency.

The European Union has launched the Sustainable Development Strategy during the Gothenburg summit (2001), called Europe 2020 (renewed in June 2006), and in June 2009 the European Committee has evaluated the progress made by the European Union ever since the moment the strategy was launched. The Committee had underlined that despite the fact that the EU sees itself as the spearhead of the battle against climatic changes and for sustainable development, in some area certain tendencies remain: annual losses in the field of services related to the ecosystem equivalent to 50 billion Euro, while the summed losses sustained by the natural wealth is estimated at 7% of the GDP of member countries up till 2050; the demand for natural resources is rapidly rising; the European reserves of fish and almost exhausted, and the forests, plant species and animal races are increasingly endangered by climatic changes, etc. As such on the day of the 3<sup>rd</sup> of March 2010, the European Committee has adopted the Europe 2020 Strategy for exiting the crisis and rapidly changing over to an economy with lower emissions and a lower consumption of energy, based on energetically efficient technologies, on sustainable transport and by changing over to sustainable consumption behaviors. The strategy identifies three key factors required for economic growth, which must be applied to the whole of the EU and at national levels too: a growth based on intelligence, innovation, education and a digital society; a more competitive production and a more efficient use of resources; an economic growth favorable to inclusion, meaning better participation on the labor market and the fight against poverty.

Progress made towards the three objectives will be measured via five indicators representative at the level of the EU, and which member states must transform in indicators of national reference: 75% of the population between 20-64 years must be hired; 3% of the EU's GDP must be invested in research and development; the climatic objective of 20/20/20 must be achieved, meaning that 20% of energy used must have been attained from regenerating sources, and the volumes of toxins emitted in the atmosphere must be cut by 20% before 2020; the percentage of early school dropout must be under 10%, and at least 40% of the young generation must have academic studies; the number of

individuals exposed to poverty must be cut down by 20 million individuals. So as to realize the proposed objectives the EU proposes the Europe 2020 Agenda, which is a series of initiatives among which: a union of innovation which implies the reorientation of research-development and the innovation policies towards major challenges; the Youth in motion program is a digital agenda for Europe which implies the creation of unique digital markets to which all Europeans must have broadband internet access before 2013; efficient use of resources, regenerating resources too, with reduced atmospheric carbon emission; an industrial policy which will promote green economic growth; an agenda for new competencies and work places; an European platform against poverty.<sup>(1)</sup>

The European Committee's Project for the new economic strategy of the EU sounds good enough, the aims are ambitious and realistic, but achieving them remains a problem difficult to solve, just as it has happened before with the Lisbon Strategy. The EU must rigorously involve itself in the management of how this is implemented and in the overseeing of the process, especially on the long term and must convince all member states to put up permanent and sustained effort towards achieving, on one side, a tighter connection between climate changes, energy, banking-financial regulation and social development, and, on the other side, must redefine the aggregate of policies: economic, educational, cultural, banking-financial which must have a coexistent end and must be attuned to the new European and world requirements. The role of the European parliament must be amplified by changing over to a new level of government and responsibility. Also, it is necessary that all citizens and all institutions empowered and acknowledged by law to contribute to a rapid change towards a society of knowledge, with reduced emissions and reduced energy consumption, based on technologies effective in terms of energy and resource usage and educating the population and institutions towards a sustainable consumption, all of these to limit the effects of the profound economic, ecologic, socio-political and cultural-spiritual crisis which plagues the whole planet.

Green Economy is the solution for a healthy, prosperous and clean life, economic policies should establish a market for the very clear environmental framework aimed at: reducing drastically our emissions that deteriorate the climate, preservation of rural landscapes, protecting diversity the biological world, halting production of nuclear waste, etc.

The transition from a society of waste to a recycling economy will provide new jobs will replace the extraction industries, will create economic and social stability will ensure a healthier and cleaner environment; energy will come from wind turbines instead of coal mines and the cities will be for people

not cars. Green Economy will not be in conflict with the system, the planetary ecosystem will be able to sustain economic progress for a long future.

We must be aware that by consuming these products, either as individuals or as a legal person, we can exercise great influence on the future of Earth. Each purchase you do, whether it is a piece of paper or a computer, contains hidden costs to the environment and Earth's population. Many products require large amounts of water, wood, energy, metals and resources that are not always renewable, and these materials often contain toxic chemicals that when they reach the environment they endanger human health and ecological systems on which we depend.

Corporations, schools, universities, state institutions and other large institutions have a significant purchasing power, and many companies just do not buy just finished products but also raw materials, packaging and other goods required for their production process. In this respect, for things to flow normally in the environment, greening of supply is proposed. Greening supply contracts requires that supply agencies would require: products that display more positive environmental attributes, products that generate less waste, with more durable less bulky packaging that is reusable; products that meet certain criteria of environmental protection during manufacturing or production, suppliers should recover or accept electronic equipment or other property at the end of it's utilization; suppliers should present environmental safeguards, etc. (Halweil, Mastny, 2004, p. 162).

Buying organic products can increase savings, for both entrepreneurs as well as for any other person, and some organic products are even cheaper than conventional products, and even if when buying organic products does not lead directly to savings, they may lead to general benefit for all. Purchasing organic products can improve the health of the population (Halweil, Mastny, 2004, p. 173). Although we are not aware, many of the products you purchase (eg. paint for walls and furniture, pesticides for maintenance of land. cleaning detergents used for maintenance of buildings, heavy metals and volatile organic compounds, etc.) can pollute the air inside buildings and hazardous emissions emitted can accumulate in living tissue, thus jeopardizing human health and the environment.

An important mean of institutionalizing environmental supply is the establishment of written rules or laws that support the work. Example: the strategy adopted by the City of Copenhagen in 1998, stating that all the effects of two years in office should be without PVC, all photocopiers should use 100% recycled paper, all printers should print on both sides and all boxes should be used. However, who ensures that these activities will take place? Nobody, because organizations do not set strict targets and because there isn't a

system of well-formed; so if an institution sets more specific and measurable goals it's more probable to buy organic products.

Higher demand from all institutions for organic products can play a major role in establishing a larger market sales of environmental goods and services, and producers will be more motivated to design and produce them, and if these products will be on the rise, propelled by competition and innovation, the markets will decrease prices, making it accessible to purchase organic products.

Presently, some manufacturers are looking to bring more competitive and more modern new goods on the market, but in their chase after profits will unbalance other spheres of social life and especially the environment. Given that companies are responsible for making profits and are in relationship with associations and suppliers, in some cases it may be that certain competitive disadvantages prevent them from going to a green economy.

Consumer economy makes the individual to focus attention and energy consumption because it's a fashion, thus remaining a prisoner of that need, which in fact is physiological, not longer having time to think at other spiritual needs that might improve or even change the social condition nor to think about environmental consequences. And so it appears as an over-fish limits needs, the goods which are useful but less used, even harmful to consumers, that produce artificial needs.

The mass production and mass consumption is an economic necessity as modern economies are able to produce huge quantities of goods at very low prices, which makes both producers and consumers to look more and more products as single goods that can take be dispose of relatively easy and not as articles incorporating energy and valuable materials. Cheap raw materials are the consumer's paradise. Major producers seek to produce in countries where labor is cheapest, being in constant competition in terms of maintaining a very low income to workers. China is one example, so that its trade surplus with the United States reached 103 billion in 2002 (Brown, 2005, p. 23).

To support the orientation towards an economy that consumes less energy, consumers and producers should pay attention to product life cycle, from materials and production methods to how these products are biodegradable and undergo the process of recycling, use and reuse. For that process to be sustainable a number of measures should be taken: suspension of subsidies from the state (fuel, metals and minerals, wood, etc.) encourages lower prices and stimulates the consumer, tax transfer is a measure that causes producers to reduce use of fossil fuel and waste emissions, however, imposing eco-taxes is limited so far (eg tax for environmental protection in OECD countries averages about 6-7% of total all taxes, environmental supply can lead to technological innovation and establish green markets through regulatory

instruments, product standards and labeling programs to inform consumers in choosing non-aggressive products towards the environment, goods, etc.).

Since resources are limited to the potential of our planet, you must use them wisely and find ways to recycle and reuse them in order to become less necessary to extract from the wild.

Producers should try to provide the same given volume of goods and services, a contribution of materials ten times lower, so prices are the lowest cost per unit, encouraging increased use of these products and consumers can satisfy their many needs at the same price. The activity of consumption of resources will be minimized if the companies recover after the use of products. If manufacturers will consider this, then useless parts will be eliminated such as unwanted packages and products that can be easily disassembled, recycled, or reused.

Sustainability, reparability, and the capacity of modernization are key factors in lowering the environmental impact of consumption. For some companies these factors may mean lower sales, but there will be more opportunities for maintenance, repairing and remanufacturing products, and therefore a greater potential for business and jobs over the life of a product. This will make producers rethink the product and to provide consumers with products that satisfy a real need, and so consumers will not buy products, but will take lease or rent them, and manufacturers will support the maintenance. But unfortunately there is more to do in reducing the environmental impact of products and services supplied to consumers.

The past few decades, the prices of oil, fossil fuels and natural gases have risen very much, so as to show that the time when these could be cheap has gone, increasing the tension between the world's countries. As such the contemporary economy must find ways to bring together the economy with the environment, and the functioning of the economy must be based on natural processes, which regenerate and can be recycled, with natural hydrological cycles, with local materials, using local resources, and entails that we rebuild our economic units into ecological systems.

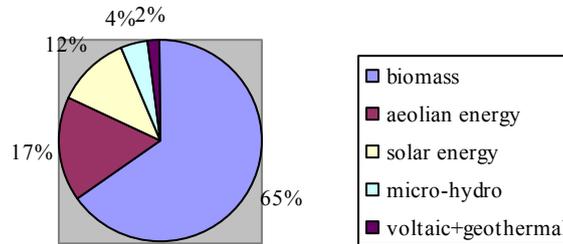
The International Agency for Energy (IAE) has forecasted that regenerating energy will hold a percentage of 13% of the world's energy from 2005 to 2030, and if national policies will be effectively implemented this percentage may reach 17% and regenerating resources could provide 29% of the total global energy during this time. Also, the IAE estimates that we must invest 45 trillion \$, in average 1% of the current global economic production before 2050 for the world to be rid of the need for oil and to cut in half CO<sub>2</sub> emissions. World Consumption of energy in 2009 and potential annual renewable energy production with current technologies: world energy

consumption – 477 energy flow; solar energy > 1600; wind energy p 600; geothermal energy – 500; biomass > 250; hydropower p 50; marine energy < 1 (Savin, Moomaw, 2009, p. 181).

In Romania, green businesses are only just starting - investing in wind farms and plants using solar energy is just starting. For renewable energy, energy efficiency and organic farming, European Commission allocates funds through the Sectoral Operational Program on boosting economic competitiveness. To support investments in upgrading and building new generating capacity for electricity and heat by turning biomass, hydropower resources, solar, wind, geothermal, etc. have been allocated 263 million for 2007-2013 (see Figure 1). Distribution areas of potential renewable energy: Danube Delta – energy solar; Dobrogea – solar and wind; Moldova – micro-hydro, wind energy, biomass; Carpathians – biomass and micro-hydro; Transylvania – high potential for micro-hydro; West Plain – geothermal energy; Sub-Carpathians – biomass and micro-hydro; South Plain – biomass, geothermal energy, solar energy<sup>(2)</sup>.

Romania has the energetic potential and possibility to place Aeolian aggregates, and Aeolian installations with a capacity of up to 1,400 MW, which means 23,000 GWh/year. Solar energy is used especially for producing warm water for household use in individual homes, and if we were to exploit the whole of our countries solar potential we could cover for about 50% of the volume of household use water or 15% of the thermal energy currently required for heating. Given the weather and sun conditions of our country, a thermal solar collector could work with a return of 40%-90%.

Another source of regenerating energy Romania holds and has great potential is water, which is used in a proportion of 48. The biomass is the main rurally used fuel for warming households and water, and maximally exploiting the biomass means that we must fully use residue from logging, sawdust and other resources resulting from wood, agricultural waste resulting from cereal or corn stalks, vine crop residues and urban waste residues. Current growth rates indicate that Aeolian, solar and biomass using installations can be built at speeds similar to those of conventional large energy projects (the number of photovoltaic cells has risen by more 40% per year; Aeolian energy – 3.15%; oil – 1.8%; nuclear energy – 0.4%) (Hare, 2009, p. 202).



**Source:** Mona Scărișoreanu (2009), *Organic farming receives 180 million euros*, Capital magazine, October 2009, article published in the magazine supplement entitled *Romania in the threshold green revolution*, p. 6.

**Figure 1.** Romania's green energy potential

Currently Romania produces about 18% of its energy from regenerating source. The European Committee has set that before 2020 Romania must reach 24%, and as such the intermediary goals of 2012 is 19.04%, in 2014 of 19.66%, in 2016 of 20,59% and in 2018 of 21.83%. In the whole of the European Union only 8.5% of energy is produced using regenerating sources, and up till 2020 the aggregate aim is 20%<sup>(3)</sup>.

For us to free ourselves of our need for fossil fuels we need will and we also need to redefine our educational and cultural policies as to what regards our practices of production and consumption. The building of many new aeolian power plants, geothermal power plants, biomass power plants and other regenerating systems will require large amounts of energy, but the build times are rather short – three to eight months for an aeolian turbine and one to give years for photovoltaic panels which last for about 30 years, and once most regenerating systems are put into operation there will no longer be a need to extract and transport fuels needed for them to work.

The times of cheap energy have favored the building of some green building, with zero energy consumption and zero carbon emissions, which locally produce all the energy they need, from regenerating sources (thermo-solar panels can heat up water and produce heat efficiently, and photovoltaic cells can be placed on the roof and even on the building face). Such building are some like the Bank of America Tower (SUA – they have their own power plant generating 4.6 Megawatts, the steel in the building has been made in a proportion of 87% from recycled material and the concrete 45% from recycled materials; it saves 34 million liters of water annually thanks to its own rain water collecting system), World Wildlife Fund (the Dutch headquarters of the

ecological organization – the first building with 0 greenhouse gases emissions; the building is ventilated naturally, and electricity and warm water are produced by the solar panels which cover the building), the Wuhan Electric Center (China – is shaped like a flower; zero greenhouse gases emissions, the roof is equipped with solar panels to generate its electrical energy, and rain is collected and recycled, and also Aeolian turbines generate energy), etc.

Romania must speed up implementation of these programs because, starting 2020 will have to produce 24% of consumed energy from renewable resources, with six percentage points more than the present hydropower and biomass. The European Parliament also determined that since 2019, any new building constructed in the European Union to be "green", so according to Romanian Council for Green Buildings (RoGBC), a building is considered green if by design, materials construction and technology can reduce both energy consumption and negative environmental impacts both during construction and operation. Developing a green building design implies project costs and performance and equipment increased by 10% -20% compared with traditional buildings, but operating costs decline with a minimum of 10-15% for green building, energy costs are lower, and people can live in a healthier environment.

All energy services which use natural fluxes of energy will protect the global climate, will create new jobs, will help the developing countries to reduce poverty, will increase personal and social security, will reduce international tensions caused by resources and will also improve people's health and that of the ecosystems. For that we must achieve certain objectives to create a world with zero polluting gas emissions so as to attain climatic stability: long term thinking which must make the future our responsibility and we must consider the impact of our decision on future generations; innovative technologies which maximize the production and use of energy, without carbon, while minimizing costs and easing access to ecological goods; demographic policies together with economic, educational, political, social, etc. policies so as to ensure a balance between the needs and resources available to the population; changing our way of life means that we must change our unhealthy habits and practices of production and consumption into more efficient practices both on the side of the entrepreneur and on the side of the consumer, we must wish that production be made ecologically, we must buy only products we strictly need, we must undertake a series of actions for the environment, we must refuse to consume products which damage and endanger our lives, etc.; the soil and vegetation must be protected and continually improved so that the soil can absorb 13% of all CO<sub>2</sub> emissions caused by man each year, so the soil can also serve as strong collectors of carboniferous gases and greenhouse effect gases

from the atmosphere; capable, strong institutions which can watch over so that certain aims be finalized efficiently, both at a national and at a global level, aims which must try to satisfy the needs not only of certain groups of interest but also those of citizens in a as clean as possible environment; effective environmental agreements which must regulate, in an as equal as possible manner, responsibility for having inefficiently exploited and having polluted the socio-human environment by economic activities; economic stability so as to allow the implementation and monitoring of economic and ecological objectives both in times of economic boom and recession; political stability so that the political be able to concentrate on finding effective solutions so as to solve future problems and not have to deal with conflicts and revolts between political parties or different interest groups; informing and warning humanity about the unwanted and unexpected consequences of an irrational, wasteful, ineffective, polluting and damaging economy on all that is alive on this planet, etc.

Like any economic revolution, changing over to green economy requires sustained effort and many sacrifices, and registering on this sustainable path will be a lengthy and complex process. Governments must play an important role, promptly acting inside the borders and working together with other governments both at an European level and at a global one. Companies and certain institutions will have to assume many of the risks, create much innovation and create new jobs, while citizens will change their unhealthy mentality, way of life, habits and practices of production and consumption, and with all of this only time can tell how much these efforts and investments into durable ways to save the future.

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## Notes

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- (1) See „Avatarurile strategiilor Uniunii Europene”, *Euroconsultanța, Ghidul firmei*, Nr. 8(67), august 2010, pp. 29-34
- (2) Press release from the Ministry of environment and Forests, available on-line on the website at [www.euroactiv.ro](http://www.euroactiv.ro) 18.02.2010
- (3) According to Frauke Thies – Green Peace expert of the UE, statement made on-line on [www.wall-street.ro](http://www.wall-street.ro), accessed 19.05.2010

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