



ELEMENTS OF UNIFORMING THE ECOECONOMY

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Abstract *Ecoeconomy is regarded as a further step towards a new economic science that should devise economic life and health values produced from the perspective of 'the health of the whole living', is strongly grounded in the principles of Economics and Bio-economics. Bio-economics uses soil and biological resources (growth), as well as waste as raw material for the production of **bio-products** (food, feed, energy, industrial and production). It also includes the use of friendly environmental processes for sustainable industrial sectors (it is known that bio-waste have a considerable potential as an alternative to chemical fertilizers or for conversion into bio-energy and can contribute to the achievement of the 2 % of the EU objective of renewable energy).*

Key words:

*Ecoeconomy,
green economy,
environment,
sustainability*

JEL Codes:

Q20, Q50, Q56

Green economy, as defined by the United Nations Environment Programme (launched in February 2011), results in an improved well-being and social equity, together with the significant reduction of environmental risks and ecological deficit. Green economy involves risk-taking and investment policies which will prepare the growth of intensive consumption of raw materials and energy.

A green economy can be thought as a low-carbon economy, through effective and sustainable use of resources and ensuring social inclusion. In a green economy, increasing incomes and employment should be bolstered by public and private investments that lower the carbon emissions and pollution, increase energy efficiency and resource efficiency, and prevent the loss of biodiversity and ecosystem services.

Moreover, green economy is a mode of economic development based on sustainable development and knowledge on ecological economy. Karl Burkart¹ defines green economy as a basis for six main sectors:

1. Renewable energy (solar, wind, geothermal);
2. “green” constructions (constructions LEED-Leadership in Energy and Environmental Design);
3. Alternative fuels (electrical and hybrid vehicles etc);

4. Water management (water treatment, systems of collecting the rainwater etc);
5. Management of waste r (recycling etc);
6. Territorial management (including organic agriculture, habitat preservation, afforestation at the urban level, reafforestation and grounds stabilization).

The Global Citizens Center² lead by Kevin Danaher defines “green economy” as an integrated concept based on:

1. **sustainability**– humanity depends on the natural resources of the earth and that’s why an economic system that respects the integrity of ecosystems should be created;
2. **social environment**– an economic system full of opportunities for social and personal development should be created in order to grant all people the access to a decent standard of living;
3. **green economy** is a global aggregate of the individual communities of satisfying the citizens’ needs by the means of the local responsible production as well as the exchange of goods and services.

In order to acquire a clear perspective on the

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modality of assessment and measurement of ecoeconomy at the country level, we have undertaken an analysis of indicators arising from the implementation of sustainable development principles at EU level. At the same time, we have taken into

account the relations of interdependence between education, social environment, resources endowment, capacity of producing energy from renewable sources, and the system of governance.

Themes/ Fields of development	Indicators/Explications
<p>1. <u>Social-economic development</u></p>	<p>Real GDP per capita, Euro per person GDP includes goods and services produced by the economic agents of the final resident, over a period of time, usually a year. For the measurement of the rate of growth of real GDP, GDP at current prices is valued at previous year's prices and volume changes are calculated at the level of a reference year; This is called a series concatenate. As a result, the price movements will not increase the growth rate. Real GDP per capita is calculated as the ratio of real GDP and the average population of a given year. It is often used as an indicator for measuring the level of well-being as measured by the real average income of a country. However, it is not a complete measure of economic well-being. For example, GDP does not include unpaid household work. It also does not take into account the negative effects of economic activity, such as environmental degradation.³</p>
<p><i>Economic development</i></p>	
<p>Investments on institutional sectors</p>	<p>Dispersive GDP per capita</p>
<p>Available real gross income of the households per capita</p>	<p>Net National Income</p>
	<p>Rate of household savings</p>
<p><i>Innovation, competitiveness and eco-efficiency</i></p>	
<p>Real rate of increase and labour productivity per hour</p>	<p>Indexes of eco-efficiency</p>
	<p>C&D Total expenses</p>
	<p>Turnover in innovation</p>
	<p>Energetic intensity of the economy - gross internal consumption of energy divided by GDP (equivalent petrol kilogram in 1 000 EUR).This indicator is the ratio of gross domestic energy consumption and the gross domestic product (GDP) for a given calendar year. It measures the energy consumption of an economy and the level of energy efficiency. Gross inland consumption of energy is calculated as the sum of gross domestic consumption by the five types of energy: coal, electricity, oil, natural gas and renewable energy sources. GDP has year 2010 as a basis of reference. The energy intensity ratio is determined by dividing the gross domestic consumption to GDP. Whereas the gross domestic consumption is measured in kilos (kilogram of</p>

³<http://ec.europa.eu/eurostat/tgm/web/table/description.jsp>, Code: tsdec100

	oil equivalent) and the GDP to 1 000 euros invested, this ratio is measured in kilos per 1 000 euro. ⁴
Employment	
Employment rate	Employment rate, considering the education level
	Dispersive regional occupancy rate , by gender
Young people who do not work are included neither in education nor in training (NEET)	Employment rate
	Unitary cost of the nominal labour
2. <u>Production and sustainable consumption</u>	<p>Productivity of resources Resource productivity is GDP (PGDP), divided by the domestic consumption of materials (DMC). DMC measured the total quantity of materials used directly by an economy. It is defined as the annual quantity of raw materials extracted from the national territory of the local economy, adjusted by the balance of incomes in relation to foreign exchange factors (physical imports minus physical exports). It is important to note that the term 'consumer', as used in DMC, relate to apparent consumption/current consumption and not the final consumption. DMC does not include upstream flows related to the import and export of raw materials and products outside the local economy. To calculate productivity resources, Eurostat uses GDP expressed in EURO units either in concatenated volume '(with reference year 2010 exchange rates) or in PPC units (purchasing power parity). Therefore, the indicator is expressed as: (i) in euro/kg, to compare the changes from a country in time; II) in PPC per kg, in order to compare different countries in a given year, is calculated as an index for the year 2010, when comparing countries in different years⁵.</p>
Utilization of resources and waste	
Generating waste, exception making the major mineral waste	Components of the domestic material consumption
	Domestic material consumption, by material types
	Generating municipal and treatment waste, depending on the type of treatment
	Generation of hazardous waste, of economic activity
	Emissions of sulphur oxides (SOx), by sector source
	Emissions of nitrogen oxides (NOx), by sector

⁴<http://ec.europa.eu/eurostat/tgm/web/table/description.jsp>, Code sdec360

⁵<http://ec.europa.eu/eurostat/tgm/web/table/description.jsp>, Code: tsdpc100

	source
	Emissions of non- methane volatile organic compounds (COVNM), by sector source
	Emissions de ammonia(NH3), by sector source
Models of consumptions	
Consumption of electrical energy in households	Final energy consumption by sector
	Motorization rate
Models of production	
Organisations and websites registered with the environment and audit management (eco-management and audit scheme-EMAS)	Organic labelling licence
	Area in accordance with agri-environment commitment
	The area included in the organic agriculture
	Livestock density index
3. Social inclusion	<p>People at risk of poverty or social exclusion-the 1000 inhabitants</p> <p>Europe 2020 strategy promotes social inclusion, in particular through poverty reduction, in order to decrease at least by 20 million people the number of people with a high risk of poverty and social exclusion. This index corresponds to the sum of the people who are at risk of poverty or severely lacking in resources or living in households with higher incidence in the labour market was very low. Persons are counted only once, even if they are present in several sub-indexes. People at risk of poverty are persons with an equivalent income below the risk of poverty, which is set at 60% of the national average equivalent income (after social transfers).</p> <p>Material shortages relate to economic constraints generated by limiting the consumption of durable goods.</p> <p>Persons seriously affected the lack of material resources are those people who are facing major difficulties in at least 4 of 9 deprivation: they cannot afford) to pay rent or utility bills, II) to keep home adequately warm, III) face with unexpected expenses, IV) to eat meat, fish or a protein equivalent every second day, V) a week's holiday away from home, VI) a car, VII) a washing machine, VIII) color tv, or ix) phone.</p> <p>People living in households with very low incidence in the labour market are ones aged 0-59 who are living in households where adults (aged 18-59 years old) work with 20% or less of their total potential work over the past year⁶.</p> <p>Persons exposed to the poverty risk or social exclusion - %</p> <p>The data are expressed in % of the total population and are changed every three years.</p>

⁶<http://ec.europa.eu/eurostat/tgm/web/table/description.jsp>, Code: t2020_50

	People at risk of poverty or social exclusion-% per 1 000 persons
Shortage of financial resources and living conditions	
Persons exposed to the poverty risk, after social transfers	Persistence-at- the poverty risk The average lag time regarding the risk of poverty
People seriously deprived of financial possibilities	Inequality of income distribution
Access to the labour market y	
People living in households with very low work intensity	Risk of poverty for those persons who laugh A disposable income below the risk-of-poverty equated, which is set at 60 of the national average equivalent income (after social transfers).
	Unemployment rate on long- term
	Gap between women and men in terms of gross salary
Education	
Persons who abandon early education and training	Poverty risk rate Gap between women and men in terms of salary in raw form The level of secondary education, by age
Level of tertiary education on gender, age groups 30-34	Lifelong learning Low-performance concerning ability of reading students Individual IT skills Internet use at the individual level
4. Demographical changes	Employment rate for seniors Employment rate of older workers is calculated by dividing the number of employed persons and the age of 55 and 64 years of age in the total population of the same age group. The indicator is based on the survey of the labour force in the EU. The survey includes population from private households and excludes the population in collective households such as boarding houses, halls of residence and hospitals. Population consists of those persons who during the reference week did any work for pay or profit for at least one hour, or were not working, or they had jobs from which they were temporarily absent
Demography	
Number of years of healthy life and life expectancy at 65 years, by gender	Total fertility rate
Gross rate of total population change	Gross rate of net migration (plus adjustment)
Adjusting the income by age	
Aggregated rate of replacement	
Sustainability of public finance	

Gross public debt	Length of professional life
5. <u>Public health</u>	<p>Number of healthy life and birth life expectancy , by gender</p> <p>The healthy life years indicator (HLY) at birth shall be measured by the number of years that a person at birth is expected to live in a healthy condition. HLY is an indicator that shows the hope of health and mortality and combines information on morbidity.</p> <p>The requested data are age-specific prevalence (ratio) of the population in healthy and unhealthy conditions and mortality age-specific information. A good health is defined by the absence of limitations in functioning/disability.</p> <p>The indicator is calculated separately for males and females. The pointer is also called disability-free life expectancy (DFLE). Life expectancy at birth is defined as the average number of years expected to be living one person since the birth, if it is subject for the rest of his/ her life to the current conditions of mortality.</p>
Health and inequalities health	
The rate of death due to chronic diseases, by gender	<p>The rate of suicide death, by age group</p> <p>Auto-reporting for unsatisfied health care needs due to medical services price too high, by five categories of income</p> <p>People who have a disease or a long-term health problem, five categories of income</p>
Health determiners	
Index of toxic chemicals production , by toxicity class	<p>Urban population exposure to air pollution, suspended particulates</p> <p>Urban population exposure to air pollution, ozone layer</p> <p>The proportion of the population living in households and suffers from noise</p> <p>Non-fatal accidents by gender</p>
6. <u>Energy and climatic changes</u>	<p>GHG emissions in 1990 - Index (1990 = 100)</p> <p>This indicator shows trends in total emissions of human-caused by economic activities that generate greenhouse gases, as described in the ' Kyoto Protocol '.</p> <p>This protocol/agreement has presented total annual emissions since 1990. Greenhouse gases included in the "Kyoto Protocol" shall mean: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and the so-called fluorinated gases (hydro fluorocarbons, per fluorocarbons and sulphur hexafluoride (SF₆)).</p>

	<p>These gases are aggregated into a single unit with the help of specific factors potentially gas global warming (Global warming potential-GWP). Emissions of greenhouse gases are expressed in units of CO equivalent.</p> <p>The indicator does not include emissions and takeovers related to land-use change and forestry land intended purpose (Land use, land-use change and forestry-LULUCF); neither does it include emissions from international maritime transport emissions resulting from aviation times.CO2 emissions resulting from biomass, with energy recovery, are reported as a memorandum item in accordance with the guidelines of the UNFCCC and which are not included in the national reporting of greenhouse gases. The EU as a whole is committed to achieve at least a 20% reduction of greenhouse gas emissions of greenhouse gases by 2020 compared to 1990.</p> <p>This objective implies: a reduction in emissions by 21% in the sectors covered by the EU ETS (emissions trading scheme), in comparison with 2005 by 2020; -A reduction of 10 emissions in sectors outside the EU ETS. To achieve this global goal of 10%, each Member State has agreed to some limits on emissions of greenhouse gases by specific countries for 2020 in relation to 2005 (decision No 406/2009/EC).</p> <p>Consumption of primary energy</p>
Climate changes	
Emissions of greenhouse gases, by sectors	<p>The intensity of the emission of greenhouse gases of the energy consumption</p> <p>Projections of emissions of greenhouse gases</p> <p>European and global deviation in temperature of surface</p>
Energy	
Energy dependency	<p>Gross inland consumption of energy, considering the type of fuel</p> <p>Electricity generated by renewable energy sources</p>
The weight of renewable energies in the final consumption of gross energy	<p>The weight of renewable energy out of the consumption of transport fuel</p> <p>Generation of heat and combined energy</p>
7. Sustainable transport	<p>Consumption of energy for transport in relation with GDP</p> <p>This indicator is defined as the ratio of the energy consumption and GDP (concatenated volumes, at the conversion rates from 2010). The energy consumed by all types of transport (road, rail, domestic and air navigation) are</p>

	covered, including commercial, transport and public, with the exception of maritime transport and by pipeline.
Transport and mobility	
Passenger transport	Volume of the commodities transport in relation with GDP
	Volume of the passengers transport in relation with GDP
Commodities transport	Consumption of energy in accordance with the transport mode
Impact of transports	
Emissions of greenhouse gases regarding the transport mode	Emissions of nitrogen oxides (NOx) from transport
	Emissions of suspended particulate from transport
Persons dead in driving accidents	Medium emissions of CO2 per km generated by new automobiles
8. Natural resources	<p>Index of the ordinary birds</p> <p>This indicator is an index and it includes the population abundance and diversity of a selection of common bird species associated with specific habitats. Rare species are excluded. Three groups of bird species are represented: common species on the land (39), common forest species (34 species) and all species of birds (167 species), which include species of farmland, forest and other 94 common species joint (general, in contrast to the agricultural land and forest). The birds on the agricultural land have a high dependence on the land cultivated during the nesting and feeding in most part of the year, while forest birds are just as dependent on forested areas. A list of European bird species has been carried out, each country chooses the species to be covered by the data collected in the field. This means that different species are covered in each country, depending on their occurrence; for example, for agricultural land birds, it is only the lark included in the indexes of all countries. Although this indicator has a limited concentration in relation to the policy objectives of the EU's biodiversity and ecosystem services, it is considered to be the best available data set and also an indicator of the general state of the environment.⁷</p>
Biodiversity	
Sites designed in accordance with EU directive regarding the habitats	Destruction of habitats
Resources of fresh water	
Index of water exploitation	Population connected to wastewater treatment

⁷<http://ec.europa.eu/eurostat/tgm/web/table/description.jsp>, code tsdnr100

	of urban waste water — at least those of inferior quality
	Biochemical oxygen consumption in rivers
Sea Ecosystems	
	Fishing fleet capacity of energy production
Use of ground	
Covering the artificial ground t	Gross balance of nutrients on agricultural lands
Planting forests and cutting	
9. Global partnership	Official Development Assistance as a percentage of the gross domestic income
Globalisation of the trade	
EU Imports in the developing countries according to the incomes	Imports from developing countries by product
	EU imports from the least developed countries by groups of aggregated
	Measures to support agriculture
Finance for durable development	
Total EU financing for developing countries, by type of funding	Foreign direct investment in developing countries for official development assistance, by income groups
	Official development assistance by income groups
	Official unilateral assistance for development
	Official bilateral assistance for developing various assistance categories
	Population living with less than 1.25 USD per day
Global administration of the resources	
CO2 emissions per capita in the EU and in the developing countries	Population with a sustainable access to improved water sources
10. Good governance	
Politics coherence and efficiency	
New cases of the break of law	Transposition deficit
Participation and openness	
Participation rate at the national and EU elections	Use of E-governance by the natural persons
Economic tools	
Environment and job taxes actions in the total tax revenues from taxes and social contributions	Implicit rate of energy tax

Ecoeconomy and sustainability

What has become clear in recent years is that a dynamic economy based solely on price, opportunity cost, optimal Pareto, his accumulation, maximizing utility/profit, comparative advantages and/or using growth in GDP per capita as an indicator of welfare is unsustainable and problematic.

Most studies indicate that these tools have been designed somewhat isolated from eco-natural

limits cross-signals (which are very old, for example, Malthus, Jevons, or Mill) and/or the ability of the environment to assimilate soil depletion effects, consumption, emissions, etc. The current main task is likely to reinstate the economy and/or society within the natural limits of sustainability (Commoner, 1980). The principle *more with more* specific to the industrial society must be abandoned in the favour of the more *progress with fewer resources* that should be the grounds for the relation between economy and society-environment.

The alternative to traditional growth pattern seems to be a paradigm based on social and

environmental targets and not on maximizing usefulness (strong sustainability/quality growth). The main problem is that a current invoked the concept of strong sustainability is normative and ethical rather than analytical and operational (Dietz, Neumayer, 2006). The main *weak* argument is that what determines the ability of future generations to enhance their wellbeing/utility function is the quantity and quality of capital goods that are at their disposal. In other words, a sustainable economy is inseparable from its productive capacities, which should produce *in extenso* wellbeing for future generations and is based on the substitution of different forms of natural and manufactured capital (Pearce, Atkinson, 1998). The main charge of this position is that, in general, the natural capital is undervalued, a very large part of the economy's effects on the environment are irreversible, unknown and uncontrollable (Chichilnisky, 1998).

Relying on an overly optimism due to the fact that technological progress tends to generate *rebound effects* and the market internalizes costs and benefits to socialize; the substitution of manufactured capital for natural non-renewable capital makes the it problematic because it is limited and mostly because the production of manufactured implies capital materials consumption and energy that cannot be substituted (Daly, 1997).

On the contrary, the concept of *strong sustainability* rejects optimism based on continuous, dynamic market price (as the only tool for efficient allocation and distribution) and environmental substitution and insists that sustainability means rather to make available to future generations the same level of non-renewable resources and/or environmental quality; in terms of growth, the concept of strong sustainability is soon focused on aspects pertaining to the development and quality of life than the accumulation, increase consumption, GDP growth etc (Ayres, Bergh, Gowdy (2000). Difficulties, advantages and applications arising from the weak/strong concepts of sustainability are discussed extensively by Goodland (1995), and Rennings and Hohmeyer (1997) and Dietz and Neumayer (2006).

Ecoeconomy transforms the benefits of ecology and bio economics into economic policies which gives sense and rationality in economic activity, both at the level of consumption, as the defining act that supports a market economy, as well as at the level of the allocation, as a way to reduce societal inequalities.

CONCLUSION

The problems mankind is facing, from those related to the irrational use of natural resources, reaching their limits and generating increasing greenhouse gases, global warming, the intensification of natural disasters, to those generating economic crisis, prolonged recession, unemployment, structural deficits with repercussions on the quality of life, make necessary a rethinking of the economic system on the basis of rational, ethical, ecological. Naturally, ecoeconomy becomes an integrative concept which can manage unitarily environmental, social, economic, or ethical issues.

The allocation issue is obvious, especially for the fact that without effective allocation, production might lie more than the marginal cost, which would mean the waste of resources and energy etc. We believe that the allocation can be integrated into paradigms of development/growth and completely different from the traditional approach. The issue of allocation lies in the size of the scale and intensity of the increase, which takes perverse effects on a finite ecosystem, as the Earth's ecosystem, which cannot support a continuous growth of savings through the introduction of new and new needs.

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