THE GENERAL PRINCIPLES OF BIOECONOMY THROUGH 2020 STRATEGY

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Abstract: *Present and future economic development involves a high consumption of natural, informational resources, in order to generate economic goods which satisfy the global demand. The danger would be the excessive use of natural resources, the Planet being unable to replace them, to restore or store them. The fault that was generatedbetween economy, as the primary human activity of creating economic goods to satisfy the needs of humanity and nature, as the main reservoir for the production of natural resources, supporting life in order to coordinate ensuring biodiversity, biorhythm and perpetuation of species, has led to taking positions for the purposes of reconsidering production methods, development trends and development needs of mankind in the context of ensuring and preserving life opportunities.*

In this regard, the European Union carried out Europe 2020 strategy though which it advocates for bio-economy as a key element for a smart and green growth in Europe. Within this strategy there are identified a number of human actions that jeopardize the continuance of life on Earth, from production models which society applies, waste management, incidence of productive and polluting activities on the natural environment, to diets, consumption patterns and their influence on the population's living arrangements.

Key words: *natural resources, economic development, sustainability, environment*

JEL Classifications*: I15, I31*

Introduction

The economy based solely on the price dynamics, the opportunity cost, Pareto optimality, accumulation, maximizing utility/profit, comparative advantages and/or which use the growth in GDP per capita as an indicator of welfare became unsustainable and problematic. Most studies indicate that these tools have been designed somewhat isolated from natural eco-limits signals and/or the ability of the environment to assimilate soil depletion effects, consumption, emissions, etc. Currently it needs creating a system whereby the economy and/or society within the natural limits of sustainability will be reintegrated (Commoner, 1980). The principle of *more with more* specific to the industrial society must be abandoned, and rather *more progress with fewer resources* should be placed at the base of the economy and society's relationship with the environment.

Literature review

The alternative to the 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 currently addressed is that the concept of *strong sustainability* is rather normative and ethically than analytic and operational (Dietz, Neumayer, 2006).The main *weak* principle is that what determines the ability of the future generation to improve their wellbeing/utility function is the quantity and quality of capital that is available to them. In other words, a sustainable economy is inseparable of its productive capacities that have to produce *in extenso* wellbeing for the future generations and is based on the substitution among the different forms of natural and manufactured capital. A (Pearce, Atkinson, 1998) .The main disagreements with this position are that,

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generally, the natural capital is under evaluated and a great part of the effects of economy on the environment are irreversible and incontrollable (Chichilnisky, 1998). Relying on an overly optimism given the fact that technological progress tends to generate *rebound effects* and the market to internalize benefits costs and to socialize costs; the substitution of manufactured capital for natural non renewable capital is problematic because it is limited and mostly because the production of manufactured capital requires 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 substitutability, and insists that sustainability means soon 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, consumption increase, GDP growth (Ayres, Jeroen, Gowdy, 2000). Difficulties, advantages and applications arising from the *weak/strong concepts of sustainability* are extensively discussed by Goodland (1995), and Rennings Hohmeyer (1997) and Dietz and Elizabeth (2006).

Bioeconomy and ecoeconomy

Ecoeconomy transforms the benefits of ecology and bioeconomics 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. The problems mankind are 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, from the economic crisis, generating economic recession prolonged unemployment, structural deficits, with repercussions on the quality of life, make necessary a rethinking of the economic system on the basis of rational ethical, environmentally friendly. Naturally, ecoeconomy becomes an integrative concept which can manage unitary environmental, social, economic, and ethical issues. The allocation issue is obviously inherent particularly for the fact that without effective allocation, the production might lie over the marginal cost, what 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 the allocation lies in the size of the scale and intensity of the increase, which takes perverse effect on a finite ecosystem, as the Earth's ecosystem is, which cannot support a continuous growth of savings through the introduction of new needs.

Regarding the problem-solving approach to the allocation of the comprehensive concept of *economic justice*, Chichilnisky (2001) introduces the concept of *tragedy of the commons*. The resource allocation thus becomes a matter of survival for generations, both present and future generations, in terms of access to and benefits from its environment and can be dealt with, through knowledge, with major benefits. The more eco-efficient the allocation process becomes, more development will be generated by the distribution of economic wealth- justice. What ranks the economy and ecology of the opposing positions is probably how the market works in relation to the negative externalities they produce.

The market trend is to internalize the benefits and socialize costs/externalities. A way of questioning this difficulty and which reflects the policy of the Kyoto Protocol (1997) provided by Chichilnisky (2001, 2006). Emissions, deforestation etc. may be addressed, as well as knowledge, or public goods privately produced. If knowledge is non-rival and/or globally available, mostly due to new information technologies, CO2 emissions, reflecting the same infinite expandability, are global. Knowledge and CO2 emissions are generated by different private economic agents. In other words, knowledge,

and CO2 emissions, is public goods produced privately. The implications of this 'treatment' are immediate and institutional and bring together the development and equity issues while reducing damage over the environmental. The most important is probably the movement of trade in goods.

Considering the fact that public goods, such as CO2 emissions, different ideas, blueprint (are infinite-expansible for the purposes of the provision of services and advantages/disadvantages) etc. are produced privately, a new institutional system or a new system of property rights, is necessary. Chichilnisky argues for the marketing rights of ownership to pollute or to use the atmosphere (global emission markets) that makes it possible both to internalize negative externalities by rights policy (or to counteract the tendency of the market to socialize the costs), as well as the possibility that the emissions intensity, mainly due to better align costs with benefits.

Through such instruments a greater openness of economies towards new and more environmentally friendly forms of production (*knowledge society*). What is likely to separate public goods markets of private goods markets are the principles of efficiency and equity, which separated in traditional markets in goods, become correlated on markets of public goods. Thus, economies that pollutes less atmosphere or depend on more than natural resources, but without being as polluting as industrialized economies have more rights to pollute and vice-versa, savings that pollutes more, have smaller rights to pollute; in this case pay more to acquire more rights. This is covered by the Kyoto Protocol (2005) which becomes an instrument of international law (Chichilnisky, 2006).

The principles of fairness and efficiency in particular are reflected in identifying public property and private (non-competing). And fairness, and effectiveness of specific trades and allocations under the market meet here; the market is not eliminated, but under the new institutional arrangement it produces greater equity, not just efficiency. Under these circumstances, Chichilnisky (2001, 2006) believe that the relationship between the North (industrial) and South (natural resources), based in particular on exploiting comparative advantages, it might change in the direction of greater equities, effective and sustainable, that seem to characterize the overall knowledge and information society. The debate on *sustainable degrowth* is extremely innovative. Perhaps the main problem of inputs increasing returns (knowledge, innovation, and about all forms of complementary organizational capital) lies in the fact that they cannot be separated easily from the so-called *rebound effects*. The downside of Chichilnisky's argument is that clearly the economies and/or the expansion of the knowledge society is not/ are *eo ipso* sustainable. In other words, even if the production of knowledge and/or innovation puts us in a position to generate more output without resorting to physical quantities greater than inputs, the end result is not done in a reduction in the consumption of raw materials and energy, but quite the contrary.

A whole series of studies argues for the generation of *rebound effects* that accompanies the dematerialization of securities (Schauer, 2002). The *degrowth* debate insists particularly on the restoration of economy in environmental sustainability, through voluntary, democratic decisions and the reiterated focalization of the politics on the satisfaction of the basic needs and/or qualitative development (Fournier, 2008). Thus, even if the savings are widely dematerialized, environmental damage is incremental at best slowed, not avoided (Schneider, 2010). The decline in consumption or the change of the *consumer lifestyle*, the orientation of economies rather on development (quality) than on increase (quantity), the difference between efficiency and growth (decrease does not mean an abandonment of efficiency, but an increase over the limit of the environmental sustainability and innovation-Schneider, 2010), reiterating the role of ownership in concentrating benefits and socialization of costs etc, all constitute a decreasing of the

debate topics. An approach to sustainability considering the dematerialization of savings must be inevitably faced with *rebound effects*. However, this discussion re-opens soon, toward solutions to a concept of *strong sustainability* than towards an approach based essentially on maximizing usefulness and/or GDP growth.

Basically, ecoeconomy is a complex integrating process, generator of wealth that supports not only to cover the people' needs, but also incorporate them, in measures of standard of living and quality of life of those aspects pertaining to incommensurable individual freedoms, safety, honesty, morality, equality of opportunity, respect, honor. Hence, the ecoeconomy helps with emphasizing human development and the qualitative approach of economic growth policies on ensuring the sustainability of development, strengthening the links of causality between economic growth, human development and the natural environment.

Ecoeconomy is regarded as a further step towards the economic science to devise economic life and health values of products from the perspective of 'whole health living', is strongly grounded on the principles of Economics and bioeconomy.

Bioeconomy 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 environmentally-friendly processes for sustainable industries (it is known that biowaste have a considerable potential as an alternative to chemical fertilizers or for conversion into bioenergy and can contribute to the achievement of the 2 % EU objective regarding renewable energy).

In essence, the "Ecoeconomy" is both a present and a future concept because it makes reference to the policies of stimulating innovation and creativity combined with superior technologies, scientific research and care in relation to the environment, in the light of the concept of sustainability. Any of the approaches represent a net gain for the economy, for the economy as a whole, subject to the condition that the popularization of the term complies with the conditions of space, time and action.

Among the desiderata of the Strategy regarding "Innovating for Sustainable Growth: a Bio-economy for Europe" there are included:

- **ensuring food security** in terms of global population growth combined with increasing demand for food whose ensuring requires the creation of more efficient food supply chains in terms of natural resource use;
- **sustainable resource management** subsumes the concept of "more with less" by pursuing to improve mechanisms for providing food and means of production on account of the increase in productivity, scientific research and technological innovation in agriculture and resource management, providing a sustainable approach to the natural environment ;
- **reducing dependence on natural resources** refers specifically to the increased incidence of bio-products made from renewable energy sources at competitive prices, without compromising food security, without increasing pressure on the environment and on the primary production, and without distortion on the markets in favor of energy consumption; at the same time blue growth is encouraged by developing the see exploitations in terms of increased economic efficiency, reduced pollution sources by generating carbon dioxide that can affect environmental sustainability;
- **climate change mitigation and adaptation** especially involve developing scientific research and technologies that reduce emissions of carbon dioxide and activities that efficiently use unnatural resources and renewable energy; the reduction of carbon emissions process is lengthy and costly and involves the use of clean technologies, the change of production methods and consumption patterns,

replacing production with intensive carbon, energy and water consumption with bio-products. Another issue that the EU is considering is the process of carbon sequestration (capturing carbon dioxide in a form that prevents its issuance in the atmosphere)(Moraru, 2010)in agricultural soils (through management practices that relate to work for soil conservation) and on the seabed and increasing the forest resources. Promoting the sequestration process of organic carbon presents essential benefits to mankind by improving agricultural productivity and sustainable development of agriculture.

- **creating jobs and maintaining European competitiveness** is the main concern of EU in the context of the shortage of jobs in the prevailing economy generated by the relocation of production towards emerging economic areas in search of low costs, especially of the work; another element that contributes to the need to intensify competitive bio-products is the excess of economic goods from emerging markets at low prices that put the consumer into difficulty in terms of family's budget and of the decrease in purchasing power, effect of a decreasing work demand. In these circumstances, consistent economic policies are necessary to support private investments in the bio-economy field, in particular by supporting entrepreneurship in the production of renewable energy, their usage in the manufacturing of bio-products designed to cover human needs. This fact is particularly more important as it enhances the gaps between economic environment and natural environment by damaging ecosystems, global warming, climate change, structural changes in habitats.

Even if bio-economy involves reaching limits of humanity in terms of the momentum of technology and scientific research in the attempt to maintain control over the possibilities of recovery and regeneration of the planet, by industry scope, man creates mechanisms for understanding and well communing with nature in order to solve problems aroused by the dynamic integration in the natural environment (Serban, 2013). According to researchers, the industry scope is close to the upper limits of development in this ecosphere. For this reason, through joint efforts it is necessary to invest in education, research, new, innovative technologies in order to produce and consume bio-products which give sustainability to the human activity.

Conclusion

Considering how the economy and the environment are addressed, often as separate entities, which operate according to different principles, corrections are required in the way of substantiating and applying them within human and economic entity. In the minds of many people, economic growth comes naturally to the detriment of the environment and protecting natural resources impose constraints on economic growth. This approach on economy and environment is not sustainable and sustainability is perceived more as an environmental concept than an economic one. In reality, a sustainable vision, which does not overlap the pattern of economic development, is inconsistent with the development trends, including the perpetuation of life and habitats. Economy of the future will require an economy that rather reinforces and builds on ecological principles than working against them. This type of economy is eco-economy.

Essentially, eco-economy transfers the benefits of the bio-economy on all components of economic life, providing the individual and his needs a dominant part and advancing renewable resources, innovative technologies, products of scientific research for the integrated development of the society in relation to the environment and maintaining it at a favorable level for the perpetuation of life.

The intention of my approach is to conduct an exhaustive scientific research on the concept of eco-economy and identify assessment, commensurate or delineation instruments for specific variables, factors of influence and status or dynamic indicators.

Eco-economy advocates for public education in terms of resource consumption, efficient waste management in order to protect biodiversity, natural heritage protection and development of ecological consciousness of people, along with increased commitment to protection and preservation actions.

Human dependence on ecosystem services is part of biodiversity degradation a threat to the future well-being of all people. In these circumstances, eco-economy proposes developing a responsible attitude towards the natural environment, some pro-ecologic habits and practices in relation to the protection and preservation of the environment, public awareness about the problems caused by the irrational exploitation of resources and the negative effects on the environment among which the most important are the high levels of pollution and climate changes. Essentially, eco-economy aims applying the principles of sustainability and sustainable development at group level and translating them to the community in order to improve perceptions about the indissoluble link between the natural environment and rational use of natural resources.

Eco-economy aims to change the perception on the content of the economic growth concept, by raising awareness, people realizing how vital is for the next generations that us, people of today, rationally consume natural resources with a significant impact on the result achieved, with a driving effect on the economy. Sustainable economic growth requires sustainability and sustainable development involves more than economic growth.

Eco-economy responds to the need for developing a modern education, which for now could create that human wisdom, able to engage in active participation, capable of defining an ecological position ecological, in order to rationally use natural resources, in line with sustainable development and natural environment protection.

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