Considerations Regarding the Decoupling Thesis under Conditions of Demographic Growth and Industrialization

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Abstract. *Many individuals and organizational leaders are well aware that their activities affect the natural environment. This awareness grows out of growing evidence of the effects of environmental use and some thirty years of environmental activism. Our paper aims to look at the worldwide interconnections in the natural environment that result from the use of global commons and other resources. A special emphasis will be given to examine the combined effects of population growth and industrialization as pressures on the natural environment. Together population growth and economic development hasten natural resources consumption, putting pressure on the global commons, spreading disease, threatening species, and extending the impact of global natural disasters. Their interrelated nature will be enlightened thoroughly toward "boom" and "doom" perspectives.*

Key words: pressure on natural systems; environmental issues; population growth; industrialization; Kuznets curve.

Introduction

The Earth became more and more small. At least this is the impression of each of its inhabitants. In assembly, the physic dimension never changed, but on the relativity perspective of each of us is accrue a vital space more and more reduced. We are living on a planet more and more populated, thus it is logical that" the slice" is diminishing. Unfortunately, the dimension of the "'slice" is not depending only by our number. In fact, there is an unfair assessment of the resources.

Within the context of contemporary evolutions, the access to the resources is not a sufficient condition for the welfare. The material and energetically flows are modelled by the complex economical relations, developed within a world much different from this of today, in which the restrictions were less numerous.

The natural systems are under an increased pressure, generated on one side by the demographical increase, and on the other side by the industrialization. The equilibrium point cannot be discovered, so there is a continuous debate with more and more proofs, which are not tilting the balance. Even the legitimacy of the environment protection is recognised, the way in which we have to act, the decisions of which the global leaders must adopt are challenges for the society of the XXI century is asked to answer. In that context, we are proposing to clarify a serious of aspects related on the interaction relationships between economy and environment, from a global perspective.

The increased pressure on the natural systems. The concentrated action of demographically increase and the economical development accelerates the natural resources consumption, increasing the pressure on the global commune goods, favourizing the spread of pathogenesis agents, threaten the species and extending the impact of natural disasters. The relations established between those factors of antropic pressure are presented within figure 1.

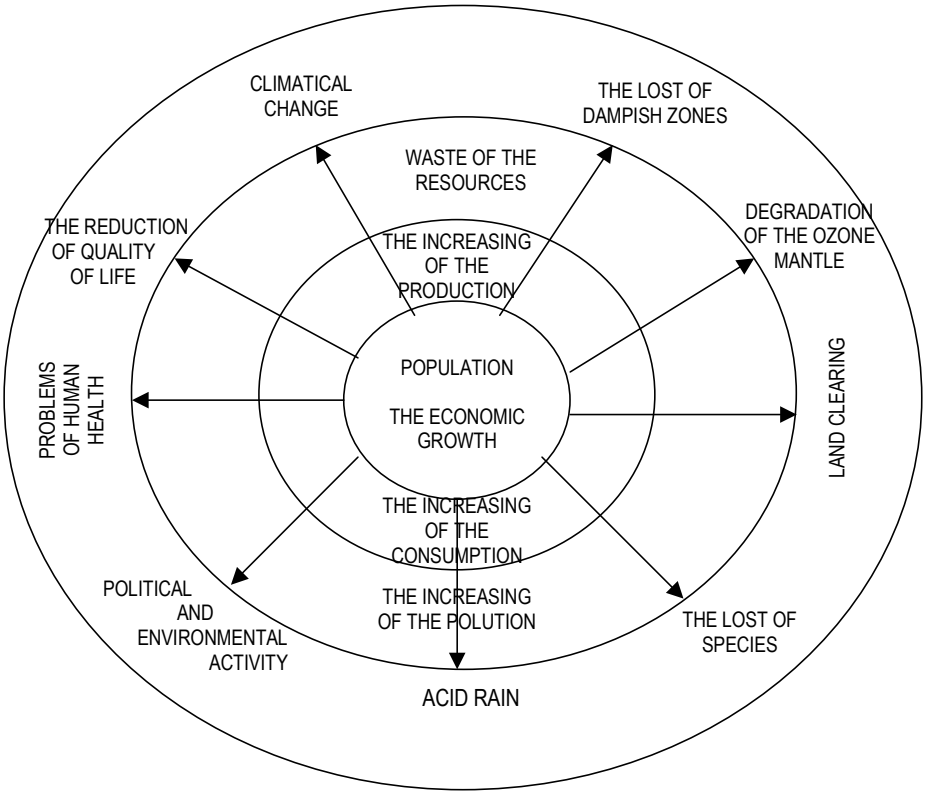


Figure 1. *The environmental problems weel*
(after Stead and Stead, 1996)

The demographical evolutions

The demographical problem, rememorized as "demographical bombe" or "demographical explosion", is brought here into attention of specialists within years '60 by the alarming evolution of demographical indicators. The mentioned name are eloquent, in the matter of effects, those results from the increasing pressure of which population will practice on the resources and, first of all, on the food resources (Bran et al., 2004, p. 102).

The Terra population represents the newest component of geo-system, of which quantitative increasing beneficiated by the "informational speeding process", generating the biggest changes in report with every planet species, if that comparison is permitted.

According to the report "Naught Demographical Increasing", there were necessary four million years for the earth population to reach two milliard people within 1927. The growth has been continued, so that in the 12th of October 1999 it numbered six milliard of inhabitants (The United Nations Population Fund, 1999) and there were expresed a series of fears related to the fact that in 2050 the support capacity of nature will be overwhelmed, this being estimated as between four and fourteen milliard of inhabitants.

Fortunately, the year 2000 marks a decline of the fertility; thus, by the recalculation of the prognosis it is estimated to a global population of 9 – 10 milliard within 2100. The causes which determined the decrease of the fertility are:

- the women became more educated, so they have more employment opportunities and more financial independence for those who choose to raise less children;
- the contraceptive means are more accessible;
- there are governmental initiatives which limits the family dimension, especially in India and China, and others which discourage families with children;
- AIDS epidemics; especially within Africa, they kills the women on the maternity age;
- the television creates expectations for the small, but happy and health families, which are presented on lot's of promotional materials.

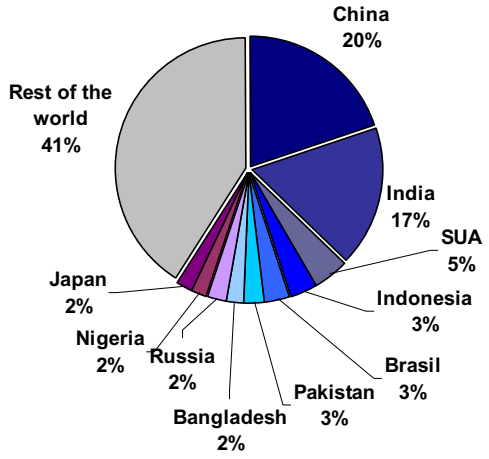
About 80% from the global population lives within the developing countries, but China and India are responsible for one third of the births of the world. As a consequence, the increase at the global scale can be unleashed anytime if in those countries the demographical tendencies are changing. Within the table 1 we present the situation of the most populated countries and the demographical estimations at the time horizon of the year 2025.

The classification of the most populated countries of the world

Table 1

Position	State	Population within 2006 (million)	Position	State	Estimated population within 2050 (million)
1	China	1,311	1	India	1,628
2	India	1,122	2	China	1,437
3	USA	299	3	USA	420
4	Indonesia	225	4	Nigeria	299
5	Brasil	187	5	Pakistan	295
6	Pakistan	166	6	Indonesia	285
7	Bangladesh	147	7	Brasil	260
8	Russia	142	8	Bangladesh	231
9	Nigeria	135	9	RD Congo	183
10	Japan	128	10	Etiopia	145

Source: 2006 World Population Data Sheet, http://www.prb.org



Source: 2006 World Population Data Sheet, http://www.prb.org

Figure 2. *„The demographical giants" and the proportion of their population within global population*

In the majority of advanced states and within industrialized economies the demographical increase was closed to zero or decreased under that level within years 1970, meanwhile the growth remains positive within countries with developing economies.

Europe registrated a sequence of aproximatively 50 years of decling of the fertility from 2.66 children/woman in the period 1955-1960 to 1.34 in the period 2000-2005. Within 1976, the fertility rates was by 1.3 in Italy (Politics of population, 1994).

In the same time, in Japan the fertility declined from 2.75 to 1.33. With the exception of USA, were the fertility is mentaining increased, within the big imigrant communities the fertility rate was in 2000 by 1.7 in the most developed countries. The socio-economical consequences of the demographical decreasing are the diminuation of the work force, a smaller potential PIB and more illness associated to the ageing phenomen.

Not so long time ago the decreased rates of the birth rate within developing countries were compensated by the big values registered within the developing countries. Under socio-economic report the demographical increase results in the problems related by the food security, education, dwellings, and the economic development has to make a step back for assuring the satisfaction of the main necessities.

The fact that within the developing economies the fertility decreased from 6.2 percent in 1960 to 1.5 percent in 2006 is a pleasant one(1).

Even if the global demographical growth tends to zero, the developing countries and those which are developing – countries are confronting with different demographical requests.

Those are referring to the structure on the age classes, the lack of balance between sexes, immigration and consumption habits. Each of these demands has different implications for the economic activities. For example, the demographical ageing brings opportunities for the development of new services and products, but requires also solutions for the maintaining within activity for a long period of time.

Populations from the most advanced countries consume the biggest part of the global resources. For example, the richest nations consume until 86% from the total of the goods and services, meanwhile the fifth part of the poorest part of the population consume only 1.3% from the total. This lack of balance invites to reflection on two key aspects: equity and the exhaustion of the resources. The economical development and the prosperity results, in general, in the increase of the consumption. That model from the advanced countries is the one that wants to adopt also the poor economies. By sequel, the logical consequences of the demographical increase and of the world economy growth is very probably a request more and more higher for the limited natural resources and, in consequences, a more rapid exhaustion of the available stocks.

The equity problem is referring also to the distribution within territory. Only few are the citizens of the developed countries who want to renounce to their goods and many are those from the developing countries who wants also to own cars, televisions, refrigerators etc. Is very easy to anticipate that those from reward will be inclined to kill the natural resources as forests ore the quality of air for obtaining goods or for sustaining the economic growth. The both types of consumption emphasises the pressure on the natural resources.

The cosmopolitanism is a result of the demographical increase that influences the production and the consumption. The town represents a concentration point of the social-economic activities, respectively the place where the most important decisions are taken, the business developing, the space is transformed and where the nature rates are left behind. Here everything can be sold on and bought – inclusively ideas, workforce, peoples. The last decades are witnesses of an intensive cosmopolitanism.

The number of towns, their dimensions, but mostly the proportion of the urban population increased. Thus, more than three milliard of town's lives about half of the world population and 19 from those have a population more than 10 million inhabitants.

According to ONU reports, the process will assure the continuity on the future, so that in 2030 more than 60% from the world population will live within towns (respectively 4.9 milliard people, from 8.1 milliard people). *Homo urbanus* can be defined by his habit of living within agglomerating places, tolerance for the strangers, predictable behaviour based on the accepted rules, very good access to the information and an almost total discount from the natural world (Bran et al., 2007, p. 64). The accelerated cosmopolitanism intensifies the pressure on the global common goods – the air and the water –, as well as on other resources as living space and food.

In plus, the wastes generated by the increase of the consumption are involved into global process. For example, the wastes produced in London are, in proportion by 90%, stored in the exterior of the town, an important proportion being exported in China. The similar practices characterises also the USA, where the wastes flow leaves to China, India and other nations where those are used as staples. The values of the waste exports from the USA to China were in 2002 by 1.2. Milliard USD. The majority of nations who receive those wastes have ecological standards less exigent or insufficient implemented.

The growth of the consumption, the over cost ore the consumerism are responsible for a serious health problems which overloads the bill of the society. The obesity, the hard problems, the disease of the circulatory apparatus, lung cancer are only few of modernity illnesses associated to the comfort and the excessive consumption and represents the main cause of death within developed countries. The world development added the incidence of the richness diseases. The richness diseases influence the global affairs and have implications regarding the use of the resources.

Industrialization

The industrial model of the economic growth was one of the leading forces of the world economical integration and of the global intercommunions of cultures, policies, industries, technologies and the natural environments. The industrial units which emits pollutants creates, in the same time, work places and a higher standards of life, required from each of us and by each of nations. Those units attract, also, the people in most agglomerating places where the urban problems of the wastes emerge; as well as those related to water treating and filtering; the noise and the air pollution.

The industrialization can contribute to the increase of the prosperity if the measurement of the welfare is realizing by the use of GDP, but in the same time increases the potential for the ecological disequilibrium which, at their turn, contributes to the decreasing of the quality of life.

In those conditions there is the problem of the way in which the international organizations and the multinationals firms have to act. The answers are different even in the interior of the same sector of activity and on this basis the world leaders are re-evaluating the global role within environment protection.

The legitimacy of environment protection is today far away from any controversies, indifferently if we analyse the agenda of global or national policies, or the agenda of main corporations. More than that, the research processes brought a series of solutions more and more innovative. Thus, the environment is linked by the decision on the way in which the environment protection will be realised.

A possible guide in that extend is constituted by the extreme situations. Thus, two scenarios are debated: the prosperity scenarios, in which the economical growth will lead to the intensification of the ecological efforts, and the deprivation scenarios, according to which the sustainability cannot be realised without restricting the consumption. The both scenarios admit the fact that the demographical growth and the industrialization affect the environment, but evaluate the different implications of the future evolutions. Thus, both scenarios of prosperity or deprivation are different as regards (Wilson, 2002, pp. 82-92):

- the anticipation of the world state;
- the projected time period;
- the measure in which the life of the other human beings is appreciated.

The "boom" perspective. The fast economical increase will generate the necessary technologies for the solving of ecological problems. As examples we can mention the online systems that necessitate a more reduce consumption on the paper, the reducing quantities of industrial wastes by recycling of the secondary products, more efficient use of the resources by the capitalization of the solar energy and biotechnologies. The prevision is positive and don't involved non-human beings.

That scenario was constituted starting from a series of hypothesis. Even similar as regards the results those differs by the starting point, which is considered the level of incomes, innovative ideas, respectively the resilience of the environment.

The first anticipation of that type is made by early time and is today one of the most known work hypothesis. Is about the environmental Kuznets curve, according to which from a starting level of incomes the impact on the environment by pollution starts to diminish, even if the industrialization responsible by the increase of the incomes will bring, on a short time, a worsen of the environment state (figure 3).

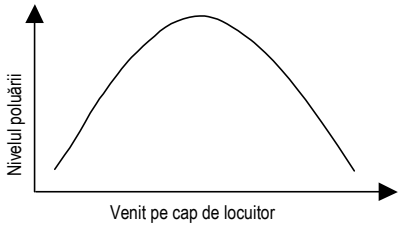


Figure 3. *The environmental Kuznets curve*

Another hypothesis underlines the fact that the capacity of creating new ideas is the key factor for the economical growth and for the nature conservation (Simon, 1998). The argumentation of the prosperities scenarios is based also on a risky assumption that the natural environment has a more cancellation than it's estimated and the economical development brings to the improvement of the use of natural resources. For example, the emissions control of the cars with motors with internal combustion contributes meaningful to the reduction of the pollution (Easterbrook, 1995). In the box one are presented the examples who justify this scenarios.

Box 1

A study realized by the World Bonk, for a period of six years, showed that the whole volume of the total emission is decreasing in the zones in which an internal industrialization process had the place. Thus, in China, where the economical development is very accelerated and the pollution too much extended, the quality of the air was maintained stable or even were improved in the last decade.

The technological innovations improve the relation of the people with the environment and reduce also the consumption. For example, the irrigation system with drop is more efficient and efficacious than classical systems and the electric machines use fewer resources and generate less pollution. As a consequence, the technology is a key factor for the environment protection.

The supporters of the prosperity scenarios believe in the levers and the equilibrium of the economic systems that will stimulates the development of new technologies if the old ones do not correspond anymore. For example, if the fossil resources are exhausted the alternative energies will develop.

The "doom" perspective. One of the fervent supporters of that scenario is Paul Erlich (1969), from whose acceptation the environment impact (I) is equal with the population (P) multiplied by the consumption or with the richness evidences (O) and multiplied again with the technology (T):

$$I = P \times O \times T \quad (1)$$

Equation (1) reveals the fact that the technology is an environment problem not a solution of it. On the other side, Lester Brown shows in its writings that the industrial production entered into a curse that will "rive" by the natural limits of the planet. The acceleration of the economical, political and cultural globalisation are considered major restriction for the environment that will determine the aggravation of the problems related to the food, quality of water and air or petrol and natural resources. Another argument is brought by Hawken (1993) who shows that the technological innovations lead to the intensification of the degradation of the environment.

Those examples shows us the fact that the adepts of the pessimistically scenario tend to look to the problems on a longer term. For example, the bio-combustibles are considered an ingenious solution at two environment problems – emissions of gas and the petrol crisis. The analysis of external costs revealed that in the case of bio-diesel, obtained by the till of oleaginous plants, the difference for the use diesel is only appreciatively 15-20% (function of the used method) (Nocker et al., 1998).

Final observations

Even the economists have the tendency to look at the economic phenomenon as being the main sources for the solving the problems, more and more people reflects on the secondary ecological effects resulted by the acceleration of growth and begins to change their opinion.

Some of them adopt the Erlich hypothesis, considering that the industrial growth rate conduct to an escalade of the environment costs which outruns the benefices brought by production.

Analysing the specialty literature we can't tip the balance. There are arguments for both scenarios. To decide where is the truth it is very important because after the analysis it follows is the action, and that may aggravate the problems already existing if the theoretical and practical premises were not correct.

The debate regarding the role of the economical growth and the realism of the disconnection may continue to the never end. Even it is possible to detach a benchmark – in the measure in which it is adopted the optimistically perspective of the prosperity and that decision is proof to be wrong, the costs will be the highest. The mistake may by an irreversible degradation of the planet.

Note

(1) According to 2006 World Population Data Sheet, http://www.prb.org

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