

ECOLOGICAL RECONSTRUCTION OF THE ECONOMIC INFRASTRUCTURE (CASE STUDY – BACAU COUNTY)

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Abstract. Ensuring the co-habitation of the main categories of ecosystems and economic infrastructure at county level requires to find development alternatives that would be “ecologically sustainable, economically viable, socially acceptable”. Therefore, it is crucial that the main goal of development be the improvement of the quality of life, the selection and implementation of alternatives of sustainable development, in accordance with the opportunities and limits of natural capital. This implies to adapt and reconstruct economic infrastructure on an ecological basis, in close relation with the structure, the production and bearing capacity of the natural capital, correlating human needs with the diversity and the productive and bearing capacity of the natural capital, according to the principles of ethics and sustainable use. Implementing a change of such dimension requires infusion of capital, the commitment of authorities, managers, population, companies, new ideas in design, experimented specialists.

Keywords: sustainable reconstruction, economic infrastructure, natural capital, eco-efficiency, sustainable economy.

1. INTRODUCTION

The sustainable reconstruction of the economic infrastructure is a lengthy and adaptable process of structural and functional change with a view to making it compatible with the productive and bearing capacity of the natural capital. Over the last 15 years the reconstruction of the economic infrastructure has selectively pursued outputs – reducing pollution through re-technologisation, inputs having been and being still taken into consideration only within the context of increased economic efficiency.

In the context of sustainable development economic efficiency has a different coherence: that of eco-efficiency computed according to the material and energy flows which take place between the natural capital and the economic infrastructure (fig. 1) namely:

- ecological efficiency, consisting in limiting pollution in accordance with standard requirements to mitigate pollution down to a tolerable level for ecosystems and human population. Regulations concern only the critical natural capital: water, air, soil;
- environmental efficiency consisting in using natural resources up to the limit of the productive and bearing capacity of the natural capital, by increasing the degree of metabolism (eliminating waste through recycling, re-use) of the economic infrastructure;
- economic efficiency, consisting in obtaining a maximum result from each resource used.

In the long term such a development calibrated on the productive and bearing capacity of the natural capital would lead to the mitigation of damages to the environment and consequently also of the budgetary expenses, resulting in a sustainable economy at county level.

Phenomena such as acid rain, pollution, flooding, climate changes, land slides, tornadoes that occur on the county's territory are the result of pressures exerted by people on the ecosystems, which made the latter less elastic, less capable to adapt to natural fluctuations. They crumble under the action of stresses that used to be normal, producing and extending calamities.

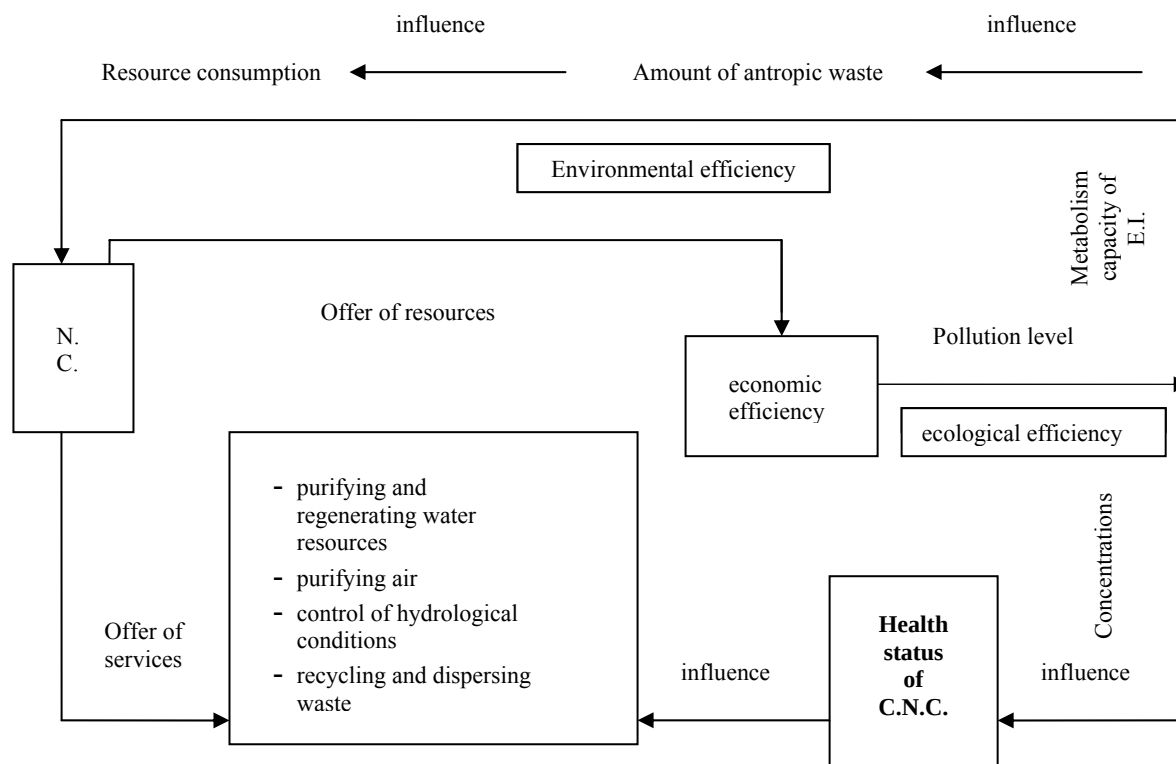


Fig. 1

Identifying eco-efficiency through material and energy flows between natural capital and economic infrastructure

N.C. – natural capital C.N.C. – critical natural capital E.I. – economic infrastructure

2. RECONSTRUCTION

Reconstruction implies: a) recalibrating the economic infrastructure to the productive and bearing capacity of natural capital requires planning the use of natural resources in physical terms within the limit of the productive and bearing capacity of the natural capital of the county; b) increasing the metabolism of the economic infrastructure by recycling, productive re-using of all outputs of economic value.

2.1. Recalibrating the economic infrastructure to the productive and bearing capacity of natural capital

Bacau County has numerous natural resources embedded in the ground (fig.2) which are either not valorized or insufficiently put to account, with severe and long-term consequences on the environment and the population, putting off the costs to be paid by future generations.



SUBSOIL RESOURCES

AREAS WITH EXPLOITED RESOURCES

HYDROCARBONATES	CLAY
COAL	GRIT STONE
ROCK SALT	SAND
MINERAL WATER	

AREAS WITH IDENTIFIED RESOURCES

HYDROCARBONATES	MINERAL WATER
COAL	CLAY
ROCK SALT	

Fig. 2 Subsoil resources

The chemical industry's platforms, which use rock salt for producing fertilizers, herbicides, pesticides and other substances for the pharmaceutical industry usually and are important water, air and soil pollution sources, need to be transformed in industrial eco-parks. International agreements and treaties that prescribe restrictions on the production of chlorides (freon, pesticides based on chlorides such as DDT and HCH, solvents for dry cleaning etc.) and the production of PVC having reached its maturity created a situation resulting in the involution of output at the Chemical Plant Borzesti. The obsolete character of fixed assets and the polluting potential for the area do not plead for the maintenance, modernization and extension of rock salt processing.

The physical output at national level is estimated to reach about 2,500 thousand t/year in the future, with a 40% use of the existing capacities. Salt export (822 thousand t in year 1989) declined by 50%, with a slight increase after 1995; the output for export could be increased by re-establishing relationships with traditional partners such as Bulgaria, Hungary, Austria, the former Federal Republic of Yugoslavia.

Attracting foreign investors could open up opportunities for new markets, and for modern extraction and conditioning technologies. Decision makers at local and county levels should develop policies to attract such investors lured by the abundance of existing mineral resources.

Over the last 40-50 years a number of activities connected to salt extraction have been devised and implemented. The salt mines (Targu Ocna) were used for therapeutic, sports and tourist activities.

The scope of such diverse activities might be enlarged and included in the category of positive externalities (salt-sculpture camps, extended therapeutic applications, storing hazardous wastes, creating museums of salt etc.). Another solution for chemical industry's platform would be to use – through new technologies – other resources such as potassium and sulphur salts (that exist in the county) with a view to producing ecological fertilizers which are in demand on international markets, not only in Romania.

Forestry and wood processing industry

Over the last 15 years this industry proved to be economically and environmentally harmful for Bacău County for the following reasons:

- forestry is directed mainly for the export of raw wood with a low degree of processing, the County being left with a small added value;
- processing technologies being obsolete there are large amounts of losses of wooden materials;
- forestation has been reduced in terms of area per capita;
- de-forestation will lead, slowly but certainly, to a significant decline of biodiversity;
- irrational exploitation increased flooding risk, accelerated soil erosion and generated land slides;
- irresponsible management of forest waste (boughs, branches, leaves, wood) and that resulted from exploitation and primary processing dumped on riversides resulted in soil, groundwater pollution and in the clogging of rivers, increasing flooding risks.

Efficient management of wooden resources requires their valorization in various ways and an integrated management that would start with the biological phase all the way through the economic circuit up to the life-cycle end of the final product (fig.3).

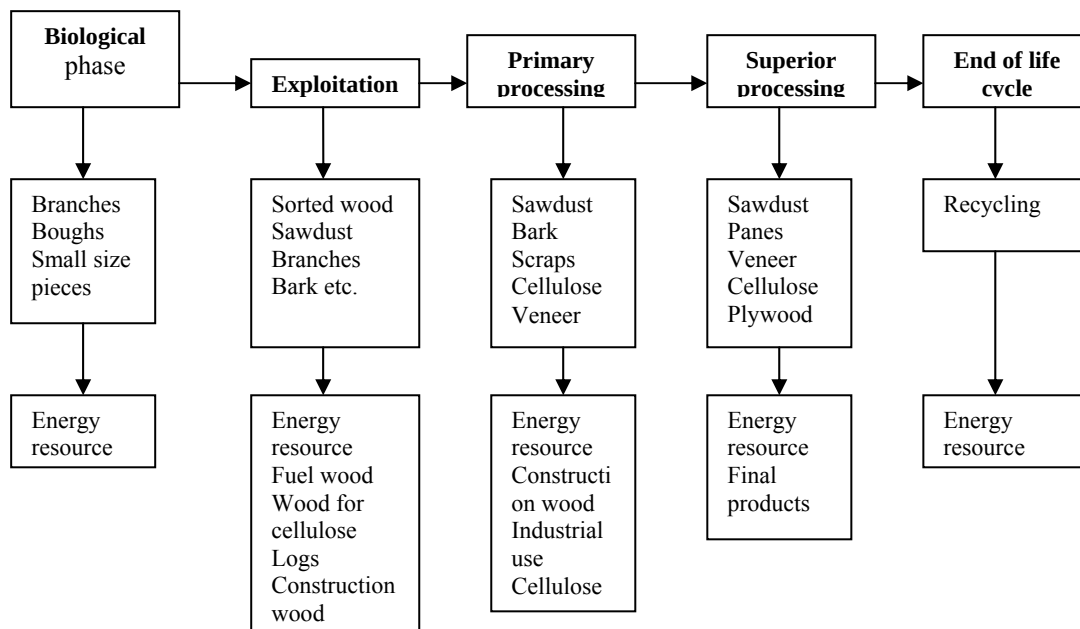


Fig. 3 The channel of wood valorization

The management of wooden resources in terms of ecological, economic and social performances should be conducted along the following main lines:

- reconstructing the forest ecosystems by recreating the integrity of existing forests and in the meantime increasing the forested areas;
- orientating wood processing industry toward the county's needs, namely: building ecological wooden houses. Creating small wood-processing enterprises associated with other categories of productive activities;
- using waste material for thermal and electric energy production in areas of concentration of such materials;
- internalizing negative externalities through cooperation between research and design, among economic agents, between various levels of production, chain collaboration of technologies along the whole life-cycle up to the end of it;
- issuance of the environment permit for economic agents in the fields of forestry and wood processing subjected to their capacity to eliminate all negative externalities and specifically document the rational management of wooden waste.

Berries and herbs processing industry

The Western part of the county is an area with great potential in berries, which are not being processed within the county but marketed on external market, and a wide array of herbs and aromatic plants that are not valorized either.

An eco-industrial park in the Comanesti area dedicated to forestry would be a development alternative which could contribute to a higher degree of processing the forest resources, to the development of transport infrastructure in the area, an incentive for the development of agro-tourism, health-care-, hunting-, cultural- and historic tourism. This would also be a solution to stop the pillage currently taking place on the Trotus Valley.

Construction and building material industry

Construction is the culprit for the disaster in the environment: ravages of forests and rivers, air and water pollution, waste production and even ailments due to poor illumination and ventilation and to the use of materials that do not comply with an ecological code. Mineral resources in Bacau County (sand, gravel, sandstone, gypsum) dwindled over the last years due to the intensive building activity, and on the other hand over exploitation of sand and gravel contributed to flooding risks.

Preserving the deposits of mineral resources requires to recoup auxiliary materials and waste and reintroduce them in the economic circuit. In Romania there is a potential demand for about 1 million new dwellings and for the renovation and refurbishment of another 2 million houses. Therefore, gypsum boards (rigips) – the new building material – becomes essential to the new building technologies in housing.

Gypsum as well as its cellulose backing may be provided by the paper plant of the county and the wood processing plants etc.

Production of gyps-board seems to be an important opportunity for the county and for the Moldova Region. Therefore ways and means should be found to attract investors. Till then, detailed evaluation of deposits, of their quality, of their property status etc. are pre-requisites for contacting investors.

Industry of health-care tourism

Mineral waters of a wide variety are one of the riches of the county: plain oligomineral waters, sulphurated, sodium carbonated, ferruginous, vitriolic, iodated etc. A number of about 100 springs wait for valorization; their therapeutic properties were certified as far back as 1971 by the Healthcare Research Institute.

Local public authorities should advertise them to potential entrepreneurs and valorize them for the public benefit of the county, and family physicians could make specific recommendations in each locality.

On the other hand, rural tourism could also benefit from a mineral water spring.

In certain areas (Moinesti, Lucacesti, Lunca, Slatina, Sarata) springs are completely abandoned. Their inclusion in a circuit of health-care tourism should be preceded by the ecological reconstruction of the respective areas and the development of recreation services (telecommunication, restaurants, treatment).

2.2 Increasing the metabolism of economic infrastructure

Industry of recyclable materials and waste

The introduction in the economic circuit of recyclable materials needs the support of the authorities for their collection, storage (in compliance with the legislation), and incentives and financial support for private investments from local funds for the re-processing of used materials.

Waste industry creates new professions and industries; albeit raw materials are just rezidues, their processing requires training and high performance equipment.

The industry of recycled materials provides new jobs for collecting, cleaning, processing and re-processing, actually new investment.

The newly created industries are capable to support themselves, in the meantime cleaning the environment. The implementation of recycling and re-conditioning industry contributes to the urban metabolism (by means of urban-waste treatment: incineration with energy recoup, recycling, compost for bio-gas and organic fertilizers).

Most new jobs will be created in the fields of planning and designing (re-designing) new products and in the new industries, as well as in production of equipment.

As we proceed towards environmental efficiency, mining and manufacturing industries will have to be significantly reduces.

By the systematic reduction of waste flows through recycling and re-utilizing most of the materials, a clean, livable environment will be created.

3. CONCLUSION

Recalibration of the economic infrastructure is a very sensitive issue, the process of recalibration should not entail unemployment, poverty, mistrust; it has to be conceived in phases so as not to affect the population, entrepreneurs, managers. Adapting, preparing the social and cultural capital of the county should be given the same consideration, those being both the driving force and the beneficiaries of change.

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