MANAGEMENT OF THE NETWORK REGENERATIVE DESIGN OF FINANCING THE ENVIRONMENTAL PROTECTION

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Rezumat

Proiectarea regenerativă în rețea a finanțării protecției mediului ar putea fi imaginată ca o abordare managerială multidisciplinară ce ilustrează în mod esențial unele aspecte circumscrise interacțiunii biunivoc-permanente şi complex-imprevizibile între sfera ştiințelor natural experimentale cu cele de sorginte umanist socială, în forma unei rețele a relațiilor, interdependențelor, conexiunilor şi fluxurilor entropic determinate între entitățile naturale şi actorii mediului socio-economic.

În acest cadru, este importantă finanțarea regenerării economiei prin intermediul clusterelor industriale şi a comunităților socio-economice durabile.

Abstract

The network regenerative design of financing the environmental protection might be imagined as a multidisciplinary managerial approach which illustrates essentially some aspects circumscribed to the biunivocal-permanent and complex-unpredictable interaction between the sphere of the experimental natural sciences with those of humanist social origin, in the form of a network of relations, interdependencies, connexions and flows entropycally determined, between the natural entities and the actors of the socio-economic environment.

Within this framework, it is important to finance the regeneration of economy through industrial clusters and through sustainable socio-economic communities.

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1. Introduction

The management of environmental financing network design might consider two general premises:

- from the perspective of scientific research methodology, the economic and ecologic scientific progress illustrates both the "static" endogenous criteria and the specific delimiting "revolutionary" criteria of the research programs, and the exogenous aspects of the process of knowledge which reveal real-natural and humanist-social multidisciplinary, interdisciplinary and transdisciplinary trends.
- from the perspective of reality, one can notice the interaction between the human being and its environment – a process of continuous location and adaptation to the mutations that appeared in the biunivocal exchanges, entropycally determined, between the natural environment, on the one hand, and the socio-economic environment, on the other hand.

Starting from the fact that the network is a concept that illustrates a matrix of structural elements – the **nodes** – and the material, economic-financial relations between them – the **connections** – this paper might reveal some aspects circumscribed to the continuous interaction between the real-natural and humanist-social scientific information, under the appearance of a network of entropic relations, connections, interdependencies and flows between the (biotic and abiotic) entities of the natural environment and the actors of the social environment (socio-economic human community).

The ecological network of the natural environment can be seen as a coherent assembly of the reciprocal interaction between the natural or semi-natural elements of the ecologic landscape that is configured and managed with the purpose to preserve or restore its ecologic functions as means to preserve biodiversity, while also ensuring adequate opportunities for the sustainable utilization of the natural resources.

The socio-economic and financial network of the artificial human environment, constructed in the form of official and informal institutions (official regulations and demand/offer-type relations)

manifest within the sphere of the institutional-human action through the configuration of the reciprocal material-economic and financial-monetary flows, between the social actors who offer or demand; these flows regard the specific economic-financial principles, regulations and instruments that make it possible to initiate and manage the funding of the socio-economic, endosomatic and exosomatic metabolism within the context of the available economic-financial resources.

The economic development in general, and the sustainable economic development, in particular, illustrate the use of resources (material, technological, financial, human) teleologically oriented towards the goal of continually improving the quality of life within the human society, so as that the functionality of the ecosystems supporting the future economic and social development is not destroyed or undermined. At the same time, until now, most studies on socio-ecologic networks design displayed both a predictable static character, and an unpredictable dynamism.

2. Regenerative design, socio-economic metabolism and „innovation learning" binomial - premises of the network management of funding environmental protection

There are some multidisciplinary theoretical and practical considerations worth being mentioned, that might be useful for a possible network approaching of financing environmental protection:

- getting aware of the quantitative and qualitative dependence of the economic-social process (in technical-productive and social-institutional organisation terms) of the health status of the ecosystems that provide free material-productive resources and leisure services for the human habitat;
- getting aware of the long-term dependence of ecosystem functionality on the endosomatic and exosomatic social metabolism;
- evolutive-complex nature of the natural, social and productive systems characterized by reciprocal inner and external interactions which illustrate cycles of innovation, moments of preservation, unpredictable dynamics and adaptive-regenerative capacity in critical moments through the process of continuous learning (productive learning, social learning);
- the network design, from the perspective of the innovation-learning binomial, of the rules and interactions between the elements of project management and as learning management by considering

the path from idea to its successful application on the market through individual and social learning, with the possibility of application within different contexts (technical-productive, socio-ecological), which put their print on the environmental protection and sustainability.

There are some aspects circumscribed to the transition from the sustainable development to the regenerative development, through the so-called transition from the paradigm of the degenerative-linear sustainable development, to the new paradigm of cyclic regenerative development, which illustrate two distinct strategic approaches - ***triple bottom line*** and, ***triple top line***.

This process reveals the change of the strategic option from the principle of minimization and rationalization of resources consumption with the purpose not to affect the necessities of the future generations, to the principle of regenerating the potential of ecosystems for future investment-productive projects. This is illustrated both at conceptual-theoretical level and at the applicative-practical level, the context of the classical idea of sustainability depending on other variables too, such as culture, education, professional experience and of the dynamic reintegration of the flows of matter, energy and information between the natural environment and the economic-social environment.

The first approach illustrated, among other, by the researcher J. Elkington, reveals essentially the interdependencies between the economic, ecologic and social nature of the human society development circumscribed to the known concept of sustainable development, showing that the object of economic development at the micro- and macro- levels should be in agreement with the objective if environmental protection and social equity. This perspective bearing the generic title of ***triple bottom line****,* was the first premises for the elaboration of the ling-term strategies and programs, demanding similar attention given to all three elements (economic, ecologic, social). Considered today as a linear equidistant manner to consider the elements of sustainable development, it opened the road towards developing the problem of the primordial role of any of the constituting economic, ecologic or social elements. Other researchers, such as Robert Thayer, John T. Lyle, William McDonough, Michael Braungart and more recently Medard Gabel approached the ***triple bottom line*** from a different perspective: the regenerative development starts from the idea that what sustainable development was for the traditional economic development,

regenerative development would be for sustainable development, introducing thus a new concept - ***regenerative design***.

Approached in a primordially ecologic manner (John T. Lyle), or in socio-cultural term (Robert Thayer), or with its economic dimension (William McDonough and Michael Braungart), the regenerative design takes into consideration the importance of the environmental costs given by the connection established between the natural environment and the artificial economic-social-human environment in a dynamic-integrative meaning; the regenerative design has two components:

- the conceptual component, which considers the regenerative design within the context of the classical idea of sustainability depending on other variables too (culture, education, professional experience);

- the applicative-practical component, as strategic vision, which gives particular importance to the mechanisms and processes within the natural environment, which provide free goods and services (water, air, raw materials, as well as leisure services) as well as to the necessity to reintegrate the social-economic environment with the natural environment through reciprocal flows of matter, energy and information that occur continuously in the economic-technologic and cultural-educational fields and in social-community organisation.[1]

Second, by considering the assembly of processes, exchanges and flows – anabolic and catabolic, material-economic, of energy and information – established between the natural environment and the artificial human environment (economic-productive, social-institutional), pertaining to the notion of industrial-material-energetic

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[1] *J. Elkington - "Cannibals With Forks: The Triple Bottom Line of 21st Century", Business Capstone Publishing, Oxford, 1997; Richard Keirs McDonald - "Towards Regenerative Development: A Methodology for University Campuses to Become More Sustainable, with a Focus on the University of South Florida", A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science Department of Environmental Science and Policy College of Arts and Sciences University of South Florida, 4 April 2008; John Tillman Lyle - "Regenerative Design for the Sustainable Development", New York,Wiley, 1994; William McDonough, Michael Braungart - "The Next Industrial Revolution", October 1998, the Atlantic, http://www.theatlantic.com/issues/98oct/industry.htm; Robert L. Thayer - "Gray World, Green Heart: Technology and the Sustainable Landscape", New York Wiley, 1994; Medard Gabel – "Regenerative Development: Going Beyond Sustainability", Design Science Lab - Designing Solutions for Global and Local Problems, 2009.*

metabolism, as shown in the studies of A. Lotka, Nicholas Georgescu Roegen, Robert Ayres and Allen V. Kneese of the 1970s, the new concept of sustainable economic regeneration proposes not as much the conservation of resources (material, financial, human, technological), but particularly the dynamisation of their potential by industrial and social innovation; this will cause quantitative and qualitative mutations required for the expression of the human being in its triple quality of biological being, economic agent and social actor.

Again, as in the case of regenerative development, the matrix of flow-stock coordinates highlights the necessity for transition from the degenerative-linear paradigm (raw materials-processing-consumption-wastes-pollution) to the so-called regenerative-cyclic paradigm (raw materials-processing-use/regeneration, reparation, reutilization- wastes-pollution).

Within this context, the analysis of the economy-environment flows experienced a process of conceptual and applicative-practical deepening: the limitative, determinist-static nature of the *input-output* ecological models, statistically dependent, unable to keep up with the dynamic changes from the economic, social and natural environment, caused the enlargement of the conceptual basis of the monetary analysis by incorporating the so-called multi-criteria analysis. Practically, within the context of limited material resources and pollution, flow analysis is no more a mere quantitative-material analysis; rather it incorporates now new concepts and ecological indicators such as efficiency of saving and efficient utilization of the inputs and consequences of using the material resources within the flow of production or of using the ecologic space (eco-efficiency, eco-sufficiency, dematerialization, cradle-to-cradle or cradle-to-grave indicator for production flow, ecological footprint indicator of ecologic space utilization).

The experience of regenerating the coordinates of the economy-environment flows reveals the shift of accent from the precautionary economy of raw materials consumption to the economy of services. For instance, the implementation of the ***Product System Service*** aimed to develop the managerial-productive culture of the economic actors because the economic actors do not produce just simple, ecologically-clean goods, but they are an organisation which learns on a continuous basis, generates permanently conceptual solutions, applicative-practical solutions for strategic and technological

purposes – how to adapt to new requirements for environmental protection while generating new openings and opportunities for the economy and society using inventics and innovation, on the road from a concept-idea to its successful materialization on the market.

Third, another possible area of research in network design is the field of the dynamic complex systems.

Complexity is a specific feature of the natural systems and of the social systems, by the fact that it reveals endogenous interactions between their actual elements, as well as forms of communication in time and space with the environment.

Characterized by a surprising non-linearity, decentralization, self-organisation, capacity of organisation and manifestation of the interactions between the proper endogenous elements and the many agents from the environment, the complex systems are also termed as panarchies – mythological concept (Pan), which illustrates the hierarchy-decentralisation antithesis as a game between change-innovation and conservation, between predictable and unpredictable.

Same as in the previous cases, when approaching the complex systems, regeneration and transformation are termed learning capacity and capacity of adaptation after disasters by taking into consideration the principle "*Remember and Revolt*"; the natural processes illustrate several stages: ***growth and exploitation*** (R); ***conservation*** (K); ***collapse or release*** (Ω-omega) and ***restoration or reorganisation*** (ά-alpha).

Within the framework, it is important to mention that the complex systems adapt permanently through continuous learning, adaptation and reconstruction to the emerging situations. Some authors consider that not just nature is a dynamic complex system, but the human society in general, also is. The studies of W. Buckley and predecessors show that the natural systems and the economic-social systems don't tend towards equilibrium, displaying rather transient homeostatic states and dynamic morphogenetic transformations.

This requires us to consider the dynamics of the endosomatic and exosomatic metabolism within the economic and sociologic multidisciplinary context, which generates a permanent state of disturbing tension towards permanent change, by encouraging the flexibility of the multidisciplinary information communication within different contexts (technical-productive and socio-communitary), by individual learning (professional specialisation) and social (communicational-interdisciplinary), organised on three levels (***single***

loop – correct the errors with the schemes of the mental models, ***double loop -*** correct the errors by examining the principles and policies; ***triple loop –*** elaboration of governance norms and protocols).

Essentially, it is a process of managing the interaction between the concept, objectives and results of learning, which aims to regenerate the natural environment through innovation in human production and human communities.

Thus, the literature of the socio-economic networks illustrates the importance of the relationship between learning an innovation (innovation, as process of learning) which might be approached from multiple points of view, such as:

- traditionalist perspective, as product of knowledge, with possibilities of marketing, or as process of continuous individual (persons involved in the process), structural (technical-productive and community-social organisation) or interactive (multidisciplinary collaboration) learning.
- perspective of the complex system network, of the interaction between agents (individuals, teams, organisations) and the *single*, *double* and *triple loop* learning, so that the innovation, organisation and culture of learning are in a continuous interaction.

3. Aspects concerning the network design of environmental protection funding

The network design of environmental protection and sustainability illustrates the complex interactions existing between the socio-economic and ecologic entities. It can be viewed as a possible, complex, adaptive-transient, integrative approach of the project management, whose purpose is to maintain a permanent state of endo and exosomatic connectivity between the natural environment, the economic process and the social organisation using catalytic measures (financial ones included) applied within different specific contexts (productive-technical-economic, community, socio-economic) to the regeneration-innovation-learning triad.

The network design of environmental protection and sustainability can also be approached from the managerial perspective, by integrating two distinct planes:

- interaction of the elements forming the project management;
- interaction of the elements forming the management of adaptation and the management of transition

On the one hand, aspects are considered, which are circumscribed to the process of subjective, comparative, parametric and analytical evaluation of the project management, in terms of the general and specific interconnections between the incipient coordinates of the impact of the general and specific necessities of the activities and relations between the project beneficiary and the stakeholders, involved directly or indirectly; the aspects circumscribed to the cyclically determined and multi-phased stages, and the analysis of project costs and benefits are also considered. All this is done with the help of a matrix of the organisational-managerial, technical-contractual and financial ecologic risks and responsibilities.

On the other hand, aspects are revealed, which regard the interaction between the management of adaptation and the management of transition, while taking into consideration the peculiarities of the socio-ecologic network expressed synthetically (dynamic unpredictability, creative and self-organisation capacity, reconfiguration, adaptation and learning within the context of crises and shocks).

Starting from the studies of C.S. Holling, the management of adaptation highlights these forms of network identity particularly concerning the learning capacity of the socio-ecologic networks, their ability to cope with unexpected events and to support the flexibilization of the natural, technological, human, financial and social capital management.

The management of transition developed in the productive technical-economic domain in the Netherlands, based on the concept of transition illustrated by the literature as synonym of transformation – capacity of a technical-economic or socio-ecologic system to generate a basic change by encouraging fundamental changes of mentality both in economy and in the society, using a system of learning and thinking based on continuous practice - ***learning by doing*** – at multi inter and transdisciplinary level. This has set the premises for a transition of the public opinion perception, and of the specialists, towards a change in the organisation of the productive technical-economic processes which become inertial to change. Even though the two theories have different origins, they have much in common.

Both are presented as theories pointing towards learning management. Both reveal the importance of knowing the aspects pertaining to the adaptive complex systems and, therefore, underline

the continuous importance of the learning and adaptation processes. The two managerial approaches reveal the involvement of many actors in the decision-making process.

The network financing of environmental protection and sustainability takes into consideration the processual integrative approach of premises, management and contextual specificity (the competitional process of maximizing the quality of products specific to the network of the economic processes, and the process of community transformation, from the socio-ecologic sphere), potentially applicable to the triadic project regeneration-innovation-learning. For instance, from the technical-economic perspective, the economic processes display a new manner of manifestation, as transition from the traditional economy towards the tertiary-bound economy, characterised essentially by the idea that the companies don't just produce goods, but also services or concepts of products, within the context of a higher internationalisation of the markets, of more flexible production and capital structures, managerially decentralised, and of the new competitive reality based not so much on cost minimization, as on the maximization of quality. Adding to these is the place and role of the human factor within the Ford, conveyor belt-type traditional economy: the worker was a replaceable factor of production, while it becomes now a factor more important than the physical capital due to the possibility o developing its cognitive, managerial and human capital.

The network design of environmental protection illustrates the complex interactions existing between the ecologic, socio-economic and financial entities, on the side of the offer and demand, involved in the sustainable regeneration of the natural and social environment. The progress of knowledge and its impact on the restoration and regeneration of the entropycally-determined interconnections between the natural environment and the socio-economic environment are tightly linked to funding the research, development and innovation activity on the road from the idea to its successful marketing – invention-innovation binomial. Thus, the general objective of environmental protection and sustainability reveals the stimulation of the regenerative-sustainable industries both in terms of efficiency (new, value-added, products), in terms of new agents emerging on the market, and in terms of the regional development. This shows a very complex process which involves the interconnections existing between the financing sources, the

institutional characteristics and researcher motivation, and between the motivations, funds and competitive advantages of the private companies.

The interactions established between the designers of technological ideas and the suppliers of risk capital are illustrated by the implementation of the so-called ESTD (Early Stage Technology Development) technological projects. This route, taking two forms, as product and as multi, inter and transdisciplinary process, is illustrated practically by the motivations for the two types of ESTD projects: the *start-ups* and *spin-offs*, and their funding. The *start-up* project illustrates a technological company whose establishment and maturation are outside the commercial world (within the university, academic framework), the transition from the idea to innovation being accompanied by the migration of the academic inventors towards the establishment of a new productive-commercial company. The *spin-off* project is a risky entrepreneurial project initiated by a larger company and it is much more connected to market realities.

The financial support to ESTD projects is essentially done through a mix of three types of complementary financial sources: angel investors, economic, financial-banking corporatist companies and the state budget.

The two definitions reveal specific motivations and challenges which require a mix of organisational-entrepreneurial measures backed up financially.

The idea of clusters, of the transition from the geographical approach of the industrial districts to the research area specific to Porter's industrial poles of competitiveness, set the bases for the subsequent establishment of networks interconnecting different institutional nodes (university-scientific, financial, producers and clients) aimed to support the development of the end products orthe development of technological research, such as the biotechnological products. However, the material money, no matter how much, is not the only valid universal stimulant.

In a world of technological and financial incertitude, financing by funds of guarantees and public contracts (procurement) is used by the private companies, risk capitals and angel investors, because they have important resources such as expertise, intellectual assets,

financial assets able to support the project administrator top make the best decisions towards success.[2]

Irrespective whether it is a *spin off* or *start up*, the project launched on the market has inter, multi and transdisciplinary, economic, financial, technological and human nature. The road from invention to innovation needs technological-financial connections through the mix of macroeconomic policies which stimulate the interconnections between the performance of the high school, university and scientific research environment, on the one hand, and the yield of the business environment, on the other hand.

The EU is now considering whether to finance and develop the clusters within the context of the principle of subsidiarity and open method of coordination. Thus, they consider a so-called multi-phased test of subsidiarity, applicable to the funds for the development of research networks. The direct funding of innovation and research relies on article 166 of EU Treaty, which consider the manifestation of market failures (the costs generated by the risks of exploiting the research products), the necessity for inter-state institutional coordination for the regulation of the intellectual property rights (patents, inventions, innovations) and the impact generated by the financial instruments specific to competition and industrial reorganisation.

Within this framework, the instruments to stimulate the establishment of clusters within the EU refer to direct financing, through the regulatory-fiscal binomial, circumscribed to the research and technological development programs (FP-RTD), by procedural provisions (article 251) or relying on technological partnership (articles 169, 171)[3].

The network design of the economic processes might be exemplified by the Belgian way of using the national and EU funds (FEDER, FSE).[4]

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[2] *Venture Support Systems Project:Angel Investors*, MIT, MIT Entrepreneurship Center, 2000; Robert Wiltbank, Warren Boeker - "*Returns to Angel Investors in Groups*", 2007.

[3] *Loris Di Pietrantonio – "Towards a New (European Research) Deal. The Case for Enhanced Fiscal Policy Coordination on Research and Innovation", Bruges European Economic Policy briefings, BEEP briefing nr. 20, 2009.*

[4] *"Évaluation Stratégique Environnementale-Programme Opérationnel FEDER «Competitivité regionale et emploi»" Wallonie (programmation 2007-2013), February 2007.*

Environmental protection and sustainability can be approached interactively in two ways:

- stimulate the formation of the poles of industrial competitiveness, of the network of regenerative outcomes (products, services of the economic agents engaged in biotechnologies, chemical and pharmaceutical industry, technology and information, agro-food industry, spatial industry, construction materials etc.) by a project management revealing the relations between the project coordinator (Ministry of the Small and Medium Enterprises), the executive coordinator (specialised Directorate or Agency) and the beneficiaries (SMEs, for instance);
- promotion, development and vaporization of the human capital in terms of technological innovations, spin-off and start-up concepts, and by measures revealing the importance of the school, university, academic environment in the formation of specialists, production of patents and their utilization in production. The companies which employ highly trained doctoral students are to receive fiscal facilities and "moral subsidies" being known as "first doctor" companies.

Criteria of economic eligibility (nomenclature of possible new domains of regenerative areas, some of them mentioned earlier, such as biotechnologies) and criteria of financial eligibility (compliance with EU definition of the SMEs included in the Recommendation of 6 May 2003, which stipulates that the SMEs are not low yield companies from "delicate" sectors or with tertiary financial problems) will be used to encourage the establishment of companies and the creation of jobs; thus, a financial-technological mix (angel investors, corporatist-economic, financial-banking companies and the state budget) and enticements for the formation, consolidation and development of the innovative spirit (for instance, by the development of the multidisciplinary economy of the incubators) will be used.

Environmental protection and sustainability funding within the network of the community process is integrated to the nature and context of the process of establishing sustainable communities.

The literature mentions several interconnected elements which illustrate processual aspects of the sustainable communities, a concept derived from the sociological notion of the community as a constant manifestation in time and space of the territorial, linguistic, cultural, economic, social and religious cohesion of its members. These elements refer to the process of the community transformation which aims:

- communicational-democratic identification and evaluation of the groups of interests involved in the social learning (learn from each other by debates such as round tables);
- methods of strategic planning (forecasting and backcasting – stress on the future from the perspective of the present versus the method of scenarios, where the future objective generates the energy of finding the resources to accomplish it);
- transfer of technology, education and professional training as process of continuous learning helps to design the community process;
- degree of public authority involvement and involvement of the economic and financial community in encouraging the green business.

At the first sight, the sustainable communities illustrate a specific dimension, geographically determined. The sustainable communities don't regard just the town or region, they don't refer to a fixed parameter, rather they illustrate a process similar to the sociological concept of the community, including connections and relations between the involved people or stakeholders such as natural persons, legal persons, public authorities, financial-banking actors, specialists (engineers, architects, NGOs). These sustainable communities might get involved in the specialisation and interrelation of the activities of analysis, evaluation, instrumentation, regulation and funding of economically, socially, ecologically and cultural-educationally sustainable investments (investment opportunities in the physical and financial infrastructure); ecologic investments (mechanisms for environmental or resource protection); social investments (formal and informal institutions – local and representative democracy, social network – process of making the factors of public decision and the company insiders accountable for their actions – awareness of the ecologic value at the stakeholder); human aspects (professional training, human resource potential development); cultural investments (cultural information, treasuring and acquiring the historical heritage and religious beliefs, civic involvement based on rights and duties). Integrated decisions are thus adopted for the inter and intra-generational management of the rare and limited natural resources in relation with the unlimited human necessities (**economic necessities**: production, consumption, employment); **cultural-educational, social, sanitary** necessities: access to education and learning, health care, transportation,

environmental services; **political necessities**: freedom and necessity to participate directly or by representatives and through the insiders of the microeconomic agents in the decision-making process).

Essentially, the interconnected elements of the sustainable communitary process also reveal the importance of the impact which the economic and financial community has, in order to:

- accomplish more with less resources (maximize the use of the existing resources);
- accelerate the financial and monetary flows within the community;
- regenerate the resources and create new products;

The practical financing of the socio-ecologic network is illustrated by several approaches such as:

- the Natural Step;
- the New Urbanism;
- the Melbourne Principles

Natural Step (NS)

The framework structure takes into consideration the strategic possibilities to approach systemically the economic, ecologic and social issues.

Inspired by the Brundtland Report, dr. Karl-Henrik Robert, one of the most reputed Swedish researchers on cancer, incited by the confusing disputes about the impact of the sustainable development on the human health, decided to focus on the systemic causes for environmental degradation and human health decay.

This approach relies on aspects pertaining to the socio-industrial metabolism and to the metabolism of the natural environment, on the funnel metaphor, of own conceptual system, and on the implementation of specific strategies. Several essential conditions of the socio-industrial metabolism are formulated which show that it affects the processes of interactivity between the environment – society – economy, both for the products, by revealing the discrepancy between the consumption of extracted raw materials and the slow terrestrial capacity for their regeneration, between the intensity of industrial noxious wastes and of those recyclable naturally (that demand the integration of the processes of production with the ecological cycles), and for the leisure services, by degrading the services that support life in general.

By considering the laws of entropy in physics, chemistry and biology, the authors used the so-called "funnel metaphor" which shows the low metabolic margin of manoeuvre between the two limits of the economic-social environment to the capacity of the ecosystem to supply products and services, which shows the necessity for a properly designed strategic management (conception of a mental model of awareness, axiom-setting, instrumentation, implementation) oriented towards practical success. NS shows the importance of innovation and creativity of all the stakeholders involved in community transformation (individual persons, economic agents, local public authorities). The SWOT analysis must be applied to the various elements of the strategic planning (NS education, culture and practice through workshops and general debates, in schools and within the management, by partnerships in the democratic process). The community environment (natural, agrarian and industrial) for productive necessities, the economic, financial and banking environment (for funding) and the social environment (for human necessities) must be considered within the context in which the public authorities are one of the involved stakeholders.

New Urbanism (NU)

The New Urbanism approach is a form of urban regenerative design which appeared in the 1980s in response to the environmental degradation and to the degradation of the human habitat due to the higher urbanization and metropolitan agglomeration.

Incorporating the idea formulated by urban architects, devotees to the traditional community (Andrés Duany and Elizabeth Plater-Zyberk), NU reveals aspects pertaining to traffic fluidization, expansion of the network of pedestrian alleys, home design according to stakeholders' profile, activity and possibilities (economic agents, population); essentially this means the intense quantitative and qualitative use of the ecologic area to the benefit of community members..

The process of community transformation reveals the importance of the active involvement of the local authorities by multidisciplinary round tables (American Charette) which gather specialists, businessmen and politicians with specific responsibilities in accomplishing the community objectives.

The strategic planning of NU is choice-planning or planning by a constant survey of the public opinion perception; while the ordinary

strategic planning focuses on new attributions to make the system more efficient, NU paradigm reveals a real planning. Each idea of a stakeholder is first developed within a matrix of performance and then the selected ideas are implemented. This type of planning can be applied at town-level or at community-level. The role of education and culture in general and of the ecologic culture, in particular, plays a special role in getting aware of the anatomy and physiology of the endosomatic, biologic and exosomatic, cultural, educational societal metabolism. The community environment shows the importance of landscape management, of neighbourhood management, which strengthens the capacity of reaction and of economic and financial regeneration, the importance of creating a human habitat adapted to the economic, social, cultural, educational and political needs of the people.

The local public authority plays an essential role by permanently exerting its attributions in a transparent way. However, much too often, community projects are updated below expectations, or risk to infringe the legal provisions.

Melbourne Principles **(MP)**

This urban-holistic approach consists of the ten principles adopted by the 2002 conference on the „Melbourne Principles for Sustainable Communities" sponsored by the UN program for the environment, seeking for the sustainable development of the towns. The principles aim the long-term economic and social security of the towns (the town not just as mere human habitat, but also a space of socially interconnected structures), the protection and regeneration of ecosystemic biodiversity, the efficient use of the ecologic resources through the symbiotic incorporation of the natural-ecological principles and processes in the urban characteristic, strategy and culture; this means stressing the responsible participation of all urban actors (citizens, authorities, public and private agents) for an active collaboration to build a common sustainable future through promoting the values of an efficient, sustainable consumption, through financial, social and political transparency and responsibility

The community process reveals the sudden motivation of the local authorities generated only by the aggravation of he ecological problems, the fact that only the public/private partnership is generally used and that the strategic planning is an adaptive process of continuous learning of the local authorities to take decisions.

The community environment in the MP approach reveals the interconnections between the aspects of the ecologic recycling of the wastes, those concerning the establishment of cooperation networks between the local economic agents based on the triple bottom line and triple top line concepts, and the social aspects, through responsible cooperation and governing. The routine of the local authorities (expressed by the legislative initiatives and the strategies developed and implemented) is less important than the commitment of the public authorities towards these.

In conclusion, the community process has been generated for several reasons: the health state for NS, the urban agglomeration for NU and the sudden degradation for MP. The role of the actors involved in this process reveals either the "body and soul" involvement of all the actors in the elaboration and actual implementation of the strategies (NS), or the multidisciplinary nature of the round tables (NU), or the community marketing (MP). The strategic planning reveals either the use of backcasting (NS), or the use of prognosis (NU), or the use of the traditional strategic planning.

The process of continuous learning shows the importance of the funnel metaphor for the analysis of the relationship between the societal consumption and the ecosystemic possibilities (NS), the encouragement of public debates on the ecologic community space (NU) and the use of the debates arena for discussions on the current and prospective role of the local public authorities.

The learning process leads to the elaboration of NS general and specific projects, to the multidisciplinary evaluation of the community landscape design (NU) or to the learning of the local political factors within the process of strategic ad tactical elaboration and involvement.

The community environment has concrete ways for an efficient exploration of the ecologic space and its resources, focusing either on the societal metabolism (NS), on the minimal ecologic impact (NU) or on the recognition of the value of ecosystemic biodiversity (MP).

At the same time, the economic and financial environments show the importance of ensuring the long-term economic security by financing ecological technologies and an efficient management (MP), or by incorporating eco-efficient technologies as demanded by the community (NU), or by one-step economic strategies aiming towards wider goals (NS).

Thus, progress has already been done in financing the environmental protection and sustainability. As Elena Antonacopoulou (2006) said, starting from the syntagm specialization-multidisciplinarity and from the concept of individual and social learning spread on the three levels (single loop, double loop and triple loop), the network funding of environmental protection and sustainability incorporates not just aspects of the industrial and social cluster research area, but also the surprise effect specific to the complex systems (interactivity, diversity and openness towards multiple options, innovation through learning). This puts into discussion the relation between the outer world and the inner world of the human action, between the source of financing the visible action and the source of human spiritual energy, of becoming aware of the perfectible way to do a job, both as form and as content, by considering the butterfly effect: a small step towards environmental protection and sustainability may generate later (when you don't expect it) amazing progress.

In conclusion, the nature and technical-economic and socio-economic context transfigures continuously the triad regeneration-innovation-learning, illustrating the enormous cultural exosomatic human potential, of the way in which the productive man or the social actor works or relates in economic and social terms, given the interactions existing between the natural environment and the artificial human economic-social environment.

Therefore, within the context of funding the environmental protection and sustainability, next to the importance of the new technologies or the access to new raw materials show the decisive strategic role of the human capital which, by education and professional training, leads to the emergence of the cultivated, professional polyvalent worker and manager.

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