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New Theoretical And Practical Approaches Of Implementing The Circular Economy For The Preservation Of Natural Resources

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Abstract

The purpose of this paper is to achieve a strategic approach to funding environmental flows in a sequence-focused vision. This approach allows the training and use of all funding sources feasible in an industrial economy centered on the regeneration of environmental resources, aiming at ensuring the preservation of their multigenerational, maintaining a sustainable natural environment and meeting human needs prudential. Through research conducted in the article was intended to assess the methodological and instrumental resources-economy-environment concepts, projects addressing border protection activities under a common natural environment and the transfer and replication sources. Achieving conceptual and methodological support required to connect the activities and sectors worldwide movement Romanian regenerative economy is also an important issue that will require financial efforts, institutions, mechanisms and procedures that financial flows are directed both to control, mitigate and eliminate pollution the environmental activities of economic agents and consumers to eco-efficient strategies for continuous development in order to improve environmental performance in line with regional, national and global. The research also promoted by the proposed paper highlights the complex issues of resource-economy-environment relationship, multidimensional view of their financial resonances both in the economic subjects polluting behaviors and the communities, regions, country and border areas.

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1. Introduction

Romania's located in the EU implied acceptance of the doctrine of sustainable development not as a voluntary option possible among many, but the only responsible way consistent with the national interest and the requirements of international collaboration.

In this context, the strategic approach, integrative and convergent financial flows to a regenerative economy is a necessity while supporting continued economic and social development, and conservation of natural capital. Regenerative industrial economy is based on a strategy "win-win", which aims to protect the environment, consumers and employees along with increased industrial efficiency, profitability and competitiveness, acting according to the principles: precaution, prevention, integration.

The main difference between pollution control and regenerative production is timing: pollution control is an "after the event" (reacts and treats), while cleaner production concept is the future (anticipating and preventing). Regenerative industrial economy is a method of restructuring the ring systems. This trend has as main objective the creation and development of clean industry, taking as a model the natural environment in solving environmental problems. Applying the natural pattern of industrial activity will increase efficiency, reduce consumption of natural resources and to reduce losses.

To achieve an integrative-regenerative industrial economy required the preparation of environmental projects aimed at solving the complex problem of resources-economy-environment relationship. In view of mainstreaming financing of environmental investments, environmental projects reveal interdependencies and interactions between flows and circuits financing environment, financial flows between them and the local, national and supranational, highlighting the need for timely financing, distribution, and correlative multiplicative environment in an extended spatial and temporal vision and projection.

1. Characteristics of financing environmental projects

Economic environment green investment opportunities with returns due to the overall evolution of the economy, the business sector, and the mode of action of the management teams. Selection of optimal variants is based on the strategy adopted by the company: specialization, prevention or environmental protection. Select an environmental project involves conducting extensive studies on investment:

The study is the most important trading because it provides information about the market. Without proper positioning on the market, the investment environment cannot provide the expected return.

a. technical-economic study includes technical project itself which refers to purely technical aspects of construction and operation.

b. Fiscal Studies indicate, where appropriate, facilities or environmental restrictions in falling investment. A high tax reduces the return on investment environment. Taxation is the main lever of state intervention in the economy.

c. personal study evaluates the required amount of manpower and appropriate qualifications, markets that can make recruiting and future improvement costs on wages and labor.

d. Financial Study envisages released the draft environmental efficiency based on data from other studies. At this level considering investment on environmental indicators and financial indicators.

Project financing is a concept that has evolved over time to specific technical term financing of project categories, and environmental projects. In this context, donors are only interested in cash flows and earnings of the project, because these flows represent funds for repayment of loans. Because the project is a distinct entity, separate from the initiators of the project, its participants to achieve and have a specific impact on the balance sheets of businesses, institutions and organizations, the relationship established between the parties to the financing of a project is done through a variety of contractual

Environmental projects is based on a financial structure without recourse or limited recourse debts incurred and the invested capital for financing pays the cash flow generated by the project.

Environmental projects seek to maximize the debt and reduce your capital so that financing costs are reduced for the project beneficiary. Although equity participation involves greater risk than contracting debt to finance the

project, the bank generally preferred and equity investors, because shareholders to be employed in taking part of the potential risks.

Project financing involves considerable costs of the loan contract, so bank charges for the management of the credit / financing the project can reach even 5% of the total cost of capital

If limited recourse project financing, there is additional commitments from shareholders to the bank, in addition to the subscription agreement for a certain level of equity. The project is funded based on "stand-alone" (by itself), without recourse to other assets of the company to support the repayment of debt. Debt repayment is insured only projected assets and cash flow.

This type of environmental project involves a complex series of contracts between the bank and the investor and is more expensive. Providing such financing, the bank will be interested in guaranteeing payment by the company credited and, for example, within a broader development plan for energy efficiency, the company implementing the project can use the bonds as collateral or receivables excluding for guaranteeing payments for that project. The fixed assets of the project, such as machinery and land can also be used as collateral, as well as bank accounts, shares or life insurance.

Term project finance covers a wide range of financing structures. The environmental projects can be defined as the financing of environmental investments carried out in order to achieve the goal of environmental protection.

Based on the above definitions, we can identify the following general characteristics of financing environmental projects:

1) Establishment of management system of environmental projects. Starting capital management system of environmental projects is provided by the developers, sponsors or original donors. Rule management system for environmental projects is highly leveraged;

2) environmental projects so that those who lend through both debt instruments and the equity investment instruments, not enforceable access to funds or the developers heritage;

3) balance-sheet transactions

4) secure flow generated by the project environment, the main guarantee for funding. It is the most important element of any financial installation project throughout its financing depending on cash flow provided directly or indirectly by the project;

5) differentiated financing instruments;

6) actors involved in the financing of environmental protection;

7) financing risks.

In an economic reality that the future can only be foreshadowed the decision to invest in an environmental project involving a degree of risk. Risks Variety decision to invest in a project environment is very high, but, in principle, can be grouped into three types:

- Risk of insolvency;

- Operational risk (operational);

- Financial risk.

Because it is hard quantifiable risk behaviors cause different donors.

Capital cost is directly proportionate to the risk. Procurement of external funds (own or borrowed) is always conditional on the risk of the project. The project is considered more risky the remuneration claimed by donors is higher, and the capital they are willing to allocate smaller.

3. Definition of financial instruments and investment objectives correlate with environmental

General feature of all projects is the need for financing, but the nature and amount of financing needed in various stages of the project may vary significantly. For most projects, the rate of expenditure shows a differential evolution along different stages of the project life cycle: from assessment phase, continuing with the design and implementation through to operational phase.

Profile exact cash flow curve for an environmental project depends on many factors such as the time required for setting goals for approvals, completion design, financial contracts and installation of the project, the pace of construction and the amount of work performed, and operating speed.

Borrowing from external sources for the project type is evidenced by the fact that cash flow remains negative until the breakeven point of the project.

Cash flow necessary to finance an environmental project must be designed so that it caters to the financing needs and be of interest to investors.

To achieve this goal it is essential to a thorough knowledge of financial instruments. Financing a project involves using a large number of financial instruments: long-term financing instruments and short-term financing instruments.

3.1. Long-term financing tool

An environmental project will require long-term financing mainly for investments with long profitable, long-term funding is necessary because the assets created by the project has a period of time that does not generate revenue. Long-term financing that helps defer the project by partially or totally, the payment of interest or dividends on the securities issued until the project begins to generate revenue. The main types of long-term financial instruments are presented in Table 1.

Table 1. Main types of long-term financial instruments.

Type of tool	Tool
Debt	Collective loans, foreign currency loans, debt, export credit, supplier credit, buyer credit.
Actions	Common shares, preferred shares.
Intermediation	Bonds normal interest and less risky, high-interest bonds and risky variable rate bonds, deep discount bonds, debentures subject to tax, Eurobonds, bonds underwriting fund, insurance fund bills, convertible bonds
Other tools	Deposits custody, financing leasing (operational, financial, with initial sales), risk capital aid refundable.

Source: Gheorghe Manolescu, Nicolae Istudor, 2007, Logistica proiectării, Ed. ASE, București

3.2. Short-term financing tool

Environmental projects need short-term debt in two forms:

- The necessary capital or stock, these funds became necessary when the project is put into operation to cover the time gap between payments that need to be made to materials, components and equipment required funding target set by the project, and proceeds from the sale of production;

- Linking funding or temporary borrowing to cover temporary cash deficit when is uncertain that there is a guaranteed source of funds for loan provisional liquidation. Short-term financing options, which can be to turn a project for working capital requirements in the operational phase, other than internal resources can be grouped into three categories:

- Unsecured bank loans;
- Bank loans guaranteed;
- Other sources such as trade effects or bank acceptances.

A preliminary financial analysis including cash flow information as well as tools used in the project environment will determine broad financial parameters of the project, as necessary investments and return on investment.

Ensure compatibility of economic, social and environmental active and responsible involvement of central and local government, private sector, non-governmental organizations. The involvement of all stakeholders incumbent will lead the development of a business environment conducive to investment by domestic and foreign capital for modernization and sustainable development of the country.

The actors involved in environmental projects include: public, private, financial and non-financial institutions, domestic or foreign investors.

Government: compared with a publicly funded project from the state budget, where the activity of all institutions and organizations is monitored by a bureaucratic system regulated assemblies funding for the work required parameters are provided by contract penalties. The first and most important task of the host government will ensure that the necessary reforms were implemented in legislation and regulations, for the financing of projects to become a viable alternative budget financing of environmental projects. There are various ways in which local government can participate in a project environment: as a cosponsor of the project; contributing to the share capital; contributing

to borrowed capital; providing some resources for the project, which might was still under state control; providing certain tax incentives such as tax breaks and tax subsidies.

According to a World Bank study 46% of the responsibility for environmental investment returns municipality, and only 11% of the central government. More National Action Plan for Environment in Romania estimated that almost 70% of the necessary funding will be linked to pollution in the private sector. There are many different ways of involving the private sector in environmental investment:

Government involvement as primary sponsor of the project. If less developed countries sponsoring is done usually with a sponsor from the government or regional authorities. Involvement in the project to local authorities creates confidence to lenders and investors, given that the project has the full support of the authorities (national, regional, local);

Involving the main part responsible for the execution and operation of the project;

Involving the main part responsible for financing through private financial institutions and commercial banks;

Involvement as guarantor or provider of other forms of collateral for certain transactions;

Involvement of the insurer or buyer of products or services through the operation of the project.

According to the "polluter pays" funding burden should be borne by the investor as much as possible and pollutants. The National Environmental Action Plan, private investment has been estimated at nearly 70% of the funding required about pollution. There are many different ways of involving the private sector in environmental infrastructure investments in sectors along the time were the responsibility of the public sector.

Public-private partnership schemes (PPP) are agreements between public actors, namely the private sector for a project or providing services that are traditionally provided by the public sector. Both parties, public and private, share investment, risks, benefits and responsibilities in implementing PPP projects. The most common types of PPP are:

- Construction-Operations Planning (Design-Built-Operate) - the planning, construction and operation of a facility are made by the private sector for a certain period of time and then returned to the public sector; facility is funded by the public and remains property throughout the project, but the private sector bears the risk of planning, construction and operation;

- Planning Building-Operation-Financing (Design-Build-Operate-Finance) -plan, construction, operation and financing of facilities are provided by the private sector for a period of time and then returned to the public sector; private investors have owned facility in this period bear the risks of planning, construction and operation and recover the costs of public subsidies;

- Concession (similar to the one before, but the private sector recovers its costs from fees paid by users).

The level of involvement of the private sector starts to contract drafting to "privatize" the total environmental services, including tax collection responsibility.

Involvement of private sector models that stop before total privatization include projects "Construction Planning-Operating-Financing" and "Planning-Construction-Operation". Such models must allocate both legal and financial responsibilities correctly. In a project environment that is based on a partnership between the public and private sectors should consider transparency, equal treatment and competition among participants.

A bank or financial institution may be able to assist in developing an environmental project as part of a loan package. The commercial banks have implemented projects for international financial institutions and subsidy programs. A contractor responsible for the whole project, a commitment "key" may be able to provide financing project implementation environment.

Developing public-private partnerships should not be limited to concessions, although they should be encouraged further economic and financial conditions favorable to sustainable development. The establishment of new companies, capitalized in part by IPOs (IPO), the State or local authority holds a minority stake in the company that finances and operates, but which subsequently capitalized by listing on the stock exchange may be another solution initial budget reduction effort and maintenance costs after commissioning for investment in infrastructure. Reduction of the public money at the same time reduces the potential for corruption and negative effects on the efficiency of investment.

Regional Environmental Administrations - participation in environmental projects is through funds from their budgets or budget revenues are not sufficient, these institutions can borrow domestic (mainly commercial banks) and / or market foreign (mainly European Investment Bank).

Thus, it is necessary to increase substantially the ability of eligible projects and to provide advice and expertise at regional and local level through measures such as: increasing the role of existing regional and local level, these

structures attract and motivate highly specialists Training in specific real opportunities in each region; inventory and evaluation of existing environmental feasibility of projects and completion of the project portfolio as investment in infrastructure and basic public services and projects initiated by private entrepreneurs; attract existing potential development projects in design and development institutions and universities in technical and economic terms.

Foreign governments - their participation may take various forms

- Through bilateral loans for the project;
- Supporting loans offered by private lenders and credit provider through national agencies export credit guarantee and export-import banks
- The purchase of production or services offered by the company operating the project;
- Providing raw materials required for the operation of the project.

Saving development tools based practices successfully applied in other EU countries may include: development of a market that can be freely traded securities, public and corporate bonds, long-term investment instruments that have access and individuals; regulation of mortgage markets in which to free trading rights and especially mortgage securities; stimulating instruments and collective investment institutions can attract significant amounts through long-term commitments (15-20 years).

It is also useful to examine the costs and benefits of using fiscal instruments for stimulating savings such as tax reduction or cancellation of interest on household deposits in banks, because the current level discourages savings, purchasing power of deposits on maturity and in many cases lower than on their formation; tax reduction on profits reinvested to stimulate capital spending to increase competitiveness and eco-efficiency of products and services and reduce current consumption spending generated by dividends.

Expanding the use of the capital market by listing the companies in which the state also owns significant shares packages and improve regulation in this area can attract a considerable amount of capital to provide additional funding targeted to major infrastructure projects in order to expedite their completion average, with effects economic and social support regional development.

4. Demonstration of alternative financing mechanisms and assemblies

The financing environment involves the following steps:

Phase I: establishing the necessary funds for environmental protection to be achieved in two levels: national and local.

At national level, the structure of financial flows in the drawing the necessary funds focused around developing the state budget, including positions on the environment. Establishing funding requirements for environmental protection is based on data / information about:

- Features and facilities sectors of Romanian economy;
- The degree of pollution at national level;
- General objectives of environmental policy;
- Phasing of environmental policy;
- Environmental policy instruments

Locally, at the stage of establishing the necessary funds for environmental protection provides a series of local budget expenditures for environmental protection, but the proposals are made by local government bodies through its information system and without cooperation with authorities in the territory of Directors Central.

In the businesses, establishing the necessary funds for environmental protection is relative to: the activity, competition, obtaining bank loans.

The phase determination necessary funds for environmental protection and is costing investment and maintenance costs and administrative costs. Thus, at this stage it is necessary to define flows and stable circuit maker to provide complete information in developing funding programs for environmental protection.

Phase II: Establishing funding opportunities - financial resources are evaluated by taking into account both internal resources and external resources.

Phase III: Comparing needs with availability - achieved through an analysis of the differences required-available and review possibilities coverage differences.

Complex financing mechanism involves a series of streams and common circuits and other areas as well as some specific environment. The financial flows resulting from the use of the state budget, the funding instrument for the

environment are identical to those used for other areas of finance. At the microeconomic level, however, financing can be achieved by some circuits and specific to environmental flows. In this regard, using a variety of methods of financing such as associations or foundations acting in the field of environmental lending Fund, lending by the banking system, subsidizing local budget etc.

In all Member States U.E. use of structural funds will affect the direction of national development and regional programming process becoming an important mechanism for development planning. It is therefore extremely important to integrate environmental protection from the beginning in this field in the plans and programs, both to take advantage of that growth based on environmental protection can bring to society and to stimulate development sustainable in the EU.

Conclusions and recommendations

To understand the applicability of the proposed findings and recommendations must also be taken into account:

- Environmental investments contribute significantly to reducing the costs directly involved in economic activities generating income - investment environment and create conditions to reduce and sometimes eliminate the risks associated with the production of economic goods, given that preventive investment reduces investment efforts to combat the effects generated by environmental damage

- Investment environment favors the orientation of economic activities, not only for the expansion and reconfiguration of progressive economies and markets.

Achieving environmental projects to make the transition from a linear economic model to a circular economic model consists of structuring elements correlative protection, investment and financing, and based on it to establish interdependencies and interactions between components of funding (sources, tools products, institutions) aimed at ensuring a spatial and temporal perspective and streamlining and multiplying financial flows. However, network development funding and interactive model will be an operational tool orientation financing flows and measuring the impact of financing environmental investments.

References

- Bogdan T. A., Comşa, D., Opean, C., 2012, *Eco-Bio-Diplomația*, Ed. Academiei oamenilor de știință din România, București.
- Bogdan T. A., Ardelean, A., Opean, C., 2010, *Ghid metodologic, științific, didactic și financiar. Școala postdoctorală pentru biodiversitate zootehnică și biotehnologii alimentare pe baza ecoeconomiei și bioeconomiei necesare ecosanogenezei*, Ediția I, Vision Design.
- Lester R. Brown , 2006, *Earth Policy Institute - „Planul B 2.0 :Salvarea unei Planete sub Presiune și a unei Civilizații în Impas ”*, Ed. Tehnică, București.
- Clawson, K., 1969, *The Economics of Outdoor Recreation*, Ed. John Hopkins Press.
- Herman E., 2002, *School of Public Affairs University of Maryland, Sustainable Development: Definitions, Principles, Policies*”, Invited Address, World Bank, April 30, Washington, DC.;
- Dimitriu, M., Opreșanescu, G. și alții, 2001, *Structuri și instrumente financiare utilizate la nivel microeconomic pentru promovarea protecției mediului și a dezvoltării ecologice a economiei, proiect de cercetare, CCFM, București.*
- ;
- Lafferty, W.M., Hovden, E., 2001, *Environmental Policy Integration: Towards an Analytical Framework*, *Environmental Politics* 12/ 2001 p.1-22;
- Nagy, B., Elek, P., 2007, *Price and Power- A Twentieth Reinterpretation of Interconnected Phenomena*, Akadémiai Kiadó, Budapest. Massart, Frédéric; Matthews, J.B., 2007, *Pieces to a Puzzle: Towards a Synergy of Sustainable Community Development Frameworks*, Masters Thesis, 2007;
- Negrei, C., 2004, *Economia și Politica mediului*”, Editura ASE, București.
- Negrei C., 2000, *Instrumente și metode în managementul mediului*, Ed. Economică.
- North, D., 1990, *Institutions, Institutional Change and Economic Performance*” Cambridge: Cambridge University Press.
- Opreșanescu, G., Manolescu, Gh. și alții, 2002, *Implicațiile financiare ale deteriorării mediului natural. Studii zonale*”, proiect de cercetare, CCFM, București.
- Panayotou, Th., 2002, *Economic growth and the Environment*, Harvard University and Cyprus International Institute of Management, Cyprus.
- Piciu, G., 2007, *Integrarea dezvoltării durabile în politica de protecție a mediului, comunicare științifică, Sesiune Științifică Internațională “Spațiul Est European în Contextul Globalizării ”*, Universitatea de Apărare Carol I, București.
- Platon, V., 1997, *Protecția mediului și dezvoltarea durabilă* , E.D.P, București.
- Vădineanu, A., Negrei, C., Lisievici, P. (coordonatori), 2000, *Dezvoltare durabilă – mecanisme și instrumente*, Ed. Universității, București.