

# THE ECO-ECONOMIC ASSESSMENT OF ENTREPRENEURIAL STRATEGIES FOR SUSTAINABLE WASTE MANAGEMENT

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## **Abstract:**

*A specific aspect of the new Europe 2020 strategy is related to waste management that, nowadays, is no longer limited only to technological aspects, but approaches the strategically, organizational, educational and industrial projection elements. This paper presents some relevant issues for a sustainable waste management through analysis of main factors related to production and waste management in Romanian companies. We consider that, if enterprises haven't the capacity to manage the waste results from production processes, than the production should be regulated. In these conditions, we suggest the passing from 3 R to new 7 R: reduce, reuse, recycling, repair, re-research, redesign and responsibility. So, the main targets of sustainable waste management should be: resources consumption rationalization, minimize the pollution level and establish a performing entrepreneurial behaviour on eco-economic direction.*

**Key words:** waste management, sustainability, entrepreneurial strategies

**JEL classification:** Q, Q5, Q59

## **1. Introduction**

In our contemporary society, in addition to economic development interests, is remarkable the ample environmental protection concerns, too, manifested both at European and national level. In the context which the major problems facing the humanity are caused by environmental degradation, its protection by entrepreneurial strategic actions is a global necessity. For this reason, we propose emphasize most significant issues related to waste management strategies, from different perspectives: the need of alignment to European requirements of environmental policies, adapting the national legislation to these requirements, the modalities of implement the waste management strategies on enterprise level, the eco-economic analysis of consequences manifestation of a greater interest for adopting these strategies on entrepreneurial area.

The starting point for an eco-economic assessment of waste management strategies is the illustration of main keys regarding the waste management, continuously growing. In addition, we start by observation that at national level there are serious difficulties on waste control and management, due to some factors such as: low educational level on environmental protection, lake of information and responsibility, lack of interest for the consequences of inadequate waste management, increasing and diversification of urban waste quantities and types due to the trade proliferation, too timid attempts regarding the waste collection and recycling, both in public and private sectors.

Another important problem that requires to be analyzed is related to the strategic actions proposals that must be sustained in order to create an entrepreneurial environment responsible in terms of: environmental protection, natural resources consumption, human health protection and waste management.

Decisions on balanced waste management should take into account, necessarily, the efficient consumption of natural resources, minimization of generated waste and

recycling of large waste quantities, as by reducing the pollution levels, so that the strategic actions at enterprise level have a lower impact both on environment and our health, for short and long term.<sup>1</sup>

## 2. The eco-economic waste management: a European level priority

The issue of waste management is one of the XXI century challenges. Given the significant annual increase of waste quantities and worry that this growth it produces to human communities, there is an increasingly emphasis on strategic waste management issues, under three aspects of sustainability: environmental, economic and social.<sup>2</sup> Strategic management of waste is a real problem for socio-economic development and quality of human life.

European experience demonstrates that a waste management (resulted from production processes) to a large scale that includes both the environmental and economic aspects, becomes a powerful tool connotation: support of a responsible, innovative and sustainable development. At European Union level the issue of efficient use of resources is directly linked to the waste management and requires a close collaboration between business partners, since the international cooperation can produce skills, technology and best practices exchange.

In the context of approaching the waste management issues at global level, we consider that the utility of international cooperation derived from project models already implemented that can be adapted to national and European level. Thus, starting from the Japanese concept "3R" (*reduce, reuse and recycle*), is developing a new concept: "7R". This new concept extends the strategic action area to *reducing, reuse, recycling, repair, re-research, redesign and responsibility*. The novelty of this concept is the strategically reconsideration of aspects such as research and innovation, reparation, responsibility and technological reconfiguration.

Thus, the companies will focus their activity not only the production, but also the waste management in sustainable manner. In this way, to ensure the competitive relationship of foreign exchange, the enterprises will be need to redirect towards investments in clean technologies, production processes that generate less waste and which be able to use a part of waste in new productive processes. In addition, at European level could be approached and implemented a new entrepreneurial concept: *green growth* (promoted successfully in South Korea). In these conditions, the EU must to intensify its activity in this direction in order to strengthen the competitive position and to benefit of opportunities created by this position.<sup>3</sup> The increasing level increasing of green technologies use will offer advantages regarding the environment and natural resources protection and will improve the production processes efficiency, favouring more rational use of increasingly scarce natural resources.

The national economy should be redirected in the sense of European guidelines, on the way to create a society focused on minimal production of waste and on recycling, and this redirection should be increased to overcome the existing gaps in the strategic waste management. By European Commission Report related to the Member States achievements in preventing and recycling waste, result that some Member States have obtained notable progress, but Romania is still far from achieve the long-term goal to become a "society based on recycling", so a society that would produce a minimal

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<sup>1</sup> Report regarding the environment state in Iași County for 2009, Agency of Environmental Protection Iași; <http://apmis.anpm.ro/files/apm%20ias/rapoarte%20anuale/2009.pdf>

<sup>2</sup> Marian Proorocu – *Regional plan for waste management, North – West Region 6* (Ministry of Environment and Sustainable Development); pg. 3

<sup>3</sup> Communication of Commission to the European Parliament, Council, Economic and Social European Committee and Regions Committee – *An efficient Europe in terms of resource using - emblematic initiative of Strategy Europe 2020*, Bruxelles, 26.1.2011; [http://ec.europa.eu/resource-efficient-europe/pdf/resource-efficient\\_europe\\_ro.pdf](http://ec.europa.eu/resource-efficient-europe/pdf/resource-efficient_europe_ro.pdf)

quantity of waste used as a resource subsequently.<sup>4</sup> The report shows that in most Member States the waste generation have an upward or stabilization trend, but less pronounced than the growth rate. In the past 10 years, the municipal waste generation has stabilized at about 524 kg / person / year, while the household consumption grew about 16% over the same period. Approximately 25% of food bought by European households is discarded, while approximately 60% of this waste could be avoided by overconsumption limitation, thus generating a saving of 500 Euros/ family/year, too.<sup>5</sup>

Nowadays, at European level the wastes are about 20% of all cases where the environmental legislation is broken. Therefore, the implementation of legislation related to waste is essential for environmental and human health protection, respectively to ensure the support for economic development. However, the transposition in practice of European legislation related to wastes presents real impediments. Thus, the new Framework Directive (2006/12/EC) concerning wastes, which had to be transposed until 12 December 2010, was not assumed in national legislation of many EU countries, while the Member States have benefited from a transitional of 2 years period to establish the necessary measures for complying with the new directive. The European Commission monitor this situation and, if necessary, will be taken measures against those who not implement the directive. In essence, the new Directive updates and simplifies the traditional approach on waste policy, the accent being moved on the life cycle product notion that must to be analyzed since the procurement resources phase (rational consumption) and after the phase of consumption (recycling). Thus, the wastes represent the last stage of the life cycle product; mean the time between product design and date when it becomes waste.

By this reorientation is ensuring the *prevention* of generation, *reuse*, *recycling* and *recovery* waste, and the Member States are obliged to change their waste management plans, to develop the waste prevention programs until 2013 and until 2020 to recycle 50% of municipal waste and 70% of construction and demolition waste.

The European Directives on waste management fall into four main groups:

- Framework legislation regarding the Wastes (Framework Directive 2006/12/EC), with stipulations for all wastes types (excluding those covered separately by other directives and Hazardous Waste Directive - 91/689/EEC);
- legislation regarding special waste fluxes specific: regulations on packaging and packaging waste, used oil, batteries and accumulators, discarded vehicles, electrical and electronic equipment wastes, etc.
- law on waste treatment operations (regulations for municipal and dangerous waste incineration);
- legislation on transport, import and export of waste.

Monitoring of implementation and ensuring the enforcement of legislation on waste at national level is realized by the European Commission which is trying to develop specific instruments through assist and sustain the Member States to formulate the strategies and policies required.

In 2012, the Commission will present new proposals and measures that in European Union member states have been achieve progress in a new society efficient in terms of resource consumption and focused to recycling.

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<sup>4</sup> *Review of the Thematic Strategy on the prevention and recycling of waste*; [http://ec.europa.eu/environment/waste/elv\\_index.htm](http://ec.europa.eu/environment/waste/elv_index.htm)

<sup>5</sup> Study realized by British Organization *Waste & Resources Action Programme* (WRAP) – November 2009

### 3. Responsibility of enterprises through entrepreneurial strategies for waste management

The implementation of a sustainable waste management system involves major changes to current entrepreneurial practices. The adoption of these changes requires the participation of all society segments: public authorities, socio-economic institutions, economic operators and consumers. The intentions of waste management strategic planning is to provide for an integrated management system, viewed as a tool whereby the national economy and society can evolve, following the example of European states, where the production of waste is minimized and completed by reintroducing in economic circuit.<sup>6</sup>

An enterprise is considered "responsible" when the principles of economic ethics are respected and following an economic growth for a long period, respectively contributes to the macroeconomic development and not compromise the capacity development of future generations. The enterprises must respond to requests for responsibility and evaluate the individual policies effects on socio-economic systems, on consumer health and environmental sustainability. Very useful would be the elaboration of sustainability reports of enterprises, which has been integrated the socio-economic balance and environmental reports in a unique optical, through is favoured the connection with economic and financial aspects. The responsibility for waste management activities is of generators (according to the *polluter pays* principle) or producers (according to the *producer responsibility* principle).

To provide the certainty that equilibrated waste management will become a strategic priority goal on enterprise-level, it must be introduced a complex set of economic, financial and legal tools that have been tested in developed European states and have determinate the eco-economic performances and social responsibility.

The directive on waste management has a particular importance for national economy, given the difficulties and costs involved by "waste" sector. This has been transposed into Romanian legislation by:<sup>7</sup>

- ✓ GEO (Government Urgency Ordinance) no. 78/2000 on waste regime, modified and supplemented by GEO 61/2006 (approved by Law 27/2007);
- ✓ GD (Government Decision) 856/2002 on waste management evidence and for approval the list of the wastes, including the hazardous waste.

The national strategic documents which governing the waste management and which constitutes the basis tools into implementation in Romania of EU policy on wastes domain are (Table 1):

Table 1 *National strategic documents which governing the waste management*

<i>Strategic documents</i>	<i>Basic explanation</i>
The National Waste Management Strategy (NWMS)	- elaborated for 2003-2013 period, will be reviewed periodically in accordance with the technical progress and environmental protection requirements and transposed at enterprise level in order to be assimilate and respected;
National Waste Management Plan (NWMP)	- a vital tool which contributes to establish and implement the waste management strategies and to achieve targets set out in this area.

<sup>6</sup> Marinel Kovacs – *Regional plan for waste management, North – West Region 6* (Ministry of Environment and Sustainable Development); pg. 3

<sup>7</sup> The National Waste Management Strategy (NWMS), National Waste Management Plan (NWMP) - [http://www.mmediu.ro/protectia\\_mediului/strategii\\_planuri.htm](http://www.mmediu.ro/protectia_mediului/strategii_planuri.htm)

The identification of entrepreneurial strategies for the sustainable management of wastes should start from respecting the following basic principles (Table 2):<sup>8</sup>

Table 2 *Basic principles of sustainable waste management*

<i>Principle</i>	<i>Description</i>
<b><i>primary resources protection</i></b>	establishes the need to minimize and streamline the use of primary resources, focusing on the use of secondary raw materials;
<b><i>preliminary measures</i></b>	is correlated with the BATNEEC using (Best Available Technique Not Entailing Excessive Cost) and establishes that for any activity it must take into account: the current state of technology development, environmental protection requirements, selecting and applying of those measures feasible economically;
<b><i>prevention</i></b>	establishes the hierarchy of waste management activities: avoiding the appearance, minimizing quantities, treatment in order to be recovered, treatment and disposal in a safe conditions for environment;
<b><i>polluter pays</i></b>	is correlated with <i>producer responsibility</i> principle and the <i>user responsibility</i> principle and establish the need to create an appropriate legal and economic framework, so that the waste management costs have been supported by these generator;
<b><i>substitution</i></b>	establishes the need to replace the hazardous materials with non-hazardous materials, thus avoiding the occurrence of hazardous waste;
<b><i>proximity</i></b>	establish that the wastes should be treated and eliminated as close to the source of generation;
<b><i>subsidiary</i></b>	establishes the competences providing such as the decisions on waste management have been taken at the lowest administrative level toward source of generation, on the basis of uniform criteria at national and regional levels;
<b><i>integration</i></b>	establishes that the waste management activities are an integral part of socio-economic activities that it generates.

The strategic actions that every entrepreneur can support them in accordance with national strategy and national plan for waste management must represent a priority and should be viewed like any other economic action, with financial purpose. Thus, the entrepreneurs may guide their usual activities in eco-economic perspective in terms of waste management through the following strategic actions, based on European strategic models:

- ✓ investment in the application of "clean technologies", especially in activities that generate waste;
- ✓ minimization of waste quantity through the application of best practices in each area of activity that generate wastes;
- ✓ turning to account the wastes through reuse, material recycling and energetic recovery;

<sup>8</sup> Corneliu Ungureanu – *Integrated management of municipal waste*, Polytechnic Publishing House, Timișoara, 2006 ([http://ro.wikipedia.org/wiki/Gestionarea\\_de%C8%99eurilor](http://ro.wikipedia.org/wiki/Gestionarea_de%C8%99eurilor))

- ✓ product monitoring from conception phase (and rational allocation of resources) until the recovery of wastes obtained from the own products consumption phase;
- ✓ final disposal by controlled landfills.

The strategies adopted in the national entrepreneurial environment require changing of way to approach the wastes problem and make reference to:

- ✓ changing raw materials that generate dangerous wastes and adopt green technologies;
- ✓ renunciation to realization and consumption products that generate big quantities of waste;
- ✓ identify certain ways for capitalization and replacement of permanent storage with temporary storage in order to recovery the wastes;
- ✓ ensuring the best options for collecting and transporting the wastes in order to more efficient recovery and disposal for ensuring an environmental rational management;
- ✓ reuse, recycling and treatment from construction and demolition waste
- ✓ adoption and implementation of measures in order to prevent the generation wastes from packaging;
- ✓ reduction of waste disposed volume;
- ✓ implementation of selective waste collection, recovery and recycling of reusable waste.

The investment necessary for eco-economic waste management will be supported by economic agents who generate wastes or other specialized economic operator that will realized these operations for the third parties against remuneration. By implementing the legal provisions in current economic activity of economic agents and local government, it is expected that impact of waste management on the environment and human health will be reduced significantly.

## Conclusions

A particular aspect of new Europe 2020 strategy is related to waste management that nowadays is no longer only to the technological aspects, but approaches strategic, organizational, educational and industrial design elements. The sustainable waste management must be manifested in three areas of responsibility: entrepreneurial, communitarian and politics. We believe that, if on enterprise-level does not exist the capacity to sustainably manage the waste resulting from production processes then the production should be regulated. The main goals of sustainable waste management should be:

- resources consumption rationalization;
- minimizing the pollution level;
- establish an entrepreneurial performing behaviour on eco-economic level.

According to the current legislation, the general objective of National Waste Management Strategy and National Waste Management Plan is to develop an integrated management system, economically effective and that ensure the human health and the environment protection. In order to comply with legislative requirements in the waste management domain, the hierarchy in terms of waste management will respect the following options: prevention, collection, selective collection, recovery, recycling, treatment and disposal, in parallel with closure of non-complying storages.

In parallel with the strategic reorientation of Romanian entrepreneurial environment, from the sustainable waste management perspective, is required some informational-educational-awareness actions among the population.

The tools that permit the implementation of waste management strategies at the enterprise level and the achievement of strategic objectives are:

- legislative and regulators: there are over 200 normative acts in Romania;

- technical: provide the compliance with quality standards and using the best available technologies;
- economic: encourages the cost coverage of waste management activities in product prices and producers status on market;
- financial: may relate to the unpolluted investments sustain or penalties application;
  - statistics.

A prognosis of waste production is difficult to realize because it is directly influenced by industrial development prognosis. In these conditions a decrease in the quantity of waste is not an expected result if represent the consequence of reducing level of economic activities. However, we believe that we were on the strategic direction of the European eco-economic development if the decrease of wastes is based on the clean technologies implementation and will applied the principles of prevention, reduction and integrated control of wastes.

*This work was supported by the project "Post-Doctoral Studies in Economics: training program for elite researchers - SPODE" co-funded from the European Social Fund through the Development of Human Resources Operational Programme 2007-2013, contract no. POSDRU/89/1.5/S/61755.*

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