

## INVESTMENTS FOR SUSTAINABLE DEVELOPMENT

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**Abstract.** Investments are a present spending for a future gain either profit or other benefits (ecological, social, technical, skills etc.). The investments can be adapted to the change and made sustainable. This is not a fashion, it is a reality that already is present in well developed countries. The European developed countries, as the Netherlands, Sweden, Germany, Great Britain, France, etc., or transition economies as China, Russia, Romania etc. are investing in their own economies on sustainable development basis and putting the foundation for a new economy based on information technology.

### 1. EFFICIENCY AND EFFECTIVENESS IN INVESTMENTS

The non-classical approach, based on sustainable investments and new economy, is necessary for Romania on its access to European Union economic integration. The efficiency means to do well what are you doing, at time and with optimum consume of resources either human, material or financial.[3]

The economic efficiency of investments means to put in balance efforts (financial, human, technical etc.) with effects (gains as turnover, profit, production, services, products, impact on environment etc.).

For example, an investment in a building is efficient if the time of completing and the return on investment (ROI) is fulfilled at the desired time without any time delays and resources overconsumptions.

The efficiency coefficient help at the selection of a variant of a project investment from others taking as a base the ratio effects/ efforts there were seen as profit/ costs, for instance, or products made / optimum quantity consumed resources.

Effectiveness means to do the right thing, with the lowest consumption of resources either human, material, technical or financial. In a practical way it means that an investment is effective if it is the most adequate for the purpose involved and it is done with the lowest (or optimum) consumption of resources.

For example, an investment in a building is effective if the desired utility is fulfilled and the consumption of resources during using is the most appropriate.

### 2. INVESTMENTS AND SUSTAINABLE DEVELOPMENT IN THE NEW ECONOMY

The concept of sustainable development has emerged in the seventies due to the general concern about the global environment, as a result of pollution and an increasing usage of sources for raw materials and energy.

Sustainability means the rearrangement of technological, scientific, environmental, economic and social resources in such a way that the resulting heterogeneous system can be maintained in a state of temporal and spatial.

Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

As a result of the definitions of a sustainable development, a sustainable production can be an industrial activity resulting products that meet the needs and wishes of the present society without compromising the ability of future generations to meet their needs and wishes.

As a consequence of this definition, a sustainable production will minimize the pollution of the global environment as well as the use of natural sources of raw materials and energy. A possible way to reach these requirements is by a continuous improvement of industrial activities with respect to:

- reduction of energy usage of non-renewable energy sources,
- usage of recovered goods, parts and materials from discarded goods,
- sustainable product quality.

A sustainable production implies that all phases of the product are viewed with respect to the requirements, from the exploitation of raw material and energy sources until the recovery of materials. In the chain, the different industrial activities can be distinguished:

- exploration of raw material and energy sources,
- transformation of raw materials into materials,
- product design,
- transformation of materials into products,
- recovery of goods, parts and materials.

To arrive at sustainability for the complete chain, each activity of the chain should be sustainable. That means that three main activities of the chain have to be optimised: product design, transformation and recovery.

The product design determines the material and energy usage of a product during his entire life cycle and the percentage of recovery. During the transformation activity, material and energy usage is depicted by the used processes and systems, while this activity determines the product quality too. During recovery, the quantity and quality of recovered goods, parts and materials are determined by the processes and systems.

Product and production belongs to each other and are coupled on the technology: product-technology-production. Innovations are obtained by new technological opportunities while demand is dictated by the market.

### 3. ECO-DESIGN PRODUCTS AND INVESTMENTS

The product design is important for all activities in the chain in order to create an integral chain control with respect to a sustainable development. Almost all limitations are the result of the product design.[1]

To create a sustainable investment, the choice of the materials and the way the product structure has been composed, are very important.

Therefore the following activities should have a high priority for the product eco-design:

- minimal usage of virgin materials,
- minimal energy consumption during the production and usage periods,
- usage of materials which can be recovered easily,
- eco-design with easy to divide materials,
- easily disassembled or dismantled oriented product design,
- eco-design so that parts and the product have long life cycles.

The aim is to have the requirements with respect to sustainability from the beginning of the design phase, using concurrent engineering and concurrent economics.

The purpose of production is to enrich society through the production of functionally desirable, aesthetically pleasing, environmentally safe, economically affordable, highly reliable, top-quality products.

Technical development has made it possible to attain high productivity rates which are essential for any society willing to enjoy high living standards.

In the past, it was tried to obtain an efficient organisation in order to have a higher production output. But now the price pressure requires an efficient organisation in order to reduce the cost price. To be competitive, management focused on reorganisations and transferring the production to low wages countries.

Therefore the battle for the attention of the buyer became more difficult. Especially Japanese firms increased their product assortment and shortened the life time of a product. The buyer liked the choice he could make now and showed this in buying this kind of products.

Besides being efficient and producing with a high quality, product assortment, delivery time and the look of a product became very important.

A sustainable production system means that production system will have less impact to the environment [2], and it's end products as well, being characterized by:

- reduction of energy usage from non-renewable sources,
- closing the production chain by introducing recovery of the goods, parts and materials,
- increasing the sustainable product quality.

#### 4. CONCLUSIONS

To transform an existing production system into sustainable one could be followed some of the next strategy:

- Total Excluding Strategy: is the situation in which either it gives no market demand for the product, or the product doesn't fulfil the sustainability requirements; this means that there are no economical-ecological reasons to maintain it.
- Reverting Strategy: is the situation in which it gives to a market demand for the products, or the products don't fulfil the sustainability requirements and (the product) could be replaced on the market, with other types of products resulting from other types of technologies; in the mean time the technical facilities (machinery, equipment etc.) could be used in remodelling the process (in a sustainable way) for other (sustainable) end-products with other segment market destination.
- Reconfiguration Strategy: is the situation in which it gives a market demand for the product at affordable price, but the product doesn't fulfil the sustainability requirements, or the technological chain is not sustainable itself and there are not enough investment funds to finance the total replacing with a new one;
- Total Replacing Strategy: is the situation in which already exists a market demand for the products, and because these are not sustainable, and the technology to produce them is not sustainable as well but there are enough money to buy another to fulfil the sustainability requirements.

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