

# Green Innovation Trends and Systems Thinking

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## *Abstract:*

Systems thinking and multi view approaches, which are a must for a successful establishment of a sustainable business and modern green trends, are of great importance. The idea that business has a responsibility other than producing goods and services is not new. In 1919, Henry L. Gantt stated his belief that the community would attempt to take over business if the business system neglected its social responsibilities. Everybody speaks of technological development only, although it is causing increasing unemployment around the world and other problems such as motivation and environmental degradation, including a dangerous climate change. Congenial and stimulating atmosphere, promoting relaxed free and unimpeded activities, work satisfaction and satisfaction with co-operation with others, are all elements distinguishing excellent performance. When implementing changes, employees should be motivated adequately. Life Cycle Thinking (LCT) and Assessment (LCA) are essential, worldwide, to front-running businesses and public authorities. In their drive towards sustainable consumption and production, the life cycle perspective helps decision makers in business and government to take into account all the resources consumed and environmental impacts associated with the supply, use, and end-of-life of goods and services (products).

*Key words:* environment, green trends, management, sustainable business, systems thinking

## 1 Introduction

Leaders of successful, high-growth companies understand that innovation is what drives growth, and innovation is achieved by awesome people with a shared relentless growth attitude and shared passion for problem solving and for turning ideas into realities. Companies that continuously innovate will create and re-invent new markets, products, services, and business models – which leads to more growth. Innovation is founded on your enterprise's ability to recognize market opportunities, your internal capabilities to respond innovatively, and your knowledge base. So, the best thing to do to guarantee growth is to build a sustainable innovation organization around the following components:

1. Vision and strategy for innovation
2. Culture supporting innovation
3. Processes, practices and systems supporting innovation

4. Top management team leading innovation
5. Cross-functional teams mapping innovation road

Empowered employees driving innovation [2]. Integrated production processes innovation model which promotes production processes innovation was derived from the model of managing company policy following the interest theory and business excellence. The successful development and implementation of processes innovation in an organizational system can produce a significant saving in the amount of business and environment resources and therefore a smaller environmental impact [7]. The heightened awareness of the importance of environmental protection, and the possible impacts associated with products manufactured and consumed, has increased the interest in the development of methods to better comprehend and reduce these impacts [3]. The last three decades have witnessed a radical change in world and regional circumstances as well as in social and entrepreneurial ones. Consequently,

following a holistic approach to competitiveness, it is of utmost importance to consider all the relevant factors of competitiveness. These factors could be subdivided into systemic thinking, production processes management, and business excellence. Moreover, competitiveness is the basis for successful company performance as well as for a better quality of life. Because of this modern trends requiring systems thinking.

## 2 Modern Trends Requiring Systems Thinking

There are several trends in world-wide life requiring systems thinking, such as:

- United Nations are the widest organisation of humankind and exist to work for holism in detecting and solving of the world-wide problems;
- Many other international organisations exist for the same basic reason;
- Sustainable Development is an important concept, which humankind has launched through United Nations and several other international organisations in order to solve the problem of survival of humankind: we all need interdependence of both our care for economic development and for nature, because both of them together, in synergy rather than in separation, support our survival;
- Since the times of enlightenment several centuries ago, humankind has been working for its economic development, including its development of knowledge, including science and its application; this development resulted in enormous amounts of new findings, discoveries, and innovations, as well as in a more and more narrow specialisation;
- The unavoidable specialisation has become exaggerated: along with deep and crucial insights it has caused many oversights, resulting in small and huge problems, all way to world wars, many other wars, profit (as motive) killing profit (as outcome) by causing huge medical, reparation, nature renewal, etc. costs; all these trends required and require increasingly the international bodies and actions mentioned above under the motto: **Think globally, act locally**;
- Science and its application resulted, among other effects, in humankind's capacity to

master more and more complex, not only complicated, issues, all the way to the most modern computer-supported tools (1) able to bring data, messages, even information from other planets that are many million kilometers away from Earth, (2) able to enter human body, (3) cure diseases as never before, etc.

- Etc. Most of the amazing results of modern times result from combinations of
  - Deep, and hence one-sided, specialisation, and
  - Bridges for co-operation between mutually different and interdependent specialists, based on application of (informal or formal) systems thinking.
- Systems thinking, rather than systems theory, is a millennia old practice of the successful practitioners and scientists and artists, which has made and makes them different from the less successful ones. (All losers are more or less one-sided thinkers and actors.)
- The exaggerated specialisation of the modern times caused the need for systems thinking to receive support from systems theory. It can teach humans to live consciously in the way that has always made a part of humans successful without possessing a theory as their background of their success.

(For details see: Dyck et al, 1998; Mulej et al., 2000; Mulej, 2004; Rebernik et al, 2004; etc) [4].

In the 19th century, there were authors claiming the humankind's need to consider relations, interdependences, not parts of the world as independent entities only. Their background may have been consciously or subconsciously the ancient Chinese notion of interdependence called **yin and yang**, and/or the ancient Greek notion of interdependence called **dialectics**. Both mean interdependence. In the 19th century one has seen Idealistic Dialectics, Materialistic Dialectics, and several more notions and teachings about holistic thinking. (Delgado, Banathy, eds., 1993) [4].

One can reach several centuries back. Many know that there has been, centuries ago, a certain Leonardo da Vinci. He is known as artist of the supreme quality, but he was also a great researcher. One can find in him a pioneer in the fields of creative thinking, accelerated learning, and innovative leadership (Gelb, 2004; Tab. 1 on p. 10; thanks to New Moment) [4]:

7 DA VINCIAN PRINCIPLES	What is it?	Look at your own mind map from the perspective of the 7 Da Vinci principles
1 <b>Curiosita</b>	An insatiably curious approach to life and an unrelenting quest for continuous learning.	Am I asking right questions?
2 <b>Dimostrazione</b>	A commitment to test knowledge through experience, persistence, and willingness to learn from mistakes.	How can I improve my ability to learn from my mistakes and experiences? How can I develop my independence of my thought?
3 <b>Sensazione</b>	The continual refinement of the senses, especially sight, as the means to enliven experience.	What is my plan for sharpening my senses as I age?
4 <b>Sfumato (Literally "Going up in Smoke")</b>	A willingness to embrace ambiguity, paradox, and uncertainty.	How can I strengthen my ability to hold creative tension to embrace the major paradoxes of life?
5 <b>Arte/Scienza</b>	The development of the balance between science and art, logic and imagination. "Whole brain" thinking.	Am I balancing Arte and Scienza at home and at work?
6 <b>Corporalita</b>	The cultivation of grace, ambidexterity, fitness, and poise	How can I nurture the balance of body and mind?
7 <b>Connessione</b>	A recognition of and appreciation for the inter-connectedness of all things and phenomena. Systems thinking.	How do all the above elements fit together? How does everything connect to everything else?

Table 1: How to Think like Leonardo da Vinci [4]

### 3 Innovative Business

The oldest *innovation of management* may well have been the hierarchical subordination of the less qualified members of an organization to the more qualified and experienced ones (Schmidt, 1993). It made and makes sense as long as (1) the superiors do not abuse their position; (2) the subordinates would not be able to perform well enough in their jobs with no supervision and instruction, due to their lack of expertise and interest. In the course of the 20th century, the equipment has been more and more introduced that has required more skill, education and training. This has made the traditional hierarchical subordination less and less useful and needed [19].

The next *innovation of management* may hence have been the (1) *human relations*, between the two world wars, and (2) *human resources*, in recent decades. Their main difference from the old tradition is the supposition that subordinates are capable of creativity and responsibility. This finding has had a lot to do with the practical experience as well as with the growing need that the companies and other organizations both develop and activate as much of their personnel's creativity, inventiveness and innovativeness as possible [19].

Gradually, a next *innovation of management* entered the scene, which we may call **innovative business**. It can be simply defined by the following five sentences:

- 1.
2. 1. In principle, every cost is unnecessary. In reality it is, if we work smarter, not harder, and produce innovations.
- 3.
4. 2. Today, every product and process becomes obsolete, sooner or later. That's why we must know their life cycles, do research, do development (connecting research results with the daily needs and practices), create other inventions and make them innovations as a new, useful basis of survival, on a continuous basis.
- 5.
6. 3. Survival and therefore both good and poor work is everybody's business. Nobody, neither the superiors nor the subordinates, are entitled by their own life reality to be irresponsible and unmotivated for innovation.
- 7.
8. 4. Therefore let us continuously, all the time and everywhere, search for *possible novelties*! Only a small portion of them may become *inventions* (= new, perhaps making sense and potentially useful ideas). From some of them, by research and development, sometimes something both usable and new might be created, *a potential innovation*. Customers will accept only a fragment of them as useful and worth paying for, hence making a benefit to both customers and suppliers, therefore deserving the name of *innovation*.
9. 5. The entire business policy and practice is innovation oriented, not just a fragment of it. We work as smart and not as crazy [19].

A further part of the essence of the innovative business is that the five sentences of its definition no longer apply to the producing part of the organizations only, but to all activities and all parts of life in all organizations. The effort must be broadly disseminated and permanent, because the pressure of competitors is permanent, and for competitiveness the quality must be systemic which is impossible without continuous innovation [19].

#### 4 Innovative Society

- Science and scientific research are worthy of support in their own right in any advanced society. Yet more and more, the ability to capture ideas and discoveries that flow from research will be the test of whether we can sustain growth and prosperity [20]. In the advanced countries, the innovative business has become the prevailing culture:
  - The market ratio of supply and demand passed the transition from
    - (1) the *random market* - they produce for themselves and sell only incidental surpluses, to
    - (2) the *producers market* in which they the supply is smaller than demand (»queuing economy«, buyers cannot find everything they want), to
    - (3) the *buyers market* in which supplies exceed demand (»market economy«, suppliers cannot find buyers for all what they offer, innovation is necessary), and further on to
    - (4) the *state supported buyers market* in which supplies exceed demand a lot (»advanced market economy«, innovation is unavoidable) [19].
  - The continuous need for innovation encourages creativity of everybody, and therefore causes the evolution of democracy as a societal mechanism making room for *creativity and holism*, not only as *democracy in politics* (with many parties, civil society etc.), but also in *economics* (with free entrepreneurship, choice of job, profession etc.), *on shop floor* (with invention and innovation circles, quality circles, leadership instead of managership, i.e. co-operative instead of commanding management etc.), *in family, education, local community life* [19].

The innovative society differs from the (foregoing, historically) routinistic society:

- It applies all achievements of development of the

worldwide civilization.

- It accepts and applies its own and foreign innovations rather quickly.
- It applies foreign knowledge to upgrade its own knowledge in order to effectively develop and use all the technologies of production, organization, education etc.
- It, on this basis, attains both a high international competitiveness and quality of life.
- Its inventiveness and innovativeness, both as attributes and activities, reach (at least) the West European level, so do their preconditions [19].
- The creative (co)workers, scientific and other inventors and innovators are well appreciated because they are the most useful (co)citizens and (co)workers.
- The uncreative individuals are in trouble, especially the ones under-using their natural and educated capabilities [19].

The dialectical system of attributes of an innovative society includes:

1. a contemporary, creativity based *democracy* both in the entire society and all organizations
2. a contemporary, creativity enhancing *market* in which, as well as in the democracy, innovative persons and organizations prevail
3. a contemporary perception of *ownership*, which tells clearly the responsibility and includes creative and innovative ambitions rather than seeking rent (as an income based on owning without creating) only
4. a contemporary perception of *innovation*, which says that innovation is every useful novelty accepted as such by customers and granting the suppliers a suitable profit
5. a contemporary way of running the business, the *innovative business*, which continuously strives on innovation of any kind discusses here earlier
6. a contemporary perception of entrepreneurship, i.e. *innovative entrepreneurship*, which means that owner of an enterprise is an entrepreneur, who combines his or her business factors in an innovative way in order to produce innovation and live on it
7. education and other societal subsystems, which are not economy/businesses, but rather create human resources, circumstances and preconditions for them to flourish, and therefore also *support innovation rather*

than routine.

European Union belongs to the rather innovative societies, but is not happy with its own level of it. In late 1980s EU produced a conference and its proceedings about it, in 1995 a Green Paper, and later on additional documents in order to foster EU's innovativeness. Let us take a brief look!

### 5 Interrelationships of an organization's management and operations with the condition of the environment

Everybody speaks of technological development only, although it is causing increasing unemployment around the world and other problems such as motivation and environmental degradation, including a dangerous climate change. There is also an

unchallenged supposition that in transitional economies owners and managers are equally fond of continuous innovation as are the ones in the most advanced corporations of the world [6]. In efforts for the improvement of position on the purchaser's market the companies must also consider accordance of operation with valid environment protected prescriptions in field of process consumer. The inclusion of enterprises in the international market, the care for reputation, that the enterprise profit with the environment protection and permanent development, places the politics of environment protection to the base of the professional politics [6]. The environment protection and permanent development is so a basic component of the basic politics. Many organizations have undertaken environmental "reviews" or "audits" to assess their environmental performance [8]. Figure 1 presents interrelationship of an organization's management and operations with the condition of the environment.

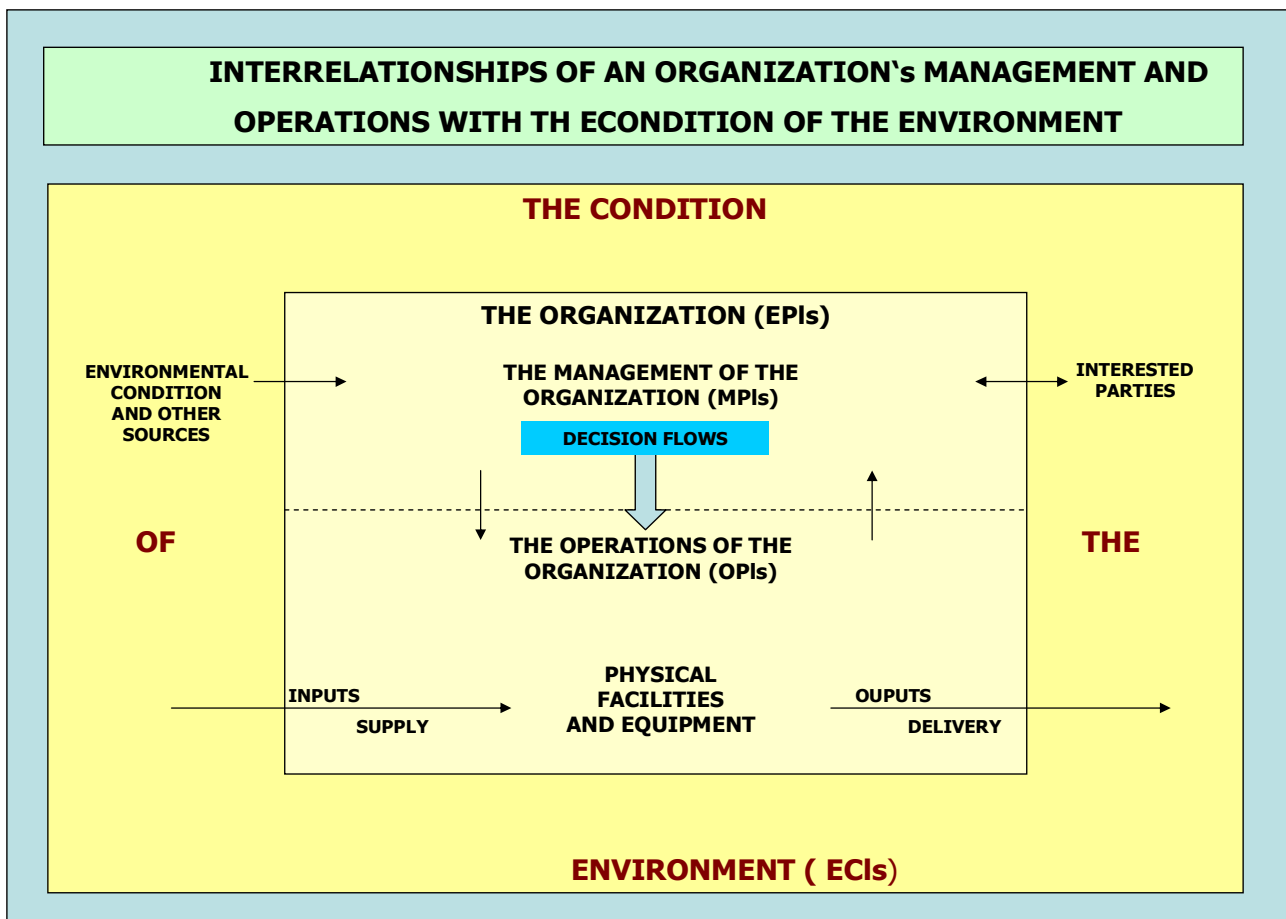


Figure 1: Interrelationships of an organization's management and operations with the condition of the environment [9].

It is about the important decisions about the basic goals of operating and development. It is about the acceptance of basic principles values and rules. The current position of an organization with regard to the environment can be established by means of an initial processes, environmental performance evaluation and innovative operations. Environmental performance evaluation (EPE) is an internal management process that uses indicators to provide information comparing an organization's past and present environmental performance with its environmental performance criteria. EPE, as detailed in ISO 14031:1999(E)-Environmental management – Environmental performance evaluation – Guidelines,, follows a “Plan-Do- Check-Act” management model. The steps of this ongoing process are following:

a) **Plan**

- 1) planning EPE;
- 2) selecting indicators for EPE (the process of selecting indicators may include both choosing from existing indicators and developing new indicators).

b) **Do**

Using data and information which includes:

- 1) collecting data relevant to the selected indicators;
- 2) analysing and converting data into information describing the organization's environmental performance;
- 3) assessing information describing the organization's environmental performance in comparison with the organization's environmental performance criteria;
- 4) reporting and communicating information describing the organization's environmental performance.

c) **Check and Act**

Reviewing and improving EPE [9].

The renovation of production processes results from lean organization, which is based on up-to-date technological and organizational starting points. Market need new consumers. Consumers need new products and services. Only innovative lean flexible organization could be the answer. Lean organization is market-driven; a buyer's market and innovation society prevail and acts as change generators in a company or other organization [16].

## 6 Environmental responsibility

The idea that business has a responsibility other than producing goods and services is not new. In 1919, Henry L.Gantt stated his belief that the community would attempt to take over business if the business system neglected its social responsibilities. Looking back, the attitudes of managers toward social responsibility seem to have gone through three historical phases:

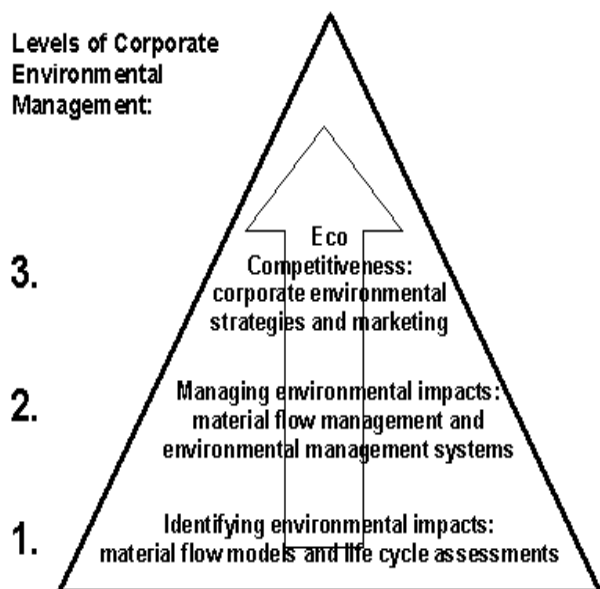
- **Phase 1;** which dominated until the 1930s, emphasized the belief that that business manager had but one objective . to maximize profits,
- **Phase 2;** from the 1930s to the early 60s, stressed that managers were responsible not only for maximizing profits but also for maintaining an equitable balance among the competing claims of customers, employees, suppliers, creditors and community,
- **Phase 3;** still dominant today, contends that managers and organizations should involve themselves in the solution of society's major problems [6].

An EMS is the organizational structure and associated responsibilities and procedures to integrate environmental considerations and objectives into the ongoing management decision-making processes and operations of an organization. According to an EPA summary, an EMS is a continual cycle of planning, implementing, reviewing and improving the processes and actions that an organization undertakes to meet its business and environmental goals. Most EMSs are built on the "Plan, Do, Check, Act" model. This model leads to continual improvement based upon:

- Planning, including identifying environmental aspects and establishing goals [plan];
- Implementing, including training and operational controls [do];
- Checking, including monitoring and corrective action [check]; and
- Reviewing, including progress reviews and acting to make needed changes to the EMS [act].

Organizations that develop EMS programs may be eligible for certification under ISO 14001. ISO stands for the International Organization for Standardization, located in Geneva, Switzerland. ISO promotes the development and implementation of voluntary

international standards. ISO 14000 refers to a series of voluntary standards in the environmental field under development by ISO, including the ISO 14001 EMS Standard [20].



**Figure 2** :Levels of Corporate Environmental Management [22]

Most of the environmental challenges we face could be resolved if each individual and organisation slightly changed their habits and practices. The key to achieving this is education – providing the knowledge and desire for change to happen. A truly sustainable society will only be created when caring for the environment becomes second nature to us all. Ultimately, most of the environmental challenges we face could be resolved if each individual and organisation slightly changed their habits and practices. The key to achieving this is education – providing the knowledge and desire for change to happen. We as individuals, and indeed society as a whole, change our habits all the time. Ten years ago very few people recycled their waste yet today the majority have learnt the habit. For many it is no longer a conscious effort, recycling has simply become the way things are done. Small changes such as this accumulate to change the paradigm of our society. A sustainable society will only be reached when caring for the environment becomes second nature to us all [23]. Environmental responsibility needs ethics. Ethics are principles of conduct used to govern the decision making and behaviour of an individual or group of individuals.

## 7 Innovation of administration - the stimulation of ecological innovations

The production concept under the influence of quick and unceasing changing environment adapt to the selection of consumer's needs and wishes and first of all to response to those claims, that are supported with purchasing power. In order to explain this viewpoint, shall develop a systemic model of individual human beings, showing how our co-evolution with our environment is linked to our thoughts, emotions and actions [17]. In the coming years the relationship to the environment will be the key component of competitive ability. The informed individual will influence on the professional dynamics in collaboration with others that will claim the strategic reflection and acting. Because of mutual co independence, cognition of creative collaboration's urgency between all in the process of protection included subjects, above all responsible administration holders, the claim for the change of leading style will be of priority nature. The role of leadership is so directed to the change of starting points of professional philosophy.

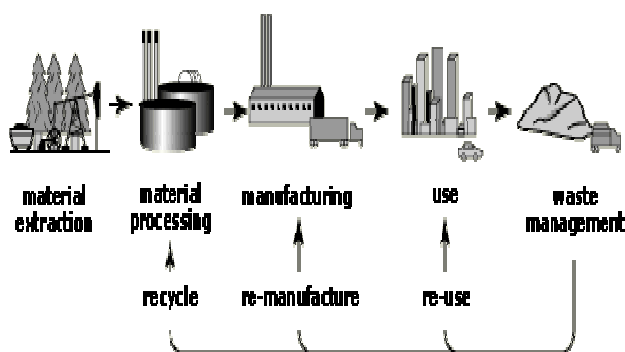
One point of view of administrative measurement is substituted with many points of view, inter structural creative collaboration [18]. The environment protection and permanent development is a complex process, where the earlier events have more influence than the later one. From here it originates the sense of activity planning of these, who administrate, who define the aims, who organize and so on. The inadvertence of independence between the parts of totality, that's why also synergic characteristics of the totality, which parts do not have as an individual part, it leads to simplification, that has in case of environment protection the catastrophic experience. Experience show that the environment protection and permanent development as a part of entrepreneur's philosophy is not carried into effect enough; this is so because of administrative workers, who were used to make decisions independently without collaboration of other experts [19]. Without participation of everybody in the chain sequence and from here resulting co dependence it is not possible to expect the good results. The partial solution gives the partial results.

## 8 Life Cycle Thinking

Life Cycle Thinking (LCT) and Assessment(LCA) are essential, worldwide, to front-running businesses and public authorities. In their drive towards sustainable consumption and production, the life cycle

perspective helps decision makers in business and government to take into account all the resources consumed and environmental impacts associated with the supply, use, and end-of-life of goods and services (products). This provides a fair basis for product comparisons, to effectively identify options for improvements, and to monitor progress in environmental performance [24].

We need to think of the whole of the life-cycle of a product, because products may have totally different environmental impacts during different stages of their cycle [23]. The product life cycle in Figure 3 is shown in five distinct phases, all of which interact with the environment. For most products, the period of use is far longer than the other periods, and there may also be periods of storage and non-use between the stages shown. Usually, but not always, these stages will be environmentally benign. Figure 3 also shows, as feedback loops, the potential for recycling, remanufacturing, and reuse. We will be saying more about these later, but it is worth making the obvious point that reuse is the strategy that potentially has the lowest environmental impact, merely based on the fact that this involves fewer processes, and each stage absorbs energy and has an environmental impact [23].



**Figure 3:** The life cycle of a product [23]

Two definitions of Life Cycle Assessment:

1. "Life Cycle Assessment is a process to evaluate the environmental burdens associated with a product, process, or activity by identifying and quantifying energy and materials used and wastes released to the environment; to assess the impact of those energy and materials used and releases to the environment; and to

identify and evaluate opportunities to affect environmental improvements. The assessment includes the entire life cycle of the product, process or activity, encompassing, extracting and processing raw materials; manufacturing, transportation and distribution; use, re-use, maintenance; recycling, and final disposal."

*Guidelines for Life-Cycle Assessment: A Code of Practice* (1993) SETAC (Society of Environmental Toxicology and Chemistry)

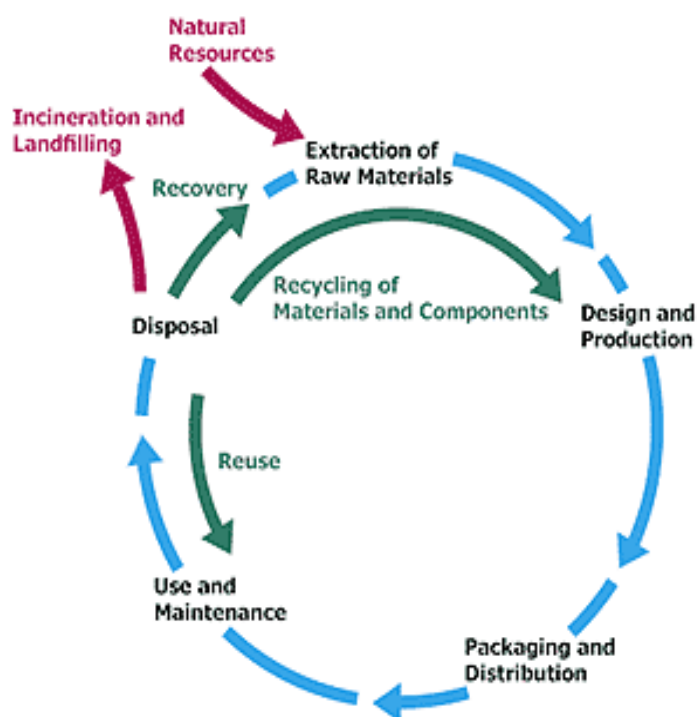
2. "LCA is a technique for assessing the environmental aspects and potential impacts associated with a product by:

- compiling an inventory of relevant inputs and outputs of a product system;
- evaluating the potential environmental impacts associated with those inputs and outputs;
- interpreting the results of the inventory analysis and impact assessment phases in relation to the objectives of the study.

"LCA studies the environmental aspects and potential impacts throughout the product's life (i.e. cradle to grave) from raw materials acquisition through production, use and disposal. The general categories of environmental impacts needing consideration include resource use, human health, and ecological consequences." *ISO 14040* [23].

Life Cycle Thinking is essential to sustainable consumption and production. It is about going beyond the traditional focus on production sites and manufacturing processes so that the environmental, social, and economic impact of a product over its entire life cycle, including the consumption and end of use phase, is taken into account. UNEP's work to promote life cycle thinking is spearheaded by the UNEP/ SETAC Life Cycle Initiative. Extended Producer Responsibility means that the producers take responsibility for their products from cradle to grave and therefore, should develop products that have improved performance throughout all stages of the product life cycle as shown above. At each stage of the life cycle, opportunities for improved performance exist [25].





**Figure 4:** Life Cycle & Resource Management [25].

Extended Producer Responsibility means that the producers take responsibility for their products from cradle to grave and therefore, should develop products that have improved performance throughout all stages of the product life cycle as shown above. At each stage of the life cycle, opportunities for improved performance exist. Three key stages are outlined below:

1. A product life cycle, can begin with extracting raw materials from natural resources in the ground and generating energy. UNEP's International Panel for Sustainable Resource Management focuses particularly on the role of resources throughout the life cycle.
2. Materials and energy are then part of production, packaging, distribution processes, which are the main activities of the industrial and commercial sectors of our economies.
3. Goods and the related services are then used and maintained by consumers. When goods become obsolete (such as when they break, have no use, or simply become unwanted) consumers then make decisions about the end of life of the things they buy, which could be

reused, recycled, or thrown away for final disposal [25].

The goal of Integrated Product Policies is to reduce a product's resource use and emissions to the environment as well as improve its socio-economic performance throughout the life cycle. This may facilitate links between the economic, social and environmental dimensions within an organization and throughout its entire value chain [25].

There are two main activities in an LCA:

- The inventory analysis step, which describes the emissions that occur and the materials and resources used during the life of a product
- The impact assessment step, which looks at the impacts of emissions and use of resources and raw materials on the environment [23].

Life Cycle Analysis is far from being a trivial exercise. Conceptually simple, projects of this nature frequently run away with resource, yet yield results that are difficult to interpret. It is partly for this reason that use of the formal technique is generally restricted to larger companies and left to specialists, and its use confined principally to comparing alternative product strategies. However, some awareness of the technique will help you to ask the right questions, and to carry out a preliminary comparison of significant design alternatives. Think of the 'cradle to grave' costs whenever you are researching new materials or methods, and be particularly aware of the way in which the environmental cost of ownership of products can be influenced by the running costs in energy and consumables [23].

## 9 Discussion

In this paper a System Thinking is presented as a requiring for processes innovation. Therefore, what we should develop is an innovation management culture. Integrated environmental management integrates the requirements of environmental legislation; the EC eco-audit regulation; learning organizations, etc. Learning organizations are, thus, (and have to be) infused with communication directed to goals; in organizations where the level of communication is not adequate, the problem is evident, management and other employees alike are aware of it. A step forward will only be

possible when the management will, in view of their power and influence, assume responsibility for establishing the environment encouraging open two-way communication directed to the goals of the organization. This will result in the awareness of their own directions into the future and into better market positions. Another step toward improvement is connected with the awareness of the management as well as of other employees that even if people communicate all the time, this does not mean that they know how to communicate. If that were the case, there were not so many misunderstandings, mistakes and conflicts [14]. System thinking help us in this way.

#### References:

- [1] Rainey, L.David: *Sustainable Business Development*, Cambridge University Press. 2006
- [2] Kralj, D., Markič, M.: *Building materials reuse and recycle*. WSEAS transactions on environment and development, 2008, vol. 4, iss. 5, pp. 409-418,
- [3] Kralj, D., Goricanec, D., Eisner, L.: Entrepreneur process need environmental management system. *WSEAS transactions on environment and development*, Nov. 2005, vol. 1, iss. 2.
- [4] Mulej, M.: *Workshop: New Roles of Systems Science in a Knowledge Society* Contribution is based of research project "From the Institutional to the Real Transition" that enjoys support of the Public Agency for Research, Republic of Slovenia, in 2004-2007.
- [5] Kralj, D., Markič, M.: *Global Marketing and Environmental Excellence*; *WSEAS transactions on environment and development*, 2008, vol. 4, iss. 5, p.p. 419-429
- [6] Kralj, D., MARKIČ, M.: *Global marketing and environmental excellence*. *WSEAS transactions on environment and development*, 2008, vol. 4, iss. 5,
- [7] Kralj D., Krope J., Goricanec D.: *The Permanent Development as a Consequence of Administration Innovating*, WSEAS Transactions on Business and Economics, Issue, Vol 2, 1.17-23 (2005)
- [8] ISO 1401:2004(E) *Environmental management system – Requirements guidance for use*
- [9] ISO 14031:1999(E) *Environmental performance evaluation – Guidelines*
- [10] ISO 14062:2002(E) *Environmental management- Integrating environmental aspects to product design and development*
- [11] Ogrin U, Kralj D.: *Economic Efficiency and Environmental Management System*, WSEAS
- [12] Kralj D.: *Environmental Waste Management in Constructions*, Lecture Notes on Energy and Environment, WSEAS 07, Archanchon, France, Oct.2007.
- [13] ISO 14001:2004(E) *Environmental management system – Requirements guidance for use*
- [14] Ursic, D., Nikl, A., Mulej, M.: *System-Organisational Aspect of a Learning Organisation in Slovenian Companies*
- [15] Kralj, D.: *Dialectal system approach supporting environmental innovation for sustainable development*. *Kybernetes*, 2008, Vol. 37, iss. 9/10, pp. 1542-1560.
- [16] ] <http://www.ford.com/en/company/about/sustainability/2005-06/envManagingAspects.htm/30.10.2006>
- [17] Wright T.: "A Selected Viewpoint on " Systems Thinking and Climate Change System", Cambridge, (2004)
- [18] Mulej M., *System Thinking* UM-EPF, Maribor, (1992)
- [19] Mulej M.: "Towards an Environment- Friendly Entrepreneurship", In: Mulej. M., Dyck, G., eds., *Self Transformation of the Forgotten Four-Fifths, Kendall/Hunt*, Dubuque, Iowa, pp. 281-288, (1998)
- [19] Mulej, M., Žensko, Z.: *Introduction to Systems Thinking with Application to Invention and Innovation Management*, Management Forum, Maribor, Maribor, 2004
- [20] <http://www.conservatives.com/pdf/12.02.2009>
- [21] <http://environment.transportation.org/05.04.08>
- [22] <http://www.jyu.fi/econ/en/05.04.08>
- [23] <http://www.environmentcity.org.uk/08.04.08>
- [23] Tarr, M.: <http://www.ami.ac.uk/14.02.2010>
- [24] <http://lct.jrc.ec.europa.eu/14.02.2010>
- [25] <http://www.unep.fr/scp/lifecycle/14.02.2010>