

## INNOVATIVE REQUIREMENTS IN SUSTAINABLE DEVELOPMENT IN THE COUNTRIES OF WESTERN BALKANS

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**Summary:** *A key challenge with which, in the biggest measure, the countries of Western Balkans will face is expressed in the development of the millennium goals of the UN in the department of long-term development of energy by year 2050. Scientism understood as the belief in science, ego became like the base of our reality at the beginning of the third millennium. It is felt that the faith in science and scientific advancements is the base of every rebirth and society advancement overcoming all obstacles. Does then the science responsibility exist if its the only true knowledge, if only science responsibility, with its own power, accomplish good? Shouldn't it be that moral justification is by itself moral and good, which is the base of every moral justification? To practically answer these questions, philosophers, sociologists, economists, engineers, ecologists and other researchers have to critically deliberate the nature and factology of the environmental catastrophe. Economic and environmental influences of company business on the community require from the manager to confront the (non)efficiency, that is (non)effectiveness acting on departments for environment protection, and also accepting responsibility in a way where the companies use energy and energetic resources. With this coauthor piece, the need for more than renunciation from the scientism problem is shown, to be able to find the meaning of science and to determine the aggressiveness on its principles, because development contributes the advancement without borders for growth.*

**Keywords:** *Western Balkans, innovations, energy efficiency, eco-security, sustainable development.*

### INTRODUCTION

Numerous changes in the world in case of interests in sustainable development have happened at the turn of century, which has to be considered when planning medium term measures and implementing millennium goals of further development

and 'survival' in the globalisation conditions.

The development concept of Western Balkans countries (society of knowledge - Knowledge Society)- of the scientific and technical progress, is pointed to the society of knowledge into the center of happenings establishes a personality and knowledge by

using scientific and informatic technologies, informatic and expert systems (Informatic - Expert Systems - IES), computer connections and Internet. The Knowledge Society has new approaches with more aspects: knowledge, manufacturing, quality, technology, informatic - expert systems, time and space etc. The increase of competitiveness of produce and services is accomplished by decreasing expenses of manufacturing, that is offered services created by decreasing the consumption of energy by produce units, that is services by implementing measures of energetic efficiency. This concept implies the use of less energy for the same unit of the social gross produce with sustaining the quality of the produce, including labeling the energetic efficiency of the produce which affect the use of energy as well. With this work, the viewed aspects of methodology of systematic analysis which precedes the scientific and research work in the area of human actions in energetics, economy and ecology, thanks to more science fields. Those fields in circular approach include branches and disciplines which are pointed to man and his survival on Earth. The need for multidisciplinary research approach will be analyzed so that science can answer the demands of sustainable development, where energetic efficiency and eco-safety have a first class significance.

## **1. Sustainability in a postmodern ambient**

Scientists and experts warn about modern society being in conflict with fundamental bases of life. That is understandable, if you consider that climate changes and disturbances, exhaustion of natural

resources, transborder transport of polluting materials, technological pollution of nature and other ecological problems inevitably affect on a bigger, almost every day growth of natural catastrophes, danger and risks of crisis situations of different natures and characteristics which can have unpredictable for all living earth. The modern society characterises a system of sustainable development. It implies a systematic approach from one side to development, and from the other protecting the environment, which implies monitoring and a number of preventive-corrective activities according to the valid law procedure. With that goal, we will show how in the existing business system (through energetic efficiency) the work conditions and life are being examined, and the according to that we will propose concrete measures of eco-safety. Sustainability of the use of energy implies the decrease of energy consumption, better use of available technologies and requests of eco-design, bigger efficiency and economy in using energy as well as the sustainability from the standpoint of influences on the environment, with using known principles of environment safety. There is a suspicion on human activity/influence on eco-systems by means of science and technology. The technological euphoria only covers the surrounding outputs, the lack of ethics in the science and responsibility for science which today shows as the only force, the one that unifies all other forces: legislation, execution and jurisdiction.

Mans' task is to behave smart, to take care that the order in nature sustains, and to dynamically and mutually acts between natural and cultural systems. From this

aspect the modern experiences prove that the mentioned idea is unfounded, that it belongs to those big stories of traditional metaphysics. The economy is out of the sphere of mutuality and voluntary cooperation, and ecology is out of the sphere of economic activities and lucrative interests. It does not imply them. The results of the ecology research aren't superior to rationality: it uncovers efficiency boundaries of economic activity and its' extra economic conditions. Ecology, specially, uncovers that the economic effort of coming to relative rarities after a built boundary causes impermeable obstacles caused by shortage of natural resources: contributions become negative, what the production destroys is bigger from what it creates. That inversion appears when the economic activity disturbs the balance of elementary cycles and destroys resources which is not cadre to renew.

## 2. Globalisation - imperative of the modern society

The industrial revolution represents the turn to the new production processes from around 1769. To the time between 1820 and 1840. It consisted of transitioning from hand production methods to mechanic, new chemical productions and process for iron production, advancement of the water energy efficiency, heightened use of steam energy and development of mechanic tools. It also includes the transition from wood and other bio-fuels to coal. The textile industry was dominant during the industrial

revolution in ways of hiring, value of the products and invested capital; the textile industry was also the first to use modern methods of production.

The imperative of modern production is integrated economic, technological, social and cultural development. This development is possible only if it's harmonized with the needs of securing the environment, formulated through the concept of sustainable development. In whichever way sustainable development is defined, in its basis it represents the balance between the use of natural resources and energetic abilities, to satisfy the needs on future generations. Today the global ecological crisis resulted in unfolding life in an ecologically dangerous epoch.<sup>4</sup> The ethical questions and dimensions of globalisation:

1) *What is Interdependence?* Under the term interdependence we imply a mutual dependence of more countries, social groups, occurrences and processes, as well as their main actors: Interdependence exists since the earliest times of social life. *Why?* There is more forms of interdependence (primary, technologically marketable, multifaceted interdependence).

2) *Globalism* - a state which implies a complex interdependence on translucent distances; etymological origin; lat. globus; eng. Globalism (Raiser and Davis - 1944); the decrease of globalism - deglobalization (exp. From 1918 - 1945, economic deglobalization, but military, social and

<sup>4</sup> Forest spasms are shrinking at a rate of 50 ha / minute, causing the disappearance of about 2,000,000 species and subspecies of plant and animal life (20% of the total quantity). The fact that vegetation makes up over 98% of the total biomass,

tropical forests above 40%, suggests that 50 years of such a pace of shrinkage and development will be enough to make it disappear, leaving behind a new desert "Sahara".

ecological globalisation); globalism as a modern political ideologies - the concept of domination of the most powerful worldly forces;

3) *Globalization* - the first time this term showed was 1961 in an English language dictionary by Dirk Mesner; today it can be defined in more ways, because of which the term is subject to ideologizing; mainly the definitions highlight the social, political, military, economic and ecological aspects of globalization, often globalization today is said to imply backlighting, the causes of bigger globalization: end of block separation and the Cold War, bigger role of the MNK and the expansion of informational and communication technologies.;

4) Some definitions of globalization - Globalization is a process of expanding the removal of obstacles to the free market (Dz. Stiglic); Globalization implies the expansion of capitalism in all countries of the world (Friedman); Globalization is a process which made sure that happenings on one end of the world have a stronger impact on the completely opposite side of the world (Smith and Baileys); Globalization is: internationalisation, westernisation, universalisation (expansions of values and free market), deterioration - Scott.

5) Historical eras of globalization - authors often speak about three big eras of globalization:

1. The first big era (from 1866 and setting up the big transatlantic cable, to the beginning of the WWI) - it was created thanks to the drop of prices of transport, the appearance of the steamboat and railway;
2. The second big era (from 1980 to 2000)

- the drop of computer prices, computer equipment and telecommunication;

3. Third big era (lasts even today) - the expansion of computer use, new computer software and massive use of modern ways of communication (Skype, Facebook, video-link...)

Dimensions of globalisation - ecological (environmental) - transport of meaningful matter for human health and wellbeing, on bigger distances; the expansion of global environmental awareness (massive environmental movements); military - new military technologies, advances military industry, the finding of new types of weaponry; social - political - migrations, expanding ideas, religions, cultures, moral forms, political idealisms and values; economic - bigger economic connection of countries, development of TNK, free flow of goods, people, services and capital; bigger economic dependency, expansion of modern technologies in manufacturing ao.

7) Globalization and MEO subjects - Thanks to the process of globalisation the country isn't the only subject of international relations and international economic relations (MEO); International subjects MEO: international government organisations (UN, EU, IMF, WB, WTO, NATO) and international nongovernmental organisations (Human Rights Watch, Transparency International, ao.); Transnational subjects of MEO: transnational social and political movements, TNK, religious organisations, • National subjects of MEO: country, NVO, and even the individuals. The changes of limits in economic sovereignty of the country ;

8) Controversies of globalization - environmental (the spreading of new diseases, viruses, global warming, ozone

hole, exhaustion of non-renewable resources on Earth); military (spreading of technologies of making weapons for mass destruction, bigger number of wars, destructiveness of wars, new kinds of war, terrorism, proliferation of nuclear weaponry); socio-political (overpopulation of the planet - 7,4 billion people, bigger illegal immigration into developed countries, domination of certain languages and cultural forms, interventionism in the name of certain ideas or ideals ao.); economic (inequality, bigger differences between countries, increased number of poor, domination).

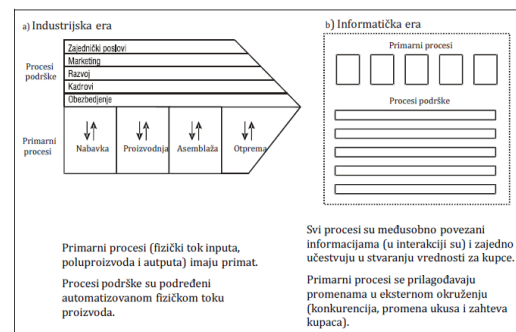
9) Ethical problems of globalization - socio-political globalization: spreading of certain values, moral forms and norms of behaviour in different surroundings; Globalisation of economy - globalization of business processes and relationships - globalization of (non)ethical business behaviours and works; Ethics of globalization and/or globalization of (non)ethics.

10) The need for new business ethics - The complexity of new economic, political and social relationships; Different roles of individuals in the modern society; Value Crisis: *what are global values and do they exist?* Corporate social responsibility as a new ethical category is directly determined by globalization.

11) *Accomplishments of science or the era of cyborgs today?* The society is mostly experiencing robots as helpers in industry, space or robots which play football. But *Tradino* is a dragon. It is the biggest robot on earth, long 15,5 meters, it spits fire, wags its' tail, moves independently, the span of its' wings is almost 13 meters and it's over 11 tons

heavy.

His body is circulated by 80 liters of artificial blood, the skin is polyurethane and advanced wool, and the glass eyes are especially interesting. In them, cameras a place with sensors, which can move independently, with blinking, expanding and shrinking the pupil. Unbelievable but true.



Pic. 1.. Paradigm change - era interactivity

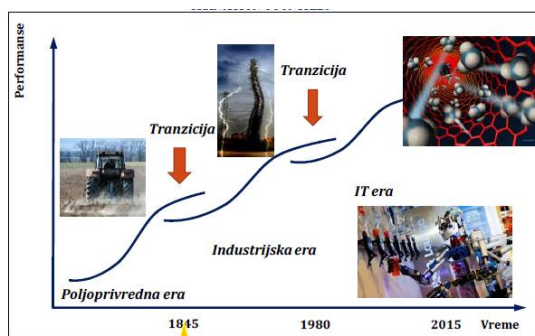
### 3. Conflict between man and nature

Development of the millenium goals of the UN ( The UN Millenium goal) the World Energy Council (WEC) has set three goals in their statement (The Millenium Statement) of development sustainability of energetics. They're made as three, and those are \*Accessibility\* to modern, acceptable energy for all, \*Availability\* in means of continuity of supplying and quality and reliability of services, and \*Acceptability\* in means of social golad connected to environment safety. Since then, these goals are the base of WEC works and they marked even the analysis in scenes of energetic policies by 2050. Energetics is a economic activity which deals with studying and using different sources of energy and manufacturing electric energy. Modern economic

development of a country completely depends on the attainable sources of energy, exploitation and use in manufacturing and consumption. Based on the source of energy which the human has used in the past and ways of using them, it can be separated into three phases:

- Phase of biological energy (from the middle of the XVIII century)
- Phase of mechanic energy (during the XIX century)
- Phase of electric energy (during the XX century)

Classical sources of energy are: wood, coal, oil, natural gas, water energy and atomic or nuclear energy. Alternative sources are: energy of the sun, energy of the wind, energy of the sea waves, geothermal, biomass energy, energy of the tide, energy of lightning and thunder, earthquake energy, nuclear energy, ao. The main sources of energy in the XX century are non-renewable sources of energy like: coal, oil, natural gas and nuclear energy. In the next period of time, those have to be renewable sources of energy.



In the history of european social studies, up until recently, the bigger part of the thinkers, not concerning the philosophy they followed, considered that human is the only one important, and everything else

was there for humans and the fact about their affiliations, nature or ecosphere was neglected. Until the appearance of the Bacon program it wasn't that important, because the matter was usually about indifference, and not the wish for 'enslaving' nature. To consider the scientific fields and disciplines inside of them, which consult in the analysis of sustainable development and environmental research, it starts from the 35th chapter of Agenda 21, which the UN set up, and which refer to science. The primary goal of every country is to, with the request and support of international organisation, identify the condition of its scientific findings and research needs, to be able to sooner accomplish important betterments in:

-Global expansion of scientific bases and empowerment of scientific and research capacities and abilities, especially in countries in development, in fields which are relevant for the environment and development;

-Forming such measures of environment safety and development, which are based on the best scientific findings and estimations, and they consider the need for expanding the international cooperations and relative uncertainty of different processes and options in this field;

- Interaction between science and deciding, by using preventive measures, because of the change of the existing model of manufacturing and usage, to get time for decreasing uncertainty connected with choosing the different options;

- Creating and applying knowledge, especially domestic knowledge, in different environments and cultures because of the realisation of sustainable levels of

development, considering the relationships of national, regional and international levels;

- Improving the cooperation between scientists through promotion or interdisciplinary research programs and activities;

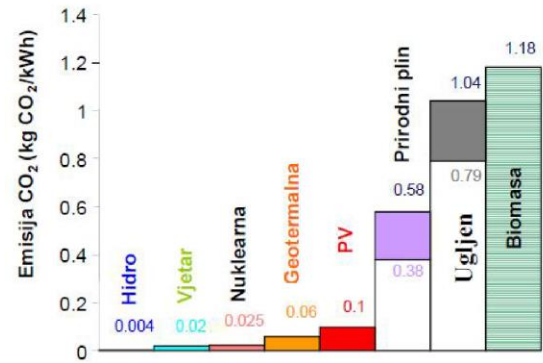
- Public cooperation in setting priorities and making choices which refer to sustainable development.

For science to answer the requirements of the researchers in the direction of sustainable development, it's development has to go towards multidisciplinary which includes four fields of science:

1. Natural sciences - their postulates and principles which mark a natural environment and connected with that the requirements which are set according to the developmental-investigative procedures;
2. Technical-technological sciences which mark the existing accomplishments and developmental flows of science in general (automatisation, computerisation, cybernetisation and bionisation);
3. Social sciences - demography and sociology of work and creativity, economics, environmental law;
4. Synthetic and organisational sciences - social ecology as a coupling for functional connections of projections of nature development and social environmental basis of adequate developmental engagement of technical-technological and organisational-developmental scientific disciplines.

Industrial ecology is a multidisciplinary study of industrial systems and economic works, as well as their relationships with the basic natural systems. It ensures theoretical bases and objective understanding where reasonable betterment

of the current practice can be based on.



Pic. 4. Harmful pollutants in different energetics

Economic instruments enable the market incentives to decrease pollution and change of technology, increase flexibility and decrease expenses using these measures, they provide sources of finances for control and realisation of policies on decreasing pollution (before all using market and financial incentives). In the group of Eastern European countries, Czechoslovakia was first to officially start keeping the environment safe with the economic way (end of the 60ies taxes for pollution were introduced). Modern technology, despite the use of big financial means and managing them, offers an extraordinary possibility for environmental decentralisation, and according to that organisational principle it achieves unbelievably favourable work and financial results. The problem of economic growth based on old technologies, usually has a consequence of the increment of environmental loads. The energetic efficiency of the manufacturing system is conditioned by the technological level, so the non-developed countries which don't have modern technologies installed can't have a concept of development, because of what they will stay behind in matter of energetic efficiency.

Modern strategies of development in developed countries are built on a line of sustainable development based on the 'new economy'. And the most important parts of the new economy are based on knowledge are using ICT technologies and sciences, which among everything else implies, even on scientific bases, a conceived environmental policy. The use of ICT technologies, especially in matters of manufacturing and company business in general is based on the rule on the precise programming and scientifically confirmed technical business.

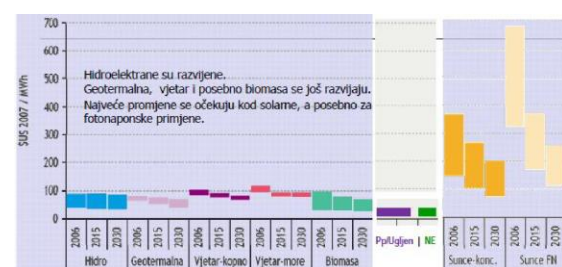
#### 4. Responsibility of environmental research

The consequences of global warming are more visible every day. Natural catastrophes and weather disasters are more frequent and they destroy life on Earth. The warmest summer of 2003 took 30.000 lives in Europe, and now that number is incomparably bigger. Extreme droughts, unrecognized floods and fires and worrying oscillation temperatures are the main themes of expert reports which speak of climate changes and global warming. New sorts and big amounts of energy on the environment have implicated big problems which have been piling up in the past two decades. Just like any other human activity and electro energy and oil industry affect the environment. The biggest pollutions are recorded in the most industrialized and most urban countries, which are the source and driving force of development.<sup>5</sup>The degradation system and environment pollution is proportional to the level of economic development and

industrialisation, that means that the connection state between causative consequential and development of the economy and environment is very clear.

And because of that there are three clear, defines principles of sustainable development:

- development cannot harmfully affect wireless systems which maintain life on earth (air, water, ground and the biological system)
- the use of natural resources has to be, not only more careful but more efficient than now;
- establishment of sustainable 'ecological' social systems is a necessity and the need on all levels (local, national and global);
- the imperative of 'green' development is the decrement of disproportions between rich and poor.
- energetics received more global scales than any other activities, which is caused;
- high requirements for energy (amidst the increase of number of residents, increment of quality and standard of life, serious influence of manufacturing and exhausting energy on the environment and changes which happen in the world market);
- changes in the geo-political-economic structure of world development.



Pic. 3. Economy in the life cycle of energetic products

<sup>5</sup> And if the OECD countries own 20% of the world's territory, and about 25% of the world's population,

they produce over 80% of goods and 65% of all types of pollution.



The strategy of environment safety of every country has to fulfill goals concerning the safety of safe life of environmental growth, as well as keeping safe the quality or regional and global mutual goals.

Problems which have to be addressed are:

- climate changes: the last decade of the XX century was the warmest in history of mankind, and it is expected that the global temperature will grow 1-6°C by 2100. For example, parts of northern Europe are exposed to abundant rainfall and floods, while in the south the climate is more and more dry;
- endangered plant and animal species are in growth, many ecosystems in rivers have vanished, as well as 75% of sandy dunes in France, Italy and Spain;
- the pollution of the air is concerning;
- growing concentration of the ozone on a level of earth since 1994 has been harmful the health of humans, ecosystems and agricultural crops;
- depositing trash provokes the pollution of water and soil;
- the use of pesticides in agriculture is alarming (in use 30.000 chemicals);
- natural resources - clean water, salts and minerals are not renewable and they are being exhausted;
- participation of the sector of energetic in harmful emissions is growing.
- The key aspect of a successful system, in means of industrial metabolism is the internalisation of the material cycle, which implies a need for energetic efficiency and total minimisation of waste. The other characteristic of the technological system, as a part of the industrial system would be the systematic integration, to achieve optimal efficiency and profit.

## Conclusion

Globalization and a constant development of new technologies in the department of industry and construction and more complex requirements of investors and the social community for the construction of Energetically efficient objects with a big number of integrated installation systems, are asking from us innovations and a constant search for new solutions, especially those of significance for manufacturing, sustainable development and eco-safety. For environmental research it is needed to have multidisciplinary, which is built by connecting more segments of science without functional connections. The holistic approach to the environmental problem is built on transdisciplinarity. Based on the connections made that way, or bridges establish relationships between research teams. All organisational forms of multidisciplinary and transdisciplinary works are considered, on which the whole functional organisation is brought to reality, and they project and establish dynamic systems which are synced to their surroundings and by us a carrier of sustainable development. Our research point out that, that even if  $\frac{2}{3}$  of business leaders recognize the use which socially accountable business brings, only  $\frac{1}{3}$  of them intends to make an estimate in a way where social and environmental topics affect the company business.<sup>6</sup> As a new paradigm, which would have to change the neoclassical deliberations, which was, through many centuries of traditions and

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<sup>6</sup> ESCO (energy service company) is a company or other legal entity, that is, an entrepreneur registered for the performance of energy services that, by providing energy services, refer to the energy efficiency of the facility, technological process and service and which to a certain extent accepts the

financial risk for the performed energy services which, in whole or in part, collects the collection of its services on the basis of the savings achieved on the basis of the implemented measures and satisfying other agreed performance criteria

biochemical metaphors, founded on knowledge, organization and readiness for acting in the system of eco-safety, everywhere and in all situations on a national, and even more on a regional level.<sup>7</sup>

The mechanisms of energetic efficiency are common instruments which the Government of one country uses, state administration officials and other state officials or other bodies, unit of the local self-government, as well as other public services because of the creation of the frame of support or incentive for participants on the market to provide and acquire energetic services and enforce measures for betterment of energetic efficiency. The economic profitability of measures secures that the investments in the measures of energetic efficiency are economically just. Saved energy is energy that doesn't have to be manufactured, where even the positive consequences for the environment are taken into consideration, which happened during the decrease of use, as well as the decrement of expenses connected to the securing of energy supply safety. The decrease of energy consumption in manufacturing sectors, distribution, transfer and consumption sectors are secured by fulfilling minimal requirements of energetic efficiency for new or reconstructed manufacturing facilities, transfer and energy distribution.

<sup>7</sup> Eco-design is a set of conditions that must be met by a product that uses energy in terms of environmental protection in a period that involves

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## REAL EFFECTS OF AUTOMOBILE AUTOMATIC STABILITY CONTROL

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**Abstract:** *One of the most significant technologies for improvement vehicle's active safety is automatic vehicle stability control. The primary function of this technology is to assist the driver in maintaining control of the vehicle during sudden maneuvers or adverse weather conditions. This technology detects drivers steering input and compares it with true attitude of the vehicle and, depending on detected difference, activates braking system and regulates engine power to compensate for eventual difference. The automatic vehicle stability control has been highly effective in preventing single-vehicle crashes. The future studies with more data may even find reduction in some types of multiple-vehicle crashes. This paper deals with the basic characteristics of automatic vehicle stability control and its effects.*

**Keywords:** *Automatic, Control, Stability, Automobile*