ECONOMIC DEVELOPMENT BASED ON THE ENERGY SOURCES EXPLOITATION

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Abstract

Intensive economic development often causes imbalances in space and causes conflict between different interest groups. Therefore there should be found ways and models in order development not to cause degradation and resource exhaustion.

The main concept of economic development based on ecological principles is based on these principles:

Merging ecology and economy in every level decisions

Equality among generations(to disable disaster for future generations)

Very high evaluation of living environment without taking into consideration material benefits for human beings.

Energy is the basic problem according to which we shall treat economic development based on ecological principles.

Energy is the main element of economic development. There is no economic development without energy production. Kosovo cannot build a sustainable future without development of the energy sector, though it is rich in energetic and mineral resources. The assessed reserves of lignite amount to 14.3 million tons, and the rational use of this source is very important for the development of our country.

The exploitation of lignite for power plant is not an economic exploitation, that is, for 1 kWh of its necessary to burn an average of lignite with 9630 KJ and of 7100 million tons of lignite may be obtained 5.497 THh. According to a World Energy Association somewhere between the half and 2/3 of the necessary world energy should be supplied in coal, therefore the world's coal production should be increased three times more than in 1979[1] .

It has been found out that coal exploitation as fuel is followed by numerous problems, especially for the living world. These problems are specific depending on the processing: cleaning, transport, use, waste etc.

In Table 1 are presented different processing stages and the possibility of implication for human health.

Introduction

Development of a society depends on the availability of resources, especially of energetic resources. In developed countries are carried out many researches in the field of exploitation of natural resources and their processing using advanced technologies, and protecting the environment. In Kosovo it's exploited the lignite resource for the generation of electric energy that not taking into account the protection of environment.

During the 90ies because of known circumstances, the development of the energy sector stagnated, and also the repair of power plants that was very necessary, wasn't respected. After 2000 from the performed studies it has been found out that generated energy has not been sufficient for an economic growth and also for daily needs of public sector. From these studies it was set up a project by a temporary mission of UNMIK and Ministry of Energy and Mines for a building of a new power plant. The project was financed by the World Bank.

The purpose of Kosovo and countries in the region is the integration in the European Union. In this integration each country should meet the provided criteria by law of the EU. According to World Health Organization approximately 23% of premature deaths in the World are connected with the environmental pollution. At the children of age 0- 14 this percentage of death is increased to more than 36%. The generation of the electric energy should be within the protection of environment. The aim of this work is the study of the issues of the economic development, possibilities of an advancement paying attention in the exploitation of the resources and their substitution with an ecological technology.

Impact of lignite exploitation on the electric energy generation

The exploitation of lignite for every processing starting from exploitation with surface mining, burning, enrichment, gasification etc., carry a lot of problems for the environment. In Table1 are presented only few processing how they impact human health.[1]

Table 1. Potential impact of coal on human health

SOURCE	EXPOSURE	IMPACT
Open mines	Acid mine drainage ;heavy metals (Pb,Cd,As), increase of pH	Sub chronic effects, cardiovascular diseases
Cleaning and enrichment	Dust, trace elements(Cd,Cr,Fe,Hg.Ni,Zn,Mn,Se,SO2,	cancer(respiratory, nasal),dermatitis ,inhibition of spermatogenesis and enzymes
Transport	Dust, pollution (metals and organic sub.)	Respiratory harassment, cancer
Combustion, emission	SO2,NO2,O3,CO,Ni,B,Se,Cu,AsPb,Fe,	Respiratory harassment, chronic diseases cancer, hearing loss,
ashes	Cr, As, B, Cd, Mn, Se	Respiratory cancer

Fossil fuels have a common feature: all of them when they burn form carbon dioxide. They are the main key of the carbon cycle on Earth. Carbon dioxide is the main pollutant which is made from fossils fuels. NO, NO2 and N2O together called NOx, sulphur present in coal results as SOx[2]. Coal reserves are substantial, however, coal is less attractive fuel from the CO2 emission. Cheaper coal is that of surface mining, but with greater contamination of the environment. All forms of generation have an impact on the environment but this generally is not reflected in the price of electricity, because the increased price because of the impact on the environment is known as externality. According to a Euro stat[3] records the contribution of the renewable electricity for the period 1995 to 2020 is as follows: According to an intelligence source renewable electricity is always increasing starting from 1995 until 2010 and also for the year 2020 are presented in the table.

	1995Eurostat	2000Eurostat	2010 planning	2020 planning
wind(TWh)	4	22.4	168	444
Fotovolt. (TWh)	0.03	0.1	3.6	42
Biomass(TWh)	22.5	39.2	141	282
Hydro(TWh)	290	322	355	384
Geoterm.(TWh)	3.5	4.8	7.0	14
Participation (%)	13.9	15.1	22.3	33.8

The table clearly shows that with the generation of energy with renewable energy resources in 2020 will be approximately 34% Currently the plant Kosovo A and B are enormous air pollutants. The concentration of dust emission from the block B1 is over ten times higher than the value limit presented according to the EU norms. Very high values are of SO2, CO2, NOx presented in Table 2. The values are compared with the Athens Memorandum, Table 3 where it's seen the limit of pollution and the limited deadline of the pollution reduction.

Table 2. Environmental pollutants from power plants

Emission	unit	TCA	TCB	Total
dust	Kton	10.78	5.97	16.76
SO2	Kton	6.75	13.47	20.22
NOx	kton	6.24	14.52	20.76
CO2	Kton	2.364.25	4.689.62	7.053.87

Carbon dioxide is the cause of 60% of the effect " enhanced greenhouse effects". The levels of atmospheric CO2 continuously increased to 10% every 20 years.[4],[[5]

Table 3. Limits of pollutants under Athens memorandum

Emission	TCA	TCB	Limits	deadline
dust(mg/Nm³)	902.32	156.35	50.00	31.12.2017
SO2(mg/Nm³)	251.42	208.55	400.00	31.12.2017
NOx(mg/Nm³)	705.75	835.08	500.00	31.12.2017

CONCLUSIONS

- The ever growing needs for energy and environmental protection requires a scientific research and application of results in the field of energy.
- For general industrial and economic development today is not necessary only the efficient use of newest technologies but there should be also anticipated possible changes in the environment as well as social development trends.
- Degraded land by waste includes an area of 1559 ha, while the minefield gap is about 1470 ha, which means that for TE activities have been degraded about 3000 ha of agricultural land. This has been manifested by the lack of many essential agricultural cultures.
- The most negative impacts are the impact of polluted waters by deposits. This is seen also from waters of the Sitnica River and its branches which contain various pollution matters, including also phenol derivatives.
- The main aim is to generate energy with the use of renewable energy using wind, solar energy, biomass, water resources, geothermal etc. According to above mentioned data this generation in 2020 should increase approximately 34%. For the period 2002-2010, in the utilization of these resources are leading Austria, Sweden, Portugal. The countries which generate the least are Hungary, Belgium and Poland. EU countries have a very rapid increase in 2010 such as Denmark, Greece and Portugal. Albania and Kosovo are not anywhere in these records but we believe that in the future we will be in the list of the renewable resources .
- The contribution of solar energy and wind energy is less than 2%.

Literature

[1] BetsyT.Kagey and Bobby G.Wixon, Applied Envi. Geoch.London(1983),463-480
[2]Leon Freris and David Infield, Renewable Energy in Power Systems,2008 John Wiley & Sons,Ltd
[3]FCCC/AWG/2010/3
[4]Gordon,S ,Carbon cure, IEE Power Engineering December 2005/ January 2006
[5]FCCC/AWGCCA/2010/MISC.6
[6]National Economic, Environment and Development Study of Climate Change (NEEDS)- Initial Summary Report 2009
[7]UNFCCC Reducing Greenhouse Gas Emissions(2010)