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Emissions of Carbon Dioxide – Factor, Determined by Growth, However Dangerous for our Climate?

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ABSTRACT: The vital topic if growth and climate protection may exist together is treated in the paper. This requires re-consideration of the ecological – environmental point of view. Existing environmentally non-effective economic structures need to be replaced with less intensive resource and emission approaches. Flexible and beneficial instruments need to be applied instead of recommendations for environmental policy. Those instruments provoke the interest of the individual, which reduce the consumption of resources and thus avoid the CO2 emissions.

ЕМИСИИТЕ НА ВЪГЛЕРОДЕН ДВУОКИС – ФАКТОР, ОБУСЛОВЕН ОТ РАСТЕЖА, КОЙТО ЗАСТРАШАВА НАШИЯ КЛИМАТ
РЕЗЮМЕ: В този доклад се разглежда въпросът, доколко растежът и защитата на климата могат да съществуват заедно. За целта е необходимо преосмисляне на еколого-икономическата гледна точка. Съществуващите екологично-неефективни стопански структури трябваше да се заменят с по-малко интензивни суровинни и емисионни подходи. Вместо отгоре да се предписва екологична политика, трябва да се използват гъвкави изгодни инструменти, които да будят интереса на отделния човек, да намаляват потреблението на суровини и така да избягват свързаните с въглеродния двуокис емисии.

Introduction

Experts on climate predict severe changes in the world climate and enhancement of average temperature with nearly 3 degrees. All predictions are undoubtedly synonymous that anthropogenic emissions of carbon dioxide are the main reason for the so-called greenhouse effect and fast heating may bring to catastrophic consequences for an immense portion of population and severe damage for future generations.

Unfortunately, all the environmental issues have an economic dimension, because the economy is impossible without the use of environment: One hand, resources are extracted from environment and applied to production. On the other hand both production and consumption emit into the environment and release products into the environmental circle. Nature feasibility for both functions is limited.

Industrial production, carbon dioxide emissions and climate change

It is very important to outline the development of world power consumption and related carbon dioxide emissions with the aim of understanding our nowadays position. The tendency of continuous increase of power consumption (power in the commercial meaning) is ongoing. The world power consumption reaches 351 10^{18} Joules in the year 1996, i.e. 66 % and even more compared to the previous 25 years. Since the beginning of the nineties, when the economic collision of the former Soviet Union brought to stagnation in world power consumption, for the first time in 1996, there is significant increase of power consumption – nearly 3 % compared to the previous year. Mainly fossil fuel is used[1].

In a worldwide scale the anthropogenic emission of carbon dioxide amount to 26,4 billion tones, and 84 % of them belong to consumption of fossil fuel and cement production. The annual carbon dioxide emissions from those sources have enhanced with 38 % for the last 20 years[1].

The concentrations of greenhouse gases, measured in the atmosphere (CO_2, CH_4, N_2O) during the pre-industrial period (before the year 1750) have enhanced so much that they get into the complex climatic system of the world, especially the carbon cycle. Those tendencies are related mainly to human activity, mostly the use of fossil fuel, changed use of land and recent agriculture[1].

First of all, emissions of CO_2, which is released from the burning of fossil fuel, even to a different extent, contributes to the enhancement of the concentration of that greenhouse gas from 280 ppmv (parts per million by volume) in the beginning of the industrialized period to nearly 358,8 ppmv in 1994 г., i.e. 28 %. Under the conditions of today emissions an enhancement of about 700 ppmv is forecasted for the year of 2010, which is two times more than the value from the pre-industrial period.

It is very important to mention that in case of stabilization of carbon dioxide emissions at the nowadays level the, the concentration of CO_2 in the atmosphere will not be stabilized, because the carbon dioxide has a long life in the climatic system (nearly century and even more) and therefore it is accumulated in the atmosphere. It is expected that in the next two centuries the concentration of carbon dioxide will increase at the sustainable level of 500 ppmv.

Model simulation calculations reveal that immediate stabilization of carbon dioxide concentration may be realized only through radical decrease of emissions 50 – 60 %, however, having in mind recent tendencies and predictions for future power consumption, this is only a brain experiment.

The relation established by climate experts (see, for example JPCC Second Assessment Report) between dramatic enhancement of concentrations of greenhouse gases in the atmosphere and subsequent hazards for the world climate as well as needed precaution activities are acknowledged by all the countries, participating in the climate convention. Those assessments, developed at national and international scientific forums, brought to respective recommendations for carbon dioxide emissions reduction and respective responsibilities on behalf of many politics.

What is the cost promised by non-biased in juridical sense? That is shown by the development since 1990. According to preliminary data in Germany the initial consumption of power in 1995 was enhanced with + 1,4% and amounted to 14234 PJ (nearly 4 % of the world power consumption) in comparison to the previous year. The negative balance, in comparison to the basic 1990 (- 3,8 % in 1990 and – 7 % in 1987) is caused almost only by the collision in the economy of new federal provinces: increase of initial consumption of power amounts to 1,5 % in comparison to 1990 + 5,4 %, and in comparison to 1987 - + 6,5%. Emissions of carbon dioxide enhanced with 3,4 % in comparison to 1990 and amounted to 726 million tones.

Reduction of CO_2 emissions in Europe is explained by factors of short-term significance. Statistics from the European Union explain that reduction of 2,7 % since 1990 with three factors: reduction of industrial production in European scale, reduced power consumption in the eastern provinces of Germany and closure of coal mines in Great Britain. However, in the last years of the century, again an increase of carbon dioxide emissions is established – digits of Eurostat confirm that in spite of the perfect initiative of the Scandinavian countries, hardly a country, member of the European Union applied serious measures for climate protection.

With the aim of being able to assess the significance of the issue, we will need to comply with the global frame conditions, which determine the dynamic of carbon dioxide emissions enhancement and be aware that this will be extremely more difficult in the future.

The West European life style and economy and its communication with natural life principles are reflected in the world generation, immediately on the integrated ecosystem of the earth, a qualitatively new and up to now non-existing situation.

Responsibilities and hazards in that situation are distributed extremely unevenly among different nations and regions. Examples of power consumption and related to them responsibilities for anthropogenic release of carbon dioxide show immense differences within the distribution over population of the world. Nevertheless, that consumption in the developed countries shows significant, specific for each country differences, consumption per person of the population in those countries is averagely 9 times higher than in the developing countries. Comparing the emissions of CO_2 per person of the population, distribution in geographic areas (countries, respectively groups of countries) shows similar uneven distribution.

The World Resource Institute describes the situation by the following:

- Consumption of power in the countries of OECD has increased for the last 20 years with 30 %.

- Consumption of power in the so-called *transition economies* has increased for the last two decades and there is a very small reduction due to the economic collision. From 1989 to 1992 there is a reduction of power consumption in the former Soviet Union and countries from Central Europe with 17 %.

- In the developing countries power consumption has continuously being increased since 1973, of course from a very small initial basis. Nevertheless, that consumption in those countries has enhanced three time since 1973 and the prevailing portion of world population lives there, in a world scale those countries consume less than one third of the power in the world[2].

- Within the world of developing countries of Asia (excluding Japan) consumes 60 % of the power and the economic growth in China, India, Korea, Thailand and Indonesia is the reason for the expansion in the prospecting of energy resources in the developing countries[2].

- Nevertheless that Africa, the Middle East and Latin America consume proportionally less power, even for then the growth in prospecting for power resources has been very high for the last 20 years. For example, Latin America doubled the power consumption since 1970 in spite of the pressure of outer depts. Almost three time has been increased the consumption of power in Africa since 1970, which corresponds only to 11 % of the consumption of power in the developed countries[3].

- In the future, the relative share of developing countries in power consumption will be enhanced, respectively in carbon dioxide emissions[4].

Conclusion

Nevertheless, that economic growth and major power consumption are related – as it is evident from the development of Asia, on one side, and the development of the eastern European countries, on the other, the relation between economic growth and release of greenhouse gases is not determined in the sense that enhanced growth definitely brings to proportional enhancement of power consumption, respectively enhancement of CO_2 emissions.

On the other side, a positive, quasi-natural relation between economic growth and quality of environment, as stated by the supporters of the neoliberalism cannot undergo the critical analysis and even it is undoubtedly rejected in respect of the issue with carbon dioxide. The above-mentioned statistical data clearly show that for both the developed and the developing countries.

Testing, adjustment and training, but not waste and increase of consumption for noting are the tests for biosphere – a recipe for successful and sustainable development. The behaviour of homo sapience should follow laws, which are much similar to the laws of circles in nature.

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