

## ASPECTS ABOUT ROMANIA ENERGY FEATURES AS PART OF SUSTAINABLE DEVELOPMENT IN THE EUROPEAN UNION

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**Abstract:** The objectives of the energy sector in Romania in accordance with the sustainable development are: providing the security of electricity and power supply for all consumers at an appropriate quality level, by diversifying of generation sources, increasing the economic competitiveness and reducing the impact of environment. In order for the Romanian National Energy System to respond the climate change and European energy market requirements, the investments have a huge role.

**Keywords:** sustainable development, net present value, pollution.

### 1. INTRODUCTION

The complexity of energetic system problems has developed a high growth in the last year, taking into account: suppliers, transmission, conversion, distribution and energy consumption in the same time with the global environmental emphases, climate changes and exhaustion of natural resources. In definition of sustainable energy policy has to determine the maximum of wellness of a long period of time in the same time with the keeping the dynamic equilibrium between the safety energy feeding and environmental protection as the answer of energetically systems challenges [1].

Till 2050 the energy objectives will be in strong connection with the environmental objectives, so the CO<sub>2</sub> emissions should be reduced with 90/95%. Taking into account the energetic industry especially the supply systems and transmission system which are the main actors for this phenomenon, the objective could not be reached without the technological measurement implementation [6].

United States of America, Canada, China, India and South Africa have to fight for this interested subject especially the last three countries that are the guiltiest of greenhouse gases.

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## **2. THE SUSTAINABLE DEVELOPMENT AND JUSTICE BETWEEN GENERATIONS**

The objectives of the energy sector in Romania in accordance with the sustainable development are: providing the security of electricity and power supply for all consumers to an appropriate quality level, by diversify of generation sources, increasing the economic competitiveness and reduction of environmental impact. [4] More important is the sustainable development in assuring the energy needs nowadays on long term at the lowest price, suitable for a decent life and a modern economy taking into account the quality and safety supply [2].

The economic development concept is larger than economic growth. The economic growth helps the economic development through supplying the goods and services and represent only a part of development [3], [5]. The sustainable development allocates a large importance to environment quality and common services offered by natural environment.

The compatibility of economic growth with environment quality is a controversial problem. There appear two ways:

- A) The opposite growth current
  - The economic growth leads to environmental degradation because the growth is assuming in using a huge quantity of primary resources and energy as the waste is increasing;
  - The growth of waste quantity endangers the resources deposits and take over the capacity of environment assimilation.
- B) The pro- growth current
  - The economic growth is the only way to supply environment protection funds;
  - More investments into environmental sector restricts the growth involving the harms international competitiveness and reduce the jobs.

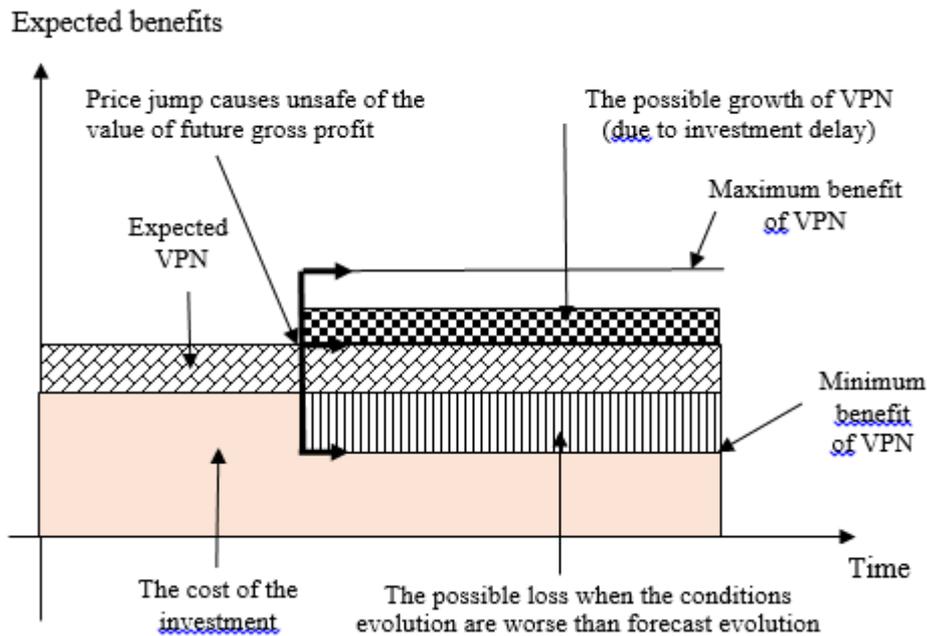
It allows some attributes regarding the sustainable development and equity:

- Equity represents how the rightness prosperity is distributed in society;
- Optimality represents a way of development which maximizes the present value of future benefits for human wellness.
- durability is a way of development where the human wellness is increasing or least is not decreasing;
- Survival is the way which is located above the minimum level of wellness.

## **3. UNCERTAINTIES AND ENERGY INVESTMENTS**

The International Energy Agency has forecasted that the investments in energy sector will be raised about 10.000 billion of USD till 2030, that means an average of 550 billion USD/year to assure the electricity access for less than two billion of people which have not allowed the opportunity in nowadays. The uncertainty can be conceived like an anticipated event which appears sometime in the future and can affect favorable or unfavorable the cash flow of investments project [7]. In the below diagram is shown that

the best alternative is that where the project is going to be rewarding as the benefits will take over the investments costs (figure 1).



**Fig.1** The probable effects of postponement of investment decisions

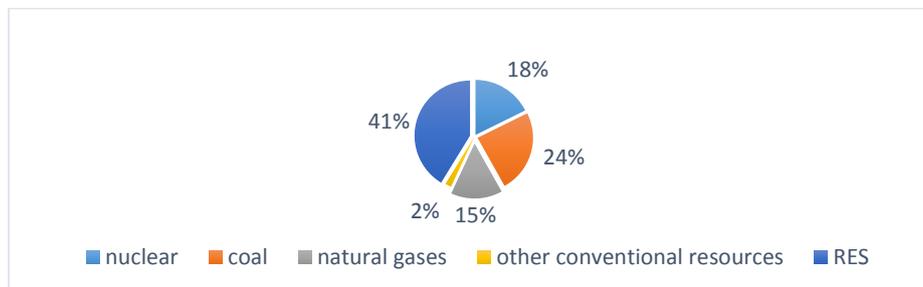
VPN – net present value

Even uncertainty of future conditions which affects the project cash flows will chase away the investment profit from the expected values the uncertainties and deviations will be bigger.

Investments performed to the energy sector have enabled the accomplishment for the first step of modern infrastructure, and of the necessary steps for the operation of the electricity market. Now, the projects of modernization, rehabilitation and development of major power station or new capacity interconnection are in progress.

There are strong needs of investments in order to Romanian National Energy System to respond the climate change and European internal energy market requirements, as: updating the old power units; increasing of deployment of RES; the energy interconnections.

As far as 2030 perspective for Romania is important to keep the freedom of establishing the national energy mix through efficient use of all forms of clean energy for achieving national target for energy security, competitiveness and price affordability (figure 2). Establishing additional targets for RES and energy efficiency could put at the risk member states flexibility to develop a diversified, safe and cost efficient energy mix [8].



**Fig.2** The Romanian electric energy supply

Through the strategic document for 2050, for energy sector, the emission decreasing is about 90% in compare with 90` year due to the technologies based on low carbon. The nowadays prescriptions for energy supply and operate domain are orientated on ``clean`` technology, as technology which operates better and to lower emission pollution. As a combined solution for simultaneous electric and thermal energy is cogeneration process through energetic, economic and ecological advantages.

#### 4. CONCLUSIONS

Among all, two valid solutions for reducing CO<sub>2</sub> emissions have been identified as being most relevant: energy efficiency improvements (EE) and generation by renewable energy sources (RES). The sustainable development is based on: efficient using of primary energy sources; decreasing the negative impact of the energy on the environment through reducing of greenhouse gas; increasing the energy efficiency; promotion of electricity and heat in high efficiency cogeneration plants.

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