

## LITERATURE:

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## ENERGY OF THE FUTURE

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Mankind has long pondered the question of what the energy of the future will be. The problem of global energy research is that it is necessary to take into account a greater number of factors affecting the production and consumption of energy resources. The world has accumulated considerable experience in researching the future of world energy.

Technological and scientific discoveries directly affect the world energy consumption and production. Research is constantly being carried out to improve energy efficiency. Analysis of technological trends shows that humanity is on the verge of an energy revolution. Today's energy is based on burning fossil fuels with a fairly low efficiency. The energy of the future is based on the use of renewable energy sources and active promotion of nuclear energy, efficient use of energy resources. The main directions of the energy revolution are the widespread dissemination of energy saving technologies, the integration of energy into the technosphere, the decentralization of energy, the creation of energy information systems, an "energy efficient house" and an "energy efficient city".

Table 1. World primary energy consumption by a scenario, million tones

|                     | 2010  | 2030  | 2050  | 2030  | 2050  | 2030  | 2050  |
|---------------------|-------|-------|-------|-------|-------|-------|-------|
| Oil                 | 3882  | 4627  | 5018  | 4441  | 4188  | 3641  | 2757  |
| Gas                 | 2653  | 3952  | 4522  | 3306  | 3483  | 3292  | 3092  |
| Coal                | 3278  | 4617  | 4487  | 3209  | 1794  | 3526  | 1812  |
| Nuclear             | 626   | 776   | 824   | 512   | 349   | 1335  | 2333  |
| Biomass             | 650   | 600   | 600   | 600   | 600   | 300   | 200   |
| Hydro               | 572   | 729   | 952   | 729   | 952   | 729   | 952   |
| New re-<br>newables | 210   | 1040  | 1835  | 1481  | 3019  | 1860  | 5846  |
| Total               | 11871 | 16342 | 18239 | 14279 | 14386 | 14683 | 16993 |

In this scenario, the main role will be taken by nuclear and renewable energy. By 2030, nuclear power can double, and by 2050 – become four times compared with the current level. The basis for such growth will be an accelerated transition to standard 3- and 4-generation reactors, as well as to fast neutron reactors. This will solve the uranium problem and the problem of used nuclear fuel. Renewable energy will

increase 9 times by 2030 compared to 2010 and by 26 times by 2050. In its structure there will prevail wind and solar power. It is expected to radically reduce the cost of solar energy.

The environmental factor is currently one of the key points in the development of energy. Legal and economic mechanisms are being created that stimulate the process of transition to a new type of energy. Special requirements are advanced to modern nuclear power plants, this causes their high cost, several times more than for Thermal Power Plants and Hydro Power Plants. The main cause of major accidents at nuclear power plants is the human factor, but with the widespread automation of production, this problem is not so acute. In my opinion, in the future consumption of resources and production waste can be radically reduced due to a complex of new technologies in the energy sector.

Also, a serious problem is the depletion of natural resources, exhaustible non-renewable fossil energy resources of nutrient origin - coal, oil, natural gas. The main way to prevent the depletion of natural resources is rational and integrated use of them, as well as the search for new sources of raw materials and the transition to new types of energy and fuel. However, the transition to renewable energy can pose new yet unknown problems to the world. So, wind energy can lead to higher temperatures in regions where wind stations are installed, and mass installation of solar panels can have a negative effect on the atmosphere.

The future of modern energy is at the intersection of science-intensive technologies, energy-efficient approach and ecologically correct choice!

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