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SUMMARY OF THE NATIONAL REPORT SUBMITTED BY UKRAINIAN SOVIET SOCIALIST REPUBLIC*

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REPORT

of the Ukrainian Soviet Socialist Republic
to the United Nations Conference on New and
Renewable Sources of Energy

SUMMARY

The Ukrainian SSR's fuel and energy complex, which is a component part of the of the USSR, is fundamental to the development and improvement of material production, makes it possible to achieve scientific and technical progress and higher labour productivity, and facilitates the main task of a socialist society - to bring about a steady rise in the material and cultural levels of the population.

The basis for the development of power production in the Ukraine lies in the planned management of the socialist economy.

Specific targets in the field of power production are set in the draft Guidelines for the Economic and Social Development of the USSR for 1981-1985 and the Period up to 1990. There are plans for developing atomic energy, raising the efficiency of the fuel industry, and broadening the use of new and renewable sources of energy in the economy.

The results obtained from special-purpose integrated scientific and technical programmes are the basis for planning the economy of the Ukrainian SSR and solving the main economic development problems of the country. In the period 1981-85, power production in the Republic will be developed in accordance with a special-purpose programme designed to solve the problems facing the fuel and energy complex and including, inter alia, work on the experimental and industrial utilization of renewable sources of energy.

From the earliest days of Soviet power, electrification was assigned a decisive role in shaping the economy of the new socialist society based on the development of large-scale industrial production. The establishment of a large energy potential was ensured by the policy of centralized State planning of the development of the fuel and energy complex.

The first plan for the electrification of the country was that of the State Commission for the Electrification of Russia (GOELRO), which set forth the main principles for energy development.

The ideas of the GOELRO plan were developed further as socialist industry was built up.

Today, the Republic's fuel and energy complex consists of a number of highly developed fuel sectors - coal, oil and oil refining.

In the period 1964-1979 alone the Republic's annual production of energy resources grew from 6.10^9 to 9.10^9 GJ.

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Along with the development of conventional sources of energy in the Ukrainian SSR, much attention is being devoted to the exploitation of new and renewable sources of energy.

On the basis of tentative estimates of the potential resources of a number of new and renewable sources of energy in the Republic, their annual output can be assessed as follows:

Solar energy - $2,500.10^9$ GJ

Wind energy - $1,700.10^6$ GJ

Geothermal energy - 900.10^6 GJ

Water power - 160.10^6 GJ

Water power is the most fully harnessed of the renewable sources of energy.

The Republic's water-power resources are utilized in an integrated fashion, which means that, along with the production of electrical power, it is possible to deal with land irrigation, the supply of water to towns and industrial enterprises, the development of shipping and fishing, and flood prevention.

The main emphasis in water-power development in the Ukrainian SSR is on the construction of cascades of hydroelectric power stations on rivers. This makes it possible to regulate the water-management system of rivers, to ensure a reliable supply of water and allow the passage of water-borne traffic, and to use differences in water level as effectively as possible over the entire length of a river.

The prospects for making use of solar energy depend on whether a relatively high degree of concentration (20 MW/m^2) can be achieved. Work aimed at utilizing solar energy to produce electricity is now in progress, and there are plans to construct a pilot industrial plant with a capacity of 5 MW for that purpose.

Tangible results have been achieved in the use of solar energy in the Republic. There are pilot plants for the supply of hot water and for heating, and there are plans to construct a number of solar energy systems to supply heat to dwellings and resort facilities.

The main problem associated with the use of solar energy is how it can be stored. A number of research projects on the storage of solar energy by chemical methods are under way in the Ukraine.

Wind power is an extremely promising source of energy for agricultural installations and other users. High-efficiency wind engines are being developed, and there are plans to construct pilot industrial plants.

The use of the thermal energy in "dry" rock masses, whose temperature in a number of areas in the Ukraine is between 150 and 250° C at depths of 3,000-5,000 metres, is highly promising. The system for the extraction of

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underground heat is to be based on the construction of geothermal power stations with capacities of 200-500 MW or more. As a first stage, there are plans to build a pilot geothermal power station with a capacity of 5-10 MW.

Tests have been conducted on the use of heat pumps for the exploitation of low-grade heat from the Black Sea to provide heating for the resort facilities in the Crimea. Cost estimates indicate that in this case heating by means of heat pumps is two to three times as efficient as the use of other heat sources.

Encouraging results have been achieved in high-capacity refrigeration using the method of "regenerative indirect vaporization cooling", which is several times as economical in terms of energy consumption as existing refrigeration systems.

The trend in the development of renewable sources of energy is towards their integrated utilization by means of combined energy-supply systems.

The Ukrainian SSR is participating actively in the USSR's international co-operation activities related to the utilization of renewable sources of energy.

The renewable sources of energy which hold most promise for use in the Ukraine are water power, solar energy, wind and geothermal energy, and low-grade thermal energy from the sea.
