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SUMMARY OF THE NATIONAL REPORT SUBMITTED BY POLAND\*

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EXCHANGE OF NATIONAL EXPERIENCE ON NEW AND  
RENEWABLE SOURCES OF ENERGY

Summary

1. Solid commercial fuels i.e. hard coal and lignite are the main energy sources used in this country as yet. The following figures for 1980 represent the share in production and consumption of the primary energy in Poland:

Production		Consumption	
hard coal	90.3	solid fuels	77.7
lignite	5.4	liquid fuels	14.9
crude oil	0.3	natural gas	6.9
natural gas	3.5	hydroenergy	0.5
hydroenergy	0.5		

Geological and mining conditions getting worse, increasing exploitation costs of the domestic coal resources as well as the rising environmental constraints indicate that the new and renewable energy sources are now being studied and the possibility to make use of them is becoming more and more likely.

2. Natural conditions for adopting the alternative energy sources are not highly encouraging in this country. Average annual solar radiation is only about 1,015 KWh/m<sup>2</sup> on the horizontal plan. The geothermal potential is limited to several dozen wells being able to deliver some 10-100 m<sup>3</sup>/h of thermal water each with the temperature at the outflow ranging from 30 to 50°C and only seldom to 70°C. The wind energy potential is modest and - under existing conditions - hardly profitable. The mean annual wind velocity is about 3.3 m/sec. Biogas seems to offer a fairly promising option through the anaerobic fermentation of cow dung, pig and poultry manure from several hundreds of big state-owned farms.

3. In Poland research and development of the utilization of the following renewable energy sources is carried out in the field of:

- solar radiation by photothermal photovoltaic conversion and
- animal wastes utilization by anaerobic fermentation.

4. The utilizable increment of new energy sources as described above is expected to constitute an equivalent of 2-3 mln tce/year by the end of 1980s i.e. nearly 2 per cent of the present input of the conventional energy sources.

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Further progress in this field is in our opinion connected with cost/benefit characteristics of the project.

#### 5. AREAS FOR FUTURE RESEARCH AND INTERNATIONAL CO-OPERATION

Experience on harnessing the renewable energy sources is limited. This situation results in the necessity for intensive investigation of the following problems:

- basic characteristic of devices/thermodynamic data of energy generation, structural materials, principles of standardication, long-term changes of efficiency and reliability etc./;
- real cost of investment, maintenance and of energy produced;
- elements of economic analysis of systems incorporating renewable energy systems with existing conventional grids;
- the role of governmental institutions in promoting new energy sources and in the transfer of technologies;
- the impact of renewable energy sources on the global energy balance in the long term.

The diffusion of new energy technologies from basic research to industrial maturity is a time-consuming process. Hence the relevant gestation periods may be analysed and taken into account as a yard-stick of the impact of renewable energy sources on the global energy balance in the coming years.

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