

# Conclusion

As the most accessible primary energy resources are depleted, the costs of electric power generation increase. An example of this provided both by the Unified Electric Power System of the f/USSR and by other world energy systems. In so doing, the increased costs are due to the depletion of cheaper resources and the development of more reliable and flexible technologies for their utilization as to their nonuniform distribution globally. On the other hand, as the world energy demand rises, the environmental problems created by the energy industry become ever more serious.

Naturally, the ways of solving both the economic and the environmental problems while satisfying the energy demand lie in the spheres of electricity conservation, of technological improvements, and of gradually varying the utilization structure of primary fuel and energy resources for electric power generation in favor of more efficient and environmentally clean production. The use of any of the above mentioned options, however, requires the transport and exchange of electric power. The expansion of territories covered by networks of rationally constructed electric power systems provides for a higher reliability of the electric power supply to consumers and for a more efficient solution of numerous environmental problems.

In view of the above, it is natural to raise the question of the feasibility and desirability of seriously developing international electric power systems in general, and of consolidating the existing international electric power systems of Eastern and Western Europe (whose networks already are to some extent linked), in particular.

The feasibility of consolidating the electric power systems of Eastern and Western Europe (i.e. the development of an Pan-European electric power system) depends on the availability of the appropriate technical solutions ensuring 1) the long-range transport of electric power, and 2) the operation of various enterprises, ranging from generation to distribution to consumers in a system without any practical territorial boundaries.

The effectiveness of the development of a Pan-European electric power system can be ensured by:

- savings of capital investment and operating costs, while maintaining the same or higher level of reliability of electric power supply, and
- suppression of adverse environmental effects caused by power plants incorporated in a Pan-European electric power system.

Savings of capital investment are possible owing to the reduction of the total capacity of power plants and their more rational structure and location. The reduction of power plant capacity is governed by the difference in time of approaching the electric load peaks in the electric power systems of the various countries, as well as by the reduction of the required reserve capacity, allowing for mutual assistance between electric power systems in the event of an accident. The more rational structure and location of electric power plants depend on the non-uniform distribution of primary fuel and energy resources within the territory of Europe.

The savings of operating costs are possible due to:

- the reduction of the total capacity of power plants;
- the increase of the utilization factor and improved conditions for use of the installed capacity of electric power system;
- fuel savings in the electric power system, defined by the reduced power requirements of the less efficient, maneuverable equipment of power plants.

Combined reduction of adverse environmental effects caused by a Pan-European electric power system is possible in view of:

- improvements in the structure of utilizing primary fuel and energy resources;
- improvements in technical and technological solutions for the Pan-European electric power system;
- broader possibilities to utilize renewable and environmentally clean energy resources.

In addition, one must allow for the possible indirect effect of the development of an Pan-European electric power system, due to the social and political aspects involved in the resolution of such a problem.

The problems listed above will naturally be resolved in the course of developing a Pan-European electric power system. This book provides the reader with an ample idea of the electric power systems of Eastern Europe and of the methods for controlling their development and operation as an object of possible integration.