

Effective Use of Energy is Coming to the Czech Republic

By Ivan Benes*

For the future development of the country, the most important task of the Czech government is to improve the energy efficiency of the national economy. This objective is an essential part of the national energy policy. Responsibility for achieving this goal lies primarily on the good cooperation of the Ministry of Industry and Trade with the Ministry of Environment supported by the Ministry of Finance, but it will need also cooperation with other government bodies (the Ministry of Regional Development, the Ministry of Agriculture, the Ministry of Social Issues, the Czech Energy Agency, and the State Environmental Fund).

CityPlan is currently working on a National Effective Use of Energy Action Plan, which should be discussed on the government level in the beginning of July 1998.

Purpose

The energy infrastructure is the blood of economy. The Czech national economy would have serious problems if the energy system did not operate efficiently. If we are speaking about an energy system, we see this system as a whole, i.e., with three energy subsystems:

- Energy Sources System which represents all raw energy forms, both fossil fuels and renewable energy sources;
- Energy Conversion and Transportation Systems which represent energy conversion processes (refineries, power and heat generation, pipes, lines etc.); and
- End User System which represents final energy demand.

It is necessary to evaluate the energy system as a whole chain of energy processes from extraction of energy through energy conversion and transportation to end use. One of the important purposes of the study is also to change the approach to energy planning from separated tasks (for example a single big power plant project development) to Integrated Resource Planning and Least Cost Planning methodology. It is important, because based on experiences from the former political regime, there are doubts about the purpose and necessity of energy planning on the national and regional levels.

Background

Since the changes in 1989, the Czech economy has moved steadily toward a liberalized free market. Of course, there still remain several sectors with the legacy of the former regime. The energy sector is the most important part of the infrastructure, but with still deformed economy.

Responsibility for energy policy is split between several governmental bodies. Their responsibilities are:

- Ministry of Trade and Industry – responsible for energy legislation, authorization and regulation,
- Ministry of Finance – responsible for price control,
- Ministry of Environment – responsible for environmental

*Ivan Benes is general manager and partner of CityPlan Ltd., president of CZAEE (Czech Association of Energy Economics) and Ministry of Environment secretary advisor. His professional career covers energy economics, energy policy, energy planning, project development, regulation, forecasting, power and heat generation and distribution.

legislation and EIA processing,

- Czech Energy Agency – responsible for energy efficiency and conservation programs, and
- State Energy Inspection – responsible for supervising energy utilization.

The current problems of the Czech energy sector are:

- high energy consumption in relation to the level of economic activity,
- distortion of energy prices – especially cross subsidies,
- insufficient and incomplete legislation,
- unfinished restructuring,
- unfinished privatization, and
- insufficient oil stock (only 50 instead 90 days).

Energy costs of the Czech economy are five to six times higher than the EU average and the intensity of energy consumption is approximately three times higher than the EU average. One of the most important targets of national energy policy is to decrease primary energy consumption. It can be achieved mainly by:

- energy conservation,
- increasing the efficiency of primary energy conversions (cogeneration, etc.) and
- renewables.

Unfortunately, all three measures to improve the national energy efficiency are not attractive from a free-market economic standpoint: to save energy is more expensive than to buy energy.

One of the most serious problems is to remedy the distorted energy price system. The price of electricity and natural gas is strongly cross-subsidized for the residential sector. To protect district heating systems against bankruptcy and to keep them economically competitive, central heating was also subsidized, but directly from the state budget. The government plans to raise energy prices to their free-market level in three years.

As was said, final energy intensity, i.e., the ratio of primary or final annual energy consumption to the gross domestic product (GNP), is almost three times higher than that of western European countries.

The high level of energy consumption is due to:

- Historical economic development in which priority had been given to heavy industries (iron and steel, petrochemicals) which are highly energy intensive.
- Low efficiency in the production, conversion, transport and distribution of energy products, in particular for electricity production and the transport of heat.
- Obsolete and poorly maintained industrial installations and, in general, inefficient consumption or end use systems (badly insulated buildings, poor regulation, etc.).
- Low cost of energy.

This high intensity of energy consumption and correspondingly high energy production is the source of enormous economic waste (e.g., in investment and hard currencies) and of environmental pollution and hazards.

Energy intensive branches of the economy (coal industry, energy industry, metallurgy, heavy machinery) have declined in the past five years. From experiences with

privatization it seems that a relatively long period will be necessary for structural change.

Very high energy consumption compared to gross national product uncovers the possibility of energy savings and the rational use of energy. To reduce consumption while raising service quality, the effective use of energy must become the highest priority of Czech energy policy. This objective is absolutely necessary if the country wants to encourage new economic growth and to significantly improve its environmental conditions. The structure of final energy consumption would be heavily modified – the share of industry would decrease to 30 percent and thus the share of the residential and commercial sectors would increase.

The main target of Czech energy policy today, and for the next two decades, is to improve the efficiency of energy use.

The energy efficiency policy should be developed through:

- Creation of institutional programs for improving energy efficiency in different sectors of activity and to help the appropriate partners and economic agents to implement them.
- A system of regulations to promote the rational use of energy (new standards and legislation).
- An appropriate system of incentives to stimulate and promote energy efficiency improvements, initiatives and projects and corresponding mechanisms to facilitate financing of investments and programs.
- Training programs about energy efficiency for technicians and engineers, managers, architects, local and municipal officials, etc.

We believe that it is possible to insure steady improvements in energy efficiency and long-term energy intensity levels nearer to that presently achieved in western Europe. Then the increased requirement for energy stemming from economic growth may be substantially offset resulting in little or no overall growth in final energy consumption. Achieving these levels of energy efficiency and intensity is an attractive economic policy objective.

Target

The analysis and evaluation of the effective use of energy in the whole national energy system should result in a National Effective Use of Energy Action Plan. This program is supposed to cover:

1. Energy demand balance model of the Czech republic broken-down by end-use sectors: industry, agriculture, transportation, tertiary and residential,
2. Overview of energy savings and energy efficiency improvement measures in each sector,
3. Overview of alternative fuel/energy sources,
4. Overview of energy conversion and energy transport processes,
5. Investment strategies,
6. Institutional measures, and
7. Noninstitutional measures.

The key goal of the National Effective Use of Energy Action Plan should be to ensure the economy grows without increasing the demand for primary energy. The GNP can be doubled (at least) without increased energy consumption. It means that all future energy demand should be covered by energy savings for a long time. The power sector should focus

on the higher utilization of natural gas, distributed cogeneration and efficient clean coal technologies. The Action Plan also has to consider higher utilization of renewables.

Success in reaching the target can be measured by means of three parameters:

1. The primary or final intensity of energy use, i.e., the ratio of primary or final annual energy consumption to the GNP of the same year.
2. The internal cost of energy, i.e., the ratio of the internal cost of annual energy consumption to the GNP of the same year.
3. The social cost of energy, i.e., the ratio internal plus the external cost of annual energy consumption to the GNP of the same year.

The final energy intensity as well as the social cost of energy should decrease through the years.

Energy Investment *(continued from page 13)*

basis not simply for international cooperation in the energy sector but for establishing the rule of law and guaranteeing the free market. While recent developments in Russia have brought about some changes in priorities, Mr. Kiriyenko considers it likely that the Energy Charter Treaty will be ratified by Russia before the end of 1998. The Treaty has, as of the end of June, been ratified by 38 out of 50 countries and has entered into force for 30 countries accounting for most of the European countries and economies in transition and Russia at present applies the Treaty provisionally.

The IEA and Russia continue to cooperate on the important issue of energy investment within the framework of their co-operative work which dates back to 1994. Since then the IEA and Russia have mutually benefited from a useful policy dialogue on a range of energy issues. Examples are the 1995 IEA Survey of Russian Energy Policies, conferences, workshops, publication of specific energy sector books, exchange of information and data and, in general, a close and open relationship.

An example of a relevant energy investment related co-operative effort is the Round Table on PSA legislation which the IEA and the Ministry of Fuel and Energy of the Russian Federation are planning for the late Fall 1998. The Round Table plans to draw on international experience from IEA member countries as well as the experience of other countries that have used PSAs to form the basis for investment in their upstream oil sectors or other such arrangements similar to PSAs in that they are distinct from the generic fiscal and legal system or raised issues similar to those faced by Russian decision makers today.

It is the hope that through more active policy dialogue and exchange on the issues raised in the G8 Energy Investment paper and the recommendations made by G8 Energy Ministers that progress in this important area can be achieved. The G8 Energy Ministerial was useful in communicating the concerns of investors and in getting high-level Russian commitment to G8 goals in the energy sector.