

HUNGARY

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Exploration for mineral resources changed very little in 2001 and there was only a slight increase in the production of existing mines.

Coal-burning power stations formerly used 89% of coal production, but the demand for coal has decreased dramatically in recent years as the power stations have gradually switched to gas. Smaller coal mines have been closed down and some of the bigger ones have been integrated into the remaining coal-burning power stations. According to current forecasts, the demand for electricity will increase by 1.45% in the next ten years. The share of coal-burning power stations in electricity production will decrease even further. The contribution of the gas-burning power stations (already quite high at 40%) will be even more significant.

Many people in the coal-mining industry have become unemployed. Some have been re-employed in mixed-mineral mining industries (sand, gravel and building- material mines) and others looked for employment abroad.

A basic commitment in the government's energy policy is to increase the use of renewable energy sources like wind, water and solar energy. At the end of 2000 the Bakonyi Power Plant started a pilot wind-powered unit in Inota. A second similar plant was opened close to the village of Kulcs by the Danube. It produces 600 kW of electricity using a single 65 m tall wind turbine with three airfoils. A large sum has also been allocated to install more solar-panel stations. The share of the renewable energy sources in the country's total energy production is only 3.6% at the present but in the government's energy policy this contribution is intended to double by 2010.

By 2015, 1,400 km of new motorway are planned to be built by the government using

Hungarian capital and labour. Building new motorways enables the country to meet the increasing demand for a long period ahead. Bitumen for this large-scale road building work will be supplied by the Hungarian oil company, MOL Rt.

One of the main targets of Hungarian railway reform is to be able to compete with the big railway companies on the widening European market. Among others things the reform aims to separate passenger-train operation from freight transport and to run them as different economic units. New dual-mode locomotives will also be introduced soon. The Hungarian Railway Co. is also planning to build a 5 km line between the ports of Trieste in Italy and Koper in Slovenia.

The 'Széchenyi Plan' recently initiated by the government facilitates medium term economic development. Backed by the financial help from the government, it incites entrepreneurs to invest and by doing that it strengthens small and medium size businesses. To participate in the Széchenyi Plan, businesses have to bid for tenders. For successful bidders financial support is provided in the form of a long-term loan at a very favourable low rates.

By the end of the first year of the Plan, one third of the local communities in the country were revitalised with new investment or development due to the successful bids of either private entrepreneurs or of the local council. With the Plan's support, Hungary hosted 31 million tourists in 2001 and became the world's 13th most popular tourist destination.

The most rapid increase has been in the country's industrial production and dynamically developing export has had a defining role in this. The total volume of the investments in the national economy reached Ft2.8 billion. Employment has increased

above four million. The number of unemployed has continued to decrease and was about 250,000 last year. The number of individual enterprises increased by 22,000.

In many aspects, Hungary comes first among the countries of the region despite the difficulties of economical and social changes that followed the earlier political changes. A recent report of the World Bank revealed that the country outstripped its rivals in the region by attracting more foreign capital and by successfully developing the private sector.

Last year, foreign capital of $\square 2.6$ billion came into the country. Several firms set up new factories or assembly plants; the Suzuki car factory, General Electric Co., Samsung Electro Mechanics, Siemens AG, WAW Aluminium Technics, BMW, Audi and Renault units.

In addition, many supermarkets (Spar, Match, Kaiser, Auchan, etc) were opened in Budapest and in other large towns in the country. The Netherlands, followed by Germany and the US, rank as the most important countries investing in Hungary. Economic figures show that foreign investors are satisfied with the environment. A few Hungarian enterprises (eg MOL Rt.) also invested abroad in 2001.

Oil, Natural Gas and Coal

Hungary's known crude oil reserves are about 22 Mt and oil production was 1.06 Mt in 2001. Activities in this field (exploration, production, refining and marketing) are carried out by MOL Rt. In addition to internal oil production, about 9 Mt crude oil are imported yearly, mainly from Russia on the 'Friendship' pipeline, with smaller amounts from the Middle East and from African countries.

Most of the crude oil is processed by the refinery in Százhalombatta, which produces petrol, diesel and lubricating oil of a very good quality. In earlier years MOL Rt. took part in exploring new fields of hydrocarbon abroad - mainly in the Middle East - with good results. This activity has declined recently and the

company is aiming to increase its market share in Europe instead. Negotiations to set up joint ventures are in progress with PKV Orion of Poland, the Czech company UNIPETROL and the Austrian company ÖMV. The main aim of MOL Rt is to achieve a leading position in the market of hydrocarbon products in Central and Eastern Europe. Besides MOL Rt, several smaller foreign companies are also engaged in hydrocarbon exploration in the country. Trial drilling by one of these companies discovered a new natural gas field near Törökkoppány (in the southwest part of the country). No detailed data are available yet.

More than 90% of Hungary's petrol stations are owned by large oil companies. Most of them are run by MOL Rt. and the others are divided between the following firms: Shell (125), ÖMV (116), Total (61), ARAL (50), Avanti (52), Esso (29), Conoco (25), Tomoil (11) and Agip (10). According to the estimates, petrol stations in Hungary purchase 4 billion litres of petrol and diesel oil annually and the estimated value is Ft 890 billion.

A Japanese entrepreneur offered a several-million dollar loan to invest in developing the geothermal energy in the region of Fábíánsebestyén on the southern part of the Hungarian Plain. Decisions have not yet been made about who will build this enormous and unique power station. Not only the Japanese firm but also some US companies and MOL Rt are interested in the bid.

In addition to annual national natural gas production of 3.5 billion m³, a significant extra amount is imported from Russia through pipelines. The energy supply of the country increasingly depends on Russian natural gas supply. The need for counter-balancing this has been repeatedly emphasised by Hungarian experts, and might be achieved by better utilisation of Hungary's own lignite reserves.

The estimated amount of geological methane found in the coal measures in the Mecsek mountains is 140 billion m³. Methane used to

make mining dangerous but since most of the mines in the region have been closed down it is no longer a hazard. Instead, new technology to remove and utilise methane is being intensively researched.

The estimated industrial coal reserve of the country is 198 Mt of hard coal, 194 Mt of brown coal and 2,700 Mt of lignite. Most of the lignite deposits in the country are known and explored. The fact that lignite reserves are found only at two sites (Torony, Bükkábrány) also increases the value. Unfortunately, the building of the 1,000 MW power station based on the lignite at Bükkábrány (with the investment of the German RWE Energie AG) has been delayed. The cheapest energy in the country is produced by the lignite-based Mátrai power station, Erömu. It also provides employment for many thousands of people.

“National energy from national coal at a competitive price” was the motto of the energy producing company that owns three power stations and two mines when it started the reconstruction on its unit 2 in Oroszlány. It added a new filter system to remove sulphur oxides complying with EU directives. This environment-friendly investment ensures that a great number of people remains employed in the region. Eight deep mines and five opencast mines are all integrated to the power stations, producing 90% of the coal.

Coal mining declined slightly in 2001 compared with previous years. The hard and brown coal production of deep and opencast mines was also lower, but the production of the lignite mines at Mátraalja did increase. Briquette production dropped by 32%, and about 800,000 t of imported coal entered the country.

The total volume of energy use was more than 1,050 TJ. This was met partly by home production (40%) and partly by import (59%). The contribution of coal as an energy source has decreased.

The state-owned nuclear power station at Paks produced 40% of the electricity used.

Based on international opinion, the four WER-type units of the power station are suitable for further operation and the output can be increased. Originally the units were designed to operate for 30 years but their operational lifetime can be extended by another 20 years after some necessary maintenance work. The Hungarian Nuclear Forum Association was set up by several enterprises in the country to co-ordinate and execute maintenance, transport, building, engineering and research tasks within the nuclear industry. Nuclear Engineering International listed the most important nuclear reactors according to their productivity and efficiency. All four units of the Hungarian nuclear station fall between 84.3 and 87.3 on this scale.

Since the start of regular bauxite mining in 1926, 103 Mt of bauxite has been produced in the country and more than two-thirds has been processed into aluminium in Hungarian factories. During the past ten years, many state-owned enterprises have been privatised, including the aluminium industry; the process of privatisation finished in 1997. The former units for exploration, mining, alumina refining, aluminium smelting etc, became separate companies or ceased to exist. Bauxite reserves amount to 14 Mt but there is only one working bauxite mine remaining. Operated by Bakonyi Bauxit Ltd, it has an annual production of 1 Mt.

The consequence of the major reconstruction in the aluminium industry and the unfavourable trends on the world market led to the termination of the long-standing bauxite-aluminium agreement between the former Soviet Union and Hungary. Most of the alumina refineries were closed down. The aluminium foundry in Inota although working at low capacity, is able to process the remaining alumina since it is much less than previously. It is known that the majority of the Hungarian bauxite reserve is below the water table, but some mining has been possible by a technology for lowering the water level. Since this technology disturbed the water supply of the world famous spa Hévíz, the

water removal had to be stopped and mining has had to be abandoned in this region (Nyírád, Halimba).

The privatised Light Metal Works in Székesfehérvár was sold to Aluminum Co. of America (Alcoa).

Ore Mining

There is a single working manganese mine in the country at Úrkút. In addition to the manganese oxide ore there is a significant amount in the form of carbonates. This needs further research to develop an economical technology for enrichment. A decision can then be taken about mining it. The industrial ore reserve of this mine is 36 Mt and ensures mining at the current production level for 14 years.

Exploration and mining of uranium ore began in 1995 near Kővágószőlős (north of the Mecsek mountains). Mining reached a rate of 900,000 t/y of ore from four open pits but the mines had closed down by the end of the 1990s because of the gradually worsening quality of the ore.

Non-ferrous ore resources (mainly copper ore) are concentrated in deep deposits at Recsk in eastern Hungary. Since this wealth has no economic importance, exploration has been curtailed.

Non-Metallic Minerals

Large resources of non-metallic minerals occur at some 2,000 sites and estimated resources amount to about 16,000 Mt, although only some 50 Mt/y are exploited. Given the extent of the resources, widening the range of uses should be possible although this will necessitate the introduction of new technologies. For the more important industrial minerals, such as kaolin and bentonite, the mines are generally well-equipped and such operations often have associated processing units.

One of the most industrial mineral sites is in the Tokaj mountain area, famous not only for its wine but also for its perlite mine at Pálháza. Its products are well known in the perlite industry and the quality equals the much-prized Greek perlite. The open-pit Pálháza operation has an associated state-of-the-art grinding and sorting unit, and produces 150,000 t/y. Because of continuously increasing demand, the reserves of Pálháza are rapidly becoming exhausted. Fortunately, a newly explored field is at the disposal of the perlite mining industry, only 5 km from Pálháza, at the village of Bózsza.

German and Austrian firms own the most significant cement factories in Hungary. Duna Dráva Cement Ltd, which is under Austrian ownership, has invested several million forints in a mortar-mixing plant as an auxiliary unit.

The silica sand mine at Fehérvárcsurgó, owned by the Irish firm Navan, produces about 40 different kinds of material for the glass, ceramics and building industries.

Metal and Mineral Production in Hungary ('000 t except where stated otherwise)

| Commodity | 1999 | 2000 | 2001* |
|---------------------------------|-------|-------|-------|
| Crude oil | 1,243 | 1,136 | 1,063 |
| Natural gas (M m ³) | 3,100 | 3,000 | 3,500 |
| Hard coal | 738 | 726 | 573 |
| Brown coal | 6,008 | 5,207 | 4,702 |
| Lignite | 7,696 | 7,873 | 8,043 |
| Manganese ore/ox. | 10.0 | 10.0 | 4.1 |
| Bauxite | 900 | 1,046 | 1,000 |
| Bentonite /crude | 9.3 | 4.8 | 5.2 |
| Perlite /crude | 148 | 150 | 151 |
| Glass sand | 490 | 500 | 339 |
| Foundry sand | 175 | 173 | 168 |
| Alumina | 295 | na | na |
| Crude steel | 1,900 | 1,969 | 2,056 |

*-preliminary data

na-not available