

National report on the Hungarian Energy regime

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by

Andrea Farsang and Alan Watt

CEU – Central European University

Department of Environmental Sciences and Policy, Hungary, Budapest



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- Policies – overall targets and policies

Energy for heating

- Production
- Consumption
- Policies to curb consumption/Increase production

Electricity

- Production
- Consumption
- Policies to curb consumption/Increase production

Transportation fuels

- Production
- Consumption (also share of alternative fuels ((biofuels, electricity) and hybrid, others)
- Policies to curb consumption/Increase production

References

Introduction

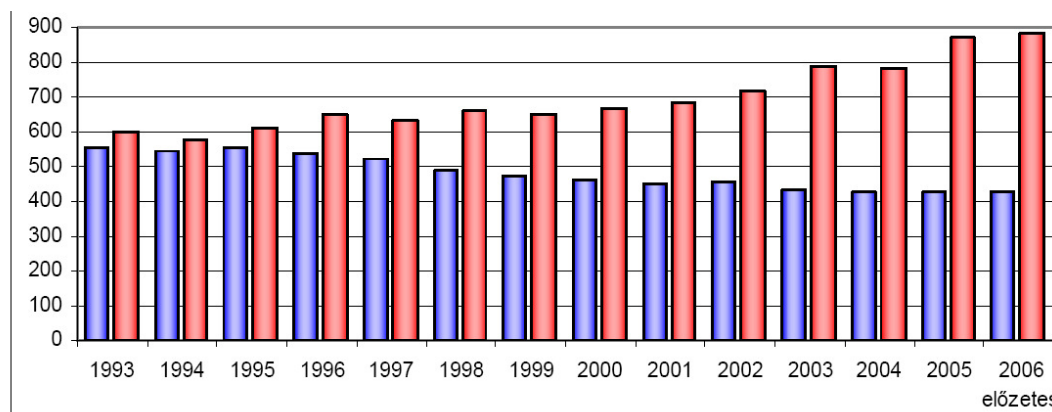
Hungary began the process of privatization and liberalization of the energy sector during the early 1990s (Urge-Vorsatz et al. 2003). Currently all the gas and electricity service providing companies are owned by well known international companies, eg. E.On, EdF\GdF and RWE. These service providing companies are still functioning as regional monopolistic businesses in the B2C sector, but in accordance with European regulations the liberalization of these markets has already started. The market will soon be opened for residential customers in the case of electricity and is already open for gas services, providing consumers with the opportunity to choose between different energy vendors.

The country joined the European Union in 2004. EU accession has had a positive influence on the energy sector in terms of setting energy efficiency and RES targets as a top priority for the liberalization of the energy market. However, this process faces substantial financial, political and social challenges (Urge-Vorsatz et al. 2003).

Responsibility for energy policy lies with the Ministry of Transport, Telecommunication and Energy (formerly the Ministry of Economy and Transport), where a separate Directorate-General deals with energy policy. The Ministry regulates the prices for electricity and for natural gas, with annual tariff schemes - creating prices substantially below real market prices. The Energy Directorate-General of the Ministry of Economic Affairs and Transport and the Hungarian Energy Office currently share the regulatory tasks concerning electricity, gas, quality of public services and consumer protection.

Since only 25% of oil and of 20% of gas is produced in the country, energy dependence (71%, see Fig.1.) is very strong in Hungary and highly influenced by Russian energy imports. In 2005, the total primary energy supply was 1301,5 PJ (36.9% domestic production and 63.1% import) (KHEM 2008a). At the same time Hungary has an important role in the future of European energy imports due to its strategic geographical position in gas transportation through the Nabucco and/or the Blue Stream pipelines. Therefore gas supply currently seems to be assured for future needs in Hungary.

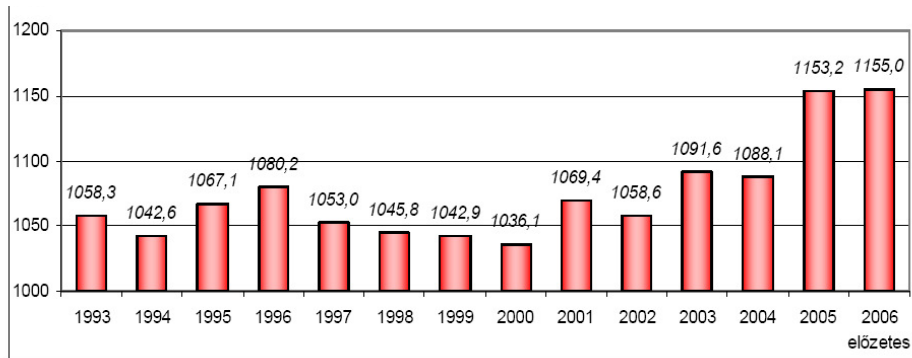
Figure 1.: Production and import of energy, 1993-2006 (PJ)



Source: KHEM 2008

- production
- import

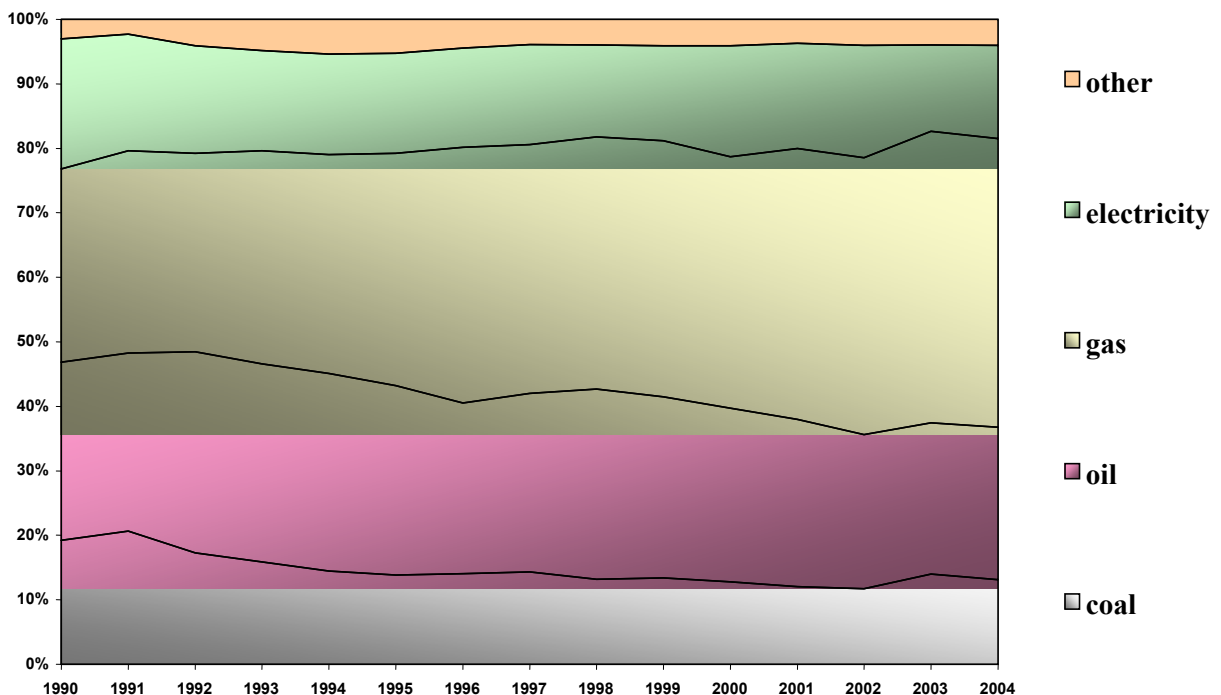
Figure 2.: Domestic energy consumption 1993-2006 (PJ)



Source: Energia Központ Kht. (KHEM 2008a)

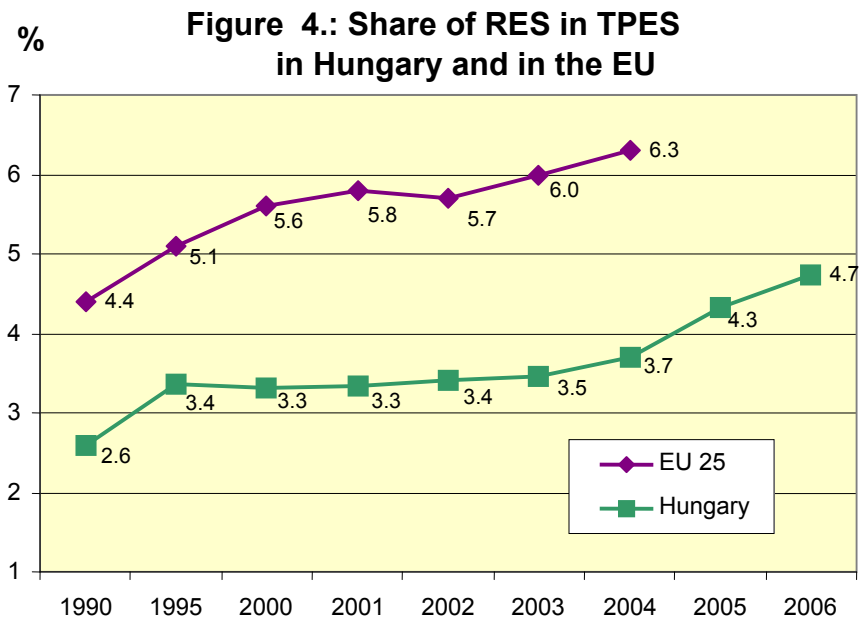
The share of oil and coal in energy supply has slightly decreased in recent years to 25% and 15% respectively, while the role of gas has increased from around one third in 1990 to one half in 2003 (see Fig. 3.). Nuclear energy – the most controversial issue in the Hungarian energy sector – is the major source of electricity production in the country, accounting for almost 40% of total electricity production.

Figure 3.: Share of primary energy supply



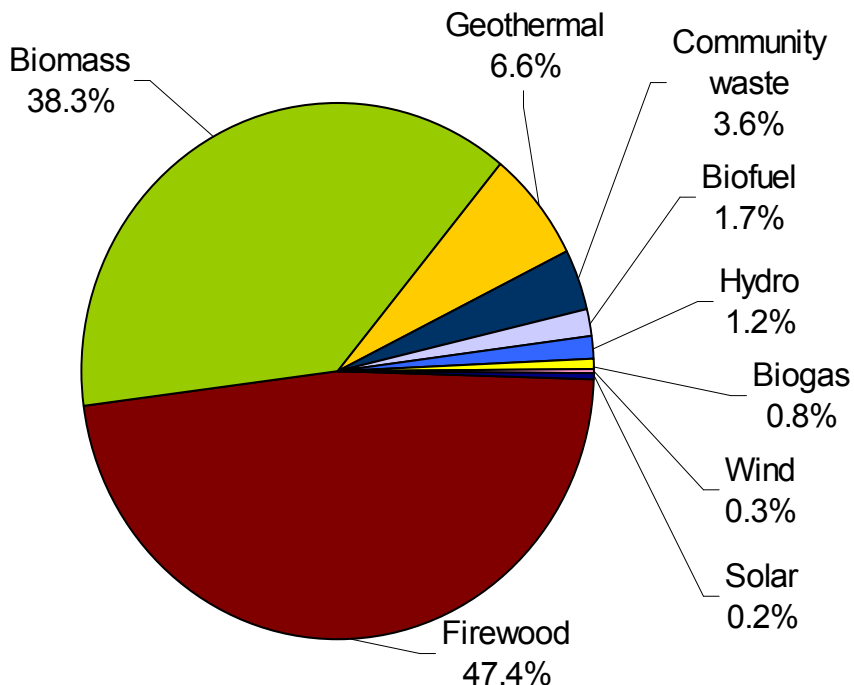
Source: KHEM 2008b

The Hungarian national target for electricity production from renewable sources was 3.6% by 2010. This percentage was already achieved in 2005, and is expected to reach 5.8% by the target date (INFORSE-Europe, 2006; Energia Klub, 2006).



The dominant share of renewable energy comes from biomass, followed by geothermal and communal waste (see Fig. 5.). Solar power does not currently play a strategic role in electricity supply despite its potentials. Wind-power has also played an insignificant role in recent years, but it is expected to increase in importance in the future.

Figure 5.: Shares of different renewable sources



The environmental impact of the energy sector has decreased over the last two decades, due to various factors: the rundown of heavy industry; improving energy efficiency; and environmentally friendly changes in the fuel mix (the share of coal has decreased while that of

gas and RES has increased). Nevertheless, energy efficiency is still behind the target level, import dependency is still high and fossil fuels continue to play a significant role. While energy demand in the industrial and agricultural sectors has decreased substantially, demand has grown significantly in the domestic and tertiary sectors.

The most recent strategic energy document is the Energy Policy Concept for 2007-2020 (40/2008. (IV. 17.) OGY resolution) which replaces the 1993 Energy Policy Concept. The 1993 Concept did not fully correspond with current priorities, was based on the former economic, socio-political and energy structure of the country, and focused particularly on supply-side interventions (Energia Klub 2006).

The new Energy Policy Concept is based on three strategic pillars:

- **Security of energy supply** with the objective of maintaining and improving the continuity and security of energy supply: energy mix, energy import diversification, strategic energy stocks, infrastructure developments, social responsibility
- **Competitiveness of the energy sector** that should contribute to increasing the economic competitiveness of the country: liberalized energy markets, integration to the EU internal energy market, energy prices, technological development and R+D
- **Sustainability** with the objective of enforcing the principles of sustainable development, energy efficiency, energy saving, renewable energy sources, and response to climate change: connections between energy and climate policies, and connections between energy and transport policies.

The energy policy concept is a framework strategy that is connected to the Hungarian Renewable Energy Strategy 2007-2020 and to the National Strategy on Energy Efficiency Objective.

Target numbers for renewable energy sources by 2020:

- in total primary energy supply: 14-16%
- biofuels: 2010: 5,75%, 2013: 8%, 2020: 10%

Direct investment support for RES is available through the Energy Efficiency Operative Program. For the period 2007-2013 250 Million Euro is available for RES projects, financed through EU Structural Funds. Additionally, biomass production is supported through the 2nd National Development Plan.

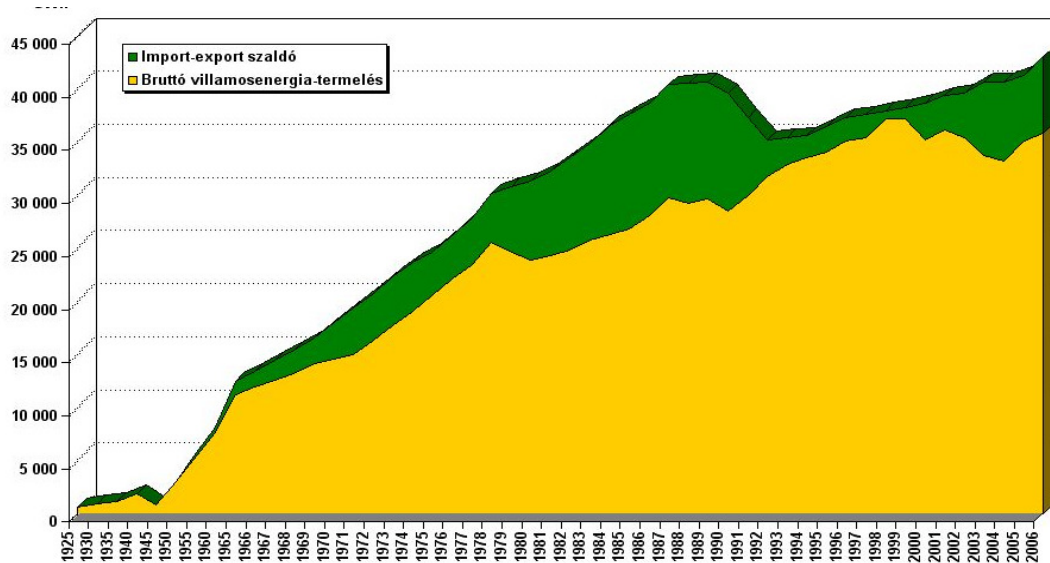
The government has been operating a National Energy Efficiency Programme (NEEP) since 2000 (Decree of 1107/1999 (X.8)). NEEP had support programmes in eight different areas, offering part-financing for households, local authorities, homesteads, SMEs, etc. As energy prices have risen significantly during the last 2 years an increasing number of households as well as organizations are interested in improving the energy efficiency of their buildings and utilizing renewable sources for energy generation. Unfortunately, part of the National Energy Efficiency Programme was closed in 2005 due to lack of resources and re-opened for

households for a very short period of time in 2007 and then again in 2008 with unfavorable conditions. A more successful programme has been one aimed at improving the energy efficiency of apartment blocks (the Panel Programme and Panel Plus Programme), which was first introduced in 2000.

Electricity

As mentioned above, nuclear energy is the major source of electricity production in the country, accounting for almost 40% of total electricity production, followed by gas and coal, while oil and renewable energy sources have a much smaller share (5% and 1% respectively).

Figure 6.: Electricity consumption in Hungary, 1925-2006(GWh)



Forrás: Villamos Energia Statisztikai Évkönyv, www.eh.gov.hu, www.npp.hu

Source: Energy Club 2008

- export-import balance
- gross electricity production

The share of RES in gross electricity production was 3.7 % in 2006 and in 2007 4.3%. Another half of the renewable-electricity comes from hydropower. There is a 55 MW installed capacity currently, and further potential is estimated at low values, 10-15 MW for small hydro-plants (Kiss 2007).

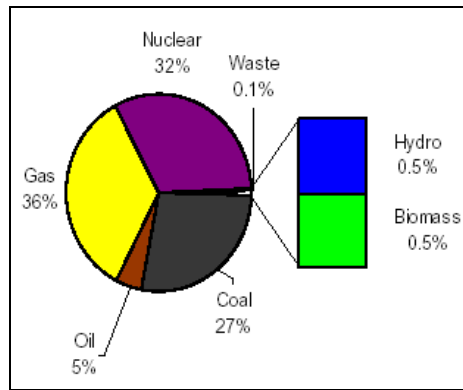
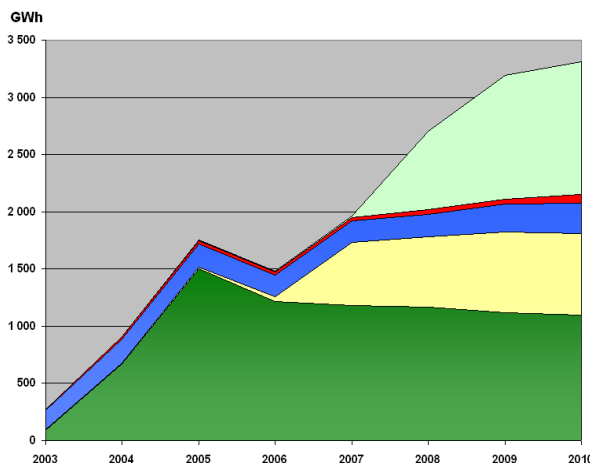


Figure 7.: The share of different energy sources in electricity production in 2003 in Hungary (INFORSE-Europe 2006 based on IEA data)

The Hungarian Renewable Energy (RES) electricity target for 2010 (3.6%) was already achieved in 2007 (due to the biomass contribution) and it is expected to reach 5.8% by the target date; its share in electricity production has been increasing rapidly (INFORSE-Europe 2006). Other renewable sources such as solar, geothermal or wind energy are hindered by various factors, such as varying economic value, social and political acceptance, and administrative constraints. Hungary aims to cover much more of its energy demand from renewables by 2020, building mainly on new biomass plants. Half of renewable energy comes from biomass with a significant increase during the last few years (in 2004 it was 5 times more than in 2003) (see Fig. 8. and 9.).

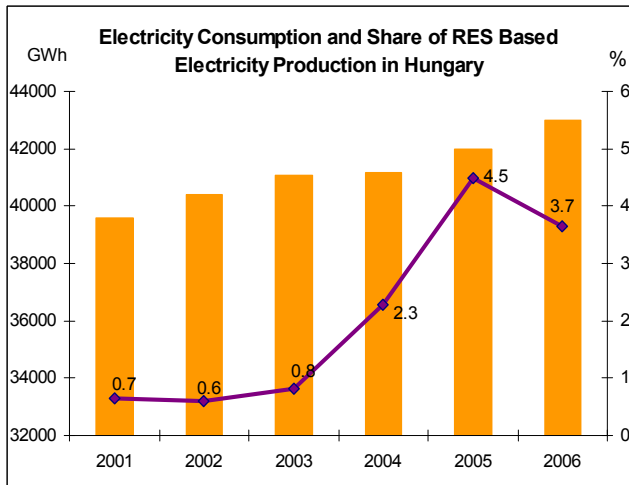
Figure 8.: The renewable source structure in green electricity



- other biomass (agriculture)
- biogas
- water
- wind
- biomass (wood)

Source: GKM 2007

Figure 9.: Green electricity developments in Hungary



Source: GKM 2007

Policies

As regards the policy framework, promotional schemes are being used and refined, and subsidies are available under certain conditions for the development of RES.

Support of RES based electricity generation is based on a feed-in-tariff and investment subsidy. The feed-in-tariff was adopted by the 2001 Electricity Act and by the ministerial decree GKM 56/2002. The feed-in tariff was set by Parliament at 8.21 euro cent and is subject to annual inflation indexing. Today it is 9.5 cent/kWh which is 80% higher than the average electricity wholesale price.

There is no time limit for the feed in tariff defined by law, and the tariff is guaranteed for the life time of the installation. The Hungarian Energy Office defines the amount of RES-e that can be sold with a feed-in-tariff. Green certificates are planned to be introduced in the future.

Table 1.: Feed-in Tariff for 2001-2007

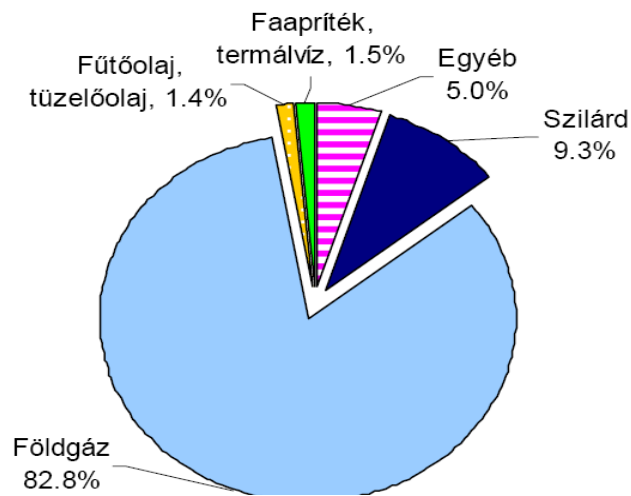
Resource	Technology	Support level [€cents/ kWh]	Feed-in tariff or premium?
hydro	Small	9.4	feed-in tariff
wind	onshore	9.4	feed in
biomass	Solid	9.4	feed in
biomass	gasification (biogas)	9.4	feed-in tariff
PV		9.4	feed-in tariff
geothermal		9.4	feed-in tariff

Source: EREC 2008

Energy for heating

One positive result of the Soviet energy policy is a well-developed district heating system and a similarly developed gas-distribution system (almost half of the energy supply in Hungary is natural gas). Natural gas is the dominant energy source used for heating (75%) (see Fig. 10.), and in 2005, more than 50% of Hungary's final energy consumption (926.5 PJ) was used for heating purposes.

Figure 10.: Composition of fuel for district heating, 2005

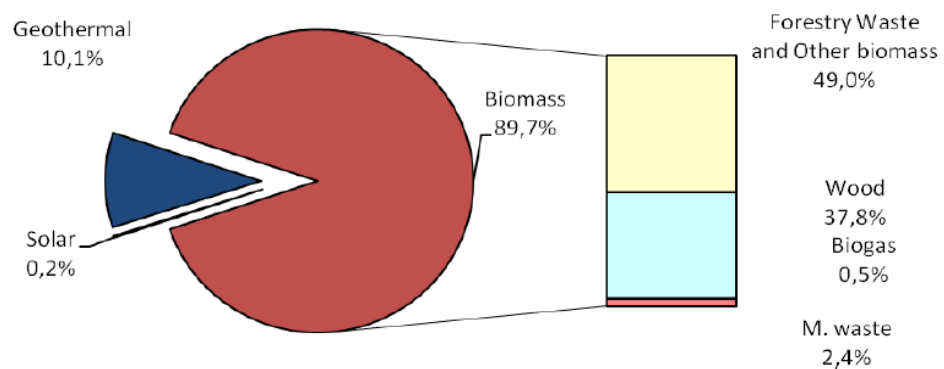


Source: KHEM 2008a

- natural gas (82.8%)
- other (5.0%)
- solid (9.3%)
- oil (1.4%)
- wood, water (1.5%)

The share of renewables for heating purposes in 2006 was less than 10%, based mainly on biomass (see Fig. 11).

Figure 11.: RES-H fuel mix in 2006 (37.5 PJ)



Source: Hungarian Energy Office, EREC 2008

Support for RES Heating and Cooling

In the National Development Plan, the Environment Protection and Infrastructure Operative Programme has specific measures to promote renewable energy sources. In 2006, it provided 280 million HUF in subsidies to energy efficiency project for:

- modernisation of buildings and institutions (Panel Program, Panel Plus Program),
- development of district heating systems (using biomass or geothermal energy or waste deposit gases, modernisation of buildings, district heating systems, application of cogeneration)
- the promotion of cogeneration, investment in renewable energy.

Energy in the transportation sector

Transport is heavily dependent on fossil fuels and has a significant contribution to CO₂ emissions and air pollutants. In the transport sector CO₂ emissions are growing 1.3% on average annually, due to the shift from rail to road transport; further increases can be expected since road transport is the fastest growing transport segment. Energy consumption by rail has decreased from the 90s, but energy consumption by aviation has been continuously increasing (Elek and Nagy, 2004). Since the 1990s the energy consumption of passenger and freight transportation increased and individual transport gained ground against public transport, as increasing railway and bus fares in passenger transport made the use of private cars more competitive (REC, 2003; Elek and Nagy 2004). As a result there has been a growth in energy consumption; and of course gas emissions with greenhouse effect are higher in personal road and air transport.

In 2004 48.3% of households had passenger cars: the rate was 64.6% in case of active households, the number of passenger cars has been increasing substantially. Transport and mobility is responsible for almost one fifth of direct CO₂ emission (without international aviation and water carriage) with a share of 98% of road transport. Energy consumption of road transport grew significantly during the last two decades, while the energy consumption of rail transport is decreasing in line with the overall shift away from rail use (Elek and Nagy, 2004). Transport and mobility accounts for 25% of the total final energy consumption of Hungary (KHEM 2008). The average age of passenger cars has improved slowly in the last few years but the spread and reputation of hybrid cars, using new, alternative energy resources is still low.

Greener fuels: Diesel and gasoline with up to 5 % bio-component is available from around 270 petrol stations in Hungary. Bio LPG gas is also available at almost 150 stations. Fuels are heavily taxed in Hungary, 30% taxes and 20% VAT. The share of biomass for transport is still low but increasing. A number of new investments in bio-ethanol production are under way. A large part of biofuel production is expected to be exported.

The sale of biofuels obtain a tax benefit. From 1 July 2007 a tax reduction to 0% excise tax has applied for biofuels blended up to 4.4% of the volume of petrol (tax: 103.5 HUF/l for petrol, 85 HUF/l for diesel). Since 1 January 2008 the same tax allowance has applied to 4.4% of biodiesel blended into diesel.

Fuel distribution companies not complying with the 4.4% requirement pay an extra tax of per litre at the wholesale level. From July 1, 2007, fuels sold by the Hungarian Oil Company

(MOL NyRt) contain 4.4% bio-ethanol and biodiesel. In case of producers, production is free from excise tax until 2010 if the whole quantity is blended in Hungary, transported from a Hungarian tax depot or sold to a registered distributor (EREC 2008). The yearly quota obligation for biofuels by 2010 is 5.75% per year.

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