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# Energy Policy of Hungary



## *Summary*

In Hungary, the energy sector was modernised on the basis of public ownership after World War II. Hungary's large, centrally controlled and vertically integrated energy systems were established at that time. Simultaneously with the regime change, western-based energy orientation also began in the energy sector and in 1990 it continued with the implementation of privatisation. Hungary's accession to the European Union provided grounds for and reinforced the process ideologically. This was followed by full liberalisation called "market opening". The policy of the second Fidesz government, formed in 2014, is characterised by the restoration of an energy policy serving national interests. This process is described in the article in a European perspective.

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## PRIVATISATION AND LIBERALISATION AFTER THE REGIME CHANGE

In Hungary, the energy sector was modernised on the basis of public ownership after World War II. Hungary's large, centrally controlled and vertically integrated energy systems were established at that time. Simultaneously with the regime change, western-based energy orientation also began in the energy sector. In 1990, after the taxi drivers' blockade, it began with imports and price liberalisation in the energy industry, and continued with the preparation and subsequent implementation of privatisation. Eastern (Soviet) advisors were replaced by western consultants; some of the Hungarian "specialists" also joined them. In 1995 and 1996, extreme privatisation

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took place with foreign dominance. Hungary's accession to the European Union provided grounds for and reinforced the process ideologically. This was followed by full liberalisation called "market opening", which meant, in the electricity industry, that electricity became a stock exchange commodity and market prices became separated from the prime cost.

#### ENERGY POLICY OF RESTORATION

Relying on the legacy of the founding fathers of the European Union, the policy of the second Fidesz government formed in 2010 was driven by the idea of a "Europe of Nations" based on Christian roots, which has also been laid down in the new constitution. The restoration policy of the government can be summarised as "capitalism, social responsibility and Christian democratic economic policy". It broke with the neoliberal doctrine that the market rules everything. The state's responsibility once again came to the fore. It was recognised that under market economy conditions the interests of the community cannot be successfully enforced solely by regulatory instruments; the active presence of the owner in the market is also essential. The energy policy was shaped by taking into account the financial capabilities of the country. Its foreign energy policy was characterised by opening to the East and strengthening Central and Eastern European regionalism. All forms of energy privatisation were stopped. The restoration and recovery and, in certain areas, expansion of the community ownership of utility systems began.

#### GLOBAL TRENDS IN THE ENERGY SECTOR

Global trends in the energy sector are the characteristics of the "new world order" (Fenyves, 2013): "free market", the instability of political and financial systems, deregulation and globalisation. In this world, reliable long-term energy planning, such as the planning of energy and capacity demand and of establishment and operating costs, is very difficult, almost impossible. The main influencing factors are financial limitations, (lay) public opinion, media, economic fluctuation (inflation, interest rates and foreign exchange rates) and political considerations. According to the famous saying of British political economist Susan Strange (1986), in the current so-called "casino capitalism", speculation and financial trading are the most important.

#### *Fossil resources*

The consequences of the surge in shale gas production in the US,<sup>1</sup> which may allow the US become an oil exporter, are still unforeseeable, but will certainly be very significant. "It will change American foreign policy, in the sense absolutely that American foreign policy will not be focused on energy, but on strategy. Due to shale gas, it will not be dependent on oil-producing countries and compelled to serve dictatorships in the Middle East" (Tálas, 2014). Increased natural gas usage will result in a decline in

coal usage, which will push the world's coal market in the direction of supply, and will also reduce the price of coal. The United States and Canada are likely to become net oil exporters by 2030 and will be larger producers already in 2 years than the world's two currently biggest oil powers, Saudi Arabia and Russia. Simultaneously, the main directions of hydrocarbon transport will change.

*Consequences for world powers*

Energy prices are low in the US. This may lead to the repatriation of a significant part of previously outsourced industrial production. Accordingly, the United States may slightly increase its exports associated with energy-intensive industries until 2035, contrasted by a possible decline of combined European and Japanese exports by nearly one-third. Through its technological monopoly, the USA will acquire a new “weapon”. The theatres of struggle for world domination, raw materials, energy and oil may be rearranged. The significance of Middle and Far Eastern countries in world politics may change. The role of petroleum-producing countries (OPEC) may be revalued. This means that the world's lines of power will shift, which may have a destabilising effect. The propaganda of globalism about the sustainability of consumption may become stronger: you can consume, consumption is sustainable, there is no need to switch paradigm. At the same time, the various myths of “saving the world” (climate protection, struggle against global warming) may weaken. However, the chances for the only correct action, adaptation, may decrease.

EUROPEAN UNION – “ENERGY COMMUNISM”

“Setting the objectives of the energy economy as seen in the Europe 2020 strategy can be attributed to the political and philosophical attitude of certain leaders of the European Union, and mostly to Jeremy Rifkin's intellectual influence. According to Rifkin, changes, which can be conceived as an industrial revolution, have taken place when the methods of energy generation and communication have changed. Now the internet and the use of renewable energy form the basis of the quality change, the third industrial revolution, in which collectivised production and consumption are pursued using smart electricity networks, in the form of some sort of *energy communism* (Katona, 2013). The theatre of this grandiose experiment is the European Union, where there are five programme points for building the future:

- 1) use of renewable energy;
- 2) implementation of local, distributed energy generation;
- 3) provision of solutions to electricity storage by starting to use hydrogen energy and other methods;
- 4) establishment of smart electricity networks, creating a kind of energy internet, in which everyone is both generator and consumer (producer + consumer = prosumer) at the same time;
- 5) conversion of transport to electric and fuel-cell drive.”

This programme would create a new “industrial platform”, a mega-technology, on which new generation methods are realised. The establishment of a carbon-free economy in the EU by 2050 would require about EUR 270 billion per year. It is a fact that the favourable effects of this “revolutionary experiment” on the European living space are not visible. The results of the European Union’s efforts are marginal also in global climate protection and do not offset the strong increase in emissions by emerging economies. The fact that the countries will scale back their energy- and emission-intensive production and consumption and thereby the European Union’s carbon-free economy is propelled to the top within the foreseeable future seems a highly unlikely vision. Such a radical change is hardly to be expected in the current space of power. The exploitation of renewable energy sources and the increase of energy efficiency may be the dogma of self-salvation, but it is not only ineffective in the consumption-centric medium of modern economy and society, but would also probably tragically set back the development level of economically weaker societies.

#### CONSEQUENCES OF EU ACCESSION IN HUNGARY

At the time of accession to the European Union, our country was under enormous pressure. The highly profitable industries, including energy supply, were acquired by large, in part state-owned Western European companies, just under the pretext of EU accession. In fact, they expropriated our markets. Whatever remained in the hands of the state are still in good working order, and this is why no considerable breakdown has occurred in our electricity system, which was felt by the population. By contrast, the majority of the power plants, which had become, in essence, foreign property, with the exception of the Paks Nuclear Power Plant and the transmission grid, have significantly deteriorated. The provision of electricity supply on the supply side has become a commercial activity to a significant extent. Today, about 30 per cent of domestic electricity consumption is supplied from abroad.

#### *Energy balance*

The structure of Hungary’s energy balance has been unfavourable since the beginning of the hydrocarbon era, the 1960s. The proportion of natural gas has become excessive in the Hungarian energy balance and in its use for heating and electricity generation. Currently two-thirds of all primary energy sources come from Russian imports (calculated without fissile fuel). This situation cannot be changed substantially for a long time with any energy source, even with renewable energy. We have to live with this. Therefore, the responsible government seeks to expand its latitude, by taking into account these conditions, in international natural gas supply and storage.

Hungary can join the shale gas revolution later (Leszák, 2014). Primarily the regulations and licensing hinder today European and Hungarian developments related to

unconventional gas reserves, while a surge in production would result in a completely new situation in the markets of the continent. The occurrence of shale gas in Europe would allow within 6 to 10 years that unconventional gas reserves appear in the markets of both the continent and Hungary to a considerable extent. The unconventional gas technology is relatively new and changes quickly, so it is not impossible that gas production will also be economical in the more distant future in Hungary (in the Makó trench). It is in Hungary's interest to create a regulatory environment that allows for economical production.

#### *Environmental protection*

The recognition of the limits to growth have strengthened environmental movements that raise the consciousness of humanity. It is regrettable that these noble efforts have also increasingly fallen victim to manipulation by global powers (Héjjas, 2013). The Greens have become policy-shaping factors both in Europe and in our country. Globalism tries to put this, too, to its own service. Economic operators and politicians have recognised the business and propaganda potential in environment protection and tried to influence such movements. The attitude towards renewable energy has become unduly pronounced within energy policy. More environmentally sound solutions, "renewable energy", are much more expensive than conventional sources, further increase costs to consumers and re-create the basic problem, imbalance, while investors get extra profit from high-priority grants. It would be a minimum step towards rationalisation if renewable sources were also evaluated through the market and their costs also included the financial burdens caused by them, which others are still forced to cover (external costs).

#### *Renewable energy lobby in Hungary*

One of the key characteristics, which however carry risks, of the Hungarian energy policy was the uncritical commitment to the EU's unilateral renewable energy policy. "Renewable energy strategies" were developed in this spirit. The agricultural lobby, with close ties to the MSZP (socialist party), was the main standard-bearer in this matter, since the large-scale production of biomass considered a priority allowed fabulous EU grants to be obtained. There was real competition in the energy market only for these grants for a long time. Previously, the SZDSZ (liberal party) was the main champion of environment protection, and it endeavoured to use this field to strengthen its political support. More recently, the LMP (new liberal party) has replaced it and is making efforts at taking over its role. Unfortunately, the MSZP, which has lost its power, is changing its position in energy matters also increasingly in this direction. This is clearly manifest in the fact that they have abandoned the national consensus previously reached on the issue of the expansion of the nuclear power plant.<sup>2</sup>

*Climate protection*

In terms of taking into account environment impact, “climate protection” is important in our country; it is dealt with by the National Adaptation Strategy (NAS-2). It consists of three main parts:

- National Climate Change Strategy (NÉS) (NFM, 2013) which aims to reduce global warming as much as possible;
- Decarbonisation Strategy (DS), which aims to reduce, theoretically eliminate, carbon dioxide emissions;
- National Adaptation Strategy (NAS), which aims to manage and adapt to the impact of inevitable climate changes and to minimise possible damage.

Energy receives an excessively pronounced role in the above strategies. The Hungarian energy policy also begins to recognise this: “As long as climate policy is closely linked to energy policy, no success can be reached in the energy sector; therefore, it must be separated from the energy policy”, said Pál Kovács, Minister of State of the Ministry of National Development at the National Mining Conference (Portfolio.hu, 2013).

We cannot meaningfully influence climate change on the Earth. The role of human activities in climate change, or even the possibility of substantially influencing it, is not scientifically proven. Decarbonisation intending to curb is manipulation by agents of globalisation. It is not true that “it is in our strategic interest... to implement sustainable economic growth”, as stated by NÉS-2 (p. 4). In fact, constant economic growth, on which the global economy is based, is not sustainable. Without limiting our consumption ourselves, humanity cannot be saved. The question is whether there is any chance to build a world of other values.

It must be understood that, although each topic has to be addressed due to our commitments to the European Union, our own resources may only be used for objectives that promise substantial results. As many of the grants provided by the European Union for various projects as possible have to be used for goals that we also consider sensible. This is how the National Adaptation Strategy becomes really important for us, which is indeed about the future of the country.

Our only chance for survival or, more modestly, for renewing the life of our nation is if we, as a small nation, smartly adapt to both changes on our Earth that we virtually cannot influence and to shifts in world politics. We must agree with the “Adaptation vision” set out in the NÉS-2 (p. 8): “prepare for the inevitable and prevent what can be avoided”. We must have a similar attitude towards global world politics. In order to be able to cope with all this, it is insufficient for us to be smart, we must also remain healthy and viable. This is how we get to the fundamental recognition the NAS is about. One must start from the whole, the requirement of viability. All sub-strategies pointed out for different reasons must serve this requirement collectively, in a complex way, with the minimisation of inconsistencies as much as possible. This is in the interest of the community. We must stand on the good side, the side of life, and we need to find allies for this both in the European Union and all over the world. Our nation’s cultural history provides grounds for this.

*Energy security*

The dependence on the import of primary energy sources from Russia cannot be reduced significantly in the foreseeable future; absolutely not with renewable sources, and only in part with domestic lignite. The effects of even the best measures will be felt only in the long term. This recognition must lead the foreign energy policy of the government. The European Union should promote the security of supply primarily with the common market of imported primary energy sources. By contrast, dominant states have their separate ways. Bypassing about half a dozen EU Member States, the largest east-west gas pipeline was established between Russia and Germany, and the procurement of natural gas from the east, which is essential for Europe, has been degraded to a separate agreement between Russia and Germany. There have been hardly any primary energy projects with a common European interest for the development of our region to date. Since, in this respect, the Visegrad countries share common interests in the energy sector, it is possible and necessary to coordinate them with the framework of enlarged Central European regionalism.

It is possible to achieve the security of supply primarily by political guarantees and common energy investments providing grounds for them, not giving up the notion that the single market of energy sources must also be strengthened in the European Union. The task of Hungarian energy policy is to influence the EU's energy policy with due consideration to Hungary's interests. Any change can be achieved in the EU only with determination coupled with professional competence if there is a goal that can be well communicated and to which the Member States' consent can be obtained. To do so, we must take advantage of the potential of the Visegrád cooperation and other similar efforts appearing elsewhere. The "Visegrád countries" must take joint action to modify the regulation of the energy market by the EU. Market regulation must be democratised in such a way that these rules may take effect only by the unanimous vote of the Member States, and it must be allowed that Member States be able to opt out from internal market regulations that are detrimental to them. Joint action must be taken in order to diversify gas supply and against the discrimination of nuclear power generation as well as in the operation and construction of nuclear power plants. It must be ensured that the European Union accepts the necessary and appropriate assumption of this role by the state.

#### NATIONAL ENERGY STRATEGY 2030 (NES)

The Hungarian energy policy had to take it as a basis that we can count only on ourselves in terms of the security of supply. Taking this into account, Hungary must follow a strategy that, apparently in accordance with the EU's objectives, achieves the security of supply, reduces dependence on imports, and facilitates that both retail and industrial consumers obtain electricity at an affordable price.<sup>3</sup>

In Hungary, establishing a rational primary energy structure is vital for the whole national economy, and fundamentally determines the coordinated feasibility of the

fundamental requirements of energy policy (security of supply, sustainability and competitiveness). The NES completed in 2010 interpreted the security of supply as one of the pillars, a factor that is partly a function of the tolerance of society, but the increase of which is in the national interest. The NES not only determines the optimal directions for development until 2030, but also spells out the basic solution also for the period up to 2050: the need to achieve an electricity sector based on three pillars, i.e., nuclear, coal and renewable sources, and the possible paths for achieving this.

## GAS SUPPLY

Along with ever-decreasing domestic production, the country will be supplied with Russian gas in the long term. The supply of natural gas is ensured as a result of good energy cooperation with Russia and the establishment of gas storage capacities. Gas supply to Hungary is ensured under an agreement until 2021, and negotiations have been started for the post-2021 period. For us, the most important is that the Russian raw material reaches Hungary under any circumstances.<sup>4</sup> The revival of the South Stream would be in our interest, while we gladly participate in the Turkish Stream.

The primary energy source with the largest share is natural gas, which is especially important from several points of view and which cannot be changed even in the long term. The responsible government must aim to increase the latitude of energy market operators by taking into account these conditions and to help supply the consumers with an energy source that is available reliably and at a reasonable price. The most important tools of this are:

- supporting the wholesale gas market through to the diversification of sources, expansion of liquidity and its development in a regional direction;
- acquiring state ownership in the case of strategic infrastructure elements important for the security of supply and key market operators.

Through the repurchased gas market infrastructure and its strong presence in the market, Hungary will be able to operate as an important market centre in the Eastern and Central European Region. Due to its presence in the market, our bargaining positions will improve when agreements are concluded for the reservation of gas capacities, which is key for supplying the country.

### *Renewable sources*

There are good options for using traditional *biomass*, because the area and yield of forests in Hungary keep increasing. Only half of the full annual surplus (which can be used) is suitable for industrial use in part, while the other half is of firewood quality. With the combustion of this and organic waste, a significant amount of heat energy can be produced, which can be primarily used for individual heating and making hot water. Several previously coal-fired power plants have been converted in whole or in part to biomass firing in Hungary. Only small biomass power plants and district heating works operate in a few municipalities. In 2016, the electricity generated from



renewable energy sources provided for only 5.5 per cent of the total gross electricity consumption (Hárfás, 2017). It can be established that with its share of over 50 per cent most of it was still provided by biomass, that is, wood combustion.

*Wind energy* and *solar energy* accounted for 27 and only 1.75 per cent, respectively, of the total quantity of electricity, 2,406 GWh, generated from renewable sources. Taking into account their installed capacity and the quantity of electricity generated, wind power plants could generate electricity only at an annual utilisation rate of 22.5 per cent: wind turbines with a total capacity of 329.3 MW installed in the system could operate in reality at an average capacity of only 71.9 MW over the year. The fulfilment of the commitments made to the EU with respect to the use of renewable energy sources could only be achieved with very significant state subsidies. It is a question whether there are/will be funds and from where/whom, and at what pace it is worth carrying out the programme. The government does not want to put this burden on the population, but putting it on industrial consumers would worsen the positions of businesses competing in the world market.

At a *biogas* plant, energy generation is only an accessory activity, since the primary goal is to reintegrate biological waste into nature with minimum nuisance and mainly at minimum costs. In Hungary, about 46 biogas plants produce biogas currently with a total electrical capacity of 37 MW. Of these, 31 form part of farms, with a total capacity of 21 MW. About four or five additional plants are currently under construction.

#### ELECTRICITY SUPPLY

The dangers of liberalised electricity markets also have their effect on our country. The level of wholesale prices is so low that it does not in itself guarantee any return on investment into any production equipment. In fact, it usually does not cover major refurbishments and overhauls either. The availability of a number of power plants keeps declining. The construction of power plants in Hungary has become an unavoidable necessity. Since there has been no power plant construction plan since privatisation, there is no responsibility for supply, we are at the mercy of the intentions of market operators. The consequences of irresponsible energy privatisation and liberalisation have fallen on us.

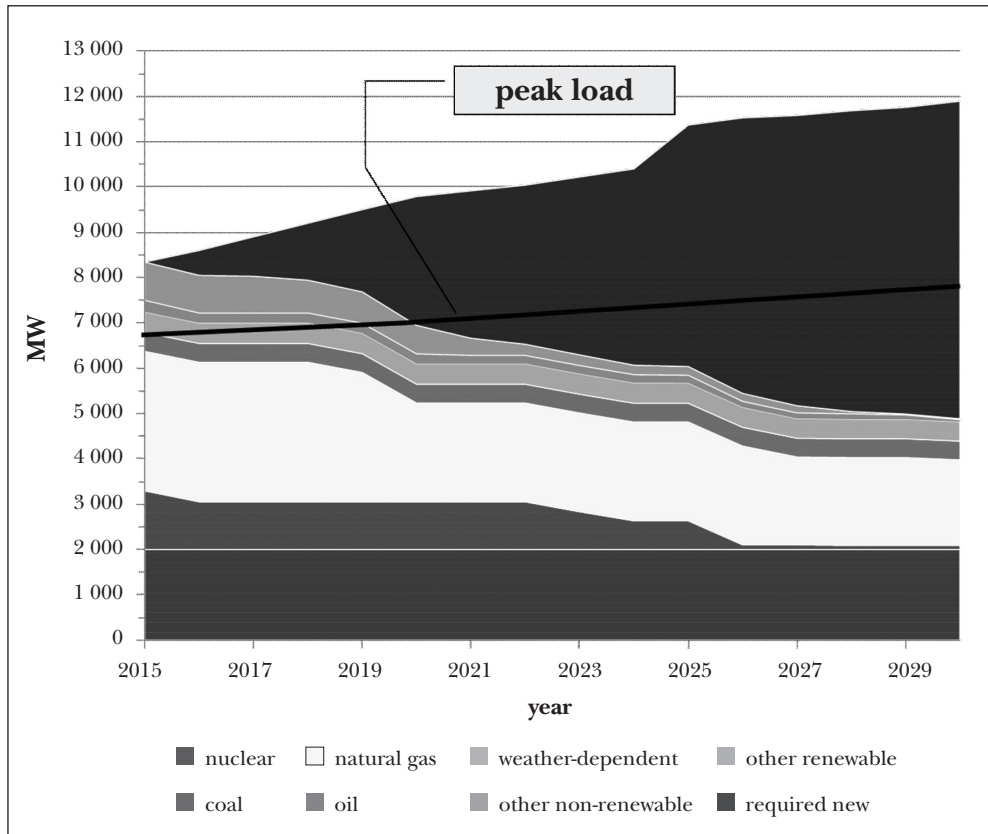
Electricity supply can be maintained only with significant imports amounting to 30 to 40 per cent. As a result of the subsidisation of renewable sources by the state, surplus capacities have occurred temporarily in certain EU Member States. However, the low market prices do not cover the fixed costs of conventional power plants; therefore, their shutdown is continuous and the possibility of imports decreases. The capacity available for exports was still 3,600 to 7,700 MW in 2016 during the winter peak load. However, there will be a capacity shortage by 2025 also in the Central European Region, they will be unable to export. Every Member State must prepare for its own secure supply of electricity. The security of electricity supply is not guaranteed. The efforts of the government for the expansion of the Paks Nuclear Power Plant and the importance of the expansion of lignite-based power generation by the Mátra Power

Plant must be assessed in the light of this. “The question is not whether there is a need for Paks II, but what else do we build in addition to meet the requirements” (Innotéka, 2017).

*Construction of power plants*

According to the technical analysis of Magyar Villamosenergia-ipari Átviteli Rendsz-erirányító Zrt. (MAVIR, Hungarian Transmission System Operator Private Limited Company), the required installed capacity of the Hungarian electricity system may be 13,551 MW until 2030. Of this capacity, large power plants may represent 11,051 MW capacity and small power plants (wind, solar, hydro, etc.) 2500 MW capacity in the future (Mavir, 2015).

Figure 1: The necessity of fund raising



Source: Mavir, 2015

A study on the subject shows that the total gross capacity of domestic power plants was about 8,900 MW at the end of 2014 (of which, however, only 7,290 MW was avail-

able in reality) (Hárfás, 2015). Of this capacity, as a result of phasing out due to wear and tear,<sup>5</sup> only 4,887 MW capacity may remain in the service of domestic electricity generation by the end of 2030. It follows that about 8,600 MW new power plant capacity will need to be established until 2030. This in turn means that in addition to the 2,400 MW capacity of the two new units at Paks, it will be necessary to install an additional 6,300 MW capacity (gas and renewable) in the system to ensure a secure supply of electricity to domestic consumers in the future.

#### *Lignite power plant*

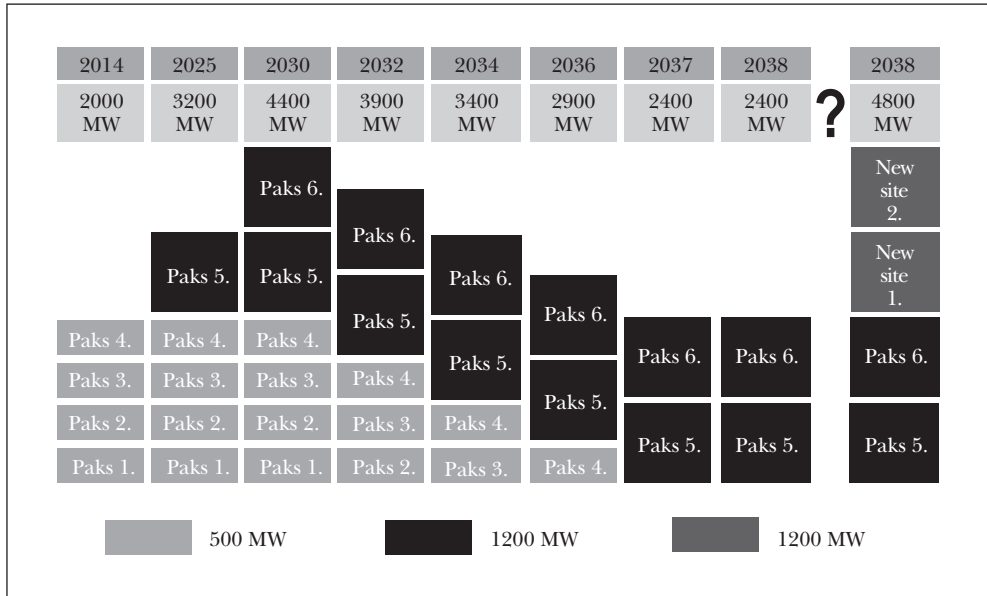
It would be obvious to also use the domestic lignite resources, because they ensure a stable prime cost for electricity generation. The already planned development has fallen victim to climate protection, the “virtual bugbear” CO<sub>2</sub> quota. In the near future, a decision must be made between two alternatives regarding the utilisation of lignite, considered a major domestic fossil energy source, for energy purposes. One alternative is to build a lignite-fired power plant for economic reasons and reasons of security of supply. Alternatively, it is advisable to reserve lignite for a later time, when we can count on natural gas to a smaller extent or only at very high costs. In both cases, the increase in CO<sub>2</sub> emissions due to lignite-fired power plants can be offset by the increased use of nuclear energy (instead of natural gas).

#### *Maintenance of the capacity of the Paks Nuclear Power Plant*

All this means that it is absolutely necessary to maintain the capacity of the Paks Nuclear Power plant, since the “lack” of the two new units in Paks would result in losing, until 2030, a capacity providing a base load of nearly 2,400 MW to the electricity system, which is key to both competitiveness and climate protection. This would represent serious security of supply risks in the future. Therefore, taking into account Hungary’s inherent natural conditions and the limits of our available energy sources, the use of nuclear energy may not be circumvented in the coming decades in order to ensure secure and reliable energy supply and, at the same time, the required degree of energy independence.<sup>6</sup> As we have seen, there is a shortage of capacity in the electricity system. At present, the security of supply can be ensured only with significant, more than 30%, imports, that is, a power plant must be built. Since the potential for renewable-based electricity generation is highly limited, the international figures of electricity generation also make it clear that nuclear electricity generation is unavoidable.<sup>7</sup> This provides grounds for the need for the nuclear power plant.

The development of Paks II was a necessary decision and it also fits into world trends. In relation to the expansion of the Paks Nuclear Power Plant, it is important to reiterate that private operators, which do not have any supply obligation, do not build power plants in the liberalised energy market. This is why a responsible state is forced, in the interest of its citizens, to establish the capacities essential for supply. The construction of power plants is widely known to be a very expensive investment with

Figure 2: Development of nuclear capacities in Hungary until 2038



Source: NFM, 2012

returns over a long time. Under Hungary’s present conditions, with special regard also to the fact that as a result of privatisation, the majority of the profits generated were taken out of the country by the foreign owners in the energy industry in the preceding decades, there is no money for development. That is, we can build power plants only from loans.

We entered into an agreement with Russia because besides appropriate technical quality they had offered funds under terms more favourable than market terms and the terms of IMF loans. The nuclear power plant, the ownership of which will be Hungarian, will meet all fundamental conditions of electricity generation. The price of electricity generated at the nuclear power plant is the lowest due to its extremely long service life and the smaller share of fuel costs within the total prime cost compared to other solutions. Even in comparison with gas and coal power plants and renewable sources, the costs of the nuclear power plants calculated over their entire service lives are the lowest.

According to the domestic opposition’s hysteria, the Paks expansion would have a positive return only if electricity prices exceeded the current price two- or threefold. In our increasingly globalised world, only uncertainty is certain in the long term. Foresight for decades, the application of the traditional market approach are almost impossible, in particular, in very capital intensive energy projects with very long payback periods. The estimation of demand and supply and prices 20 to 30 years in advance is uncertain. Therefore, long-term decisions may and must be made only with public/government responsibility, with the intent to satisfying the actual social needs and on the basis of the information available at the time of the required action. (This is why,

in order to establish a power plant, the government of the United Kingdom was also forced to assume guarantee for the price of electricity for decades in advance.) The state responsible for supply is compelled to take the risk, because market operators not responsible for supply do not take it. We expand the nuclear power plant because there is no other realistic alternative to electricity supply to the country.<sup>8</sup>

*The European Commission's recently published Decision supports that the capacity maintenance project of the Paks Nuclear Power Plant is a project of strategic importance for Hungary from the point of view of energy policy, which will also generate profits.* According to the detailed study of the body based on February 2017 data, the expected return on the project (its internal rate of return) is 6.79% to 7.90% per year, while a private investor in the market would expect 7.40% to 8.35% from a similar project.

## NOTES

- <sup>1</sup> It means the relatively cheap production of hydrocarbons (shale oil and shale gas) that can be produced with an unconventional technology. With the new hydraulic fracturing technology, reserves unavailable for production so far can be accessed.
- <sup>2</sup> *Népszabadság*, 17 December 2011.
- <sup>3</sup> Our government successfully opposes *globalomania* also dominating the EU and its internal assistants. "Apparently, at the level of rhetoric, we must be seen to be perfectly cooperating, while in practice we must solely represent our own interests at any price" (Bogár, 2016).
- <sup>4</sup> Russian President Vladimir Putin declared during his visit to Budapest on 2 February 2017 that "I can say one thing for sure: Russian natural gas will come 100% and reliably to the Hungarian market". *Info Rádió*, 3 February 2017.
- <sup>5</sup> The average age of domestic power plants is 27.4 years.
- <sup>6</sup> In Hungary, the grounds for the nuclear energy industry were laid by Professor András Lévai in the last century, who called for and taught the use of nuclear energy. He said this visionary sentence in one of his presentations in 1955: "It is no secret that our country is a specifically energy deficient country and, as such, we are among the first among the states of Europe, unfortunately, where the utilisation of the new energy source is a matter of life and death."
- <sup>7</sup> According to Prime Minister Viktor Orbán, nuclear energy will be with us also in the next century. It is a great achievement that Hungary belongs to a few countries that are considered developed in terms of the nuclear industry, excellent with regard to its educational system and outstanding with regard to its safety system. The nuclear industry is an area in which Hungary has state-of-the-art technology. *PAKS-PRESS*, 4 April 2016.
- <sup>8</sup> *Támogatjuk a Paks II. projekt megvalósítását* [We support implementation of Paks II project]. Position taken by the Energy Policy 2000 Association, <http://enpol2000.hu/dokumentumok/allasfoglalasok/article/67-%C3%8111%C3%A1sfoglal%C3%A1sok%20/554-tamogatjuk-a-paks-ii-projekt-megvalosit>.

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