# SUSTAINABLE ENERGY STRATEGY

## FOR HUNGARY

In relation to the long-term energy strategy
under development by the Government

May 1, 2007

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## SUMMARY


In 2006, Energia Klub has developed the study „Hungarian Sustainable Energy strategy" (Magyarországi Fenntartható Energiastratégia) as an answer to the call of ELTE Science, Tendering and Innovation Center's Sustainable Development department, in order to contribute to the formulation of the new Hungarian energy policy, and to facilitate the inevitable change of approach in the field.

We welcome the increasing consensus that the formulation of a modern and interdisciplinary energy strategy taking into account the challenges of the 21st century, and therefore sustainability criteria, is considered indispensable. Energia Klub would like to contribute to the strategy formulation by offering alternative viewpoints.

This study envisages Hungary's sustainable energy strategy. Our time-horizont is 2050, since such a time-scale is enough for such a rigid industry sector to undergo significant changes, and the longer scale grants the government a bigger latitude. Sustainability strategies are to balance the conflicting interests of the economy, the society and the environment. However, we need to understand, that the three criteria need to be weighed differently, as the environmental interests are the most inflexible. This strategy spanning 2050 covers only the first time period, nearly 50 years what we have left to prepare for the post-fossil fuel period. Additionally, these 50 years will be decisive on how will we be able to adapt to the inevitable changes and how can we mitigate the impacts of climate change.

Hungary is a considerably poor country in conventional energy sources (among them hydro-carbons, which take the lion's share in our current energy supply). This dependency on Eastern (primarily Russian) resources makes our energy supply fairly fragile and vulnerable. On the other hand, due to the increasing over-demand and accelerating extraction, in the future we can expect price hikes not only in the case of oil, but also for substitute resources, We believe, that due to the well-known facts and arguments, it is not necessary to introduce further ones to underpin that a carbon-based economy is unsustainable in middle- and long-term.

Our alternative strategy has a rather craggy – dismissive – standpoint about the Paks Nuclear Power Plant. The popular acceptance for *nuclear energy* is decreasing all over the world and Europe. One reason for the tendency is lack of capital: nuclear plants are among the most expensive sorts of power plants both in absolute terms and concerning costs/kWh. It requires long-term commitments, its lingering and the increase of costs in the meantime deter the investors. There is no indication of a turn in this trend, making nuclear energy uncompetitive without the market distortion of state subsidies or guarantees.

Another reason for rejection is the unsolved problem of nuclear waste disposal. The calculation of expenses related to it can be questioned as well (e.g. in the UK the estimation for costs was 56 billion GBP in 2005, today it is 110 billion GBP). As any practice for waste management is unknown in Hungary, we cannot even estimate the costs. (The decision has not yet been made, if the used fuel cells will be reprocessed in Russia, or if they will be permanently settled in Hungary.)

Estimates concerning disassembly costs are also based on very unreliable data, as there is no applicable example and due to the length of time-scale (around 70 years) when costs might occur. Thus the size of a sufficient reserve for this purpose is incalculable.

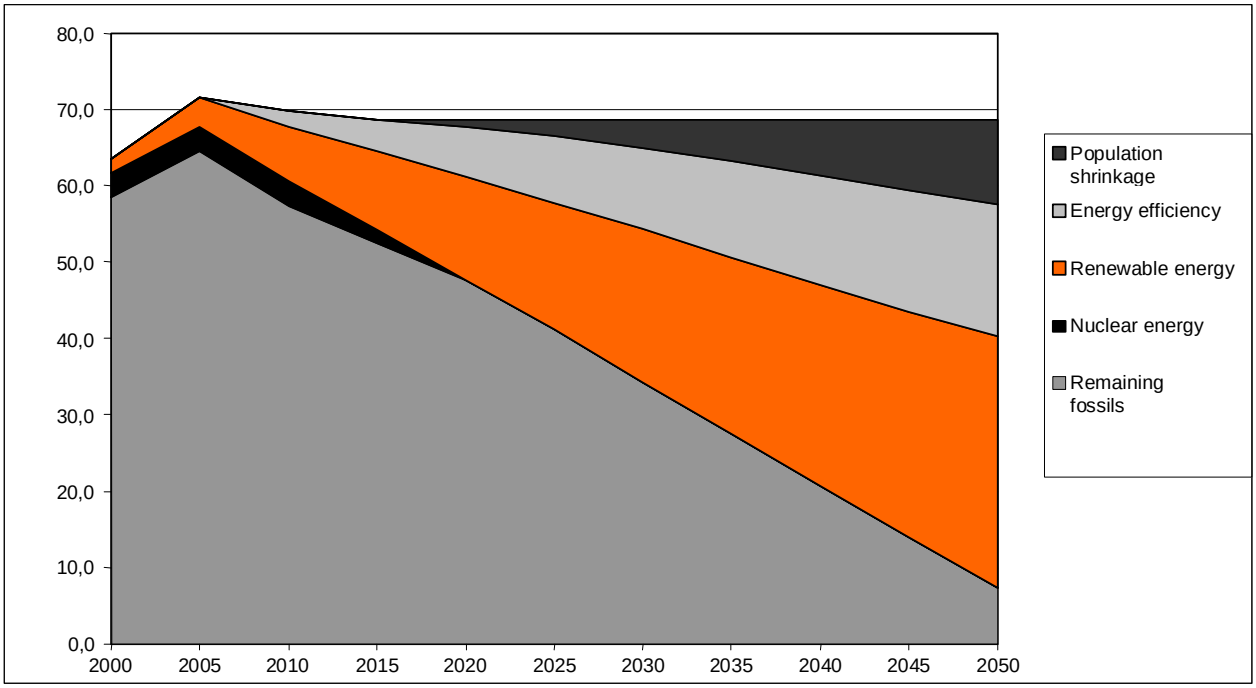
Another reason of similar importance is that sheer volume of electricity loaded into the electricity system makes it rigid. This already causes difficulties to the system regulator and in addition, current legal obligations can only be met by the charge-back of nuclear power plant (a technology that causes harm to the reactors). The current procedure of increasing the performance of reactor blocs leads only to the further rigidity of the system, and the proposed lifetime expansion would conserve the current state of affairs. Maintaining the current high proportion of nuclear energy in the Hungarian electricity supply constrains the introduction of sustainable solutions into the system. That is, lifetime expansion of Paks Nuclear Power Plant is among the main obstacles to the creation of a sustainable electricity system.

On the other hand, the country possesses promising potentials in the field of both energy-efficiency and in environment-sparing energy production. Regarding energy-efficiency and conservation (negawatt, negajoule) studies estimate a 30 percent reduction potential, while the long-term renewable potential might reach the 10-250 percent of the current Hungarian energy consumption. Given the advancements over the previous decade the industry looks ahead of a lucrative future. A further factor which should not neglected is that this industry generating significantly high added-value, which is a driving force in a modern economy. Furthermore, the production of renewable applications is source for increasing employment as this sphere of energetics generates the biggest demand for workforce. According to our analysis the four viable sources of renewable energy in Hungary are biomass, wind, solar and geothermal, so the document investigates the utilization of these thoroughly. We regard the criticism of grid operator "professionals" that the supply of renewable electricity cannot be regulated and might even destabilize the electricity system, rather unfounded, given the system-management solutions and operational experience developed in Western Europe. The simultaneous utilization of various sources of renewable energy enhances supply security and efficiency of these systems. Due to the requirement of source diversification, the excess utilization of one type of renewables (e.g. biomass) wouldn't be sound.

Taking into account all the above mentioned, the vision of a sustainable energy system drafted in the Sustainable Energy Strategy for Hungary is based on these energy sources which are at our disposal. Also taking into consideration the economic and social aspects, the document used the emission of green house gases as the major indicator for sustainability. In our model, by the use of a cautious but gradual reduction of $CO_2$ emissions, by 2050 an 81 percent of emission reduction is possible in Hungary. In this vision we expect the Hungarian population to be about 8.5 million (expected data for 2050 of the Central Statistical Office based on the calculations of the Population Science Research Institute). Contrarily, a pessimistic „business as usual" scenario predicts that by 2018 Hungary's emission will exceed the limit which expected to be determined by the Intergovernmental Panel on Climate Change

As a conclusion, the Sustainable Energy Strategy for Hungary attempts to reveal that the current state of affairs concerning the Hungarian energy system is unsustainable in economic, social and largely in environmental terms. Regrettably, in recent decades, several of the decision that has been made constrain the room for maneuver of the country in the middle-term. Thus the time is ripe for a change (of perception). Despite the undoubtedly existing challenges and difficulties lying ahead, Hungary has good givens to follow the path envisioned in the alternative strategy – but this requires conscious, far-sighted, impartial planning, the utilization of the domestic resources and widespread cooperation.

The entire study is accessible on the Internet (in Hungarian), http://www.energiaklub.hu/dl/kiadvanyok/fes.pdf.




The composition of $CO_2$ emission reduction according to the Sustainable Energy Strategy (in Mt)