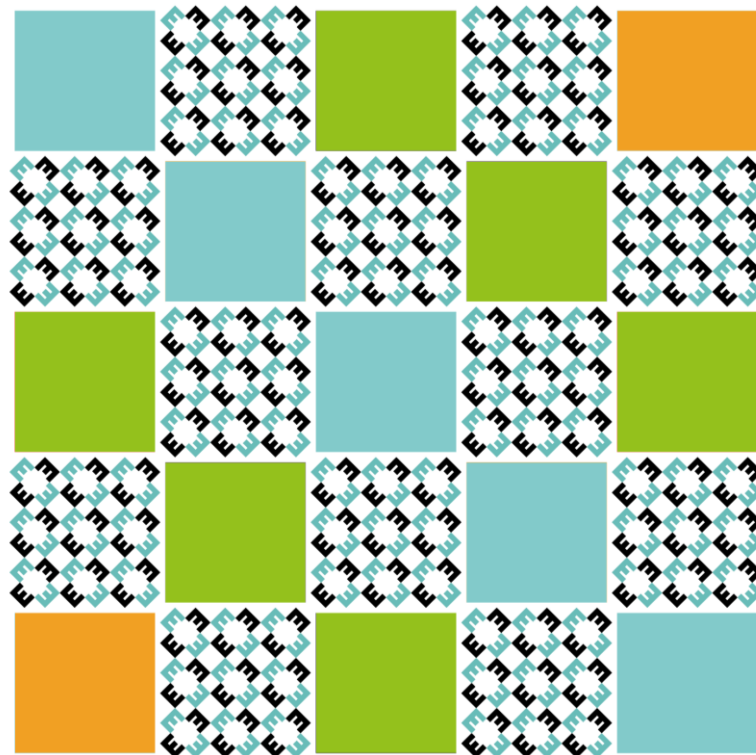




## A NUCLEAR VISION WITH A SOLAR BOOST

Critical analysis of the Hungarian NCEP from the sustainability's point of view

*Executive Summary in English*



# CRITICAL ANALYSIS OF THE HUNGARIAN NCEP FROM THE SUSTANABILITY'S POINT OF VIEW

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## EXECUTIVE SUMMARY IN ENGLISH

In accordance with the obligations set by the European Union, Hungary has also prepared its National Energy and Climate Plan for the next 10 years. The document sets out comprehensive goals and measures through which Hungary intends to reduce its energy consumption and carbon dioxide emissions by 2030, as well as increase the role of energy efficiency and the share of renewable energy sources.

The **key objectives** identified in the document are: a) **energy sovereignty**; (b) **energy security**; (c) **maintaining the results of the utility cost reduction programme**; (d) **decarbonisation of the energy production**. Most of these goals can be agreed upon, but the way of implementation is questionable from different aspects. Achieving “energy sovereignty” **through nuclear power generation, which requires Russian technology and Russian fuel import**, is certainly not leading into the direction of energy sovereignty in this area which is of national strategic importance. “**Energy security**” can be questioned because of the dependency indicated just above, as well as due to the vulnerability of a centralized electricity system that concentrates a significant part of its capacity in one geographical point. “**Maintaining the results of the utility cost reduction programme**” is questionable in several respects, as this package of measures has generated several serious problems in recent years. Regarding this sector, it mainly means a barrier to energy efficiency investments and to the transition to renewable energy sources (Szép, T. S. - Weiner, Cs. 2020). “**Decarbonisation of energy production**” is also an important goal, but the method as well as the dominant application of nuclear energy does not fulfil neither the scientific nor the practical requirements. Countries that are at the forefront of the energy transition are already producing electricity without nuclear energy and do not intend to change this direction. As claimed by several independent analyses, it would be possible to ensure the energy demand of society and the economy in Hungary without nuclear energy (Munkácsy B. et al. 2011; Felsmann, B. et al. 2014; Sáfián, F. 2015; Lechtenböhrer, S. 2016).

In terms of specific indicators, the plan sets ambitious targets in some areas, but the ideas outlined are certainly insufficient in several segments. **A key issue**, for example, is the **projected growth in primary domestic energy consumption**, which is projected to increase from 1117 PJ in 2017 to more than 1284 PJ by 2030, which is **an increase of 15%**. This does not meet the expectations of environmental and climate protection, nor the declining consumption trends of developed economies, and it is difficult to explain with the expected decline of the population.

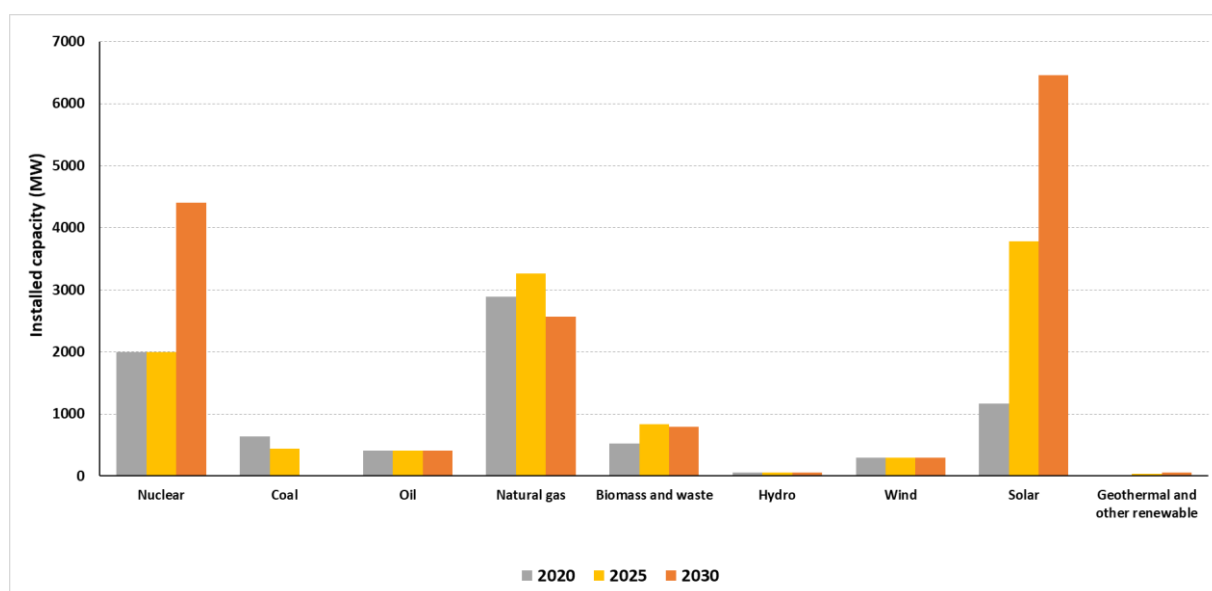
Clearly, also due to this vision of the expected growth, the NECP outlines only a little progress regarding CO<sub>2</sub> emission reduction compared to the targets set in the **Paris Agreement on Climate Change** and the commitments made by other EU Member States. A significant part of the 40% emission reduction has been already achieved (compared to the base year of 1990), so in the next decade only a 12% reduction (from 63.8 million tons in 2017 to 56.2 million tons) should be outlined. At the same time, this pace is certainly insufficient to achieve long-term climate protection goals and to mitigate climate change, as **Hungary will still have annual carbon emissions of over 43 million tons by 2050 if the track of the NECP is followed**.

These worryingly modest emission ideas are clearly closely linked to the aims of (a) energy efficiency, (b) conscious energy use and (c) renewable energy sources, which are also in many respects very modest - or even debatable.

- a) **The issue of energy efficiency**, which is rather lightly discussed, raises a number of issues. In terms of content, the NEKT is also arguable because the planned measures do not consider energy efficiency as a primary target area (while the “maximum and sustainable exploitation” of domestic non-conventional hydrocarbon sources is declared in the climate plan...). We also cannot get the impression from the text nor from its mentality that **the energy sector is responsible for 65-70 percent of Hungary's dramatically expanding ecological footprint** (the methodology is accepted by the UN, used by several countries as an official indicator), therefore it is certainly necessary to reduce and restructure the consumption: “*Naturally, reducing energy [consumption] is a priority, but in the case of economic growth, neither industry nor transport energy use cannot be limited*”. This phrasing reveals that the Hungarian government did not understand that **achieving emission reductions should be the primary goal**, namely without loopholes! However, this is not recommended through restrictive measures, but through regulations (legal and market instruments) that are widely used in the EU (and around the world) and by raising energy awareness. The above elementary errors therefore prove that an immediate and radical change of approach is needed in the economic and environmental policy of the Hungarian government!
- b) **Energy awareness**, as another means of reducing consumption and integrating renewable energy sources, is one of the rather neglected topics of the NECT. The document presents it only as a sketched idea, which will have to be run up somehow in the future, but only faint references can be read in the material.

- c) The third key element of the energy revolution in Europe is the **use of renewable energy sources**. According to EUROSTAT, **Hungary is the only EU Member State where the share of renewable energy sources has been declining every year since 2013** (Eurostat 2019b). Therefore, it is no wonder that there are no ambitious plans in this area either, as the target of the 21% RES share (in gross final energy consumption) is significantly below the EU average. EU Member States have already set an average target of 32% by 2030, thus promoting their energy independence, increasing the number of jobs and reducing the burden on the environment.

Regarding to the role of renewable energy sources, serious concerns arise about the targets. First of all, the systemic consequences of the idea of the **one-sided expansion of solar PVs** and the **unnatural discouragement of wind energy** (Antal M. 2019) appear as worrying elements for expert observers. Regarding the latter technology, it can be stated with certainty that the cost of return and the good capacity factor of the existing ageing wind farms (compared to the European level) as well as the nature conservation aspects also claims the advantages and the competitiveness of this technology. With regard to **biomass**, the intentions of the NEKT are not explicit, as it does not clarify to what extent will the planned 80% capacity increase be based on biomass waste-based biogas technology or firewood or intensively farmed solid biomass. It should be emphasized that the current form of biomass use in Hungary already raises serious sustainability concerns, as - in some important fields, as firewood usage - the rate of consumption is already exceeding the rate of reproduction, even in densely forest-covered areas (Harmat Á. et al. 2018).



*Evolution of the installed power capacity according to the NECP*

How should Hungary's energy strategy be altered to fulfil its role? In the first place, the targets and the measures to achieve them should be adjusted to the challenges of climate change. Improving energy efficiency should be considered as a priority at every step of the energy chain, but especially at consumption. Furthermore, we consider the radical acceleration of the pace of building energy renovations to be of paramount importance including the avoidance of suboptimal solutions and the utilization of waste heat. In terms of awareness, a radical change is needed compared to the current status. We would place a much greater emphasis on trainings at all possible levels especially regarding expert knowledge and consumer awareness in order to catch up with the forefront in Europe. Regarding renewable energy sources, based on the results of Hungarian alternative energy models, the share of renewables in electricity generation could have increased to 30-40% between 2010 and 2030. To optimize the utilization of the renewable potential and to get closer to the shares above, several changes would be necessary as soon as possible, inter alia: a) appropriate financial and regulatory support (introduction of flexible tariff system and widespread distribution of smart energy solutions); b) the immediate lifting of restrictions on wind energy installations; c) the restructuring of METÁR, where the capacity expansion of other technologies than solar PV, for example the flexible biomass waste-based biogas technology, should be supported. According to independent research, the wind and biomass waste-based biogas technical potentials are 93 and 80 PJ/year, respectively (Munkácsy B. et al. 2011); meanwhile their recent electricity production is only 2.5 and 1.0 PJ, respectively. In the field of heating the document has a firewood-based concept for the household level, despite the local air pollution problems and its overconsumption. Excess heat and other ambient heat utilisations, as air source and ground source heat pumps, should have been mentioned as important development areas. Some of the relevant figures of the NECP does not indicate of these possibilities, the geothermal energy is the only one, which is mentioned frequently, however they can utilize the heat sources of much deeper

geological formations. As for the crucial development area of district heating, the NECP does not mention the solar energy as a possible source of heat, which is also a problem, considering the more than 100 successful solar heated district heating systems in the rainy Denmark.

Regarding the transportation, the main problem is, that the planned significant growth in the sector (25% in passenger transport; 50% in freight transport) cannot be covered by renewable energy sources, therefore a significant increase is presumed in the fossil fuel consumption. This approach is not acceptable from the light of the Paris Agreement.

In general, instead of applying a one-sided technical approach, we consider gaining a multidisciplinary approach and practice in the Hungarian energy planning and management as soon as possible as a key factor.