

NEW ENERGY MIX FOR 2030 – TOWARDS A MORE SUSTAINABLE HUNGARIAN ENERGY STRATEGY

SUMMARY

1. WHAT IS THE PROBLEM?

The energy crisis that unfolded in 2021–2022, followed by Russia's aggression against Ukraine, has once again highlighted that **one of the most important European and national challenges of our century is to ensure secure and sustainable energy supplies, which are essential for the functioning of the economy and for people's daily activities.** As a result of economic growth and the technological revolution, the world, including Europe and Hungary, is experiencing a steady increase in energy demand, while the main question of the present period is how to meet this demand. **Energy policy is inseparable from climate policy and, in a broader sense, from saving our civilisation.** Since energy production in Hungary is responsible for around 70 percent of greenhouse gas emissions, the climate crisis certainly cannot be tackled without thinking about the medium and long term.

The EU's 2050 climate neutrality target, and the increasingly strict EU climate protection standards that will follow, will have a major impact on the competitiveness of the economy and the direction of economic development. **Countries that fall behind on the path to climate neutrality, risk being left behind and facing permanent economic decline.** In the following pages, based on data-driven analysis and the scrutiny of international best practices, **medium-term strategic goals will be set out for transforming Hungary's energy mix.**

2. CLIMATE POLICY FRAMEWORK

The room of manoeuvre for Hungarian energy policy is defined by the European Union's climate policy framework; above all by the 2050 climate neutrality target and the 2030 emissions reduction target of 55 percent (set out in the European Green Deal, the European Climate Law and the Fit for 55 package), the former of which is also stated in Hungary's national climate law, adopted by the Hungarian legislature in June 2020. However, we have committed to a less ambitious 40% emissions reduction as an intermediate target in the relevant strategy documents. As Hungary has also agreed to the 55% emission reduction target, it is worth considering this target in the medium-term planning of Hungarian energy policy.

The most relevant goals defined in Hungary's National Energy and Climate Strategy for 2030:

- the share of renewable energy in gross final energy consumption should reach **21 percent** (13.9 percent in 2020)

- The share of renewable energy in electricity consumption should reach **20 percent**. A large part of this will come from the expansion of solar PV capacity, from just under 680 MW in 2016 to nearly 6 500 MW in 2030 (11.9 percent in 2020)
- the complete elimination of coal and lignite from electricity generation
- final energy consumption should be capped at **785 petajoules** (2005 level), with the addition that the source of final energy consumption above the target should be carbon neutral (735 PJ in 2020)

Hungary's current gas import dependency of over 80% is risky not only in the light of climate goals: the Russia-Ukraine war started in February 2022 demonstrated that this situation also raises serious security policy issues.

The **National Energy Strategy**, adopted in January 2020, sets the following targets for the future energy mix:

- **90 percent of electricity generation should be carbon-free by 2030**
- **reducing total natural gas consumption from the current 10 billion m³ per year to 8.7 billion m³**
- **reducing total gas consumption to below 6.3 billion m³ by 2040**

Importantly for the definition of the Hungarian energy mix, not only will a **larger share of EU funds be allocated to green objectives in the future, but also significant private capital will be mobilised to make the green transition possible**. Climate protection will also play an important role in the EU budget and the Recovery and Resilience Facility. In the current EU budget, 37% of resources are earmarked for climate action.

3. HUNGARY'S ENERGY MIX— THE CURRENT SITUATION AND MEDIUM-TERM TRENDS

Although the amount of energy produced domestically decreased between 2000 and 2022, primary and **final energy consumption in Hungary increased by about 10 percent**. The country's energy dependency has remained broadly unchanged since 2000, with Hungary's overall energy dependency rate now standing at 80-85 percent.

In 2020, 70 percent of all energy consumed in the EU and 69 percent in Hungary came from fossil sources. **The share of electricity generated from renewable energy sources in gross final energy consumption in Hungary was 11.9 percent in 2020, compared to an EU average of 37 percent** - the rate of growth over the last ten years has also been far below the EU average. The gap is mainly due to the fact that solar energy has been the only sector to show significant growth in the last decade, while the expansion of wind energy, which is growing rapidly in other EU Member States, has stagnated due to a country-wide deployment restriction.

Over the next decade, **renewable energy production will become cheaper and more profitable overall, while new storage technologies will also help decarbonisation.** The most important medium-term trend affecting Hungary's energy strategy will therefore be the decline of fossil fuels and a decreasing share of fossil imports. **The future of nuclear energy will be largely determined by the rate of development and deployment of small modular reactors (SMRs),** which we should therefore pay attention to now. SMRs are generally safer, simpler in design, cheaper to build and much shorter in construction time than conventional nuclear power plants. However, licensing is still a major challenge and mass production is not yet possible.

The best energy is energy that is not consumed: energy and climate targets can only be met if energy demand is significantly reduced for society as a whole. Thus, energy saving, and energy efficiency are important aspects of planning Hungary's future energy mix. **The country's primary energy demand could be reduced from 1158 PJ in 2021 to 926 PJ in 2030.** However, this would require political will and large-scale energy efficiency subsidies to the residential and municipal sectors (orders of magnitude larger than hitherto).

4. THE ROLE OF NON-RENEWABLE AND RENEWABLE ENERGY SOURCES IN HUNGARY'S FUTURE ENERGY MIX

By 2030, **the advance of e-mobility will reduce the use of oil for transport, but this will be offset by petrochemical use in industry.** No dramatic increase in domestic oil production is expected.

In 2020, one third of primary energy use was from natural gas, a very high share compared to the EU average of 23.7%. Therefore, in addition to the complete phase-out of coal, one of the key decarbonisation objectives for the next decade is to radically reduce the use of natural gas, especially in the residential and commercial public services sectors. Electricity generation is the only area where demand for natural gas

will increase significantly, mainly due to its balancing function required by the growth of renewables and electrification. All elements of the natural gas system will therefore be needed in the coming decades.

The share of nuclear energy in domestic electricity generation is now close to 50 percent. As electricity consumption in our country is set to grow by leaps and bounds over the next decade, **we will need to maintain not only natural gas but also nuclear capacity for balancing and security of supply, otherwise we could face extended blackouts and be more exposed to natural gas price fluctuations.**

The 21% target for the share of renewables by 2030 in the National Energy and Climate Plan is not ambitious enough. As the technologies needed to accommodate renewables are rapidly evolving and becoming cheaper, a more ambitious target can be met. **The current technological and market framework allows for a faster capacity increase, in particular for solar and wind.** For solar, based on installed capacity, we could reach 5,000 MW by 2025 and, based on the rate of expansion, 10,000 MW by 2030. If the expansion rate of solar capacity can be accelerated compared to current plans, the pace of wind deployment should be accelerated accordingly. **This will require the removal as soon as possible of technically unjustified restrictions on the installation of wind power.**

In order to “green” the heat supply, support for the conversion of district heating systems from gas to geothermal energy and the installation of domestic and industrial heat pump systems should be increased by orders of magnitude. **At the same time, the potential for heating electrification (through solar thermal heat pump systems) is still limited due to the wasteful use of energy in residential buildings and the unpreparedness of the electricity grid.**

5. THE EQUILIBRIUM INSTITUTE’S PROPOSALS FOR A SUSTAINABLE AND SECURE ENERGY MIX FOR 2030

While keeping technological and societal realities in mind and accepting that we are far from seeing all the key technological and economic conditions evolve today, **our medium-term energy strategy must be characterised by more ambitious objectives than what we have today.** In practice, this means setting a faster pace for ourselves in terms of the **pace of decarbonisation, increasing the share of renewables and promoting energy efficiency.**

- **Let’s increase the Hungarian 2030 emissions reduction target from 40 to 55–60%! Hungary’s current 2030 emissions reduction target (40% compared to**

1990) is inadequate, contributing too little to achieving domestic climate neutrality by 2050, and projecting a grossly disproportionate distribution of the economic and social burden of the transition.

- **Let's eliminate gas supply by 2026 where it is used only for cooking!** As a first step towards reducing household gas use, **launch a four-year programme to phase out gas for cooking in flat-rate (unmetered) households.** The programme would end gas supply to households using gas exclusively for cooking by 2026. **By 2034, get gas out of the kitchen in all households! From 2025, gas connections in new buildings should be banned! As in Netherlands, decisions should be taken in advance on the disconnection of some distribution areas from the gas system as soon as possible, with a deadline to reduce the use of gas for heating.**
- **Nuclear power: waiting, capacity expansion, lifetime extension!** In the next decade, "postponing" seems to be the most appropriate choice with regards to nuclear power. First and foremost, it is necessary to prepare for **the uptake of small modular reactors** from a scientific and engineering point of view. In the meantime, the **new nuclear units at the Paks site should be commissioned as soon as possible** in order to maintain existing capacities and to mitigate the recently increased risks to security of supply. For the units already in operation, the possibility of a further extension of the operating lifetime should certainly be explored, but only with appropriate impact assessments and safety guarantees. However, both the possible extension of the Paks operating lifetime and the commissioning of the new units should be carried out with the widest possible involvement of experts, environmental organisations and other stakeholders, and after a reassuring technical dialogue.
- **Higher share of renewable energy in the energy mix: set a target of 33% by 2030!** According to the current Hungarian strategic targets, **the share of renewable energy in gross final energy consumption should be increased to 21% by 2030 (from 13.9% in 2020) and the share of renewable electricity generation to 20% (from 11.9%).** These two targets are insufficient from a geopolitical/security and climate and energy policy perspective, and there is a consensus among experts that they would not even require a major effort from the Hungarian economy. We should be much more ambitious: **we could reach 33% of final energy use by 2030.** As we plan to include mainly wind and solar energy, the same level of renewable electricity generation seems achievable.
- **Instead of 6,500 MW, let's increase the share of solar power to at least 10,000 MW, and remove the ban on the installation of new wind farms in order to increase Hungarian wind power capacity from 3.5 to 100 kilowatts/km² by 2030. Let's use geothermal energy for heat generation instead of electricity generation! The potential for geothermal and ambient heat is enormous. It offers the greatest potential for reducing gas consumption, alongside energy**

efficiency solutions. **We should increase the share of geothermal energy in the heating-cooling sector from 6 to 18 PJ by 2030!**

- **Let's consume 25% less energy in 2030 than in 2010 by promoting energy efficiency! Let's set a target to reduce our country's primary energy demand by at least 25% by 2030 compared to 2010! Dynamic pricing of electricity, depending on the current level of renewable energy production, is an appropriate policy instrument. System operators and other actors should cooperate to ensure that, in periods of significant surplus production, they can convert it as efficiently as possible using a wide range of technologies and store it for future use. We also need to modernize our buildings. Today, only 1% of the total building stock is renovated each year, but an even bigger problem is that hardly any deep renovation, i.e. investments that remove or almost remove carbon emissions from the building, is taking place. To achieve carbon neutrality by 2050, more than 100,000 homes will need deep renovation every year, instead of the 4-5,000 homes that are currently being renovated. In addition, let's encourage the spread of smart energy control systems both on the national and the local levels!**