Biomass Energy in Hungary

POLICY BRIEF

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Policy Brief

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Executive Summary

The accelerating climate crisis and the increases in fossil fuel prices due to Russia's invasion of Ukraine mean that switching to renewable energy is more important than ever.

In Central and Eastern European (CEE) countries, a large part of renewable energy comes from burning biomass, such as wood. Plans to expand renewable energy under the REPowerEU plan will likely involve increasing biomass energy even further. However, scientific evidence shows that biomass burning is not carbon neutral in the short to medium term, can lead to biodiversity destruction, harm people's health, and make food supply problems worse. This is especially a problem for the sustainability of household heating: with increasing energy prices, even more people will burn wood to keep their homes warm.

For Central and Eastern Europe to become carbon neutral, energy efficiency in buildings must be improved, solar and wind power have to expand, and significant support is needed to move people in fuel poverty away from burning solid fuels.

Issue

Current use and further expansion of biomass energy use in Hungary and other CEE countries significantly harms the climate, biodiversity, and human health.

Introduction to biomass energy in Hungary

From 2000 to 2020, the amount of energy produced from renewable energy sources in Hungary tripled: 66 % of today's renewable energy comes from biomass in Hungary (Data from Hungarian Central Statistical Office 2022). This means that in 2020 biomass energy supplied 3,96 % of electricity and a large part of the 17,7 % renewable energy used in heating and cooling.

Biomass energy production in Hungary is planned to increase by 28 % from 2016 to 2030 (Hungarian Ministry of Innovation and Technology 2019). This is a part of the National Energy and Climate Plan that Hungary produced to meet a renewable energy target of at least 21 % by 2030. This is likely to increase further due to the EU's REPowerEU strategy to raise renewable energy use to decrease the EU reliance on Russian gas. It is also likely that there will be unplanned increases in biomass energy use this winter due to how rising fuel bills drive poor households to burn wood instead of using gas to heat their homes. The poorest 20 percent of households are 4,4 times more likely to heat their homes entirely using solid fuels than the richest 20 percent (Csizmady *et al.* 2021). Current regulations only check for sustainable sourcing of biomass in industrial settings; there are no checks on home or district heating biomass (Bódis *et al.* 2021).

What is biomass energy?

Biomass energy describes using solid fuels that come from plants to produce energy. This can be burning wood from forests, energy crops such as *Miscanthus*, food crop residues such as corn stover, or wastes from the biomass supply chain such as old wood furniture. Biomass can be used directly to produce heat energy or used to power electricity generation.

Problems caused by biomass energy

Biomass energy is not carbon neutral

Biomass-based energy has been promoted as a renewable energy source under the assumption that CO_2 released when biomass is burned is entirely reabsorbed when the plants regrow (Miner *et al.* 2014). However, scientific evidence shows burning wood for energy can release two to three times more greenhouse gases than the equivalent fossil fuel (Searchinger *et al.* 2018). Furthermore, it takes decades for trees to regrow and recapture the CO_2 released (Luick *et al.* 2022). This means that in the meantime the concentration of CO_2 in the atmosphere increases, making global heating even worse. This is a problem because the rate at which climate breakdown happens is not constant, it is nonlinear; this means that reducing emissions as soon as possible is extremely important (Lenton *et al.* 2019). Short-term CO_2 increases due to biomass energy would push us closer to potentially irreversible climate tipping points, such as ice sheet collapses and rainforests turning into savannah (Feldmann and Levermann 2015; Lovejoy and Nobre 2018).

Biomass-driven land use change harms biodiversity

Growing crops for biomass energy can damage natural biodiverse ecosystems. This can happen when ecosystems are destroyed to be replaced by energy crops directly or when old-growth forests are felled and not properly regenerated. The

effect can also be indirect; if energy crops are grown on land usually used for food production, the food production can be displaced elsewhere resulting in the destruction of a natural ecosystem or increased food prices (Malins *et al.* 2014).

Biomass burning harms our health

Biomass burning can also have a significant impact on human health as small particles released during burning can enter our bodies through breathing them in. In Hungary, PM 2,5 particulate pollution, often released by burning solid fuels, is responsible for 10 367 early deaths each year (European Environment Agency 2019). Globally, biomass energy causes an average 100 times more deaths per unit energy produced than solar or wind energy (Ritchie 2020).

Biomass energy can lead to soil degradation

Even using crop residues often considered to be waste is not problem-free. Burning leftover stalks from corn crops for bioenergy can lead to soils becoming less fertile. This is because moving the residue biomass away from the cropland to be burned means less carbon re-enters the soil, lowering the soil organic carbon content (Fronning, Thelen and Min 2008). At a significant scale, this could result in increased rates of damage to the soils we rely on.

Greener strategies

Solar installations can provide at least ten times more energy per m^2 of land covered than biomass crops, and wind energy can be even more land efficient (van de Ven *et al.* 2021; Ritchie 2022). This means that they allow for more space for growing crops and regenerating wild ecosystems. They are also significantly cheaper sources of energy; the price of both solar and wind energy has fallen extremely quickly as more installations are built and technology improves (Ritchie and Roser 2021). This means that they are both economically and environmentally better placed to solve our energy problems than biomass. Currently, regulations make it almost impossible to get a licence for wind farm

construction in Hungary, and there are no firm plans for this to change (Simon and Deák 2019).

Years of household energy bill subsidies and a lack of requirements for energy efficiency has left Hungary with many poorly insulated houses that need lots of energy to keep warm (Ürge-Vorsatz *et al.* 2006). Over 23 percent of the Hungarian population lives in houses with a leaking roof, damp walls, floors, or foundation, or rot in window frames or floor (HKÉF 2018). Efforts to change this are slow, currently one percent of the houses have their insulation improved each year in Hungary (Hungarian Ministry of Innovation and Technology). This leaves many households with expensive heating bills and a much higher rate of energy use at a national level.

Implications and recommendations

Without significant policy changes, biomass energy will likely lead to the destruction of Hungarian forests, more premature deaths, and an increase in the rate of CO_2 emissions. It is therefore imperative that the recommendations set out below are taken seriously to avoid an acceleration of these negative consequences.

> **CEEweb endorses** the set of biomass specific policy recommendations from the EEB Nature-Positive Renewable Energy policy brief (2022):

1. Ensuring **full compliance with** the **cascading principle of biomass.**
2. **No public support to bioenergy plants using primary forest biomass.**

3. Ensuring **proper accounting of emissions** associated with burning **of biomass.**
4. **Move** from the risk-based approach **to** the **precautionary approach.**
5. **Phase out solid biomass** for residential and tertiary heating by **2045.**
6. **Do not use negative emission technologies** (Carbon Capture Storage and Use) which do not make bioenergy sustainable.
7. **Limit the production of biogas** to sustainable waste streams only.

> Instead of pursuing bioenergy, **CEEweb suggests that the following policy measures are taken**:

1. **Increase the rate of building renovation to raise the energy efficiency** of buildings in Hungary through added investment.
2. **Relicense wind energy in Hungary** and invest in its expansion.
3. **Convert district heating networks to renewable energy sources**, not to biomass combustion.
4. Further **expand investment in solar energy.**
5. Invest in infrastructure to **enable poorer households to move away from wood fuel** for home heating.

Conclusion

The trade-offs we have to make in continuing and expanding biomass energy use are damaging to biodiversity, the climate, and human health. Central and Eastern Europe harbours some of the last fragments of European old-growth forests and so will be impacted more than most by forest destruction. Hungary

should pursue an energy strategy that protects its natural assets, not one that sells them to be burned. This means that policy should focus on increasing energy efficiency and moving towards renewable electricity driven heating and cooling systems. Biomass should not be a part of the future of the Hungarian energy mix except in the case of the end of long chains of use and reuse of biomass products. Alongside this technical and infrastructural change, investment needs to reflect the reality that biomass use is linked to fuel poverty and target support to those still reliant on wood to heat their homes.

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