

# The (un)sustainability of biomass and fossil gas in Slovakia's energy sector

## Executive Summary

Slovakia has a great opportunity to switch from coal to a more efficient system that relies on renewable energy sources (RES). With the proper transformation in the coal region of Upper Nitra, it will be possible to show internationally that modern energy projects can be carried out even in Slovakia. The project proposals of both competitors (SE a.s. and PTH a.s.) are mostly based on natural gas and biomass (wood chips). They claim that these energy sources have great potential, but they avoid discussions about their problematic aspects. This study offers a critical look at the use of these fuels and offers recommendations on how to make use of biomass more sustainable.

Natural gas is a fossil fuel. The combustion of natural gas is more efficient than coal due to its gaseous state, which provides quality mixing of the fuel with air during the combustion process. However, this is also the cause of problems which have been increasingly discussed in recent years. Natural gas fields and distribution networks are very large and many gas leaks occur due to the use of high pressure inside pipelines. A study from MIT states that these leakages account for 1.5 to 4.9% of the amount of distributed natural gas.<sup>1</sup> According to a document on the European Bank for Reconstruction and Development's (EBRD) website<sup>2</sup>, leakages of 3-5% of the total amount of distributed natural gas would cause greenhouse gas emissions from natural gas to be higher than those from coal. A main component of natural gas is methane, whose impact on global warming (according to its global warming potential (GWP)) is several times worse than that of carbon dioxide. With such high leakage volumes of methane, total natural gas emissions are comparable to those from coal. In addition, heating plants fired by fossil gas are barely able to meet the strict emissions requirements put in place today. It is therefore important for countries such as Slovakia to not base their energy strategy on natural gas, and to ensure all energy transition solutions that include this fuel source should be temporary.

The path to sustainable energy must include the gradual integration of renewable energy sources. Biomass is the most used RES in Slovakia, and its usage has increased in recent years due to the gradual decommissioning of coal, among other things. Biomass is generally considered a carbon-neutral source of energy due to the fact that CO<sub>2</sub> (the combustion product) is returned to the natural cycle through photosynthesis. However,

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<sup>1</sup>CHANDLER, David L. *The uncertain role of natural gas in the transition to clean energy* [online]. MIT News Office, December 16, 2019.

<sup>2</sup> Energy Transitions Commission, Copenhagen Economics analysis based on Farquharson et al (2016); Lazarus et al (2015) In: EBRD: Energy Sector Strategy 2019-2023 (2018) Online: <https://www.ebrd.com/power-and-energy/ebrd-energy-sector-strategy.pdf>

this conclusion called into question by several facts. First, emissions from logging machines, transportation and the pretreatment of wood used for fuel are usually not included. Second, this calculation does not take into account that logging weakens biodiversity and the carbon sequestration of the ecosystem. The sustainable use of solid biomass is conditioned not only by its average annual increase, but also by the limits of the environment. This study offers criteria for the use of biomass, which could help biomass to become a veritable part of a sustainable energy system.

The study also analyses Slovak legislation and points out the inaccurate values of the CO<sub>2</sub> emission factors in the Slovak Decree 555/2005 regarding the energy performance of buildings. In the Decree, emission values are very low since they do not include indirect CO<sub>2</sub> emissions from supply chains or emissions of other greenhouse gases produced in the fuel life cycle. The value of CO<sub>2</sub> emissions is a part of building energy performance certificate in Slovakia hence, they should reflect the actual emission load of the building using a specific heat source. It is therefore appropriate to update values in Decree 555/2005 so that they are consistent with the latest scientific research.

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