Ulaanbaatar thermal energy storage

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Mongolia’s heating system is based on domestically produced coal, which provides an economical option for the supply of heating for the population. However, coal heating has resulted in high local pollution in cities, causing respiratory-related health issues.also It also hinders Mongolia’s aim to reduce greenhouse gas emissions and meet their Nationally Determined Contribution (NDC) to the Paris Agreement.

Mongolia, however, has significant potential for renewable energy sources – especially wind, solar and geothermal – which could be used to meets its heating needs. This detailed renewable energy-based strategic heating plan leverages the existing district heating network in the utilisation of locally available renewable heat sources as well as renewable electricity.

The assessment comprises a detailed mapping of the heat demand of buildings and an energy system analysis of district heat supply. Energy efficiency improvement in existing and new buildings, efficient and modern heat supply networks, and the integration of renewable heat and electricity play key roles in the proposed plan, which demonstrates that a renewable energy-based heating supply is more technologically and socio-economically feasible than the current fossil-fuel based system.

The implementation of the less electricity intensive technology leads to a decrease in electricity demand by 28% compared to a scenario of full electrification of heat supply. Even though the more capital intensive technology (SAGSHP) increases fixed costs by 30%, the cost savings from the lower electricity demand offset that difference, leading to 9% lower total costs. This is due to a less electricity intensive scenario requiring 22% less installed power capacity, 23% lower grid expansion costs and 28% lower variable costs.

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