Dear Cecilia Kinuthia-Njenga,

In response to the letter dated 23 February 2022 from Cecilia Kinuthia-Njenga, Director, Intergovernmental Support and Collective Progress division relating to "Global Stocktake", we submit this as a Non-Party stakeholder without observer status.

We are responding to questions 5, 9 and 10 as set out below.

Q5 - In order achieve the goals defined in Articles 2.1(a) and 4.1 of the Paris Agreement:

a) What further action is required?
b) What are the barriers and challenges, and how can they be addressed at national, regional and international levels?
c) What are the opportunities, good practices, lessons learned and success stories?

Q9 - How can the implementation of adaptation action towards achieving the goals defined in Articles 2.1(b) and 7.1 of the Paris Agreement be enhanced, taking into account the adaptation communication referred to in paragraph 10 of the Paris Agreement?

Q10 - In order to achieve the goals defined in Articles 2.1(b) and 7.1 of the Paris Agreement:

a) What further action is required?
b) What are the barriers and challenges, and how can they be overcome at national, regional and international levels?
c) What are the opportunities, good practices, lessons learned and success stories?

Thermal Storage UK submission

Thermal Storage UK is a trade association that represents three British companies who have developed modern thermal storage products. We promote the use of thermal storage in buildings in the United Kingdom (UK) and other countries to achieve net zero. Our mission is to take the carbon out of heating buildings. Dedicated thermal storage reduces carbon emissions and keeps people's bills down. While our answers focus on the UK, we have drafted our submission to highlight lessons from the UK for other developed and developing countries.

We agree with the IPCC's Sixth Assessment report that "Any further delay in concerted anticipatory global action on adaptation and mitigation will miss a brief and rapidly closing window of opportunity to secure a liveable and sustainable future for all." Urgent change is required in how we produce our electricity, heat our homes and travel.

Thermal storage is technology that can support decarbonisation through electrifying heating in developed and developing countries. Thermal storage reduces peak electricity demand for heat in winter and better utilises renewable generation (primarily wind in the UK).

Around 23% of UK emissions come from heating our buildings. This is because 83% of homes are heated by gas, while LPG, oil and coal are still used in heating. Thermal storage can either produce and store heat within a dedicated product or work with alternative heat sources such as heat pumps to store heat. Thermal storage allows people to shift their heating demand from peak to off-peak times. When paired with smart time of use tariffs, thermal storage heaters produce heat during off-peak times, for instance at night, stores that heat and releases the heat when required. This means reducing heating when back-up fossil fuel power plants are running and maximising the use of renewable generation instead. By shifting when people consume electricity, thermal storage can reduce carbon emissions and increase flexibility of the electricity grid. This flexibility means people pay less overall for their heating and hot water.

The UK has committed to achieve net zero emissions by 2050. The government's Heat and Building Strategy makes clear that to meet net zero "virtually all heat in buildings will need to be decarbonised". In addition, the UK has committed to "fully decarbonise our power system by 2035", including by building 40 GW of offshore wind by 2030. The government is also supporting energy efficiency measures for those in fuel poverty and the installation of heat pumps.

More must be done.

Governments must take the following steps to reduce reliance on fossil fuels and facilitate a speedy transition to low carbon electric heating:

Incentivise energy efficiency. Approximately 15 million (60%) of homes in England have a lower energy performance, with ratings of Energy Performance Certificate (EPC) band D and below. 95% of UK homes have wet central heating and 83% of homes are heated by gas. This combination of gas central heating and inefficient houses means higher bills for people and higher carbon emissions for the planet. Energy efficiency improvements reduce total energy use and so reduce carbon and lower people's bills. We recommend that governments rapidly increase energy efficiency measures such as insulation and speed up improvements in building fabric to reduce carbon emissions.

Change taxation to support low carbon electric heating. In the UK, the costs of increasing renewables in electricity generation are applied to electricity bills. This increases the cost of electricity relative to gas and reduces the financial incentive for people to switch to low carbon electric heating. We recommend that governments ensure taxation supports the switch to low carbon electric heating. In the UK, we recommend removing the following levies from people's electricity bills: the Energy Company Obligation, the Warm Home Discount, the Renewable Obligation and Feed in Tariffs. We also recommend reducing the value added tax on installing low carbon electric heating systems relative to fossil fuel heating systems.

Fix the electricity system design to reward flexibility. As well as building more renewable generation, the electricity system should reward people for shifting when they consume electricity. We support the UK government increasing flexibility in the electricity system, facilitated by smart time of use tariffs. We recommend that governments support the development of smart time of use tariffs. In the UK, we recommend that the government (1)

brings forward the date for electricity half-hourly settlement to 2023 and (2) shifts environmental policy costs such as the Renewable Obligation from the electricity bill to the gas bill or general taxation.

Provide clarity on when fossil fuel heating will end. The UK government proposes ending new gas boiler installations in new buildings from 2025 and to end new oil and LPG boiler installations off the gas grid from 2026. There is an aspiration to stop new gas boiler installations after 2035. We recommend that governments set clear end dates for phasing out the use of fossil fuels in heating.

We are happy to provide further information about the importance of decarbonising heat, the role of low carbon electric heating and thermal storage as part of the Global Stocktake. Please contact Tom Lowe on tomlowe@thermalstorage.org.uk or on 07736 183 498 if you have any questions.

Best wishes

Tom

Founding Director
Thermal Storage UK