Iceland residential energy storage

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To get an accurate picture of energy efficiency in a country, it is important to first look at how and where energy is being used. Total final consumption (TFC) is the energy consumed by end users such as individuals and businesses to heat and cool buildings, to run lights, devices, and appliances, and to power vehicles, machines and factories.

One way of looking at the overall energy efficiency of a country is to measure the total energy supply per unit of economic output (here adjusted for purchasing power parity). This reflects not only energy efficiency but also the structure of the economy, with services-oriented economies generally having a lower energy intensity than those based on heavy industry.

In most countries, heating and cooling make up the largest share of energy use in homes. While air conditioners, appliances and lights generally run on electricity, combustible fuels such as natural gas, oil, coal and biomass are still widely used for heating and cooking. Electrifying these end uses, for example by replacing fossil fuel boilers with efficient electric heat pumps, will be important for reducing CO2 emissions.

Residential energy intensity is largly driven by space heating, and to a lesser extent appliances. To allow cross-country comparisons, it is measured by floor area and temperature-corrected.

In most countries, transport energy use is dominated by oil used to fuel passenger cars, trucks and airplanes. Electrification of the transport sector, for example through the widespread rollout of EVs, is an important strategy for reducing CO2 emissions.

Passenger transport intensity is measured by the average amount of energy used to move one passenger over a distance of one kilometre. Intensity levels vary across countries depending on how people get around in that country - such as the modes of tranport used (e.g. driving, flying, rail), the types of vehicles used, and the average number of passengers per vehicle.

Industrial energy sources can vary considerably between countries depending on the structure of their economies. Many industrial processes, including steelmaking, cement and chemicals, still require fossil fuels for high-temperature heat or as feedstocks.

A country"s manufacturing energy intensity largely depends on the makeup of a country"s manufacturing sector: certain industries, such as basic metals and pulp and paper, are particularly energy intensive relative to their economic contribution.

The services sector tends to be much less energy intensive than industry, with the largest share of energy in most countries being used to heat and cool buildings. The shift from an economic structure based on heavy

industry to one based on services has historically been a driver of falling energy intensity of advanced economies.

Iceland"s journey to becoming a global leader in renewable energy is rooted in its unique geological profile. The island nation has long leveraged its volcanic heat to generate geothermal energy, providing power to homes and industries while significantly reducing dependence on fossil fuels. Today, Iceland derives nearly 85% of its total energy consumption from renewable sources, showcasing how a commitment to green technologies can deliver both environmental and economic benefits.

Iceland"s latest venture aims to revolutionize energy production by exploring space-based solar power (SBSP)--a method of capturing solar energy without interruptions from weather or nightfall.

By combining its rich history in geothermal energy with bold ambitions in space-based solar power, Iceland is poised to lead the charge into a new era of renewable energy innovation--one that has the power to reshape our world.

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