Energy management sweden

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Sweden"s legally binding 2045 net zero emissions target together with energy sector targets guide its energy policy. Net zero equates to an 85% cut in domestic greenhouse gas (GHG) emissions from 1990 levels (38% below 1990 levels in 2023), after allowing for expected absorptions. This target is supported by a robust policy framework that includes binding interim targets, a climate action plan to meet these targets (updated every four years), supportive climate legislation and a Climate Policy Council (that assesses Sweden"s climate policies yearly). Overall, this framework provides long-term clarity on goals, together with regular reflection and course-correction, and independent expert assessments and recommendations.

Favourable conditions in northern Sweden are shaping a green industrial transformation that will boost both economic prospects and energy demand. Sweden"s industrial transformation will draw heavily on electricity, resulting in sizeable new demand and in new demand locations, which the system will need to accommodate at the same time as managing the retirement of some existing generation assets. This places a renewed premium on system-wide energy planning and may prompt a need to rebalance electricity price variations across regions. An inquiry into Sweden"s electricity market development and regulation is underway. The findings are due by April 2025.

Despite notable progress in deploying biofuels and electric vehicles (EVs), policy shifts will challenge Sweden meeting 2030 transport emissions targets. Thanks in part to a suite of supportive policies, Sweden has both a high share of biofuels in the transport fuel mix (25% in 2022) and a high share of EV sales (60% in 2023), helping to displace a significant volume of oil product demand. However, both areas saw significant policy reversals in 2023 that may have negative implications for achieving a 2030 transport emissions target already viewed as challenging (a 70% reduction relative to 2010 levels). If it is to meet this target, Sweden will need to consider additional policy actions, such as on charging infrastructure, transport-related taxation and encouraging modal shifts.

Sweden"s strategy for decarbonising its buildings sector is focused on renovations and fuel switching. It employs an array of policy tools to achieve this, including buildings regulations, energy performance certificates and support schemes to single-family homes to switch out of fossil heating. Though already low emissions, the buildings sector would benefit from an increased focus on policy measures that constrain expected electricity demand growth. More broadly, introducing sectoral energy intensity targets could help stimulate valuable new actions, such as the adoption of more efficient industrial processes. Overall, a greater focus on energy efficiency policy actions is needed to help Sweden meet targets under the updated European Union (EU) Energy Efficiency Directive.

Sweden"s transition will result in sizeable shifts in the workforce, necessitating a major expansion of clean

energy skills across all education levels. Sweden has made progress mapping the skills needed for the transition, with the Swedish Energy Agency identifying 35 professions that are both critical to the electrification of society and have considerable skills shortages. It is already advancing several measures to improve the situation, such as through the development of a STEM (science, technology, engineering and mathematics) strategy and targeted investments to expand engineering education. Such actions must be built upon over a sustained period, together with others, such as vocational training and location-specific plans at the municipal level.

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Total energy supply (TES) includes all the energy produced in or imported to a country, minus that which is exported or stored. It represents all the energy required to supply end users in the country. Some of these energy sources are used directly while most are transformed into fuels or electricity for final consumption.

Energy production includes any fossil fuels drilled and mined, which can be burned to produce electricity or used as fuels, as well as energy produced by nuclear fission and renewable power sources such as hydro, wind and solar PV. Bioenergy - which here includes both modern and traditional sources, including the burning of municipal waste - is also an important domestic energy source in many countries.

Imports, particularly of fossil fuels like oil, natural gas and coal, make up an important part of the energy supply in many countries. Countries that rely heavily on imported energy may be vulnerable to supply disruption from external events such as the Covid-19 pandemic and the war in Ukraine. In countries that export large amounts of energy, falling energy prices can also cause major economic shocks.

Energy sources, particularly fossil fuels, are often transformed into more useful or practical forms before being used. For example, crude oil is refined into many different kinds of fuels and products, while coal, oil and natural gas can be burned to generate electricity and heat. Other forms of transformation, such as extracting gas or oil from coal, play a relatively minor role in the energy systems of most countries.

One of the most important types of transformation for the energy system is the refining of crude oil into oil products, such as the fuels that power automobiles, ships and planes.