Global renewable energy

Global renewable energy

While significant progress has been made in the nine years since the landmark Paris Agreement, the global energy transition is entering a new phase, marked by rising costs, complexity, and increased technology challenges. To successfully navigate this next phase and meet the Paris Agreement goals, urgent action will be needed and the pace of change must accelerate. The clean energy transition will also need to be balanced with affordability, energy system resiliency, and energy security in an increasingly uncertain macroeconomic environment.

Successfully navigating the transition away from fossil fuels will require focusing beyond a single solution or technology. There are no silver bullets--the future calls for a holistic transformation of the global energy system by incorporating a range of proven and emerging levers. To do this, considerations beyond technological feasibility will need to be addressed, spanning capital deployment, improving business cases, ensuring economic returns, adjusting regulation, and establishing continued political and public support in the face of competing economic and societal priorities.

Increased energy demand and the continued role of fossil fuels in the energy system mean emissions could continue rising through 2025-35. Emissions have not yet peaked, and global CO2 emissions from combustion and industrial processes are projected to increase until around 2025 under all our bottom-up scenarios. The scenarios begin to diverge toward 2030, with all showing a decline in emissions by 2050. Despite this projected decline, 2050 emissions are still meaningfully above net-zero targets across all scenarios.

The emissions decline is driven primarily by economic factors, particularly the increasing cost-effectiveness of low-carbon technology in sectors such as power and road transport. For example, solar photovoltaic (PV) deployment in Europe is on track to reach 2030 targets, while China is making strides in both solar and electric vehicle (EV) adoption. Policy and regulations will also continue to contribute to the adoption of low-carbon technology and support a decline in emissions.

In all our bottom-up scenarios, rising emissions would lead to global temperature increases above 1.5?C by 2050, from around 1.8?C in the Sustainable Transformation scenario, through around 2.2?C in Continued Momentum, to around 2.6?C in Slow Evolution.

Global energy demand is growing faster than expected and a more challenging geopolitical landscape--combined with the emergence of new sources of demand and smaller-than-expected efficiency gains--means the evolution of demand growth could see rapid changes in unexpected directions.

Global energy demand is projected to grow between 11 percent (in the Continued Momentum scenario) and 18 percent (in the Slow Evolution scenario) by 2050. Most of this growth will come from emerging economies, where growing populations and a strengthening middle class will result in higher energy demand. The

relocation of manufacturing industries from mature to emerging economies will further shift demand to these economies.

Developments in emerging economies, particularly ASEAN countries, India, and the Middle East, are critical, given that these regions are projected to drive between 66 and 95 percent of energy demand growth to 2050, depending on the scenario. A substantial part of this growth is projected to come from ASEAN countries, cementing the region as a key energy demand center--further reshaping global energy trade flows and increasing the region"s geopolitical importance.

In mature economies, as well as in China, overall demand is projected to flatten in the short to medium term. However, there are several forces at work that could affect the demand trajectory in different regions. In the United States, industrial resurgence would drive demand growth through electrification, while in Europe, by contrast, continued deindustrialization would lead to declining demand in the region.

How the world will meet the projected increase in energy demand is one of the key questions of the energy transition. Both RES and new fossil fuels build-out will be required to ensure demand is met by supply, and nuclear power could play a bigger role in the years beyond 2050. However, for all these energy sources, lengthy project timelines and higher interest rates could add costs and put project execution at risk.

Electrification is accelerating--our analysis suggests that, between 2023 and 2050, electricity consumption could more than double in slower energy transition scenarios, and nearly triple in faster scenarios. This is in comparison to total energy consumption growth of up to 21 percent over the same period. Electricity is projected to become the largest source of energy by 2050 across scenarios, with consumption coming from traditional sectors (for example, electrification of buildings) as well as newer sectors (such as data centers, EVs, and green hydrogen).

Under the Continued Momentum scenario, global green hydrogen consumption is projected to increase to 179 megatons per annum (Mtpa) by 2050, up from less than 1 Mtpa today and 5 Mtpa in 2030. This could lead to a growth in power consumption of 20 percent per year for the sector.

Contact us for free full report

Web: https://www.sumthingtasty.co.za/contact-us/
Email: energystorage2000@gmail.com
WhatsApp: 8613816583346