Capgemini

23rd Edition WORLD ENERGY MARKETS OBSERVATORY

Global Findings

Maintaining energy affordability while accelerating energy transition

Consumption and emissions decreases stemming from the COVID-19 pandemic did not lead to a sustained emissions decrease compatible with the 1.5°C global warming objective for 2100.

If current trends continue, the world may experience a temperature increase of 1.5 °C as early as

2025 - 2030

2020

3.3% GDP

3.5% energy demand (G20)

6% historical emissions

2021

Projected energy demand +4.1% (G20)

Global energy demand **+0.6%** pre-COVID levels

Investments in renewables continues to grow but fall well short of meeting intermediate and long-term goals set in the Paris Agreement.

261 GW

(+10.3% / installed capacities) New solar and wind capacity added globally in 2020

Renewable costs continued to decrease in 2020, though this downward trend is expected to slow or stop in coming years as critical metal and material prices and other capital costs increase.

Renewable LCOE costs 2020

5-10X

To meet Paris Accord objectives, investments in low carbon technologies must be increased five- to ten-fold annually for the next two decades.

What does net-zero by 2050 entail?

- Massive electrification, doubling the electricity produced and consumed
- Low carbon electricity development
- CCUS to offset remaining fossil-fuel electricity generation emissions
- Building renovation and energy efficiency growth (4% per year)

The **European Commission's Fit for 55 plan,** as well as the proposed U.S. American bipartisan infrastructure and Jobs Plan should significantly increase investments in low carbon technology, including hydrogen and electric grids.

Green hydrogen is gaining momentum.

15%

potential decarbonization of the world economy by green hydrogen at-scale…

…But green hydrogen is costly as compared to fossil-based hydrogen.

$3/kg - $6.55/kg
Green hydrogen (only 0.3% of hydrogen produced today)

VS

$1.80/kg
Fossil-based (Grey) hydrogen – 98% of hydrogen produced today

Though challenges remain, expected decreases in renewable electricity costs, as well as price reductions in electrolyzers, could help green hydrogen reach cost parity by 2030.

European and Chinese recovery packages include large investments in hydrogen.

Pressure on Oil & Gas majors has accelerated their diversification towards electricity, renewables and carbon neutrality commitment.

Many IOCs – including all European IOCs – are now committed to achieving net zero carbon emissions by 2050.

0.8%
Total IOC CAPEX outside core business 2019

VS

4%
Total IOC CAPEX outside core business 2020

10 – 20%
CAPEX outside core business for European IOCs

While gains are significant, investments remain marginal and fall far short of meeting transition goals.

Main investment domains
Renewables | Storage | e-mobility | Electricity | CCUS | Hydrogen

Utilities transformation roadmaps must be reconsidered in a post-COVID world.

ENERGY TRANSITION, CARBON NEUTRALITY

Priority #1

Access all the 2021 WEMO highlights, expert perspectives and key recommendations.

> "In this year's World Energy Markets Observatory, we see need to maintain energy affordability while accelerating energy transition efforts. Emerging technologies and new use cases across the energy value chain, including green hydrogen, CCUS, storage, and e-mobility, will play a critical role in helping the world achieve a net zero future."

Philippe Vié
Group Vice-President Energy and Utilities sector at Capgemini

> "Our analysis underscores the importance not just of undertaking steps to address climate change, but our ability to accurately measure the effect of those actions. To that end, this year's World Energy Markets Observatory highlights how energy organizations can leverage accurate, timely, high-quality data and undisputable scientific methods to maximize the value and guarantee the return on every dollar invested."

Colette Lewiner
Energy and Utilities senior advisor at Capgemini

5 key recommendations to accelerate energy transition while maintaining affordability

1. **Set ambitious but realistic energy transition plans.**
2. **Accelerate research in low-carbon technologies** and reduce obstacles for development of new renewables plants.
3. **Measure the effect of actions taken** using a science-based target framework and accurate, high-quality data.
4. **Pay special attention to cybersecurity** across the energy value chain.
5. **Implement adaptation measures** to cope with the delay in reaching climate objectives.

About WEMO

The World Energy Markets Observatory (WEMO) is Capgemini's annual thought leadership and research report created in partnership with De Pardieu Brocas Maffei, Vaasa ETT and Enerdata, that tracks the development and transformation of electricity and gas markets in Europe, North America, Australia, Southeast Asia, India and China. Now in its 23rd edition, WEMO examines the following topics: climate change & regulatory policies; energy transition; infrastructure & adequacy of supply; supply & final customer; transformation; financials; and, the oil & gas industry. This edition continues to analyze the impact of COVID-19 on the energy industry and global transition efforts.

For more information, please visit:
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