The energy transition we forecast is fast... By 2050:

- Electricity’s share in energy use doubles from 19% today to 40% in 2050.
- Renewables will provide almost 80% of the electricity mix.
- Generation from solar PV and wind will more than 20 times today’s output.
- 50% of light vehicles sold worldwide will be electric.
- Installed capacity for solar PV and wind will generate 63% of the world’s electricity.
- 40% of light vehicles sold worldwide will be electric.
- 50% of the global electricity use per year

Carbon emissions will not fall sufficiently by 2050 to reach the Paris Agreement goal of 2°C global warming, let alone 1.5°C — we estimate a rise in average global temperatures of 2.4°C by the end of the century.

Technology has the power to close the emissions gap to well below 2°C. At DNV GL, we believe a combination of measures can get us there:

- Grow solar power by more than 10 times to 5 TW and wind by 5 times to 3 TW by 2030, which would meet 50% of the global electricity use per year.
- 50-fold increase in production of batteries for the 50 million electric vehicles needed per year by 2030, plus investments in more storage and balancing solutions to accommodate the growth of solar and wind power.
- Green hydrogen to heat buildings and industry, fuel transport and make use of excess renewable energy in the power grid.
- For the heavy industry sector: increased electrification of manufacturing processes, including electrical heating. Onsite renewable sources combined with storage solutions.
- Massive rail expansion both for city commuting and long-distance passenger and cargo transport.
- Rapid and wide deployment of carbon capture, utilization and storage installations.

Time is against us. Governments need to take extraordinary policy actions now, and work with businesses and citizens. DNV GL calls for:

- More tax incentives for electric cars.
- Government policies to improve and expand our power grid.
- Economic stimulus for energy efficiency measures.
- Improved and cheaper heat-pump technologies and improved insulation.

The transition is affordable. The world will spend an ever-smaller share of GDP on energy, allowing for greater investment to accelerate the transition.

We need to change the mindset from ‘business-as-usual’ to ‘business-as-unusual’ to fast-track the energy transition.

Ditlev Engel
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