

WORLD ENERGY OUTLOOK 2014 FACTSHEET

Power and renewables

- ▶ **In the New Policies Scenario, world electricity demand increases by almost 80% over the period 2012-2040.** The power sector represents over half of the increase in global primary energy use, a rise comparable to current North American total energy demand. Non-OECD countries account for the bulk of incremental electricity demand, led by China (33%), India (15%), Southeast Asia (9%) and the Middle East (6%).
- ▶ **Fossil fuels continue to dominate the power sector, although their share of generation declines from 68% in 2012 to 55% in 2040.** Coal-fired generation is on the decline in the OECD, including the United States where coal-fired power drops by almost one-third to 2040. In China, it grows more than anywhere else, but its share still declines sharply. The share of coal also drops in India, despite strong absolute growth. Oil-fired generation declines by more than half, falling in most regions. By contrast, gas-fired power generation almost doubles over 2012-2040, increasing in most regions. In Europe, gas-fired generation gradually regains favour versus coal on rising CO₂ prices, but only gets back to 2010 levels around 2030.
- ▶ **The share of renewables in total power generation rises from 21% in 2012 to 33% in 2040, as they supply nearly half of the growth in global electricity generation.** Renewable electricity generation, including hydropower, nearly triples over 2012-2040, overtaking gas as the second-largest source of generation in the next couple of years and surpassing coal as the top source after 2035. Rapid expansion of wind and solar PV raises fundamental questions about power market designs: their ability to ensure adequate investment in conventional power plants and long-term reliability of supply. China sees the largest increase in generation from renewables, more than the gains in the EU, US and Japan combined.
- ▶ **Global subsidies to renewables reached \$121 billion in 2013, up 15% on 2012, and expand to nearly \$230 billion in 2030 in the New Policies Scenario, before falling to \$205 billion in 2040 due to the end of support commitments for recently deployed capacity.** In 2013, almost 70% of subsidies to renewables for power were provided in just five countries: Germany (\$22 billion), the US (\$15 billion), Italy (\$14 billion), Spain (\$8 billion) and China (\$7 billion). The EU remains the largest financial supporter of renewables to 2040, though the US is a close second after 2035. Solar PV continues to receive the largest portion of subsidies until falling unit costs help to reduce subsidies below those for bioenergy for power just before 2040. The value of solar PV in the system also declines with more deployment, making competitiveness a moving target. Subsidies to onshore wind reach a peak just before 2020 and then decline steadily as it becomes competitive with conventional power plants in many locations.
- ▶ **Biofuels use more than triples, rising from 1.3 million barrels of oil equivalent per day (mboe/d) in 2012 to 4.6 mboe/d in 2040, by which time it represents 8% of road-transport fuel demand.** Advanced biofuels, which help address sustainability concerns about conventional biofuels, gain market share after 2020, making up almost 20% of biofuels supply in 2040. Reflecting limited cost reductions and increasing use, subsidies to biofuels increase steadily and make up 20% of cumulative renewable energy subsidies over the projection period.
- ▶ **Global investment in the power sector amounts to \$21 trillion through to 2040, with over 40% in transmission and distribution networks.** Residential electricity prices increase in nearly all regions, in part due to rising fossil fuel prices. However, electricity becomes more affordable over time in most regions, as income levels increase faster than household electricity bills.
- ▶ **CO₂ emissions from the power sector rise from 13.2 gigatonnes (Gt) in 2012 to 15.4 Gt in 2040, retaining a share of around 40% of global emissions over the period.** Increasing penetration of low-carbon technologies and deployment of high-efficiency coal-fired power plants help to slow the growth in CO₂ emissions from the power sector. The evolution of the power sector will be critical to meeting climate change goals, due to the sector's rapid growth and because low-carbon alternatives are more readily available.