

## ETP 2014 Electricity by the Numbers

### Recent trends and current statistics

- Almost 40% of global primary energy is currently used to generate electricity, and electricity generation produces nearly 40% of global energy-related CO<sub>2</sub> emissions.
- But final energy demand exhibits a different trend: oil products continue to dominate, accounting globally for 40% of final energy demand in 2011 (particularly for transport). Electricity comes second, with a share of just 17% in the final energy demand mix, but is rapidly increasing.
- Worldwide, per capita electricity consumption more than doubled from 1 263 kilowatt hours in 1974 to 2 933 kWh in 2011.
- Despite impressive growth rates and encouraging trends in the deployment of renewable power technologies, fossil fuels covered more than three-quarters of the demand increase from 2001 to 2011. Coal represented 47% of the increase, and gas 30%.
- Failure to implement “best-in-class” technologies for new coal electricity generation capacity is making it more difficult to meet 2DS targets. Sixty percent (434 gigawatts [GW] of 734 GW) of new coal capacity built in the past decade uses least-efficient subcritical technology.
- As a result, little progress has been made in decarbonising electricity generation. Actually, the average global CO<sub>2</sub> intensity of electricity generation was 536 g CO<sub>2</sub>/kWh in 2011 – the same as in 2001.

### The future of the electricity system globally

- The share of electricity rises to around 25% of overall energy demand across all ETP 2014 scenarios to 2050. Growth in electricity production is between 80% and 130% (2DS and 6DS, respectively) from 2011 to 2050.
- The 6DS requires a large increase in power-sector investment that averages USD 760 billion annually, driven by increasing electricity demand in emerging economies and replacement of ageing infrastructure in OECD countries.
- In the 2DS, cumulative absolute investments of USD 40 trillion are required by 2050 in global electricity systems (generation as well as transmission and distribution), or an annual average of USD 990 billion. This represents more than a doubling of current average investment levels of USD 420 billion from 2000 to 2012.
- Average annual capacity additions to 2050 of low-carbon electricity generation technologies in the 2DS:
  - Solar PV: 92 GW, more than triple the 30 GW added in 2012.
  - Onshore wind: almost 80 GW, a 70% increase to the build-rate of 46 GW in 2012.
  - Coal with CCS: 15 GW; gas with CCS: 13 GW; nuclear: 22 GW; offshore wind: 16 GW; concentrated solar power: 18 GW.
- In the 2DS, renewables are responsible for almost half (46%) of the CO<sub>2</sub> reductions in the power sector to 2050, with wind accounting for 18% and solar for 13%. CCS and nuclear provide 14% and 13%, respectively, of the cumulative reductions.