Energy Technology Perspectives and Bioenergy Policy at Global and Local Level

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- First clear signs of decoupling of CO₂ emissions and GDP
  - Global energy-related CO₂ emissions remained flat in 2015 for the second year in a row
  - Renewable power capacity at record high with over 150 GW installed in 2015
- COP21 provided a historic push for clean energy
  - Start of a new era of collaboration: Country-based approaches preferred to top-down regulation
  - New goals put forward – going beyond what everyone already considered challenging when IEA’s first ETP was released in 2006
- Growing recognition that greater innovation is essential to meet ambitious climate goals
The scale of the challenge

- The carbon intensity of the global economy can be cut by two-thirds through a diversified energy technology mix.
- Bioenergy provides around 10% of the cumulative reductions.
- Bio-CCS accounts for 2% of the cumulative reductions.
Cities in emerging/developing economies will be critical

Two-thirds of the growth in global energy demand to 2050 comes from cities in emerging and developing economies
In 2DS, by 2050 the share of fossil fuels in primary energy is almost halved. Biomass becomes the largest energy source.
Progress in clean energy needs to accelerate

Clean energy deployment is still overall behind what is required to meet the 2°C goal, but recent progress on electric vehicles, solar PV and wind is promising.
Global biofuels production and medium-term forecast compared with IEA 2DS scenario requirements

A significant advanced biofuels contribution, alongside improved fuel economy and EV roll-out, is central to decarbonisation of the transport sector.
The share of non-hydro renewable electricity generation is rising, however bioenergy’s growth is relatively slower than onshore wind and PV.
Biomass power: increased competition from variable renewables

Historical and forecast global weighted average generation costs for new onshore wind and PV plants vs. selected reference bioenergy LCOEs

High levels of incentives are no longer necessary for solar PV and onshore wind in many markets. Opportunities for biomass power focus on the most promising applications.
Further policy support required to accelerate growth in biomass heat consumption.

Challenges persist to decarbonising the heat sector, however established renewable heat policies have proved successful.
Numerous bioenergy technologies do not require high levels of financial support, however policies remain vital to stimulating investments.

So, the focus should shift away from economic incentives towards creating the conditions by:

- Providing a long term stable policy framework that leads to a predictable market
- Provide certainty of income through long term PPAs
- Dynamic policy approach differentiating by sector (industry / buildings / transport)
- The right support depends on the maturity of the technology and the degree of market uptake

Tackle non-economic barriers

Address system integration issues
Bioenergy has the potential to provide a contribution to all energy needs and plays a very important role in low-carbon energy scenarios in each sector.
With cost reductions in onshore wind and PV systems, biomass power applications focus on the most promising technology under local conditions.

Further policy action is needed for heat and biofuel sectors, in the face of structural challenges (low oil price environment). Wavering policy commitments risk undermining investor confidence and market growth.

COP21 was historic and a catalyst for more innovation, research and investment in clean energy technologies.

Acting together with industry, national and local governments can drive innovation through international co-operation.
Thank you for your attention!
Additional material
Almost 1 Gt of CO₂ captured in 2050 is linked to biomass with CCS, corresponding to 16% of total CO₂ captured globally.
Focus on low carbon fuels

- In 2DS, 2050 demand for alternative energy carriers attains nearly 15 EJ in cities and exceeds 20 EJ for non-urban transport.
- This is more than twice the urban demand of 4DS, and three times larger for non-urban.
- 2DS-4DS differences in 2030 are smaller: the uptake of alternative fuel vehicles and low-carbon fuels is stronger in the long term.
Paris Agreement

- 175 Parties signed at New York ceremony on 22 April. Currently:
  - 177 signatories
  - 17 ratifications (covering 0.04% of global emissions)

- Entry into force with ratification/entry by countries representing 55% of global emissions, expected between 2016 and 2018
  - United States and China intend to ratify in 2016