



# Accelerating sustainable energy innovation

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Thank you Naomi,

I welcome the opportunity to be part of the discussion, and to begin I think it's helpful to reflect on the scale of the energy challenge to be addressed.

In BP we'd do this from a position of some experience – with more than a century in oil and gas and now into our third decade in clean energy, having established the largest operated renewables business among our peers.

That includes

- A wind business in the US that generates 1.4GW net, (2.2GW gross).
  - Enough electricity to power a city the size of Munich with clean energy.
- A biofuels business in Brazil, which produces up to 800 million litres of ethanol equivalent out of 3 world-scale sugarcane ethanol plants.
  - BP Biofuels is producing ethanol with annual benefits equating to taking third of a million European cars off roads.
- A biopower business, associated with the biofuels business, which has 224mw capacity.
  - Enough to power the plant and export excess to local grid.
- And our most recent addition, announced just a few weeks ago, which is a return to solar in partnership with Lightsource, Europe's largest solar development company.

Such is the scale of global energy system, oil and gas will remain the mainstays for some time to come – still delivering around half of all energy by 2040.

But when we look at the energy transition taking shape we see that over the next couple of decades renewable energy is expected to grow faster than any fuel, at around 7.1% a year. And forecasters regularly revisit and raise their projections.



I now understand why Winston Churchill said: "I always avoid prophesying beforehand because it is much better to prophesy after the event has already taken place."

Since I joined the oil and gas industry in 1989, renewables have increased 1500%. I'll repeat that: 1500%. And their share of the primary energy mix is heading from 3% today to around 10% by the middle of the 2030s – more if the pace of the transition is faster.

There's no doubt we are in a remarkable period of innovation – in renewables as much as anywhere, as we can see in the way costs have come down to the point where wind and solar can be competitive - in some cases without subsidy.

Solar is the exemplar. Over the last decade, costs have come down by 80% and over the past 4 years global generating capacity has risen by a third.

By 2035 solar is expected to generate around a third of the world's total renewable power and up to 10% of total global power.

Solar is not new to BP, but our strategy towards it has changed.

Unlike in the past where we manufactured panels, we have now partnered with Europe's leading solar developer, Lightsource, bringing together their expertise in development with our global scale, relationships and expertise in major project management and delivery.

We're excited about the prospects while being realistic about how fast we can go.

Energy transitions do not happen overnight – they happen over decades.

So we also need to consider how we deliver the energy the world needs as well as the energy the world wants.

It means a future role for oil and particularly gas as a means of lowering emissions at scale when replacing coal in power generation. And also its complementary role in partnership with renewables, as the flexible back-up to intermittency.

So there are many moving parts to the transition, and many participants.

I would say the single most important factor in accelerating progress is how well the many participants can work together in partnership.

- First, are the partnerships between companies working together to combine their strengths – as we have just done with Lightsource.
- Second are partnerships between multiple companies, such as the Oil and Gas Climate Initiative. The OGCI was formed following discussions here at Davos 4 years ago, and it brings together 10 IOCs and NOCs representing 20% of the world’s oil and gas production. It has invested \$1bn to lead to a reduction of 1bn tonnes of GHGs.
- Third, are cross-sector partnerships – like gas and renewables, as I’ve just mentioned.
- Fourth, venturing – which is not so much a business as a bet on the future. In BP we are investing up to \$200 million a year on venturing and related activity to seed funding for a range of clean energy prospects.
- Fifth, are academic partnerships. BP supports many long term collaborative investments with leading universities around the world including Oxford and Cambridge in the UK, Princeton, Tufts and Harvard in the US, and Tsinghua in China. Investment in research and higher education enables a nation or company to absorb ideas and innovation from elsewhere in the world - and R&D is not only increasingly multi-disciplinary, but also multinational, with many researchers are keen to work on real world problems.
- Sixth is partnership with governments, to provide the right conditions for innovation and business to flourish. There are many aspects to this and many levels – and most significantly in our view is carbon pricing - be that cap and trade or carbon taxation. BP’s view is that carbon pricing is the



most effective policy to limit greenhouse gas emissions as it incentivizes all actors – businesses and consumers – to take action on a wide range of fronts. For businesses, one of those actions is low carbon innovation – innovation in technologies, business models, markets and new resources including renewables.

Partnerships are crucial in helping accelerate innovation in sustainable energy, but I reiterate the need for a carbon pricing mechanism to help create the confidence to invest in and grow low carbon businesses at scale.

Put simply, a well-designed carbon pricing framework is the most comprehensive and economically efficient policy to limit GHG emissions – and should be introduced.

So, essentially we can see the debate in terms of policy, people and partnerships.

Policies that facilitate action – most significantly carbon pricing.

People with the ability to imagine a future that most of us can't see today.

And partnerships to deliver that vision.

Combining these three P's and we provide the energy the world needs in a way that it wants.

Thank you.