

Oil/Gas and alternative energies - antagonism or peaceful coexistence?

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Good morning and thank you for joining us today.

This city speaks with an influential voice in the energy debate, and with real purpose, which is why it is always a pleasure to be here.

The Climate Action Plan 2050, and the goal of greenhouse gas neutrality in Germany by the middle of the century, is a clear statement of this ambition.

The backdrop in the energy industry today is that, for the first time, there is no clear winner.

For a millennia, we had the age of wood, followed by the age of coal which fired the Industrial Revolution, to the age of oil in the last century.

Today, we have a share of roughly 27-30% for each of oil, gas and coal.

As a great son of Germany, Henry Kissinger, once wryly observed "The absence of alternatives clears the mind marvellously"

We do not have that luxury today.

We have alternatives and we have choices.

Therefore we need to look at our question for today in the broadest way, taking a global view on decarbonisation and the relative contributions of oil and gas and renewables.

Globally the challenge is greater than for a region or a nation.

Energy demand here in Germany - and in Europe - is being mitigated by significant advances in efficiency.

A lesser emphasis on efficiency is understandable in other countries, where energy poverty is still a critical issue, and where economic development is at an earlier stage.

We must have that in mind when we look at how we reduce carbon emissions globally while continuing to meet global energy demand, which is set rise by around 30% over the next two decades.

That is a dual challenge, but one I believe can be overcome if we apply sufficient pressure to the right levers

Let me comment on five such levers, by way of opening our discussion.

1. Renewables

Let's start with the role of renewables as a low carbon energy source - they are indeed the fastest-growing of all energy sources, increasing at around 7% a year to 2035.

Costs for renewables are coming down and scale is going up.

The costs of solar and wind power are expected to continue to fall over the next 20 years - for wind power in particular with the scope to improve wind turbine performance.

So renewables undoubtedly have a growing and important contribution to make, but we need to remain realistic regarding how quickly and at what level of investment.

It is worth recalling that it took more than 40 years for oil to grow from 1% to a 10% share of primary energy. And even after 50 years, natural gas had reached a share of only 8%.

And in terms of the costs of system change, the IEA estimates that a doubling in global investment, much of it in low carbon energy, would be required to limit the global mean temperature rise to below 2°C with a probability of success of 6%. That's an increase from \$1.8 to around \$3.5 trillion a year up until 2050.

Of course, in no way does this mean that this should not be our target, but it is important that we truly understand what will be required to deliver it.

2. Power

One area where renewables are already on course to achieve scale is in power, which is my second lever for change.

Power is expected to account for nearly two-thirds of the increase in primary energy demand over the next two decades with renewables accounting for 40% of this growth.

That still leaves a 60% share from other sources - and of course, the issue of intermittency.

This is where the natural gas economy serves as an enabler of decarbonisation at substantial scale.

We are all now familiar with the clean energy advantages of gas over coal - and that will improve as we make improvements to manage methane emissions.

At BP we see gas as a key component of the energy transition, given its abundance, affordability and clean energy advantages over coal.

3. Mobility

My third lever is the revolution underway in mobility.

In our base case BP anticipates around 100 million electric vehicles will be on the world's roads by 2035.

Those 100 million vehicles are likely to reduce the growth in oil demand, but only by around 1.2 million barrels a day in the context of an overall expansion of 900 million in the global vehicle fleet over the same period. Even with this dampening effect on demand growth, we still expect to rise by 15 Mb/d to around 110 Mb/d by 2035.

More important to the lower carbon agenda is perhaps the significant efficiency gains expected in gasoline engines, continuing the pattern of technological improvements over recent years. In our base case we expect these efficiency improvements will result oil demand being 17 Mb/d lower than would have otherwise been seen.

4. Innovative solutions

My fourth lever is summed up by the futurologist Ian Goldin, who points out that today will be the slowest day of the rest of your life.

We are in time of remarkable innovation, particularly in oil and gas. We are an industry at the confluence of digitisation, robotics, AI, biotech, automation and numerous other advances.

And we are being transformed by this latest industrial revolution.

The efficiency of our day to day operations is being transformed, as is the potential to have an impact on the development of lower carbon technologies.

For BP, we will be investing in the region of \$200 million a year in start-up companies with high potential in this area, anticipating a high failure rate but ready to press the accelerator on ideas that show promise.

And as a member of the Oil and Gas Climate Initiative we're part of a \$1 billion investment targeting advances in methane emissions reduction and breakthroughs in commercialising carbon capture use and storage.

And let's not forget that technology innovation can be driven by innovation of another kind, in the area of policy development.

As a long-time advocate for carbon pricing, we're pleased to see that around 40 countries have now implemented carbon pricing mechanisms, representing about 15% of all greenhouse gas emissions. And that could rise to over 20% when China implements its national trading scheme.

As well as incentivising energy saving and switching to lower carbon energies, a well-designed carbon pricing framework also incentivises R&D and investment in low carbon innovation.

5. Public consent

My fifth and final lever is consumer or public consent.

Technological innovation can go racing ahead in the laboratory, but it only takes off in real life with public consent and wide adoption, which has economic implications.

Apart from providing heat, light and mobility to our modern world, the current energy system has provided for an extended period of economic stability and growth through

- rent for resource holders;
- tax revenues for governments;
- investment in infrastructure; and
- employment directly in providers and indirectly in supply chains.

The energy transition that is now underway will be dependent on how successfully we can accommodate change - with public support and consent - throughout an extensive energy ecosystem.

Conclusion

One way to sum-up at this stage would be to say that this is a complex issue that goes beyond the binary options framing the debate.

The IEA describes limiting the temperature rise to below 2oC as requiring an energy transition of “exceptional scope, depth and speed.”

So we need to be ambitious and we need to galvanise our efforts, based on hard facts.

As the famous saying goes: “You are entitled to your own opinion. But you are not entitled to your own facts.”

We need to use all of the levers at our disposal in a combination - which requires a mix of fuels, used in a complementary way, in a transition that is both economically sustainable as well as environmentally sustainable.

Thank you.