Shaping the next phase of the energy transition

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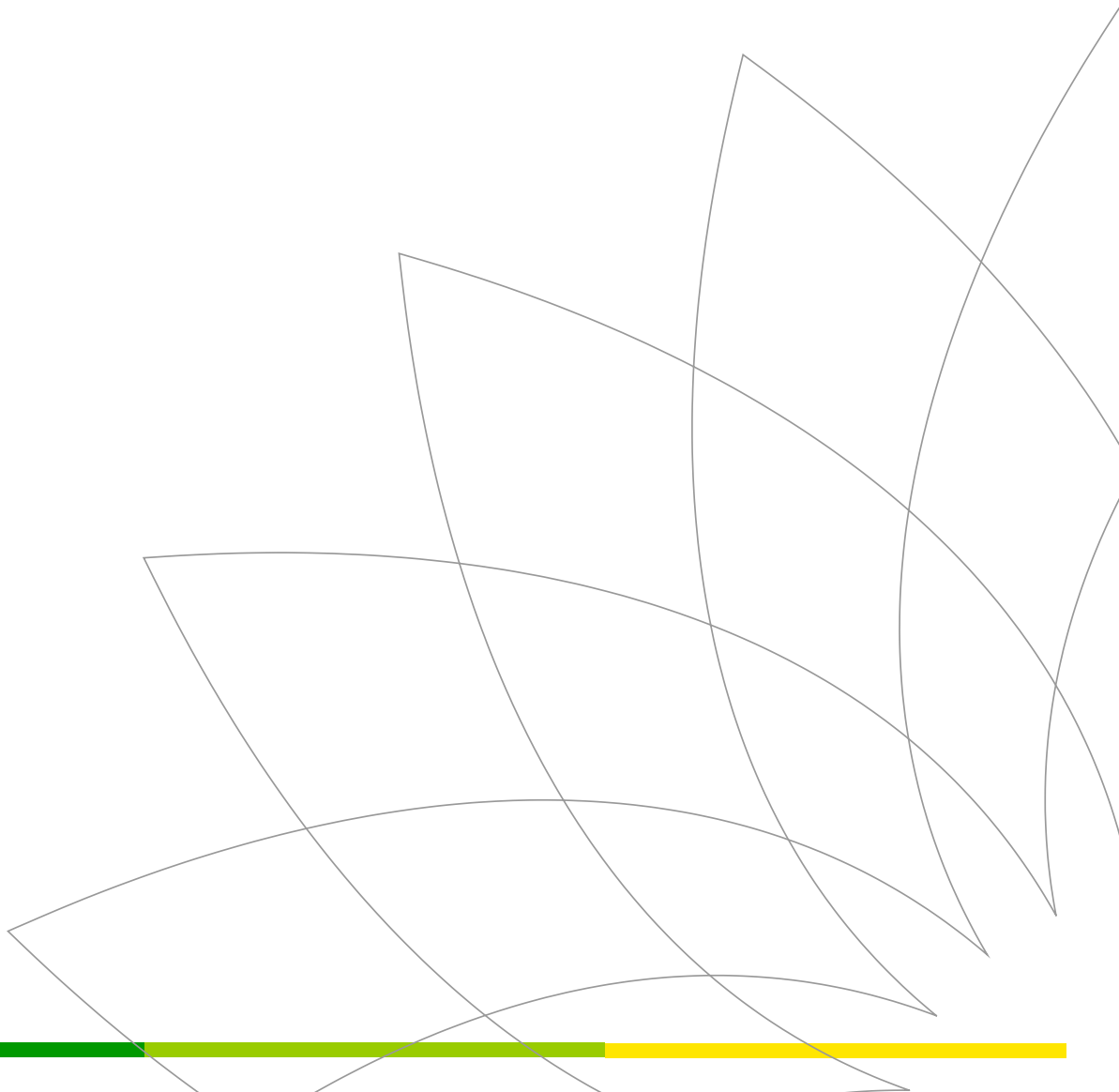

Hello everyone, it's a pleasure to be part of this panel today and I look forward to lively discussions on the topics.

Context

Before we do I'd like to add my take thoughts on today's debate. And to do so I will first take a look back on the energy transitions and industrial revolutions of the past, which are instructive and frankly extraordinary achievements by mankind.

Looking at the centuries prior to 1870, they were dominated by mostly agrarian societies with the very beginning of mechanisation, steam power and the weaving loom for cloth and tapestry in the latter part of the eighteenth century.

Traditional biomass – wood – was the energy staple and coal was just beginning to enter the mix. In 1800 the global population was hundreds of millions and energy use was 20 exajoules; which is about roughly 22 times the total annual UK electricity consumption today. So, very modest.

With the emergence of the Industrial Revolution coal ushers in the first major energy transition in the 1870s and beyond, with electricity, mass production and assembly lines.

The start of the transition saw an increase in global energy demand to around 31 exajoules, with oil making up just 1% of the total energy share – unthinkable now.

Oil use rose to 15% after the First World War, driven by naval demand and Middle Eastern supply. Move forward another 30 years and by the end of the Second World War, the global population had grown to 2.5 billion and GDP exceeded $1 trillion. At the same time, energy consumption grew nearly threefold to 90 exajoules.

This period signalled the next phase of transition, with post-war industrialisation, mobility for many, and the continued growth of all fuels.

By the end of the 1990s, the global population had grown to 6 billion, and GDP had grown even faster to $6 trillion, while energy consumption swelled to 440 exajoules, nearly five times higher than at the end of World War II.

The pace of GDP growth in the next phase, driven by the rise of China, is even faster, nearly doubling to today, as the benefits of wealth creation move eastwards.

In parallel with this, the developed world began to experience the first significant energy efficiency gains, with total energy growing only half the rate of GDP.

Energy and the next phase

So that's a potted history of energy, so what can we say about it today?

First of all, as has been the case in the past, it is still a fundamental building block for economic growth and global prosperity.

It has lifted people out of poverty, enhancing the life of those on lower incomes in countless ways through heat, cooling, light, mobility and many other areas.

And we are now entering a different and crucial phase of growth – an energy transition to the 'lower carbon energy economy'.

Whilst the speed and mode of transition cannot be guaranteed with complete certainty, we do know that to continue to support global development and wealth creation, energy will grow, particularly in the non-OECD world – in particular in China, and India.

Energy consumption could double by 2100 while the population is forecast to grow by 3.6 billion to 11.2 billion people.

At the same time we do know that we need to do this in a carbon-constrained world, and the historic Paris agreement in 2015 has set the trajectory.

Societal trends and demands will be key – this is not about supply push – known oil and gas resources today dwarf the world's likely consumption, so we no longer see oil consumption peaking from supply constraints, rather demand peaking through efficiency gains and fuel switching.

It is also about supportive, consistent policy, enabling the approximately $1 trillion of financing for renewables and alternatives we will need every year, in addition to the $6 trillion required to meet EV infrastructure requirements.

There are other key policy drivers, to de-clutter our cities and improve air quality, for example.

And electrification of energy usage will continue, in transport and in the provision of distributed, off-grid solutions in the developing world.

In fact, the most radical shift we are likely to see may be in the power sector as electricity consumption of energy grows from just over 20% today to around 50% by the middle of this century.

Hence electrification of energy usage is almost more important than supply, as current trends on renewable electricity supply are beginning to offer scale solutions.

Finally, emerging and disruptive technologies will play a part in this fourth industrial and energy revolution in ways we can't even imagine yet.

Managing the transition

The question to ask ourselves then is how do we all play a responsible role in championing this transition?

As populations and economies grow is it possible get to get to a place where the 7-plus billion people on the planet can enjoy an acceptable standard of living, when today's average requires billions of people to live on a fraction of this, with the US achieving 3 times this level wastefully?

The unprecedented change to a low carbon world will require a collaborative approach and everybody has a role to play.

It's imperative that our industry and other incumbent energy providers invest and lead the transition to remain financially viable in the future.

We need governments to provide clear, stable and effective policy frameworks.

And need consumers to demonstrate accountability through their choices.

Thanks for your time and I look forward to our discussion.