TAVISTOCK

NATURAL RESOURCES FORUM

Natural Resources Forum

Future Supplies for Future Energy

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***Steve LeVine* – What's next in the Geopolitics of Energy**
Senior Fellow, Atlantic Council's Foresight, Strategy and Risks Initiative

"Over the next couple of decades, the middleclass are going to double the car fleet to two billion vehicles. About 85% of those are going to be bought in the developing world, principally China and India"

Key points discussed:

- Tech driven economic progression will make new trillion-dollar companies like Apple
- Tesla are currently the leading non-Chinese power in the electric vehicle (EV)
- Indicators of future demand are China's policy led boom, and Tesla's model 3 presales
  - Telsa's supercharger infrastructure and personality help the company
- China is ahead in solar, batteries, and is also working to become a global leader in AI and EVs
- Transportation is currently 25% of emissions and oil demand
  - This % will increase as the current global car fleet doubles to two billion vehicles within the next few decades
  - ¼ of cars will be EVs and micro EVs (three per conventional space)
  - Once EV drivetrains are cheaper than conventional it will knock 4 million barrels a day of demand

***James Brooks* – Smart Energy Solutions. Current Trends and outlook**
Head of Strategy, Lightsource BP

"It is not a question of how fast it can happen it's really about who can create a product that can accelerate consumer adoption. If consumer adoption can move fast you will get displacement"

Key points discussed:

- Current utility companies are not understood by the public, and have terrible customer relations in the UK
- Renewables are a very small % of the power mix currently, but are developing very fast
  - The first period of renewables, in the last decade, have been driven by incentives but:
- Why are people going to buy electric cars? They are not, they will buy the cheapest best car so that needs to become EVs
- The reformation of customer-centric models that is less vertically integrated as smaller companies can compete and offer competitive options
- The renewables market will differ from the existing energy providers because of differential prices due to capacity and volatility of the product

Nick Stansbury
Fund Manager, Legal & General Investment Management

"policy makers are not adopting, always, the most economically rational choices. So, to assume that the energy system is going to evolve on a pathway that is the most economically least-cost optimal; probably naïve"

Key points discussed:

- How Legal & General ('L&G') look at the energy transition, and why that is so important
    - L&G research focuses on the long-term investment opportunities and industry areas that have the potential for large disruption on the portfolio of long term investors
    - Energy is a key element of their research as it is hugely capital intensive
    - Energy is a fundamental foundation and building block to the global economy
    - L&G believe the upcoming capital intensity of the transition will be much larger than anticipated by most
- It will become difficult to measure the cost of renewables, especially once it is 30% of total energy use not even electricity
    - Very explicit about some of the uncertainties over the future
- Relying on history to determine the development of the renewables market is probably unhelpful
    - This transition is not being driven by technology or economics, but policy imperatives
- Forecasting and plans should be done at a minimum of US$60 per barrel oil price
- Battery cost evaluations predict flat or falling material costs, which is illogical in materials like copper and nickel

David Roxby
Partner, Executive Director, EY-Parthenon

"…in the last 4 years. Hydrocarbon producers have shed their most expensive production assets, and now they're heading down to an integrated downstream market as fast as they can"

Key points discussed:

- The transition from a stable/narrow energy sector to a more competitive market along the whole chain
- Many more participants are expected in the energy market, from providers to companies
- Currently in the middle of an energy revolution, and that revolution brings more competition
    - Opinions are divided as to whether to promote new nuclear programmes to help with de-carbonisation of the energy system
    - Opinions are divided as to whether we decarbonise heat using green has or electricity
- Oil producers are looking closely at the full-carbon footprint around oil production
- Energy is not only being bought as a commodity anymore as people are willing to pay for the associated benefits associated with clean energy
    - Price is still a driving force but convenience and minimal impact on local environment required

Dr. John Constable
Director of Policy and Research, Renewable Energy Foundation

"there is no spontaneous transition to renewables over the last years since 1971, it would have to be coerced, and it would be toward low productivity sources and that may not be politically sustainable nor viable"

Key points discussed:

- Modern renewables contributed around 13.5% of total energy in 2015
  - 13% in 1971, it has not increased proportionately as all sectors have grown
  - In all areas, even with renewables being the most popular (Germany), still a very small fraction
- Demand is largest from Asia and China
- Belief that there is an energy transition, but observationally it is not happening, as expected
  - Transition to non-renewable energy during the industrial revolution, now being reversed
  - The benefits of coal, upon its adoption, allowed users to get much more from the other energy sources which grew total demand
- In 1700, 50% of UK energy came from coal, much earlier than thought
  - Organic economies in Europe were struggling against better fuelled countries
  - Coal did not replace draft animals, it was an addition allowing for expansion
- Demand and use of renewables is naturally only weakly autocatalytic. Coal was highly autocatalytic which enabled such rapid growth across the economies using it

Jorge Leon – Role of Oil in the Energy Transition
Oil Strategies, BP

"peaking oil demand growth will slow down in the future, that is something we can all agree on, but also it looks more like a plateau after peaking, it doesn't look like there is going to be a huge demand disruption after peaking"

Key points discussed:

- 3.5% of the energy mix is renewables in 2017
- BP are hypothesising multiple futures:
  - In all situations energy demand is going to continue to increase
  - Most curbed scenario for oil demand would be if Internal Combustion Engines were banned by 2040 as is being considered
- The world will have the most diverse mix of energy sources
- Policy will need to guide more changes than just EVs
- No one knows when oil demand will peak
  - It does not matter that much
- A 3% loss is a conservative estimate (three million barrels a day lost)
  - Without investment there will be massive implications across the world economy to maintain viability