ANALYSIS

Looking in the rearview mirror

Andy Brogan, EY Global Oil & Gas Leader, analyses the latest 2020 energy figures from the _BP Statistical Review of World Energy_ and asks: What does the rearview mirror show us about the road ahead?

It is an understatement to say that 2020 was 'one of the most tumultuous years for the global energy sector in modern time'.[1] Between 1965 and 2019, primary energy demand has fallen in only four years and never by more than 1.5%. However, in 2020, it fell by 4.5%.

Even in an ordinary year, the release of the *BP Statistical Review of World Energy* is highly anticipated. Nothing brings clarity like a thorough parsing of an industry's metrics and BP has set the gold standard. But 2020 was no ordinary year. No aspect of our lives went untouched as the COVID-19 pandemic circled the globe early in the year and surged and resurged for the balance. The economic crisis ebbed well before the peak of the health crisis as companies and individuals adapted to new ways of working, buying and selling, and government leaders in many countries and localities opened the spending taps. Only at the end of the year, when vaccine rollouts began, could we see a path back to 'normality'.

BP unveiled its review asking four questions: What actually happened? How surprising was it? What did we learn about the functioning of the energy system? And what messages does it contain for the energy transition and the path to net zero? It is always important to untangle what's happened during a crisis so that we can build a more resilient world and I will do my best here to add my own perspectives, and those of my team, on the data, what story they tell about the future of energy and share some thoughts on how energy companies can prepare for what's next.

A profound shift

The broad outlines of what happened are well documented. The World Bank estimates that the world economy contracted by 3.6%.[2] According to BP, oil demand fell by 9.3%, natural gas demand fell by 2.3%, coal demand fell by 4.2% and electricity demand was down by 0.9%. These numbers, when taken together, represent a profound shift in two dimensions.

First, energy intensity was affected dramatically. BP's framework, which is tied closely to GDP, would have predicted a 2.5% reduction in primary energy demand instead of 4.5%. It would not have been alone. The link between GDP and energy demand is the closest thing that energy analysts have to a law of gravity, but predictions are based on historical correlation and the pandemic brought presumably short-term structural changes to the economy that broke the GDP-to-energy link. In the 2008–2009 recession, the world economy shrank by 1.7% while primary energy demand fell by 1.5%. Energy demand shrinking by more than double the rate of the economy, while surprising on its face, makes perfect sense in retrospect. Commuting, air travel and the movement of goods were put on hold and the most energy-intensive segments of the world economy were hit the hardest.

The second structural shift was in the composition of energy demand and supply. Electricity demand was down, but not by much, while oil demand fell dramatically. As with energy intensity, what happened with the energy mix is easy to explain. Power generation continued to shift from fossil fuels to renewables, up by 12.5%, while power generation fell slightly overall. While impressive, it is an indication of the challenge in decarbonising power generation. If electricity demand had grown by 2.9% (the average between 2009 and 2019) in 2020, the increase in renewable generation would have covered only 37% of the incremental demand, implying a 602 TWh increase in fossil fuel generation.

Looking forward, the EY organisation (and BP) have given considerable thought to how much of what took place last year was permanent and what it tells us about the future. The role of major producers in balancing world markets was tested in 2020. Oil supply has been carefully calibrated to the recovery in demand and the Saudi Energy Minister declared that The Kingdom was 'the guardian of this industry'.[3] As BP points out, the payoff of OPEC+ efforts to manage supply was easy to visualise and quick to realise. It is striking that over the course of the last two years OPEC+ has completely regained

The journey to net zero has just begun – all that is left to decide is the path and rate of travel

Source: Shutterstock

control of the oil market. With investor pressure constraining non-OPEC development, whether this control continues is, for the first time in a decade, almost entirely in OPEC's hands.

The more fundamental question is whether reductions in emissions can be built on or whether we will return to 'business as usual'. Reductions in emissions are easy to explain. Road transportation and aviation ground to a halt and zero cost renewables kept running while fossil-fuel generation was throttled back. Unfortunately, that explanation means that the linkages between specific economic activities and emissions remains unchanged and doesn't lend itself well to an expectation of persistent, structural reductions in emissions. (See **Figure 1**.)

If we look at what's happened during the pandemic from the perspective of intentions and expectations, the news is good. Net zero commitments from governments have grown to account for 80% of emissions, up from 20%. Corporations promising to reach net zero goals increased from 500 to more than 3,000. The cost competitiveness of wind and solar energy has accelerated at rates exceeding our expectations. Realised additions to renewable generation capacity consistently beat projections.

But we need to move beyond intention. In 1H2021, the drag on oil demand was still visible in the market. Notwithstanding, International Energy Agency (IEA) projections show 2021 emissions at 33 Gt of CO_2, compared to 33.3 Gt in 2019. Emerging economies are eager to get back on track and power demand is resurgent. So, what do we expect will have to happen?

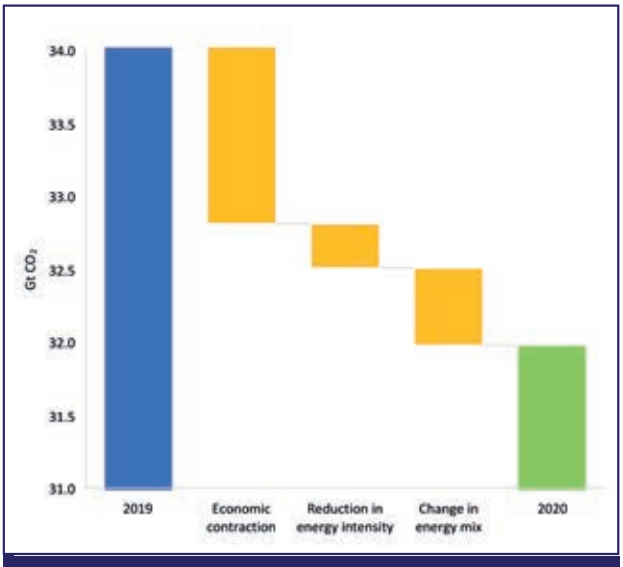

Figure 1: 'Waterfall' of CO_2 emissions, 2019–2020
Source: BP Statistical Review of World Energy 2021 *and EY analysis*

It takes time

What is evident is that the role of the consumer and the economics and physics of energy system operation create significant inertia and we see three distinct processes, each of which takes time. First, is the emergence of low-carbon technologies and the improvements that make them competitive. Second, is the acceptance of new technology by consumers and businesses when they consume products and services, buy new vehicles and build new power plants. Third, is the retirement and replacement of existing infrastructure. Net-zero scenarios highlight the behavioural changes and technology breakthroughs that will be needed. For example, long-haul travel will need to be held to 2019 levels, short-term travel will have to transition to electric trains and electric vehicles (EVs) will have to capture 100% of the market by 2035.

The role of capital is central. Energy decarbonisation will require reallocation on a scale that hasn't been seen since WWII. Currently, this is not an issue and the amount of capital chasing low-carbon businesses exceeds the number of viable projects. Whether this remains the case as spending rises to the levels required to achieve net zero is an open question. Prices and returns reflect current market conditions; oil companies will have to make hard choices between putting a footprint down in low-carbon businesses and maintaining corporate returns at levels that their investor base has learned to expect.

Fuelling the future

The future is certainly uncertain. Each of the four 'Fuelling the Future' scenarios are plausible and each one has different implications for the size of addressable markets and the return on energy assets.

With that in mind, the EY organisation has identified 'no regrets' strategies that companies can take now to profitably serve the world's ongoing need to supply energy at reasonable cost and environmental impact to the world's population, while funding businesses that will define their future. There are many moving parts, but they boil down to three principles.

The first is driving resilience into the oil and gas asset portfolio. A huge untapped source of resilience is digitalisation. Energy operations are highly complex, large scale and capital intensive, which means even small errors and inefficiencies cost millions of dollars and cause months of delays. Bringing together numerous applications and creating a unified data stream creates tremendous impact across the industry. Effectively integrating and deploying innovative technology reduces costs and drives efficiencies, both critical to navigating both the immediate effects of the COVID-19 pandemic and the long-term implications of the energy transition. To prepare for the energy transition, it is critical that companies accelerate not just adoption, but more importantly, full integration of digital technology throughout the value chain.

The second is the value of integration. Energy value chains are complex and at each link, there are leakages when buyers and sellers take time and lose opportunities finding each other. Integration can be virtual and highly developed trading capabilities can be a close substitute for asset ownership and physically connected infrastructure in capturing value. In fact, I would argue that an owned, tightly managed supply chain could be at a disadvantage, when it comes to finding and monetising short-lived disruption in demand or asset availability.

The third, underlined by the pandemic, is the decarbonisation of hydrocarbon operations. Last year demonstrated that replacing hydrocarbon demand is going to be difficult and drawn out. Without oil and gas themselves decarbonising, initially by reducing the carbon intensity of operations and then by looking at end use, then the probability of meeting ambitious targets is low.

Energy transition is the work of a generation and the last year has been an informative, but not determinative data point. There is a lot of work to be done by consumers, industry, government and capital markets. The journey has just begun, the desired destination is known and all that is left to decide is the path and rate of travel. ●

References
1. **www.bit.ly/PRBPStatRev** and p5
2. **www.bit.ly/PRWorldBank**
3. **www.bit.ly/PRSaudi**