Global CO2 emissions jumped in 2018 as primary energy demand soars

Mr. Salisu Haruna Kwalami, Senior Gas Market Analyst, April 2019

Energy is central for the realization of the developmental and environmental/climate aspects of the UN's Sustainable Development Goals (SDGs) and the Paris climate agreement. The type of fuels used to generate the energy is quite critical for the achievement of the goals and targets as set in these frameworks. Where such fuel(s) are inappropriate or not in the right balance, the goals and targets could be jeopardized. The global primary energy demand reached 14,301 Mtoe[1] in 2018, a 2.3% growth, driven by fairly strong economic growth and weather conditions which supported energy consumption in the power and industrial sectors and in the residential/commercial sectors, especially for heating requirements during the winter period. By fuel types, natural gas recorded the highest growth in 2018, at 4.6% while coal recorded the least, at 0.7%. The growth of natural gas is laudable, but it represented the third largest share of the global primary energy demand in 2018 at 23% behind oil and coal.

Notwithstanding this level of energy consumption, still ~1 billion people are without access to electricity and 2.7 billion people rely on primitive energy sources such as solid biomass, dung, etc. for cooking with detrimental effect on health and the environment.[2] The global energy-related CO_2 emissions in 2018 was 33.1 Gt, with China contributing the highest share at 29% while India, though represented 7% share, recorded the highest growth rate at 4.8%. Europe had a negative growth rate of CO_2 emission of -1.3% in 2018 bringing down its total CO_2 emission to around 4 Gt, equivalent to ~ 12% of the global.

To understand how emission from CO_2, a key greenhouse gas (GHG), increased despite global calls to lower GHG emissions, an assessment of demand for coal, being the most pollutant of fossil fuels and having the second largest share of primary energy demand in 2018, is essential. The global coal demand growth decelerated to just 0.7% in 2018 to a total of 3,778 Mtoe of coal consumption. This is mainly because of decline in coal consumption in the US and Europe as market conditions and environmental policies/regulations supported coal to gas switching, but the demand for coal was influenced by the increased in coal consumption in many Asian countries despite favourable conditions that saw the penetration of renewables and more natural gas imports. In 2018, China recorded a 1% growth in coal consumption in the primary energy mix to increase its share of the global coal consumption to ~ 51%. This led to China having CO_2 emission share of 29% and 2.5% growth rate in 2018. Also, a 5% growth rate in coal consumption in the primary energy mix in 2018 for India, that jumped its share of the global to ~ 11%, led to a CO_2 emission share of 7% and 4.8% growth rate for the country. Thus, the examples of China and India showed a positive correlation between increase in coal consumption and jump in CO_2 emission. On the other hand, a negative growth rate of - 2.6% for coal consumption in Europe in 2018, led to a negative CO_2 emission growth rate of -1.3%, showing a positive correlation between the decrease in coal consumption and reduction of CO_2 emissions. With this CO_2 emission trends and without re-structuring of the energy mix towards zero/low emission fuels, emissions could be incompatible with what is required to limit the temperature increase to 1.5 °C above pre-industrial level needed to avoid catastrophic climate change. There is no need to think twice that coal-to-gas switching offers respite for lowering emissions because when natural gas is combusted in a new, efficient gas-fired power, 50 to 60% less CO_2 is emitted compared with emissions from a typical new coal-fired power plant.[3] Even in places with a jump in the consumption of natural gas, the high proportion of coal in their energy mix impacted CO_2 emission. For example, in China, the 18% jump in natural gas consumption in 2018 to 279 Bcm could not offset the total CO_2 emission as just 1% increase in coal consumption led to overall 2.5% increase in CO_2 emission because the absolute volume of coal consumption is substantial. In the overall context, the huge global coal consumption in the primary energy demand in 2018, even at a small growth

<1/2>

rate, outperformed, from a CO_2 emission perspective, the relatively high consumption growth rates of mainstream renewables and natural gas as the absolute volumes from the latter sources are low compared to coal.

To be in consistent with the globally recognized frameworks towards sustainable future energy, the share of fuels in the energy sectors, especially in the dominant sectors (power and industrial) where emissions are high due to excessive coal usage, need to be re-structured and skewed more towards clean and environmentally –friendly fuels such as natural gas. Also, the transport/shipping sector provides another opportunity to lower emissions with the IMO 2020 Regulation coming into effect in January 2020, limiting bunker fuels' sulphur content to a maximum of 0.5% against the current 3.5%. A recent study by SEA\LNG indicated that on a life-cycle basis, LNG, as a bunker fuel, could reduce CO_2 emissions by up to 30% and GHG emissions by up to 21% compared to HFO.

Furthermore, efficient exploitation and use of the energy and effective emission trading schemes and carbon taxes would also play pivotal roles towards lowering emissions. This would not be possible if the relevant stakeholders are not aware of the detrimental effects of harmful emissions to our health & safety and the environment, and/or they are not involved in the deliberations and decisions related to the re-structuring of the energy mix towards fuels with no/less emissions. Constructive dialogue, debates, and collaboration as well as sharing of views on the gas and energy markets dynamics, is a step in the right direction towards addressing this issue. The GECF Secretariat provides, amongst many other things, a credible platform for such kind of discourses.