Press Release

After a 3-year stagnation, CO_2 emissions are on the rise again

Energy mix decarbonization and energy efficiency improvements remain insufficient

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Enerdata is releasing its *Global Energy Trends* annual publication, the first analysis of actual 2017 figures available to energy market players. Based on G20 data, accounting for 80% of global demand, this analysis identifies the key trends in the evolution of global markets.

After a 3-year stabilization, the increase in CO_2 emissions is challenging the efforts and actions implemented to reach the objectives set out by the Paris Agreement:

- Was global economic growth the main driver of the surge in energy consumption in 2017?
- Has the rebound in fossil fuel consumption, especially coal, impacted the growth of renewable energies?
- Which countries managed to avoid the global trend of global CO_2 emissions increase?
- What is the resulting delay in achieving Paris Agreement's objectives?

Highlights from Enerdata's 2017 World Energy Trends Analysis

+2%: increase in CO_2 emissions, progress towards Paris Agreement's goals stalled.

After a 3-year stabilization, CO_2 emissions in G20 countries have increased (+2% at 27 $GtCO_2$), bolstered by global economic growth. Although emissions have stagnated in the US, they have progressed in Europe (low hydro power generation, reduced nuclear availability) and have kept growing in Asia (rebound in China, new growth in India).

+3.7%: economic growth acceleration in 2017

The economic fundamentals have improved in 2017: G20 economic growth has regained its 2000-2015 average pace, even surpassing it in OECD countries (2.3% growth in the US and 2.6% in Europe, 1.7% increase in Japan). Growth remains high in China and India, around 6-7%, while recovery in Russia and Brazil intensifies after a 2-year recession.

2.1%: energy consumption rises twice as fast as in 2016

This economic growth had a direct impact on the energy demand of G20 countries, which went up by 2.1% in 2017, twice as much as 2016. Energy consumption growth doubled in China (2.9%) and in the European Union (+1%), neared 2016 levels in India (+4.4%), and surged in Russia (5.7%). It even rose in the US (+0.3%).

Energy efficiency measures have proved insufficient to maintain the improvement rate of energy intensity (ratio of energy use to GDP), which has dropped below historical average (-1.6% in 2017 compared to -1.8% between 2005 and 2015), and to converge towards the Paris Agreement. Progresses in energy efficiency have slowed down in China and Japan – energy intensity has even grown by over 4% in Russia – while the US and Europe pursue their efforts.

23%: wind and solar energy production growth in 2017

While energy intensity dropped less significantly in 2017, "carbon factor" (CO_2 emissions to energy consumption) has stabilized after a 3-year improvement. Decarbonized energies make up 25% of the additional demand in 2017 while fossil energies maintain their share, over 80% of total demand. Renewable energy production – besides hydropower – keeps progressing (+23% in 2017, +19% for wind and +20% for solar), now making up 10% of the global energy mix. Hydraulic production has remained stable in 2017, the +7.4% increase in North America partially offset the 16% drop in Europe.

Paris Agreement's objectives are slipping away

The delay in meeting the goals established by the NDC is accumulating in 2017 and maintaining the temperature increase under 2°C is going to require even more efforts: today the average required reduction amounts to 3.5%/year until 2050, whereas 2.9%/year between 2015 and 2050 would have been sufficient at the time of the Paris Agreement.

The efforts made in 2017 vary among countries, and are sometimes at odds with political declarations:

- In Europe, the energy intensity reduction in the UE has proved insufficient to meet the objectives, as has decarbonized energy development. The share of renewables in the energy mix has doubled since 2010 but has yet to increase in a context of denuclearization and decline of hydropower. On a more positive note, the United Kingdom is showing green all across the board: emissions reduction, energy intensity reduction and renewables implementation
- The United States have stabilized their CO_2 emissions in 2017 thanks to the development of renewables in the energy mix and the decrease in energy demand
- In China, energy intensity is significantly improving but the reduction of the share of coal in favor of renewables is still insufficient. Nonetheless, China make up 40% of the growth of renewable energy production (except hydro) of the G20 in 2017.

The increase in energy consumption has translated into a demand boost for all energies, including coal:

Coal consumption has rebounded in 2017 (+1%), after a 3-year decline

Bolstered by India and Turkey, and by the high demand of the electricity sector (mainly in Asia), global coal demand has rebounded. In China, consumption has slightly increased (+0.4%), despite anti-pollution policy and the transition towards gas and renewables. Consumption keeps contracting in Europe (-2.7%) and in the US (for the 4th consecutive year, -0.4%), where coal is progressively replaced by gas and renewable energies.

Oil consumption keeps rising (+1.8%)

Oil consumption in G20 has accelerated in 2017, supported by the petrochemical industry and the global car fleet growth, particularly in China (+5.4%) and in India (+5%). Oil demand keeps progressing in Europe (1.4%), and in the US (0.6%), and has recovered in Brazil and Russia.

Gas consumption is increasing for the 3rd consecutive year (+3.3%)

On the rise since 2014, global gas consumption has kept growing in 2017, boosted by economic growth – especially in Russia (+8%) and in India (+4.9%) – and coal-gas transition policies. Gas consumption surged by 15% in China and contributed to 30% of the increase in global demand, while it rose by 3.8% in Europe (economic recovery, low water levels and nuclear maintenance). In the US, the declining electricity demand

and increasing competition from renewables have contributed to reducing gas demand (-1.4%), a first after 7 years of uninterrupted growth

Electricity consumption is driven by electrification of uses (+2.5%)

The growth of electricity consumption in G20 countries has been more rapid than the total consumption of energy (respectively 2.5% and 2.1%), due to the electrification of uses. If energy efficiency improvement has limited electricity demand in Europe (0.4%) and in the US (-2.1%), growth was particularly strong in China (+5.9%), India (+5.3%), and Japan (+7.2%, the first increase since 2013).

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*: **CO_2-energy**: emissions linked with energy combustion (about 80% of CO_2 emissions)

: **Carbon intensity of the economy

Measuring the level of CO_2 emissions per unit of GDP, carbon intensity is the key indicator for measuring the structural evolution of diverse economies towards a less energy-consuming and less carbonated development path.
Carbon intensity evolves with

- *Energy intensity*: energy consumption/unit of GDP
- *Energy Carbon Factor*: CO_2 emissions by energy unit