2018-IP11: IEA Report on Global Energy and CO_2

The IEA's first ***Global Energy and CO_2 Status Report*** was released in March 2018. The report provides a snapshot of recent global trends and developments across fuels, renewable sources, and energy efficiency and carbon emissions, in 2017. The report can be found at: http://www.iea.org/geco/ The web site provides a global overview with separate summaries on tends in: CO_2 emissions, oil, gas, coal, renewables, electricity and energy efficiency[1].

According to the IEA **Global Energy Demand** grew by 2.1% in 2017, according to IEA preliminary estimates, more than twice the growth rate in 2016. Global energy demand in 2017 reached an estimated 14 050 million tonnes of oil equivalent (Mtoe), compared with 10 035 Mtoe in 2000.

Fossil fuels met over 70% of the growth in energy demand around the world. Natural gas demand increased the most, reaching a record share of 22% in total energy demand. Renewables also grew strongly, making up around a quarter of global energy demand growth, while nuclear use accounted for the remainder of the growth. The overall share of fossil fuels in global energy demand in 2017 remained at 81%, a level that has remained stable for more than three decades despite strong growth in renewables.

Improvements in global energy efficiency slowed down. The rate of decline in global energy intensity, defined as the energy consumed per unit of economic output, slowed to only 1.7%* in 2017, much lower than the 2.0% improvement seen in 2016.

The growth in global energy demand was concentrated in Asia, with China and India together representing more than 40% of the increase. Energy demand in all advanced economies contributed more than 20% of global energy demand growth, although their share in total energy use continued to fall. Notable growth was also observed in Southeast Asia (which accounted for 8% of global energy demand growth) and Africa (6%), although per capita energy use in these regions remains well below the global average.

Global energy-related CO_2 emissions grew by 1.4% in 2017, reaching a historic high of 32.5 Gt, a resumption of growth after three years of global emissions remaining flat. The increase in CO_2 emissions, however, was not universal. While most major economies saw a rise, some others experienced declines, including the United States, United Kingdom, Mexico and Japan. The biggest decline came from the United States, mainly because of higher deployment of renewables.

A more detailed summary of the latest trends on CO_2 emissions published by the IEA is appended for member's reference.

John Gale
11/04/2018

[1] Information Paper IP 2018-09 Energy Efficiency at the Cross Roads looked in detail at the 2017 trends on energy efficiency

International Energy Agency

Global Energy & CO_2 Status Report

The latest trends in energy and emissions in 2017

Latest trends in CO_2 emissions

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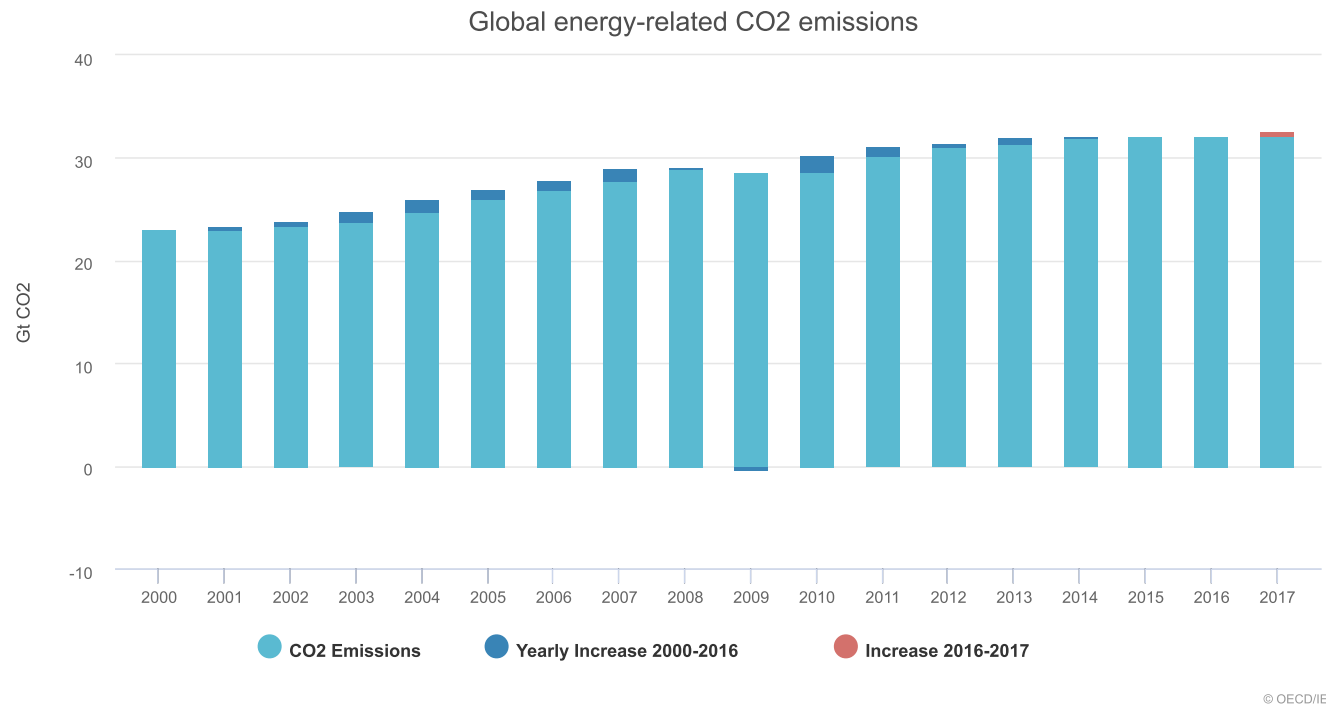
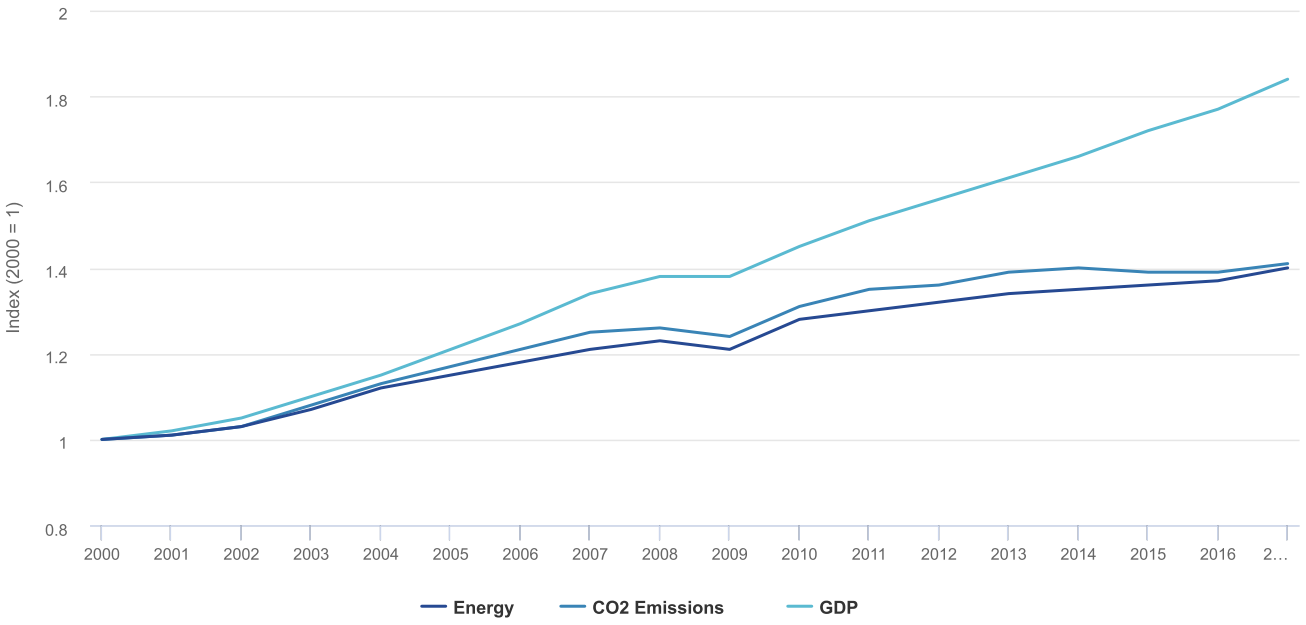


Global energy-related CO_2 rose by 1.4% in 2017, an increase of 460 million tonnes (Mt), and reached a historic high of 32.5 gigatonnes (Gt). Last year's growth came after three years of flat emissions and contrasts with the sharp reduction needed to meet the goals of the Paris Agreement on climate change.

The increase in carbon emissions, equivalent to the emissions of 170 million additional cars, was the result of robust global economic growth of 3.7%, lower fossil-fuel prices and weaker energy efficiency efforts. These three factors contributed to pushing up global energy demand by 2.1% in 2017.

Global GDP, energy demand and energy-related carbon dioxide emissions



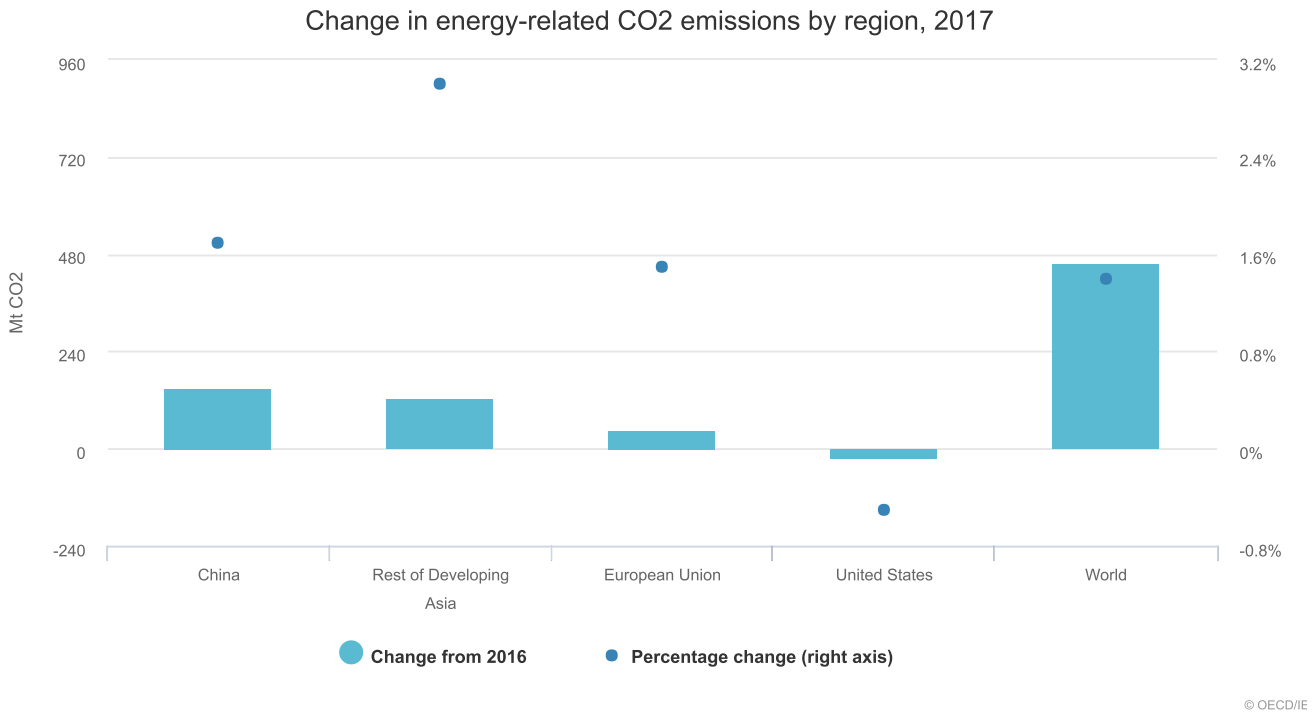
The trend of growing emissions, however, was not universal. While most major economies saw a rise in carbon emissions, some others experienced declines, such as the United States, the United Kingdom, Mexico and Japan.

The biggest decline came from the United States, where emissions dropped by 0.5%, or 25 Mt, to 4 810 Mt of CO_2, marking the third consecutive year of decline. While coal-to-gas switching played a major role in reducing emissions in previous years, last year the drop was the result of higher renewables-based electricity generation and a decline in

electricity demand. The share of renewables in electricity generation reached a record level of 17%, while the share of nuclear power held steady at 20%.

In the United Kingdom, emissions dropped by 3.8%, or 15 Mt, to 350 Mt of CO_2, their lowest level on record back to 1960. A continued shift away from coal towards gas and renewables led to a 19% drop in coal demand. In Mexico, emissions dropped by 4%, driven by a decline in oil and coal use, efficiency gains in the power system, strong growth in renewables-based electricity generation and a slight increase in overall gas use. In Japan, emissions fell by 0.5% as increased electricity generation from renewables and nuclear generation displaced generation from fossil-fuels, especially oil.

Overall, Asian economies accounted for two-thirds of the global increase in carbon emissions. China's economy grew nearly 7% last year but emissions increased by just 1.7% (or 150 Mt) thanks to continued renewables deployment and faster coal-to-gas switching. China's carbon dioxide emissions in 2017 reached 9.1 Gt, almost 1% higher than their 2014 level. While China's coal demand peaked in 2013, energy-related emissions have nonetheless increased because of rising oil and gas demand.



In India, economic growth bolstered rising energy demand and continued to drive up emissions, but at half the rate seen during the past decade. India's per-capita emissions last year were 1.7 tCO_2, well below the global per capita average of 4.3 tCO_2. Emissions in the European Union grew by 1.5%, adding almost 50 Mt of CO_2, reversing some of the progress made in recent years mainly due to robust growth in oil and gas use. The rate of energy intensity improvement slowed to 0.5% down from 1.3% the previous year. Southeast Asian economies also contributed to the rise in emissions, with Indonesia leading the growth with an increase of 4.5% relative to 2016.

The growth in energy-related carbon dioxide emissions in 2017 is a strong warning for global efforts to combat climate change, and demonstrates that current efforts are insufficient to meet the objectives of the Paris Agreement.

The IEA's **Sustainable Development Scenario** charts a path towards meeting long-term climate goals. Under this scenario, global emissions need to peak soon and decline steeply to 2020; this decline will now need to be even greater given the increase in emissions in 2017. The share of low-carbon energy sources would need to increase by 1.1 percentage points every year to meet the objectives of this scenario, more than five-times the growth registered in 2017. In the power sector, specifically, generation from renewable sources would need to increase by an average 700 TWh annually in this scenario, 80% higher than the 380 TWh increase registered in 2017. Carbon Capture, Usage and Storage (CCUS) plays an important role for reducing emissions in the industry and power sectors.