E.0
ENERGY NEW ERA

Story of World CO_2 emissions

Eleonora Di Bartolo/Serena Montefiori/Maria Tollot

24.03.2016

CO_2 trend related to world economy

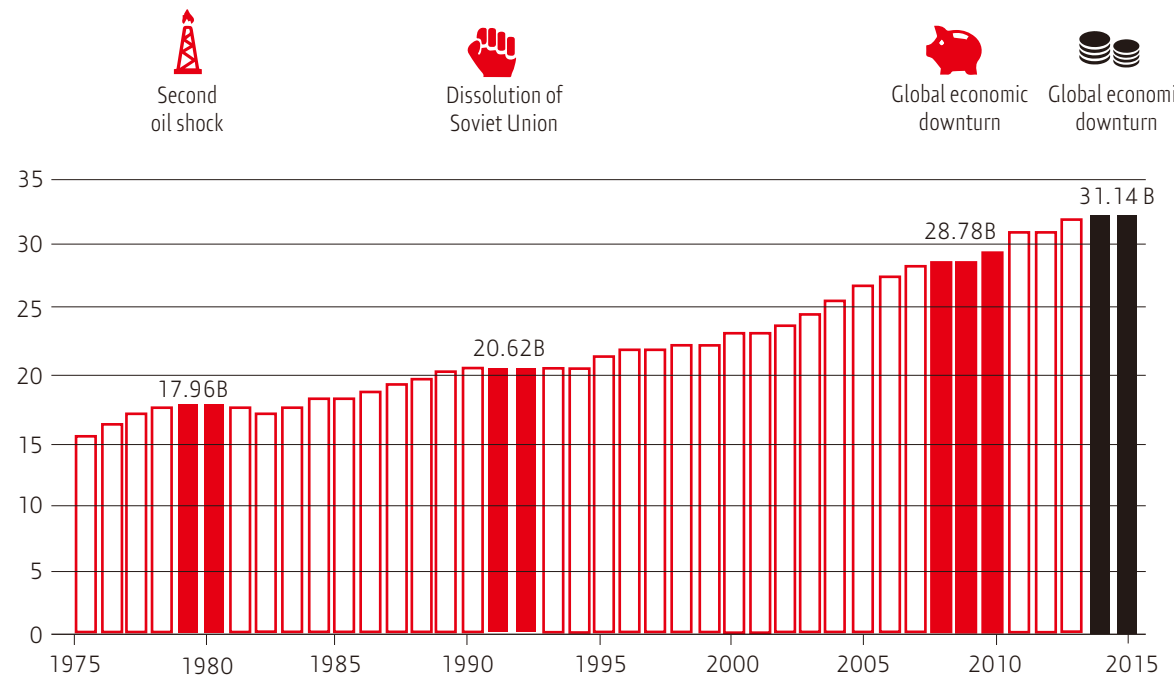
The IEA says that since 2013, global GDP growth and energy consumption have seemed to decouple, CO2 emissions remained essentially flat at just over 32 billion metric tons in 2014 and 2015. If the trend continues, it would signal that the world is achieving control over such emissions, which scientists say are a primary reason for climate change: CO2 emissions have been flat year-to-year only four previous times in the last four decades, the grew by 3.4% in 2014 and 3.1% in 2015. CO2 emissions have been flat year-to-year only four previous times in the last four decades, three of those occasions corresponding with global economic stagnation or declines. But this time, global GDP grew by 3.4% in 2014 and 3.1% in 2015. IEA says, three of those occasions corresponding with global economic stagnation or declines.

Why CO_2 grew with the economy?

1
The 90% of new electricity generation in 2015 by renewables enewrgy

2
The global economy continued to grow by more than 3%, offering further evidence that the link between economic growth and emissions growth is weakening.

3
China and the United States are the two largest emitting, dropped is that emission countries.



-1.5%
China CO_2

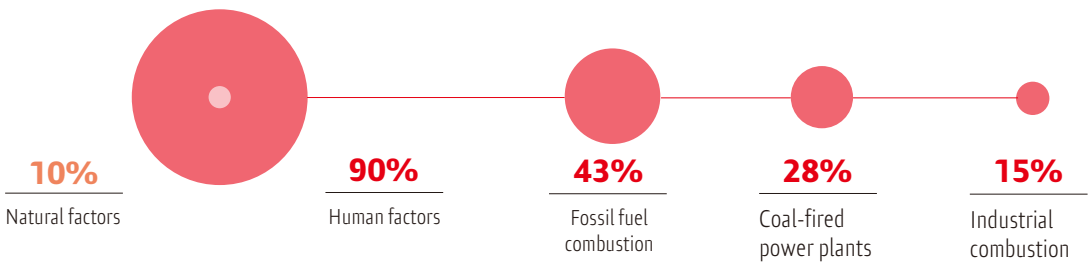
70% Coal
18% Hydro/wind

-2%
USA CO_2 emission

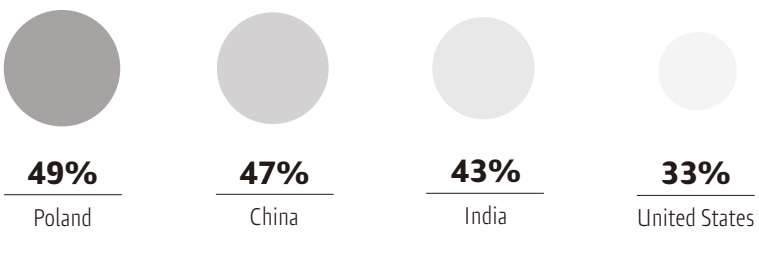
30%
Coal/gas

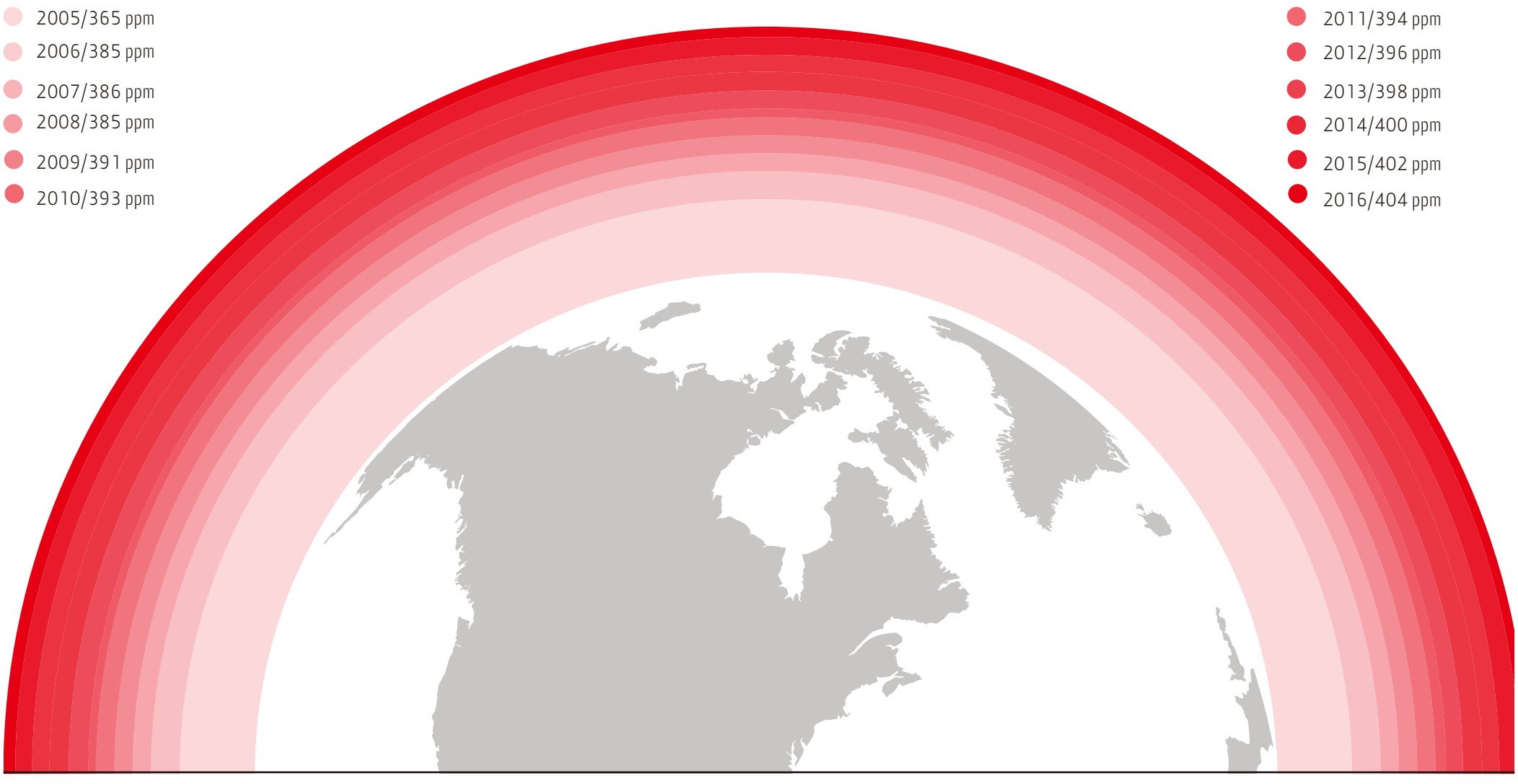
CO_2 emission in the last 10 years

Origins of CO_2 gas



The share of coal in the energy mix of bigger users





Sources: Darius Dixon, Politico; World Nuclear Association, March 2016;
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Daily World CO_2
Emissions of March 10, 2016

406.40 ppm
(part per million)

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Renewable energies as investment

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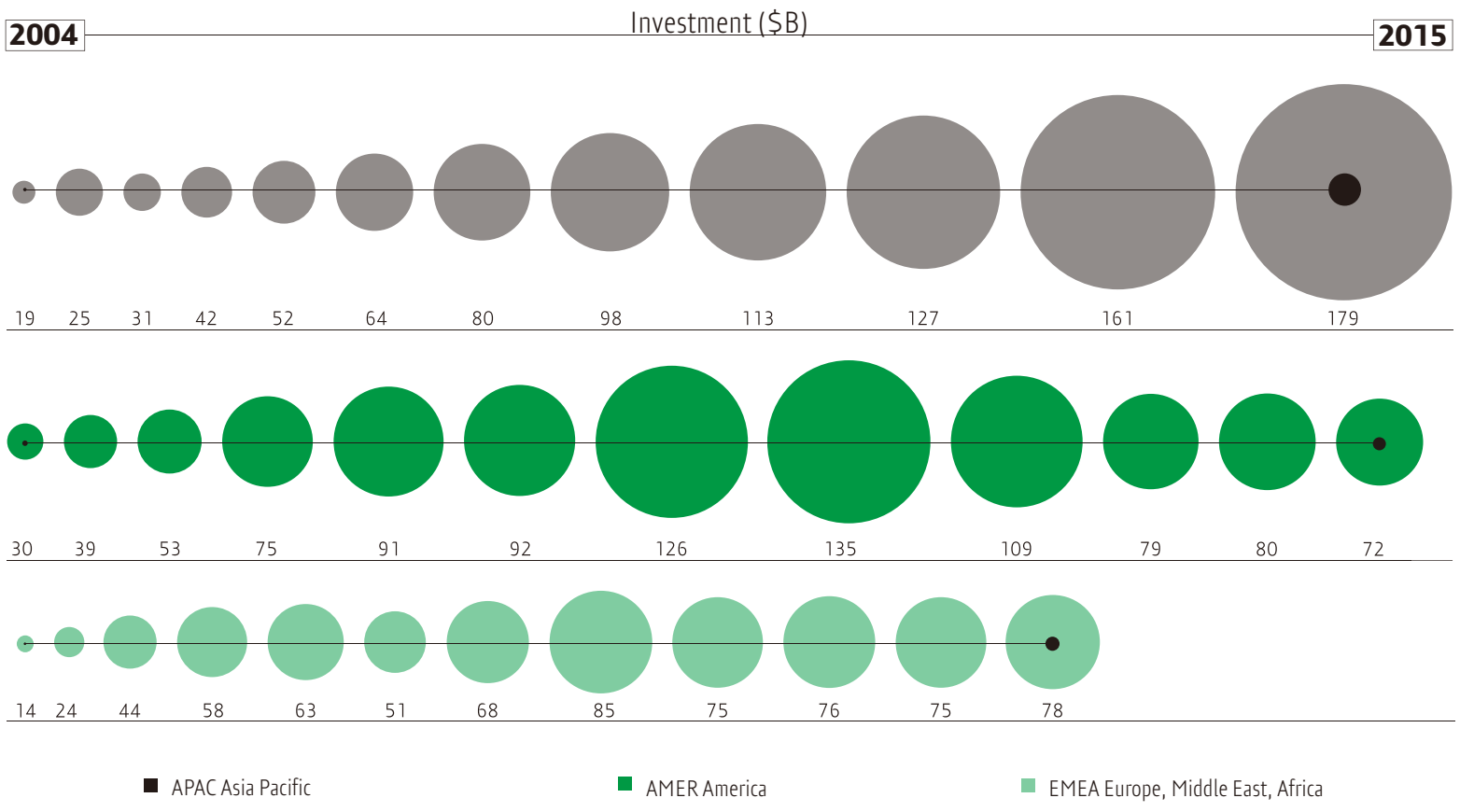
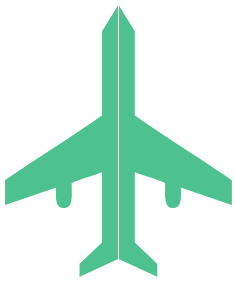
Trend of investments on renewable energy



Clean energy investment boomed across the globe in 2015, amounting to $329 billion. That's 3 percent higher than the previous record set in 2011, according to Bloomberg New Energy Finance.
Record investment flows into clean energy came even as fossil-fuel prices plummeted. Crude oil prices dropped to less than $30 a barrel on Friday, coal in Northwest Europe is down 35 percent, and U.S. natural-gas spot prices remain well below $3 per million BTU. The new record was a global effort.
Nearly $200 billion came from asset finance for utility-scale projects. The largest of those were offshore wind farms in Europe and China, where the biggest projects topped $2 billion each.
Distributed generation grew at a faster rate than utility-scale projects, up 12 percent from 2014 to $67 billion.
The combination of large- and small-scale solar and wind projects accounted for about half of all new generation worldwide, totaling 121 gigawatts.
In the public sphere, things weren't as rosy. Public-market investment was down by 27 percent, but Bloomberg noted that figure is in line with 10-year averages.

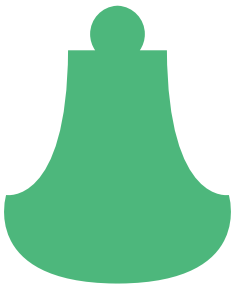
Projects using renewable power



Raphael Dinelli is a French scientist, former yachtsman, and now a pilot is determined to make history by completing the first zero-carbon trans-Atlantic flight this June with a lightweight hybrid plane powered by solar energy and biofuels.

Zero carbon Transatlantic
By Raphael Dinelli, 2016

100% Clean energy to fly
55% Algae derived biofuels
25% Wind mounted solar power
20% Wind current



WaveSpring and is developed by the Swedish company CorPower Ocean innovative floating buoy that, according to estimates , produces three times more energy than the other devices on the market. These buoys are using both the surface water movement, that of the waves coming from the depths of the sea.

WaveSpring
By CorPower Ocean, 2016

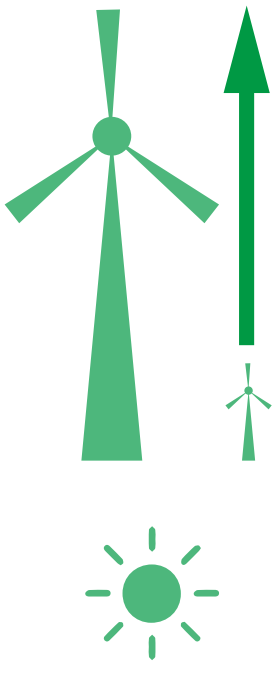
20% Of annual global energy production
150 Pound each Kilowatt/hour
4000 Terawatt/hour of energy production per year

Arbre à vent (or Wind Tree) blends perfectly with the environment, generating electricity for 320 days a year. Installed at the Place de la Concorde , it has managed to produce 3500 kWh to 13,500 kWh depending on the intensity of the wind.
Currently the cost of a single device is about 30 thousand euro.

Wind tree
By Jérôme Michaud Lariviè, 2011

13500 Kilowatt/hour of energy production
80% Production of the average electricity consumption

Focus on geothermal , solar and wind power



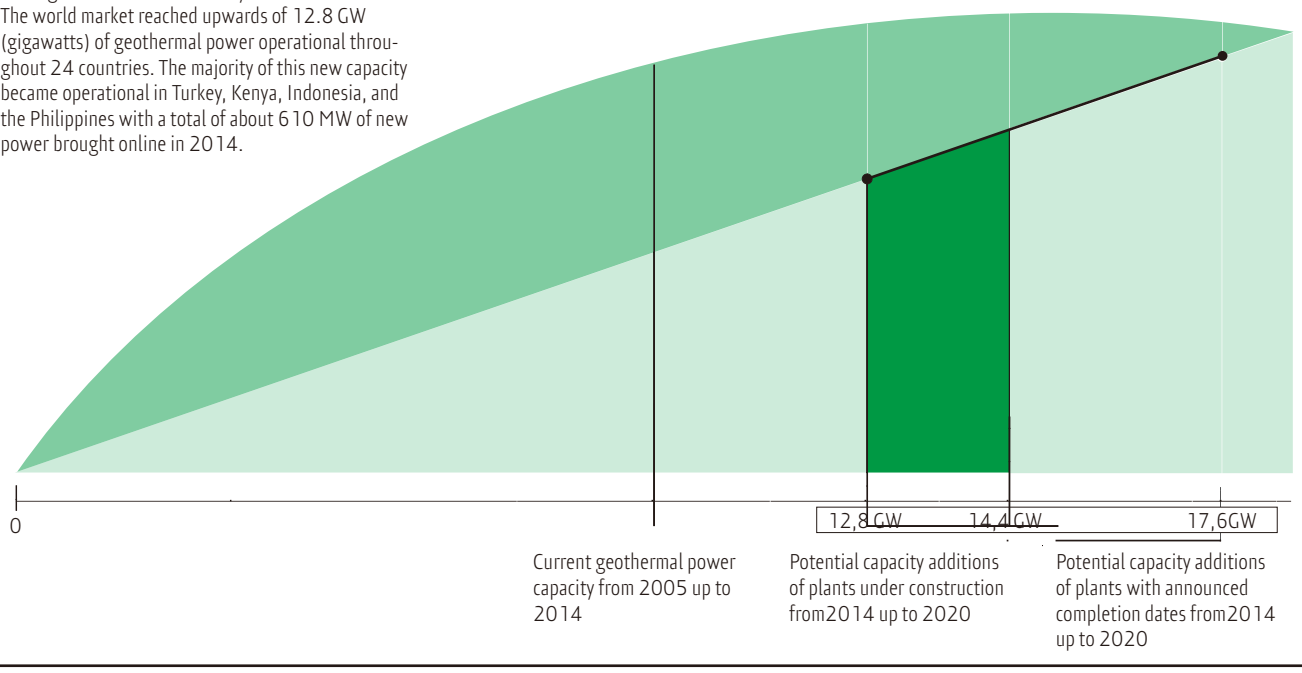
20% Increase of commitments to eolic energy by China from 2005 up to 2020

27% Increase of commitments to eolic energy by EU from 2005 up to 2020

22% Increase of commitments to solar energy by China from 2005 up to 2020

20% Increase of commitments to solar energy by EU from 2005 up to 2020

Geothermal power industry global in 2014 sustained a 5% growth rate for the third year in a row.
The world market reached upwards of 12.8 GW (gigawatts) of geothermal power operational throughout 24 countries. The majority of this new capacity became operational in Turkey, Kenya, Indonesia, and the Philippines with a total of about 610 MW of new power brought online in 2014.



Sources: www.Inhabitat.com; www.Bloomberg,org; www.quartz.org; Annual US & Global Geothermal Power Production Report

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San Marco Airport
Green energy produced until now

3,112,524 MWh
(Megawatt/hour)