

## Global energy balance 2013 « BRICS and the USA draw the world energy consumption »

Based on its 2013 data for G20 countries, Enerdata analyses the trends of the world energy demand. June 2, 2014 - Paris

# **1. World energy key figures for 2013**2. Trends per energy source



## G20's 2013 Key Figures\*

+ 2.8% economic growth (at purchasing power parity) + 2.1% (10.7 Gtoe)

energy consumption growth + 2.0% (26.1 GtCO<sub>2</sub>) CO<sub>2</sub> emissions increase

\* Note: G20 accounts for about 80% of the world energy consumption



## China and the USA represent nearly half of the G20 energy consumption

#### Primary energy consumption by countries in 2000 and 2013



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# The USA returned to a dynamic growth level, while the BRICS kept driving energy demand

Energy consumption growth in the G20 major countries (%/year)



- The energy demand growth accelerated compared to 2012 (+2.1% en 2013 vs 1.5% in 2012)
- Demand upturn in the USA (+2.5% vs -2.6% in 2012)
- G20 energy demand is still driven by BRICS (+3.5%); trends converge (China, Brazil, India)
- China accounts for 60% of the increase in demand
- Slight energy demand decline in Europe, Japan and Russia (weak economic activity)

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## Coal is the main energy consumed in the G20



## Coal met half of the 2013 rise in energy consumption



\*: nuclear, hydropower, wind, solar and geothermal

\*\*: biomass and heat



# In 2013, CO<sub>2</sub> emissions have increased at the same rate as energy consumption

Source : Enerdata



CO 2 emissions growth in the G20 major countries (%/year)

- CO<sub>2</sub> emissions increased by 2% in 2013
- Minor change in the energy mix in 2013
- Increase of the BRICS'weight
- China = 1/3 of G20's CO<sub>2</sub> emissions; deceleration due to a slower coal consumption growth
- Emissions rose in the USA with the recovery in energy demand

# World energy key figures for 2013 Trends per energy source



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## The growth of oil demand in the BRICS halved in 2013



- Oil demand growth in the G20 major countries (%/year)
- Slight growth of the G20 demand: +0.9%
- Slowdown in BRICS: Chinese oil demand halved in 2013 (first decline in demand for diesel in 20 years), quasi-stagnation in India
- Reduced use of oil for power generation in the EU and Japan
- Oil demand more and more transport-related
- Price convergence between WTI and Brent in 2013 with the recovery of demand in the USA

## Oil independence: the opposite paths of the USA and China



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### Gas & LNG

# The gas price rise in the USA resulted in a pronounced slowdown in consumption growth

Gas demand growth in the G20 major countries (%/year)



- Gas demand increased by 1.4% in 2013
- Slow growth in the USA due to gas price increase (slower gas production growth than in previous years)
- Steady demand in Japan following the sharp rise linked to the Fukushima event
- Quasi-stagnation in the EU (-0.7% vs -2.4% in 2012)
  - Steady gas price in Europe resulted in a slight resurgence in demand for gas in the power sector in the EU
  - Impact of climate: drop would have been twice as much in normal climate (long 2012-2013 winter)

### Gas & LNG

### With more than 53 bcm of LNG contracts signed, the USA will become a new key player in gas exchange



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Coal

# The rapid and intense changes in trends in the USA contrast with the trend in the G20



- 2.2% of coal consumption growth
- Demand recovery in the USA (+3.9% vs -10.7% in 2012) due to gas price increase
- Strong growth in BRICS but half that of the previous decade
- China = 80% of the additional coal consumption
- Slight drop in the EU demand for the first time in 3 years due to lower demand in Spain, the United Kingdom and Italy

### Electricity

# BRICS' electricity demand growth was three times higher than total G20 countries



- Increase in electricity consumption of 2.3% (against 1.7% in 2012)
- Strong growth in BRICS, although lower than over the previous decade
- China, the world's largest consumer, contributes to 85% of the G20 additional electricity consumption in 2013
- Slowing or declining demand in most of OECD countries (except North America)



### Electricity

# For the first time in Europe, renewables dominate the electricity mix



Gas decline; due to:

- Increased competitiveness of coal
  - Massive use of renewable energy
- The decrease in electricity demand





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Source : Enerdata

## Power plants in Europe: more than 20 GW of capacity closed or mothballed since 2010

#### Power plants closed or mothballed between 2010 and 2017



Source: Enerdata, Utilities announcements via REMIT, May 2014

- 6.5 GW closed since 2010 and 12/15 GW mothballed
- 2 GW closed and 11 GW others mothballed capacities announced by 2017
- Capacity markets are implemented in Italy, Spain, and Sweden; in process to be developed in France, Germany and the UK.



### Renewables

## PV: markets boom in China and Japan ...



- +29 GW of installed capacity (i.e. +30%)
- Boom of installed capacity in Asia :
  - + 7 GW in China
  - + 7 GW in Japan
- Slowdown in Europe:
  - Feed-in tariffs (FiT) drop
  - End of feed-in tariffs scheme for PV in Italy, Greece and Cyprus in 2013; in Spain in 2011 and in Czech Republic in 2014

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## ... tied to the development of market incentives

# Feed-in tariffs (FiTs) Renewable **Obligations** (ROs) FiTs + ROs

Source : Power Plant Tracker – Module on renewable energies support schemes

### Japan: feed-in tariffs implemented in July 2012 in replacement of a Renewable Obligation (RO) mechanism. (FiT for PV systems have been reduced by 3-15% in April 2014)

- China: feed-in tariffs implemented in 2011 for largescale PV projects, extended to small installations in September 2013
- India: target of 20 GW solar capacity in 2022. Feed-in tariffs operating since 2008 coupled with a RO scheme since 2011.

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#### Renewable energies support schemes in Asia in 2013

### Renewables

# First drop in new wind installations in 20 years, due to regulatory uncertainties in the USA



- Collapse of new capacities in the USA (+1 GW in 2013 vs +13 GW in 2012); many projects in the pipeline for 2014 (12 GW under construction in late 2013)
- China kept its wind energy developer leader status since 2010 (37% of new installed capacities in 2013)
- The majority of capacities are installed in non-OECD countries
- European market still strong despite lower economic supports; Germany and UK = half of new installations in the EU

### Emissions

# In 2013 a Chinese person emits almost as much CO<sub>2</sub> as an European person!



- China is catching up on CO<sub>2</sub> emissions per capita to the EU, whereas per capita energy consumption in the EU is 1.5 times that of China
- Sharp long-term decline in the USA linked to the increased use of gas
- Increase in emissions in the USA in 2013 related to the demand recovery, as well as increase coal use
- Stabilization in Japan



### Emissions

### Almost stable carbon factor for 10 years in the G20



Source : Enerdata

\*Carbon factor: tCO<sub>2</sub> emitted per toe of energy consumed

- Stable G20 carbon factor\*
- Chinese carbon factor is 45% above that of EU countries on average, which slightly decreased
- India, Indonesia and Japan have increased their carbon factor since 2000

## Annex: Economic Growth in the G20 countries

	2000-10	2011-12	2012-13
G20	3.3%	2.9%	6 2.8%
G7	1.3%	1.7%	5 1.4%
BRICS	7.8%	5.4%	5.6%
Argentina	4.3%	1.9%	<b>4.3%</b>
Brazil	3.6%	0.9%	<b>2.3</b> %
Mexico	1.8%	3.6%	<b>5 1.1%</b>
USA	1.6%	2.8%	5 <b>1.9%</b>
Canada	1.9%	1.7%	<b>2.0%</b>
Australia	3.1%	3.7%	<b>5</b> 2.4%
China	10.5%	7.7%	5 7.7%
India	7.6%	3.2%	<b>4.4%</b>
Indonesia	5.2%	6.2%	5.8%
Japan	0.7%	2.0%	5 <b>1.5%</b>
S.Korea	4.2%	2.0%	<b>2.8%</b>
Russia	4.8%	3.4%	5 <b>1.3%</b>
S.Arabia	3.3%	5.1%	3.8%
S.Africa	3.5%	2.5%	5 1.9%
Turkey	3.9%	2.2%	4.3%
France	1.1%	0.0%	6 0.3%
Germany	1.0%	0.9%	6 0.5%
Italy	0.4%	-2.4%	5 -1.9%
UK	1.8%	0.2%	5 1.8%
E.U.28	1.5%	1.5%	6 <b>-0.1%</b>



### Thank you for your attention!



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