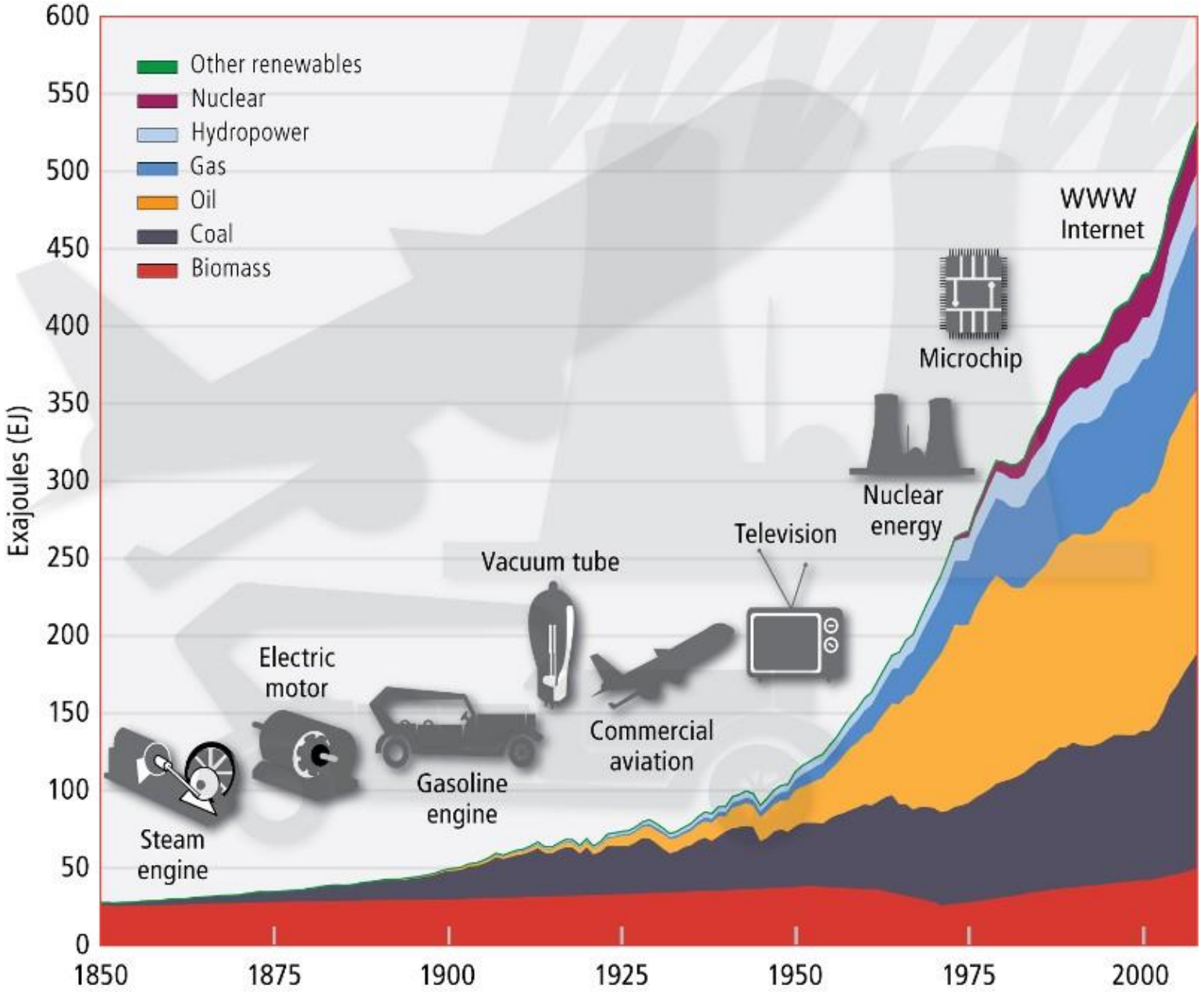
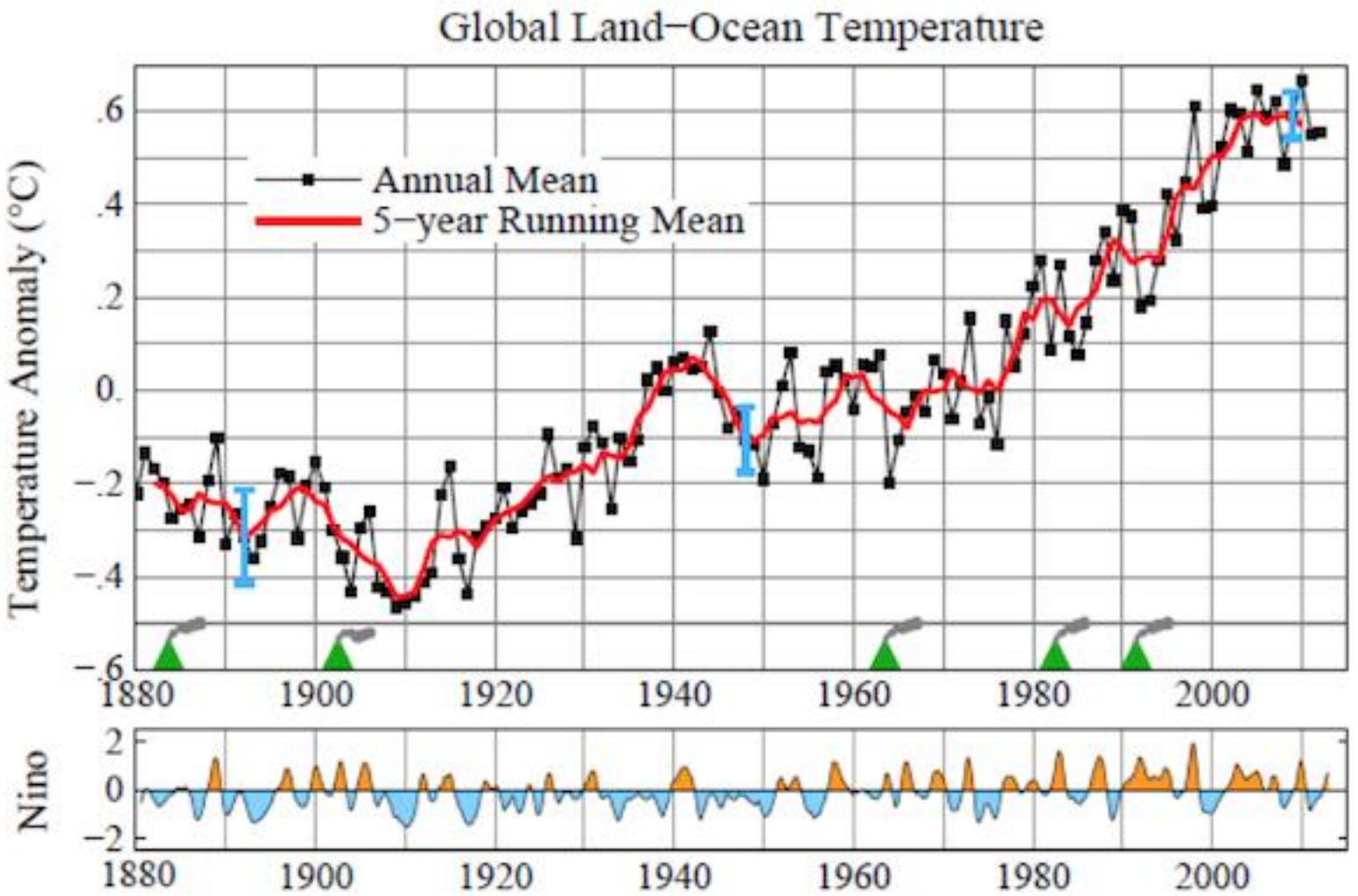
Climate Change Politics Post-Paris

Miranda A. Schreurs
Environmental Policy Research Center
Freie Univ. Berlin

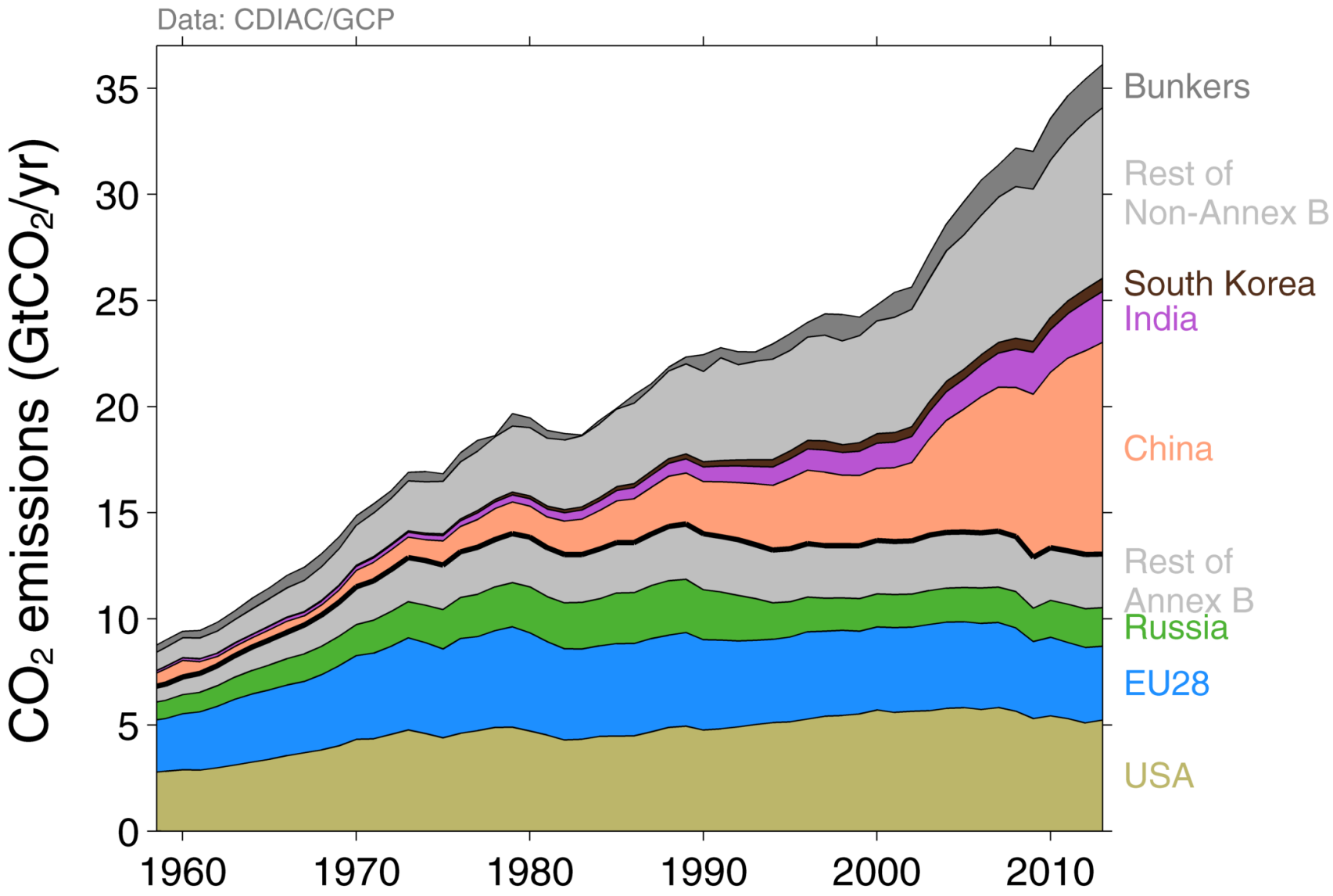


www.iiasa.ac.at/GenticsImageStore/800/auto/prop/web/home/resources/publications/options/Sustain.jpg

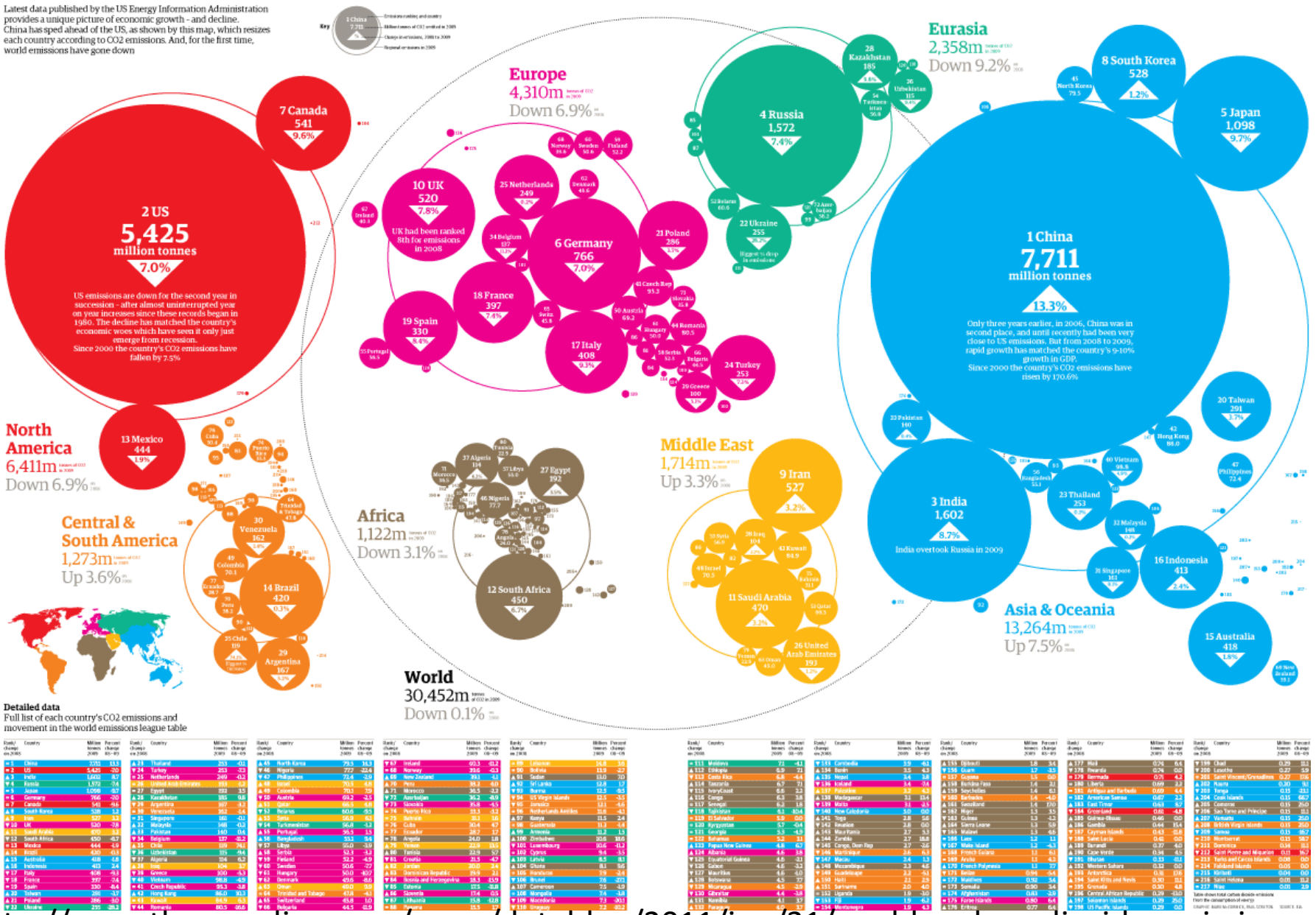


Nasa: http://d35brb9zkkbdsd.cloudfront.net/wp-content/uploads/2013/01/NASA2012-FINAL.png

Source: Global Carbon Project, 2013 data
http://folk.uio.no/roberan/img/GCP2014/PNG/fig_36_Emissions_by_Country_300.png



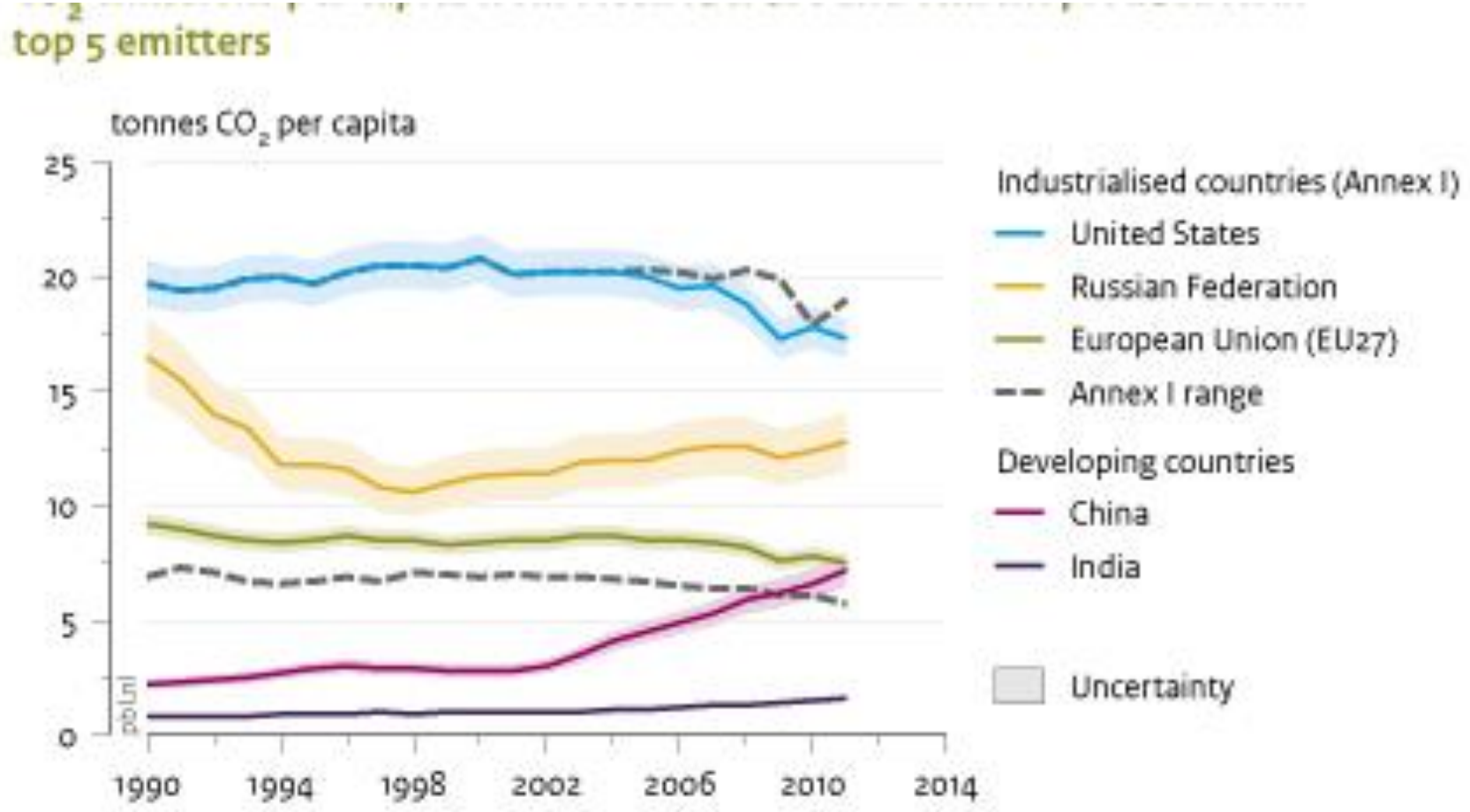
An atlas of pollution: the world in carbon dioxide emissions



http://www.theguardian.com/news/datablog/2011/jan/31/world-carbon-dioxide-emissions-country-data-co2

CO2 Emissions Per Cap in Top 5 Emitters

Source: EDGAR 4.2 UNDP, 2010: Oliver et al. 2012, http://www.pbl.nl/sites/default/files/cms/afbeeldingen/pbl-2012-global-co2-emissions-per-capita-1990-2011.jpg



Share Global CO_2 Emissions (2013)

Source: Global Carbon Project

1. China 29%
2. United States 15%
3. European Union 10%
4. India 7.1%
5. Russian Federation 5.3%
6. Japan 3.7%
7. Germany 2.2%
8. Republic of Korea 1.8%
9. Iran 1.8%
10. Saudia Arabia 1.8%

Top 3 (China, US, EU) = 54% global total

Top 6 (China, US, EU, India, Russian Fed., Japan = 70.1%)

The Paris Climate Accord

https://upload.wikimedia.org/wikipedia/commons/5/54/COP21_participants_-_30_Nov_2015_%28234302737l5%29.jpg

Main Achievements Agreements on:

- Keeping temperature increase below 2°C, and strive for 1.5° C
- Nationally determined contributions (NDCs) (annual reports on progress with international review)
- new NDCs after 5 years (with expectation they will represent a progression beyond previous ones)
- Increasing aid for developing countries to more than US$100 billion per year

Decarbonization of Energy Industry

- Shift away from lignite, hard coal, oil, and eventually natural gas
- Future of fossil fuel use is time limited!
- Energy efficiency will be crucial
- Renewable energy will be a major part of the future global energy economy
- Nuclear energy will be pushed by industry, but also strongly resisted. Probably too expensive.

Major Economies

EU Goals set in 2008:
20, 20, 20 by 2020

- 20% reduction in CO_2 emissions
- 20% energy efficiency improvements
- 20% renewable energy in final energy mix1990

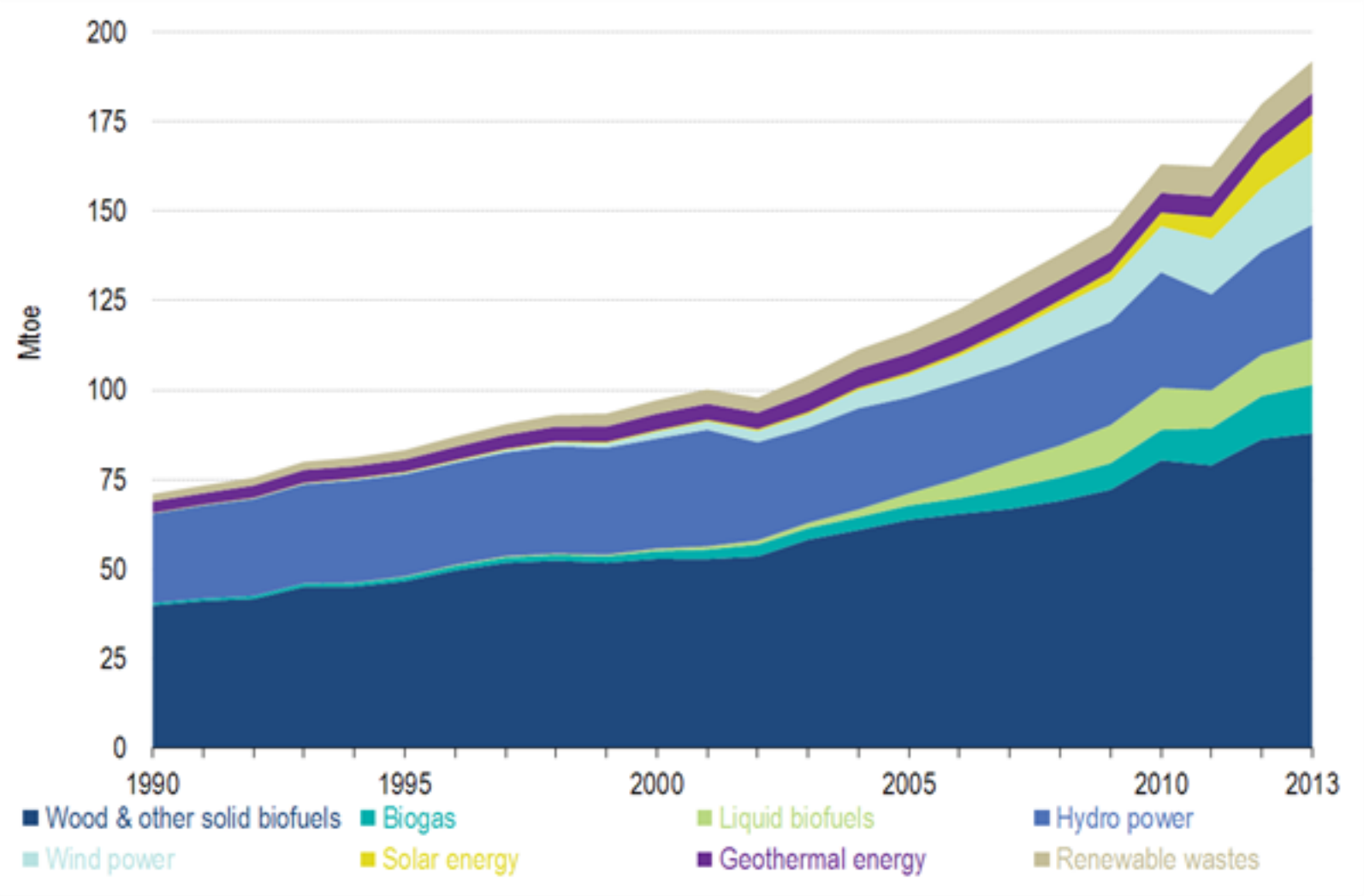
EU's 2030 Framework for Climate and Energy Policy

Council decision (October 23, 2014):

By 2030:

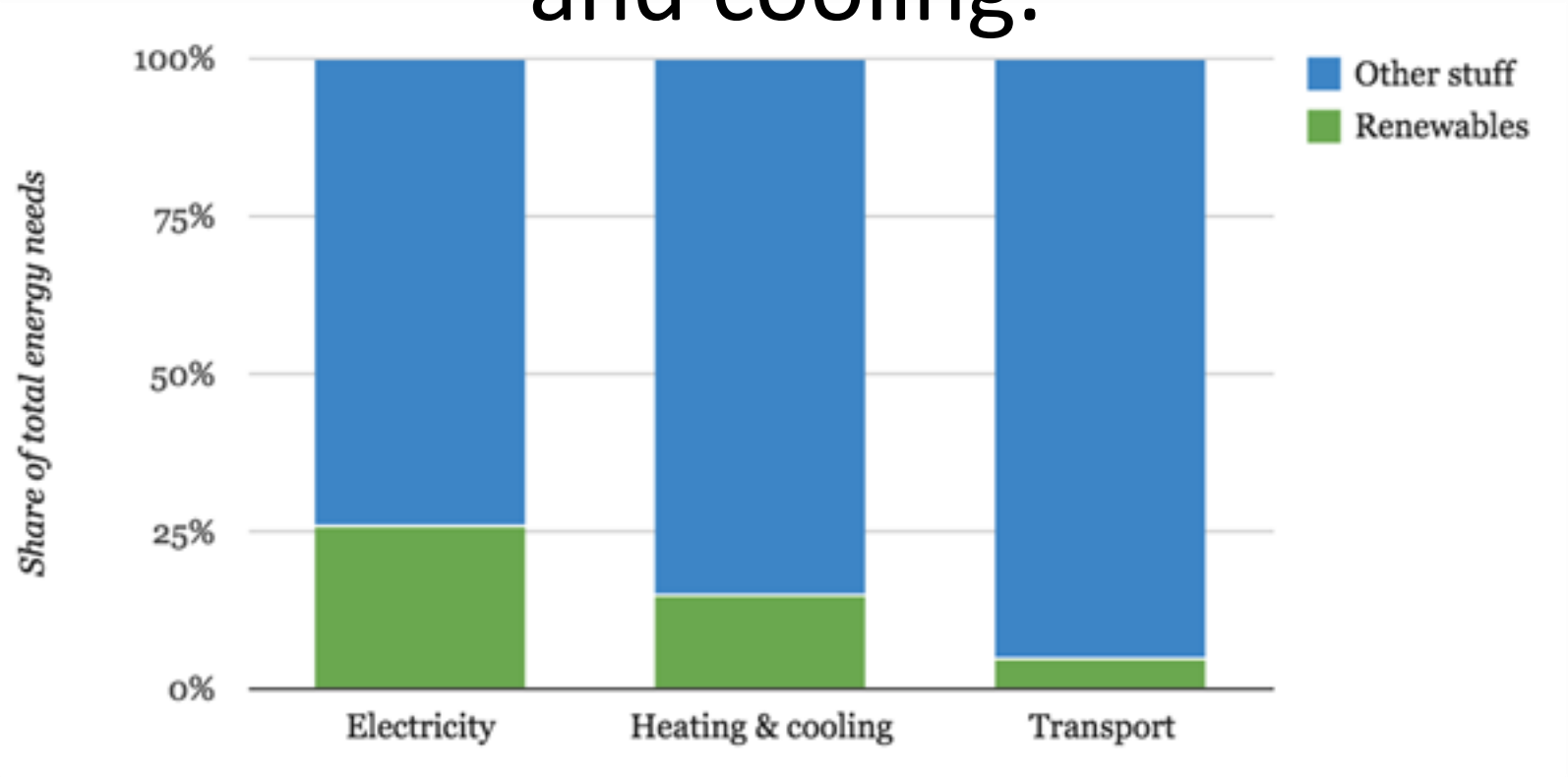
- At least 40% ghg emission reductions (compared to 1990 levels)
- 27% share of renewables in energy consumed
- 27% (minimum) energy efficiency improvements (with possible increase to 30% after 2020 review)

Renewables Primary Production EU



http://www.carbonbrief.org/media/386166/renewables-primary-production-2013_599x393.jpg

Renewable share of the EU energy mix for electricity, transport and heating and cooling.



Source: Eurostat, Chart by Carbon Brief
http://www.carbonbrief.org/media/386156/screen-shot-2015-03-10-at-175206_599x297.jpg

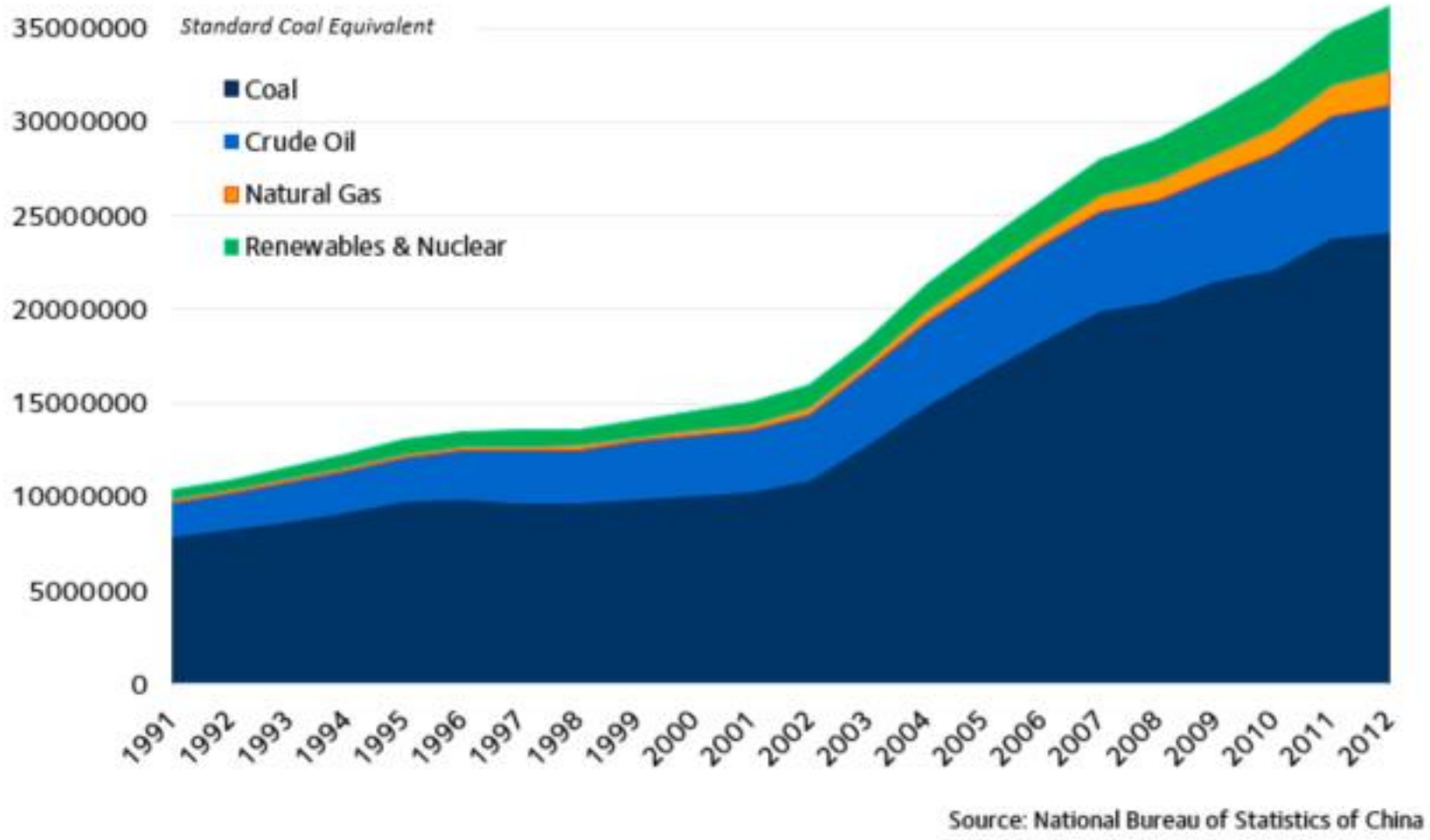
Energiewende Targets set in 2010

	Climate	Renewables		Efficiency				
	Green house gases (vs. 1990)	power	Primary energy consum ption	Primary energy	power	Energy productivity	transport	buildings
2020	- 40 %	35%	18%	- 20%	-10%	increase to 2,1%/a	-10 %	Double 1 ---2 % Refurbis-ment p.a.
2030	- 55 %	50%	30%					
2040	- 70 %	65%	45%					
2050	- 80-95%	80%	60%	- 50%	-25%		- 40 %	

China


HEILONGJIANG
MONGOLIA
KIRGIZSTAN
JILIN
XINJIANG
LIAONING
INNER MONGOLIA
NORTH KOREA
Beijing
GANSU
Yellow Sea
PAKISTAN
Tianjin
HEBEI
SOUTH KOREA
QINGHAI
SHANXI
NINGXIA
SHANDONG
Yellow River
CHINA
HENAN
JIANGSU
SHAANXI
TIBET
SHANGHAI
ANHUI
SICHUAN
HUBEI
NEPAL
CHONGQING
ZHEJIANG
Yangtze River
East China Sea
BHUTAN
JIANGXI
HUNAN
INDIA
GUIZHOU
FUJIAN
BANGLADESH
YUNNAN
TAIWAN
GUANGXI
GUANGDONG

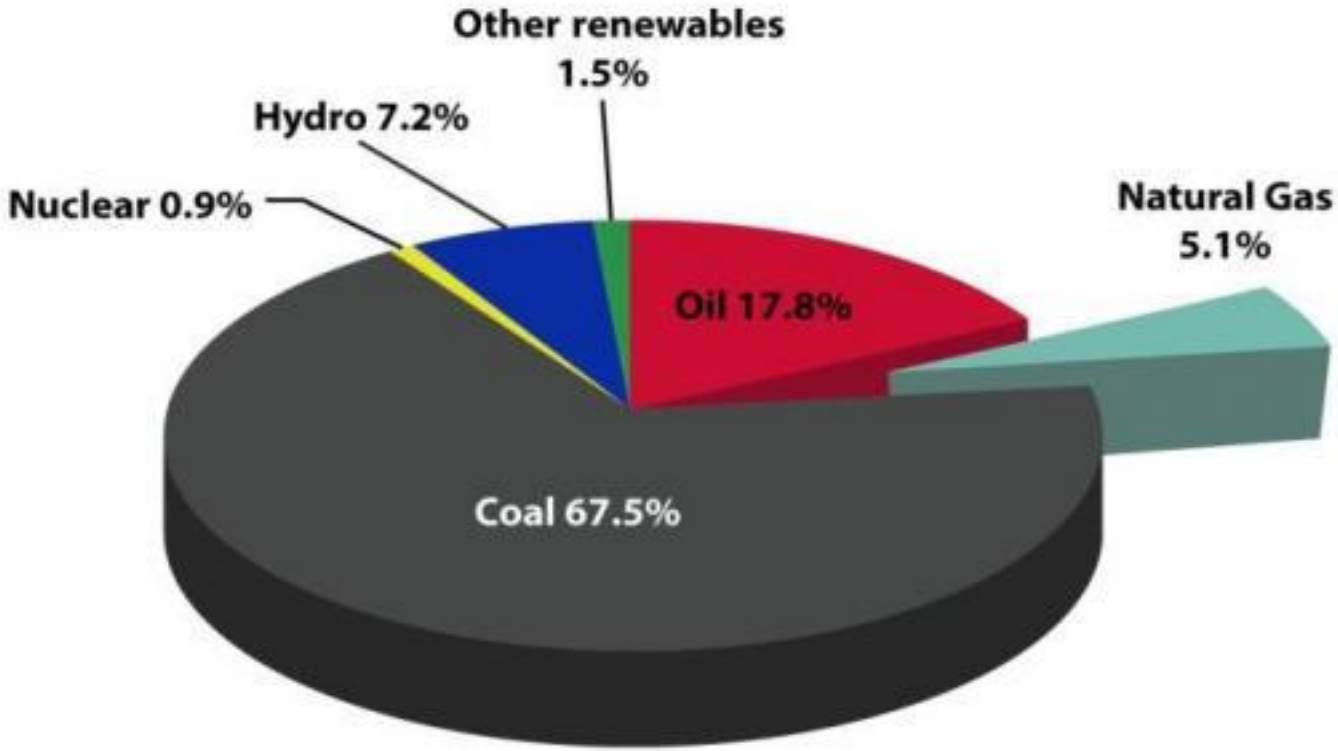
China: Energy Demand Growth By Source



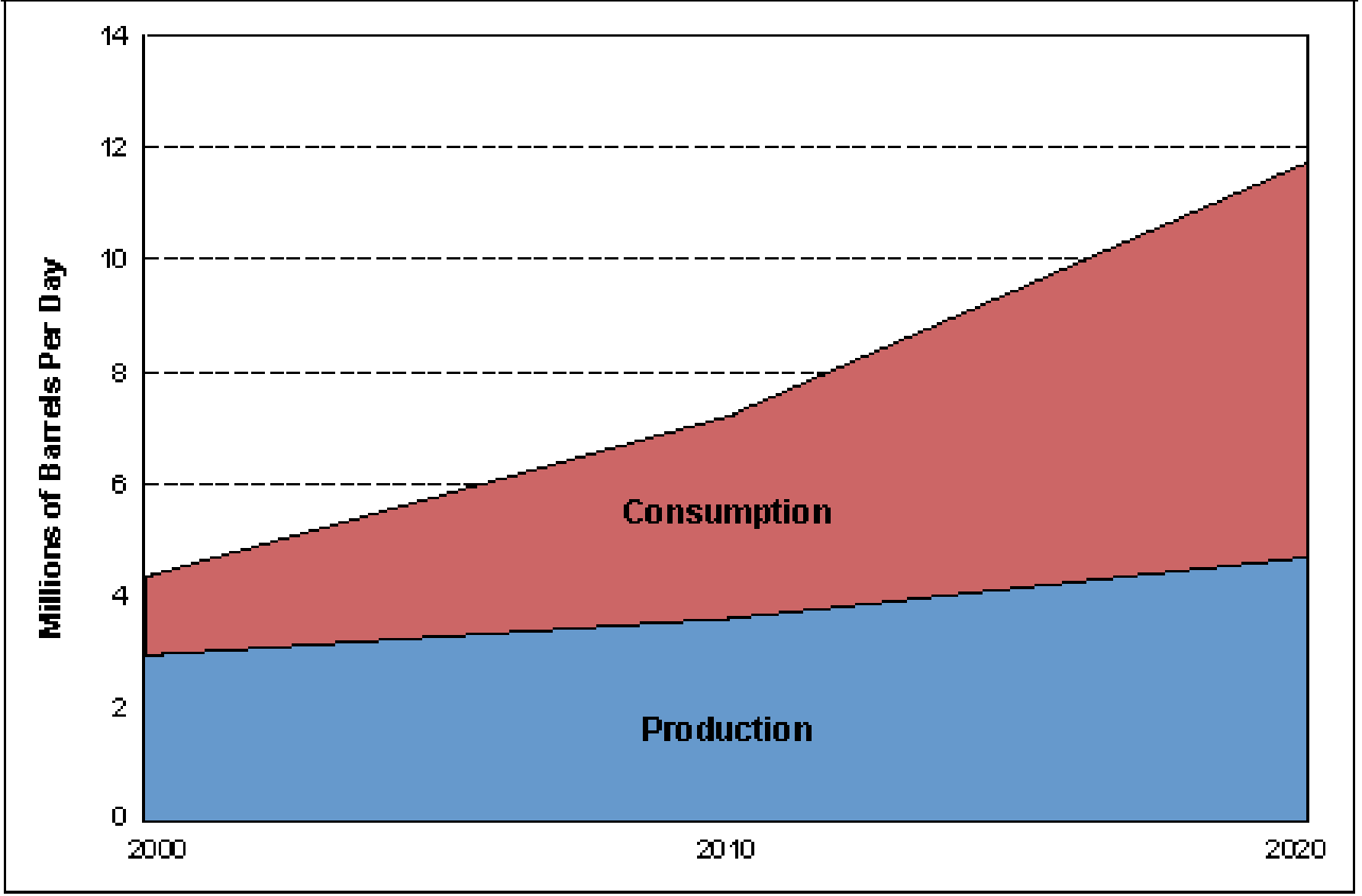
Source: National Bureau of Statistics of China

China‘s Primary Energy Mix 2013

http://www.worldreview.info/sites/default/files/imagecache/article-image-big557x371/china-s-primary-energy-mix-2013-bp-statistical-review-world-energy-2014_3.



China's Dependence on Imported Oil, 2000 to 2020 (Business-as-Usual Scenario)



Source: Development Research Center, The State Council, *China's National Energy Strategy and Policy 2000–2020*, November 2003

China: National Climate Change Programme (June 2007)

1. Climate change visible in China
2. Emission intensity improving (5.47kgC02/$US in 1990 →2.76kgC02/$US in 2004)
3. Developed countries have primary responsibility
4. Develop low carbon and renewable energy
5. Nation-wide tree planting
6. Family planning
7. New institutions and laws
8. Climate change research and capacity building

Twelfth Five Year Plan: Renewables

- 16% reduction in energy intensity (energy consumption per unit of GDP)
- Increase non-fossil energy to 11.4% of total energy use in 2015 and 15% in 2020
- 17% reduction in carbon intensity (carbon emissions per unit of GDP).




China: Climate Negotiations

- Cap on carbon emissions: around 2030.
- Renewables 20% of final energy by 2030

China under Xi Jinping

- calls for creation of ecological civilization
- Revamping of 1989 environmental law
- Fight on air pollution
- Introduction of 7 pilot CO_2 emissions trading systems. National system to be established in 2016.

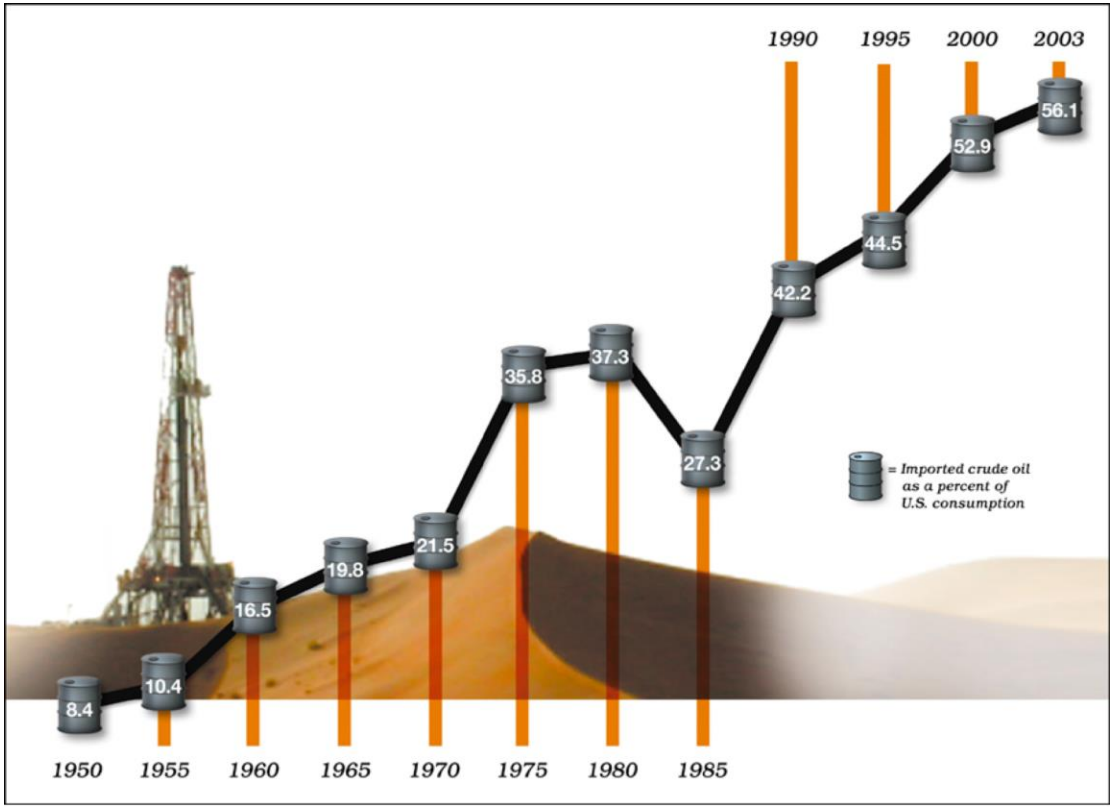
China under Xi Jinpeng

- calls for creation of ecological civilization
- Revamping of 1989 environmental law
- Fight on air pollution
- Introduction of emissions trading system
- Cap on carbon emissions: around 2030.
- Renewables 20% of final energy by 2030

United States

U.S. Crude Energy Imports,

http://upload.wikimedia.org/wikipedia/commons/f/ff/Imported_Crude_Oil_as_a_Percent_of_US_Consumption_1950-2003.jpg



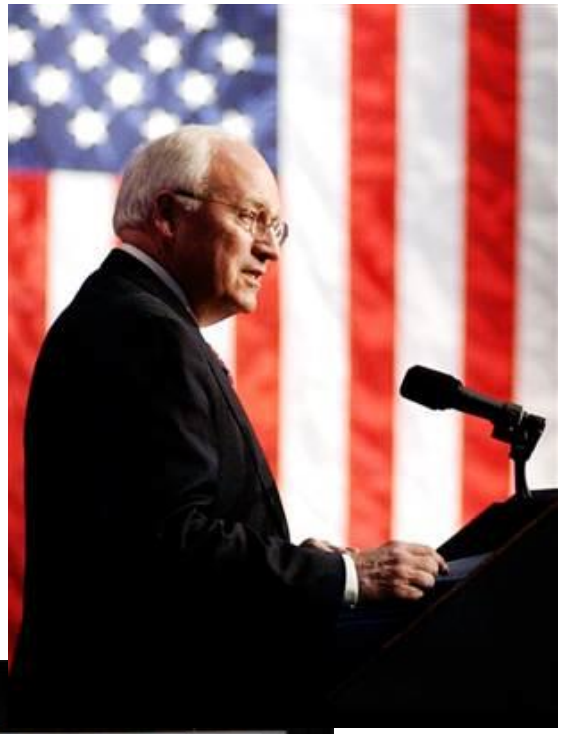
Energy Policy Act 2005

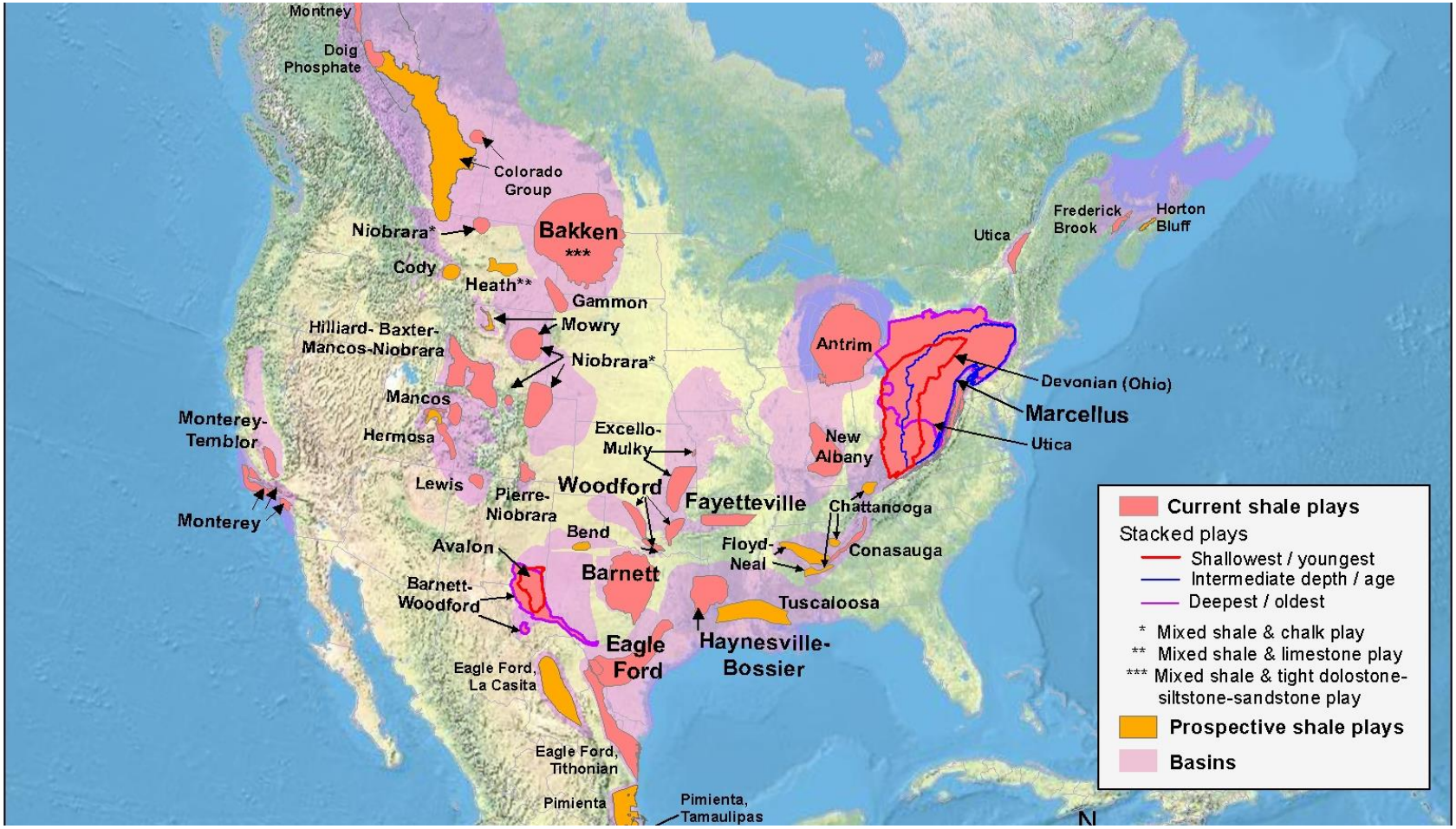
-focus is on how to meet growing energy demands linked to rising population

-how to assure energy security

-provides numerous incentives to oil, coal, gas industries

-also has some focus on renewable energies and energy efficiency improvements




Montney
Doig Phosphate
Colorado Group
Niobrara*
Bakken ***
Cody
Heath**
Gammon
Mowry
Hilliard- Baxter- Mancos-Niobrara
Niobrara*
Mancos
Monterey- Temblor
Hermosa
Excello- Mulky
Lewis
Pierre- Niobrara
Woodford
Fayetteville
Monterey
Bend
Avalon
Barnett
Barnett- Woodford
Eagle Ford
Haynesville- Bossier
Eagle Ford, La Casita
Eagle Ford, Tithonian
Pimienta
Pimienta, Tamaulipas
Utica
Frederick Brook
Horton Bluff
Antrim
Devonian (Ohio)
Marcellus
Utica
New Albany
Chattanooga
Floyd- Neal
Conasauga
Tuscaloosa
Current shale plays
Stacked plays
Shallowest / youngest
Intermediate depth / age
Deepest / oldest
* Mixed shale & chalk play
** Mixed shale & limestone play
*** Mixed shale & tight dolostone- siltstone-sandstone play
Prospective shale plays
Basins
N

Barack Obama, 2009

- **$150 Billion over 10 Years in Clean Energy**
- **Double Energy Research and Development Funding**
- **Develop and Deploy Clean Coal Technology**
- **Increase Fuel Economy Standards 50 Percent by 2030**

(Jan 26, 2009 announced plans to set 35 mpg requirement by 2020)

Obama 2012 Car Efficiency Standards

In August 2012, the Obama administration issued new rules that require auto companies to meet an average of 54.5 miles/gallon for 2025 (average efficiency of fleet)

30% cut in US power plant emissions

- Covers the approx. 7000 plants of at least 1MW size.
- Different goals to be set for each state. Flexibility for meeting targets (through efficiency, more natural gas, renewables, cap and trade...). Plan expected to save $48-82 billion by 2030 in health and climate benefits

India

- Reduce emissions intensity of CO2 by 33-35% of 2005 levels by 2030.
- 40% non-fossil fuels by 2030 (also includes nuclear, 175 GW solar and wind)
- 33% forest cover

U.S. on Paris Climate Negotiations

- 26-28% cut by 2025 compared to 2005

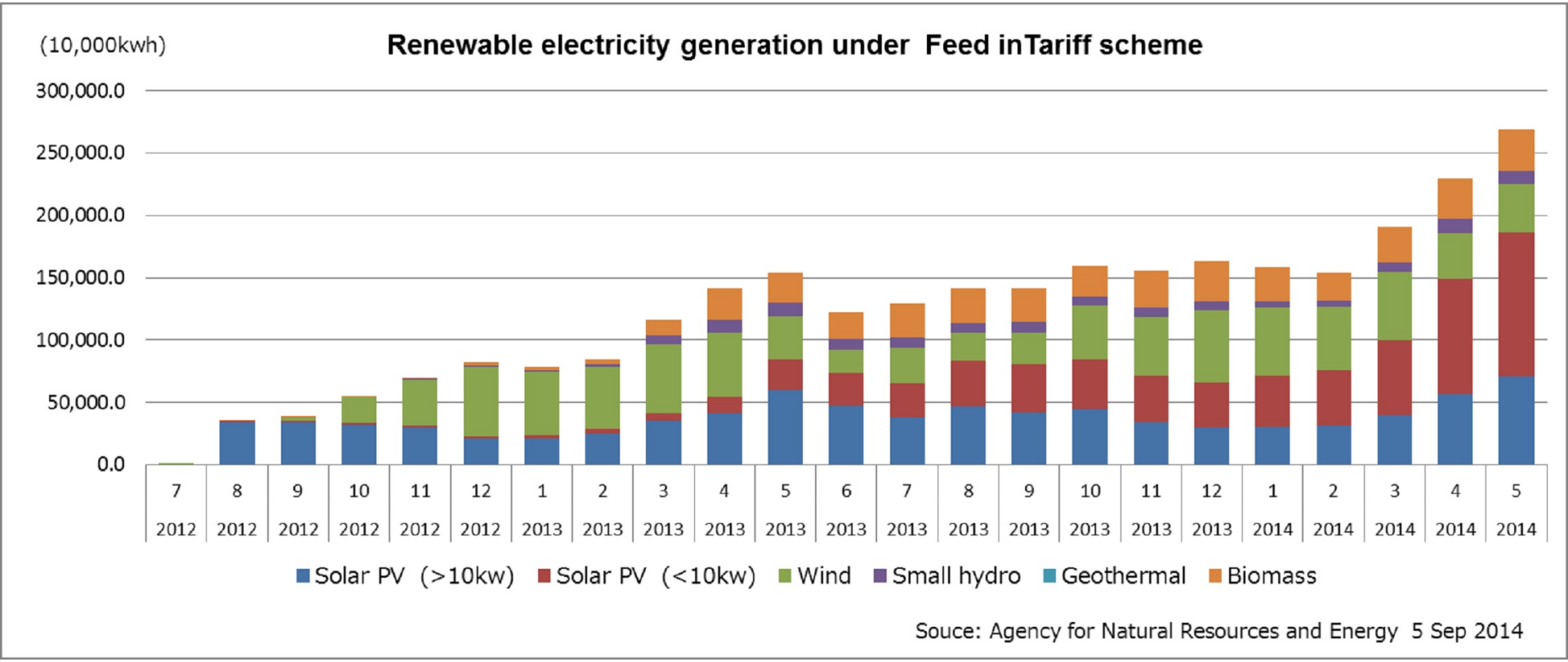
- US bilateral negotiating with China and India on climate

Japan

- At time of Fukushima 54 nuclear reactors
- All except one currently off-grid. 48 operable nuclear reactors.
- Climate policy will hinge on decision about nuclear.

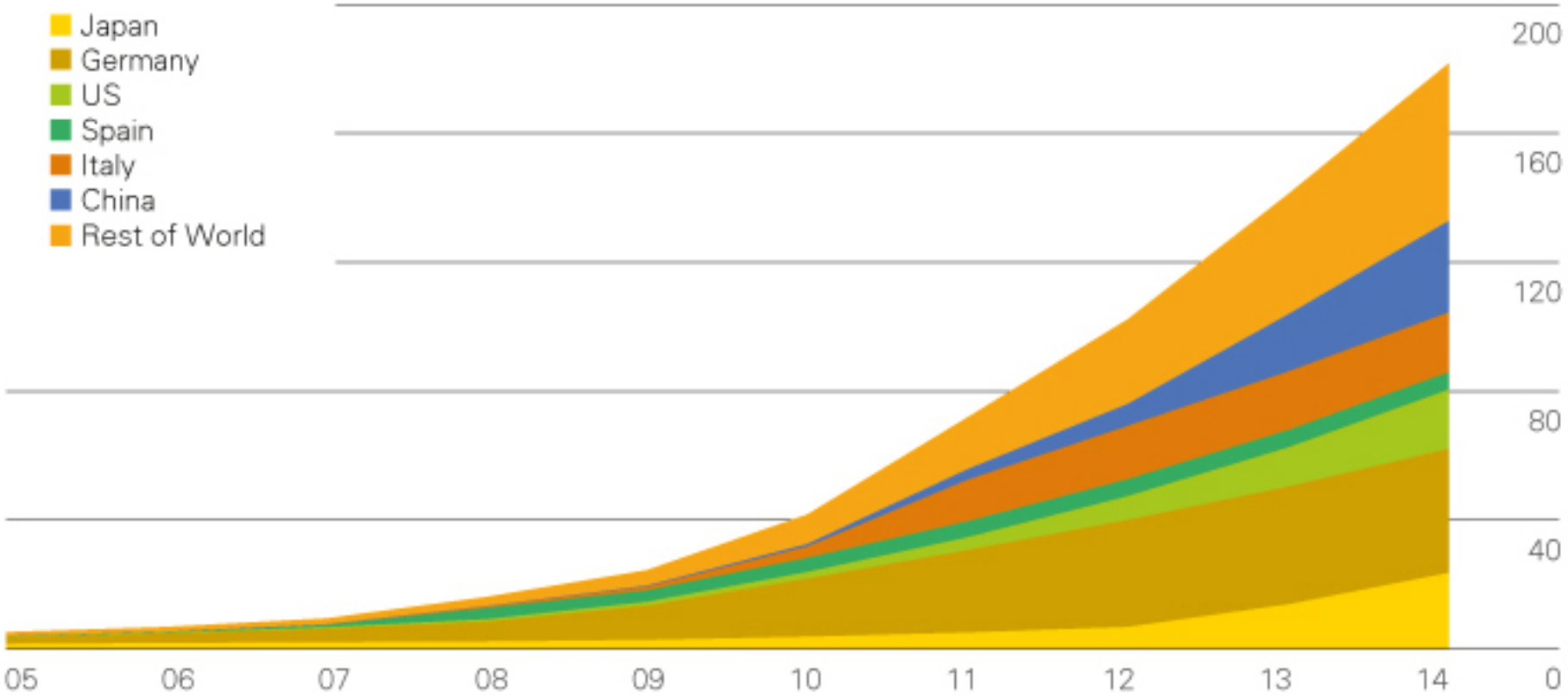
Paris: -26% of FY 2013 levels by 2030 (25.4% compared to 2005 levels; 18% below 1990 levels)

Renewables Growth in Japan Post Fukushima



Solar PV generation capacity

Gigawatts

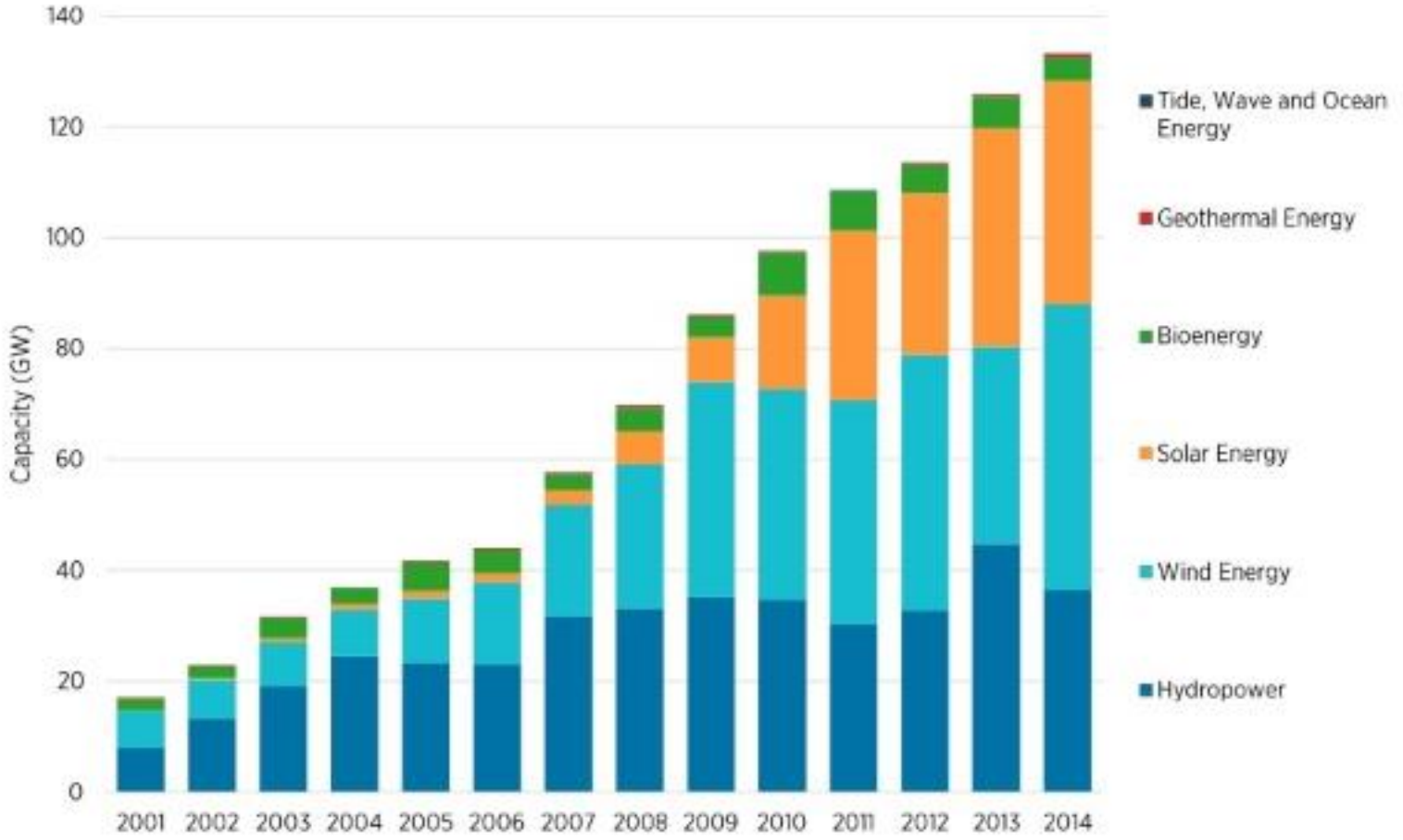


Source: includes data from IEA Photovoltaic Power Systems Programme, EPIA, EurObserver

BP Statistical Review of World Energy 2015

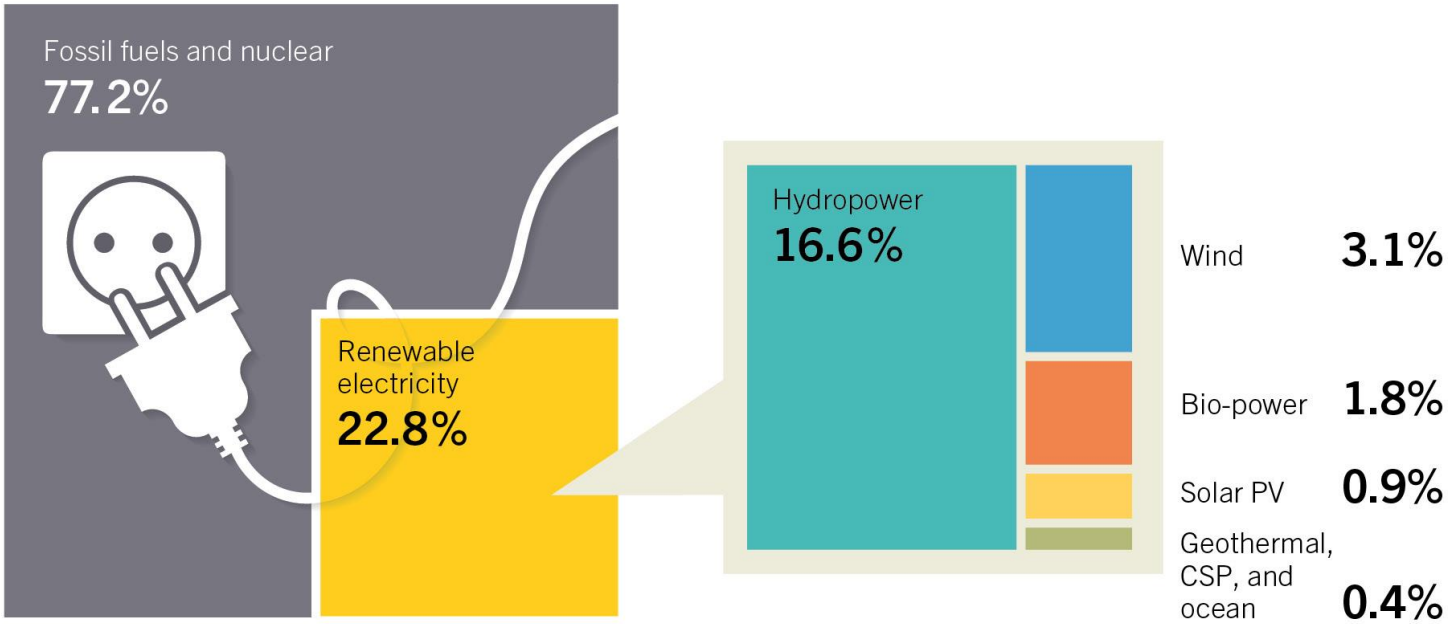
IRENA
International Renewable Energy Agency

Installed Renewable Power Capacity - Net additions



Renewables 22.8% of world electricity production in 2014 (nuclear 10.8% in 2013)

Estimated Renewable Energy Share of Global Electricity Production, End-2014



Based on renewable generating capacity in operation at year-end 2014.

REN21 *Renewables 2015 Global Status Report*

REN21 Renewable Energy Policy Network for the 21st Century

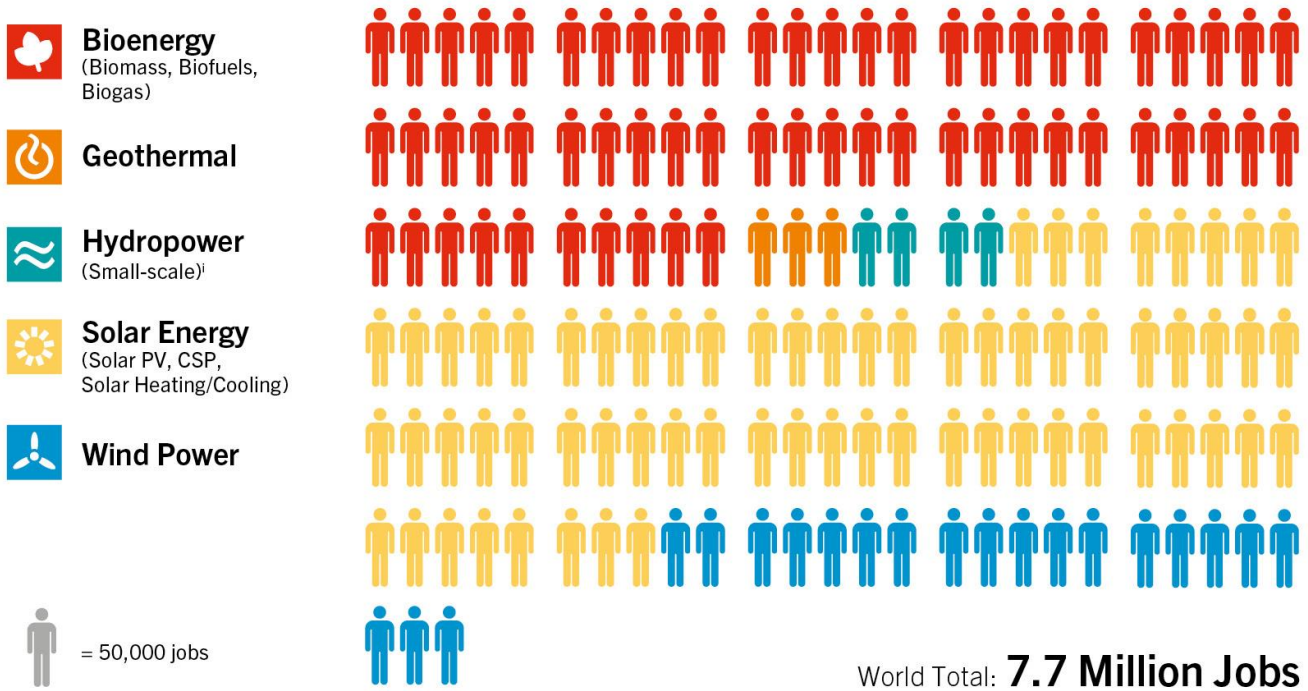
International Renewable Energy Agency

Founded in 2009. (Idea first proposed in 1981)

Established as global hub for renewable energy information exchange and cooperation (143 states plus the EU)

Welcomes Paris Accord as: “Watershed for the Global Energy Transition”

Jobs in Renewable Energy, 2014

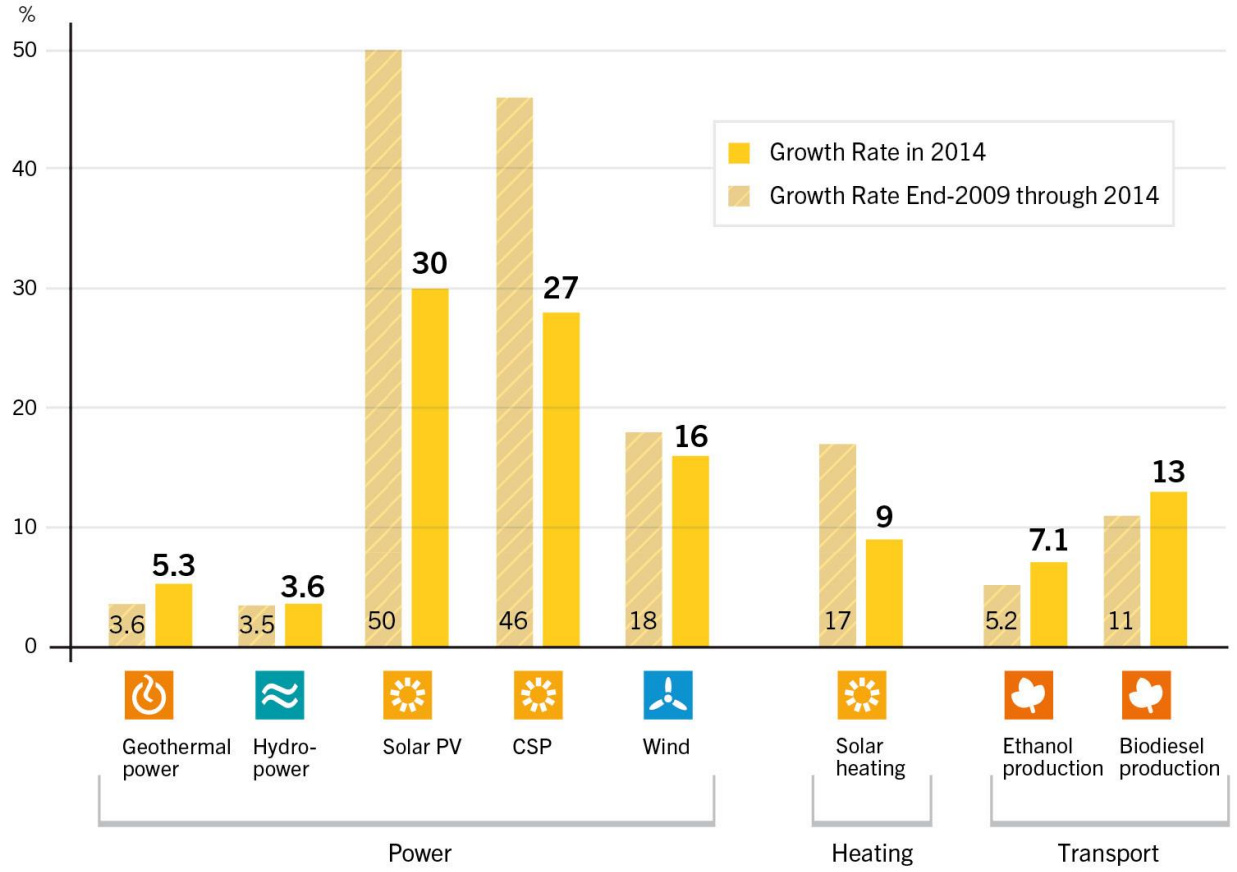


i - Employment information for large-scale hydropower not included.

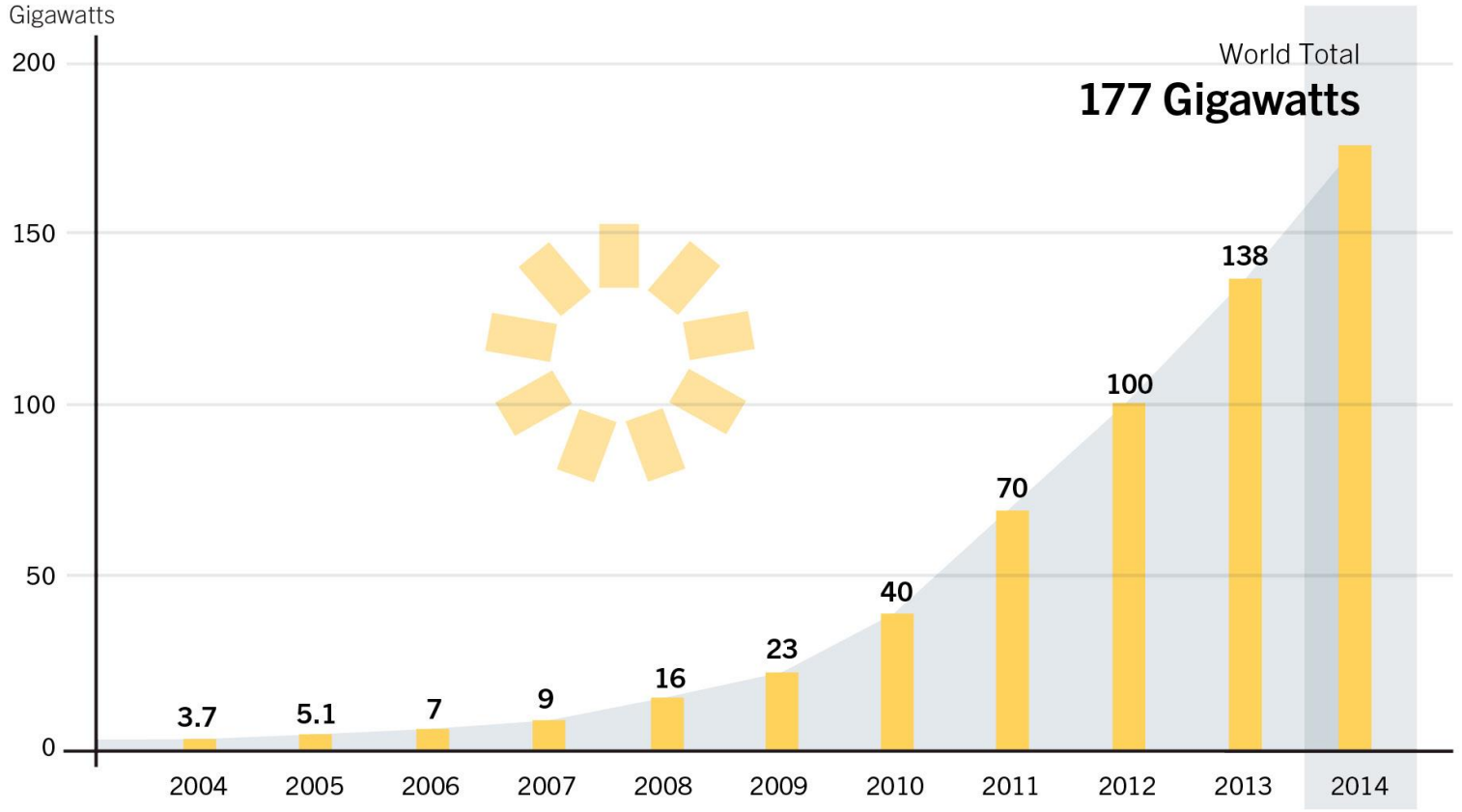
REN21 *Renewables 2015 Global Status Report*

Source: IRENA

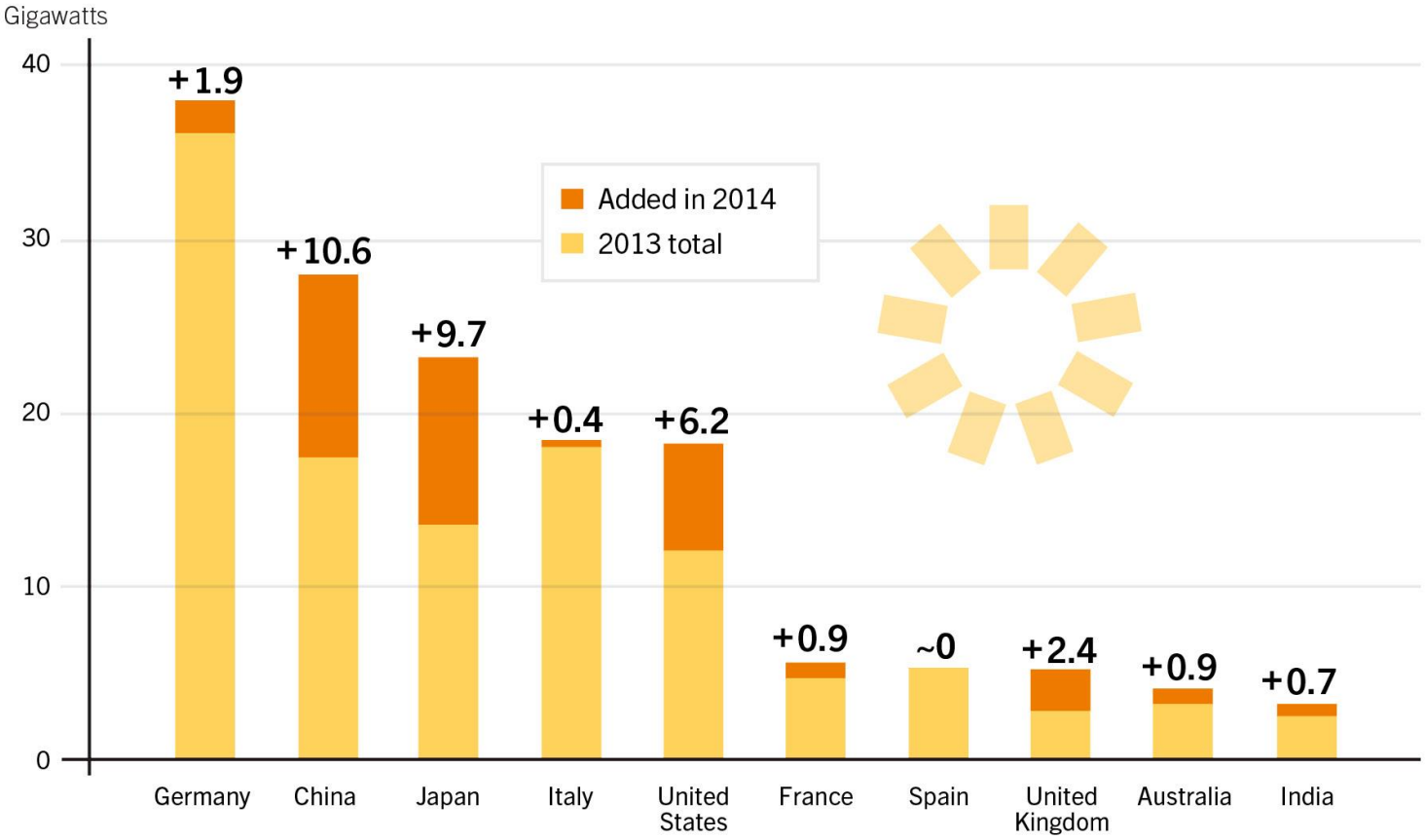
Average Annual Growth Rates of Renewable Energy Capacity and Biofuels Production, End-2009–2014



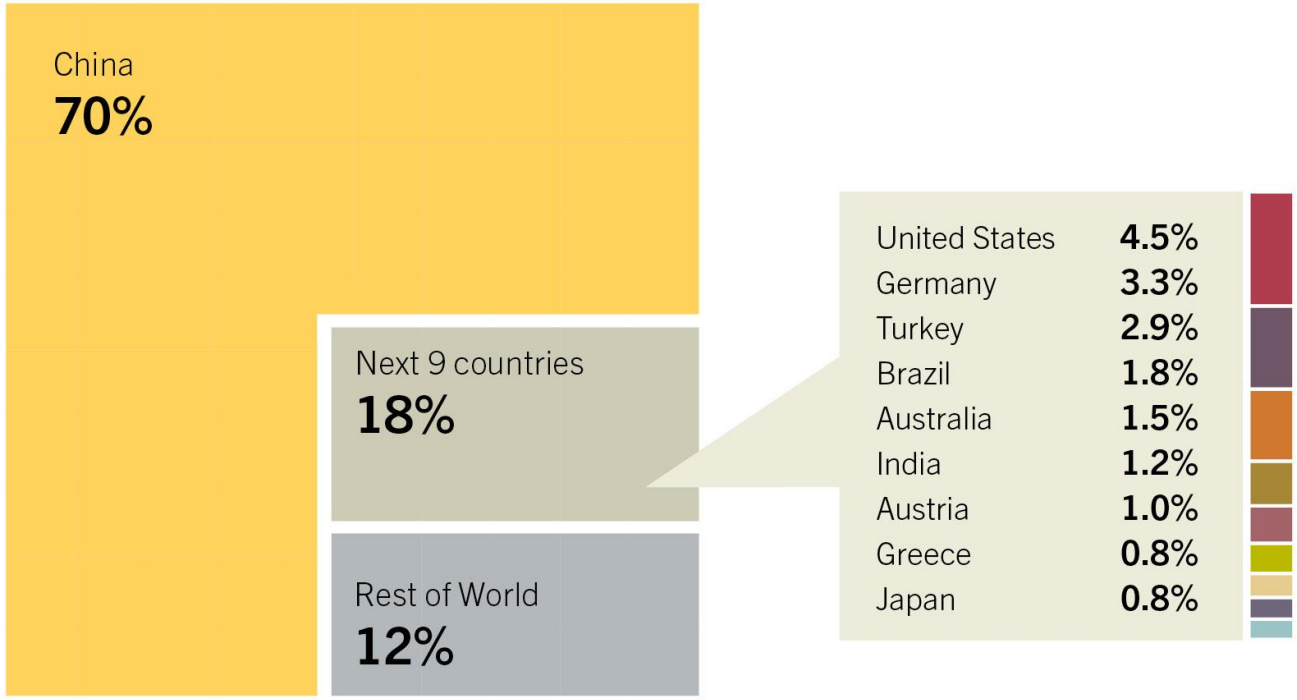
Solar PV Global Capacity, 2004–2014



Solar PV Capacity and Additions, Top 10 Countries, 2014



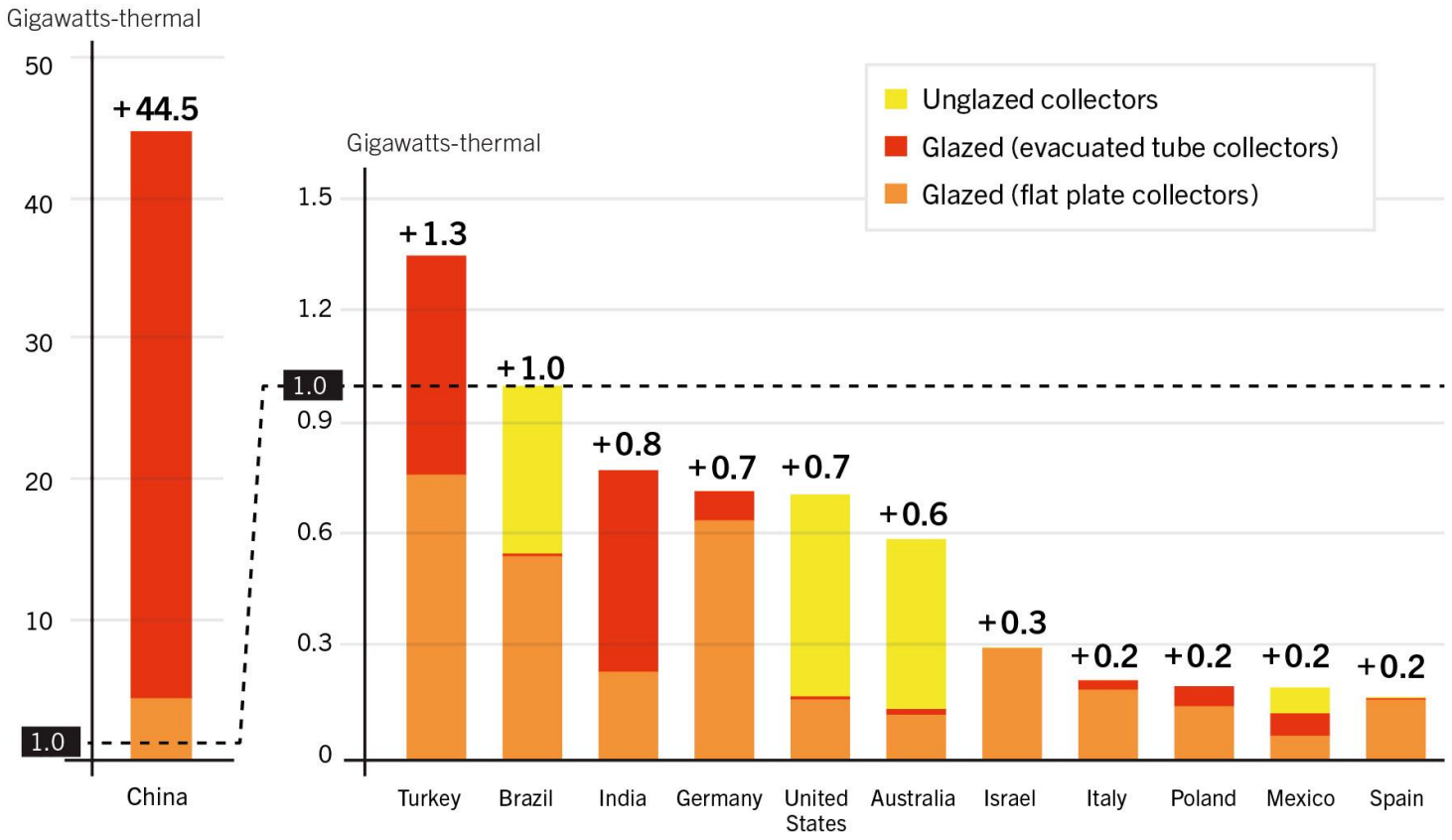
Solar Water Heating Collectors Global Capacity, Shares of Top 10 Countries and Rest of World, 2013



Data are for solar water collectors only (not including air collectors).

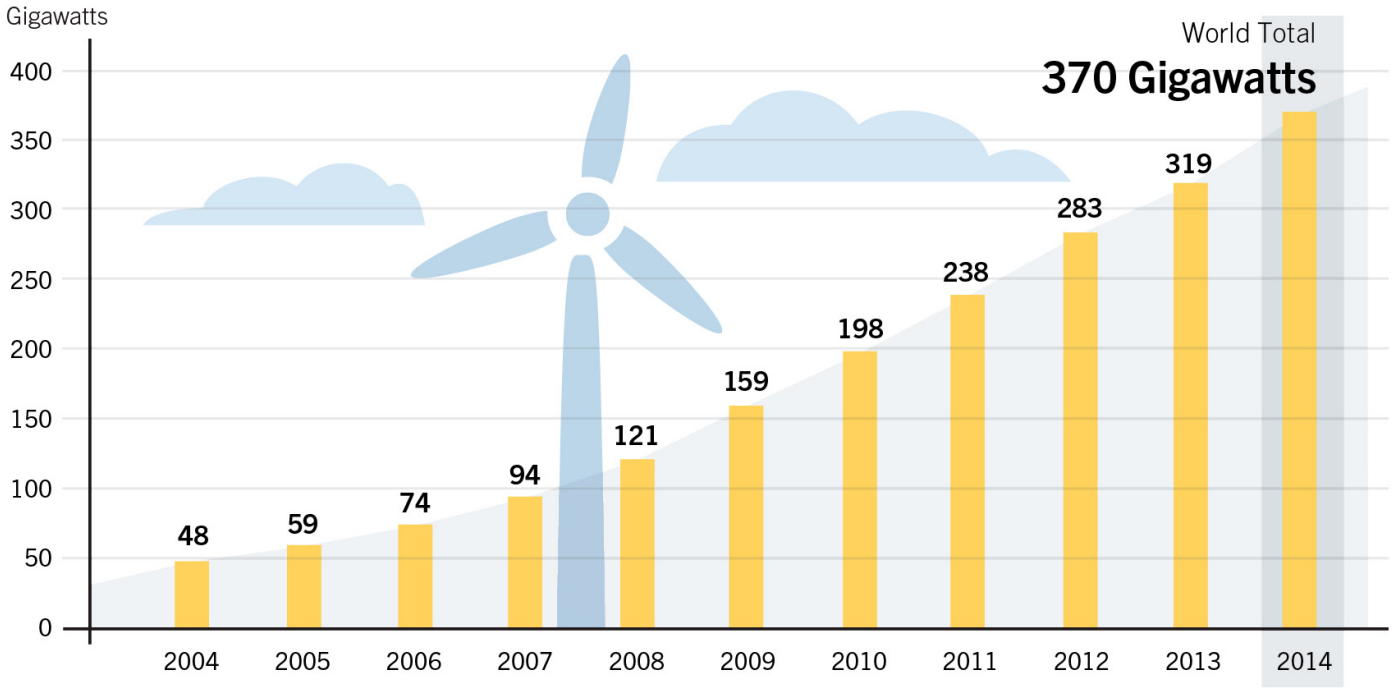
REN21 Renewable Energy Policy Network for the 21st Century

Solar Water Heating Collectors Additions, Top 12 Countries for Capacity Added, 2013



Additions represent gross capacity added.

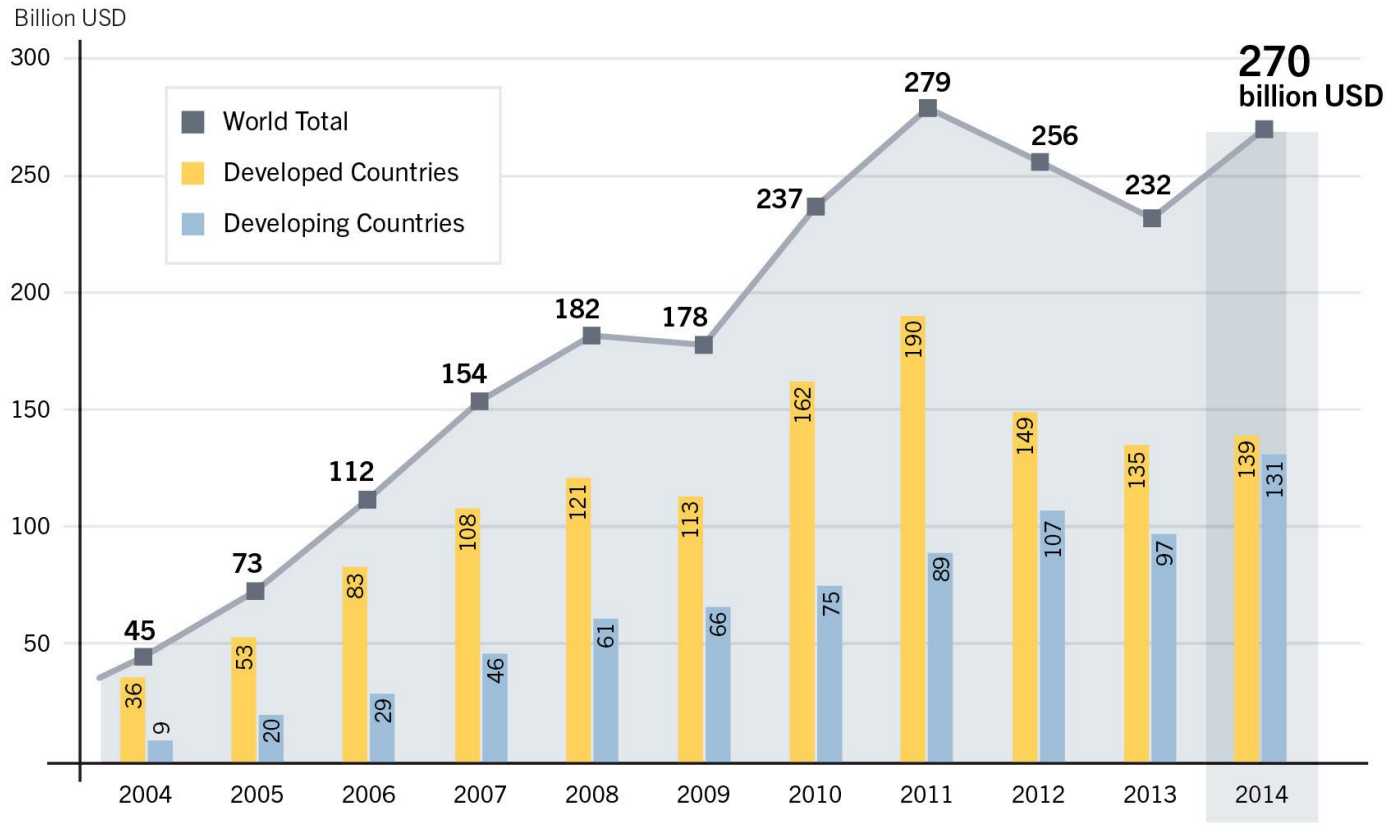
Wind Power Global Capacity, 2004–2014



REN21 *Renewables 2015 Global Status Report*

REN21 Renewable Energy Policy Network for the 21st Century

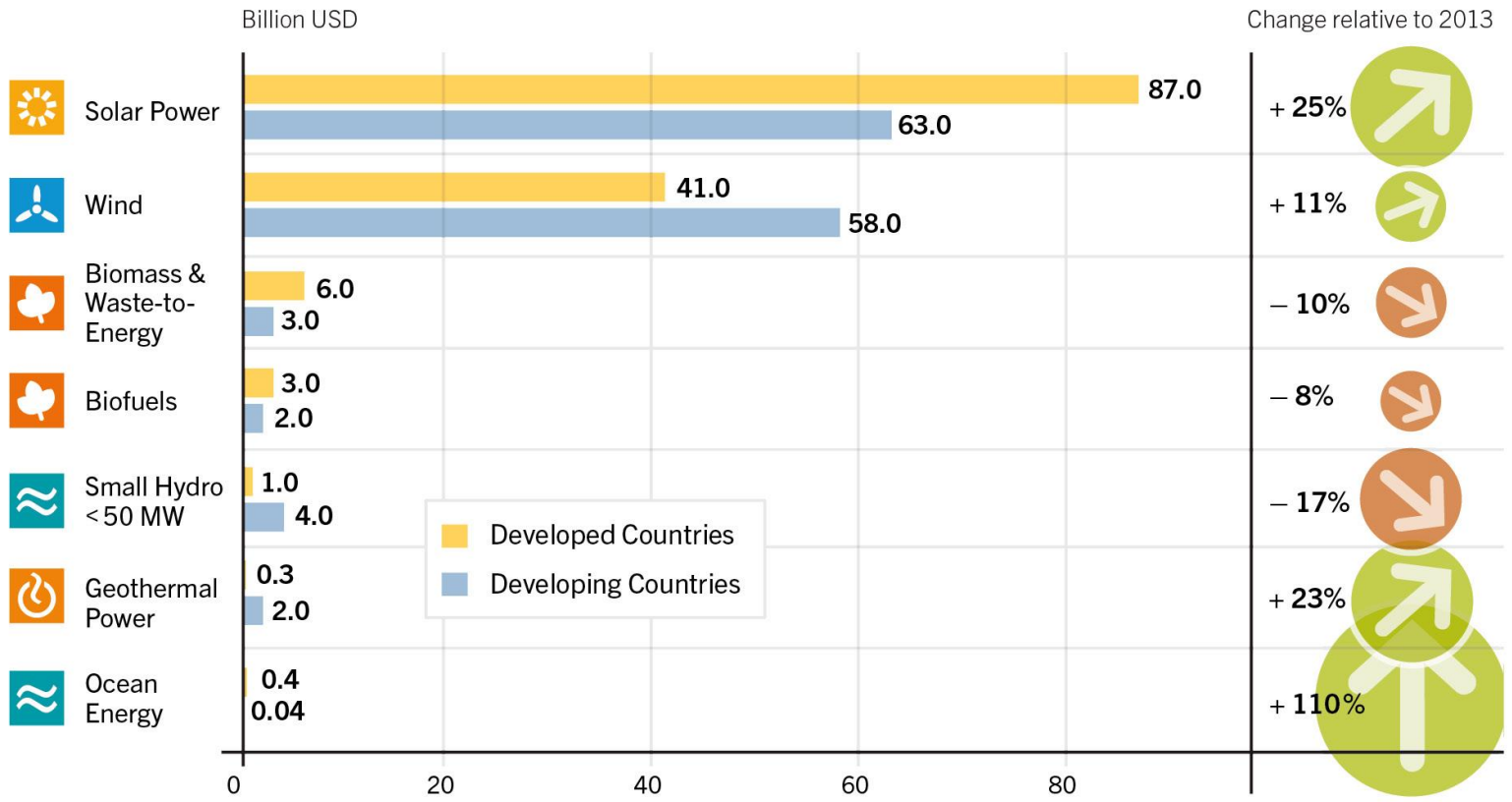
Global New Investment in Renewable Power and Fuels, Developed and Developing Countries, 2004–2014



REN21 *Renewables 2015 Global Status Report*

Source: Frankfurt School–UNEP and BNEF

Global New Investment in Renewable Energy by Technology, Developed and Developing Countries, 2014



REN21 *Renewables 2015 Global Status Report*

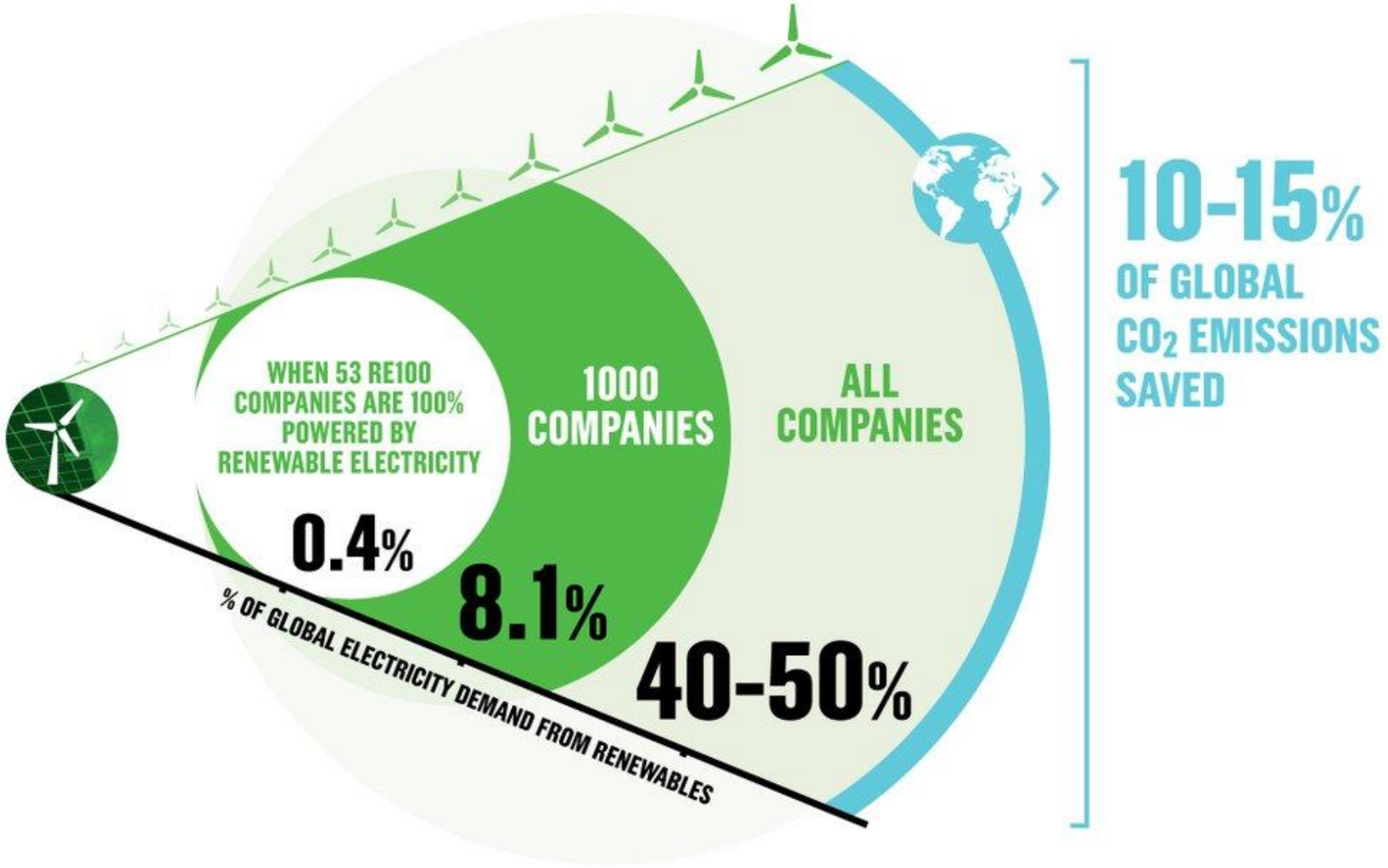
Source: Frankfurt School–UNEP and BNEF

Global Solar Council, launched at COP21 in Paris

- founding members
- Applied Materials
- Dow Corning
- DuPont
- First Solar
- Lanco Solar
- Phoenix Solar
- Suntech

RE 100

HOW BUSINESSES ARE POWERING A LOW CARBON ECONOMY



#RE100

*Not to scale

Find out more at TheRE100.org

RE 100 | AN INITIATIVE OF THE CLIMATE GROUP | IN PARTNERSHIP WITH CDP

Israel‘s INDC

- an economy-wide unconditional target of reducing its *per capita* greenhouse gas emissions to 7.7 tCO2e by 2030 (a reduction of 26% below the level in 2005 of 10.4 tCO2e per capita.)
- An interim target of 8.8 tCO2e per capita is expected by 2025.