

The World Nuclear Industry Status Report 2014

Free download at www.WorldNuclearReport.org

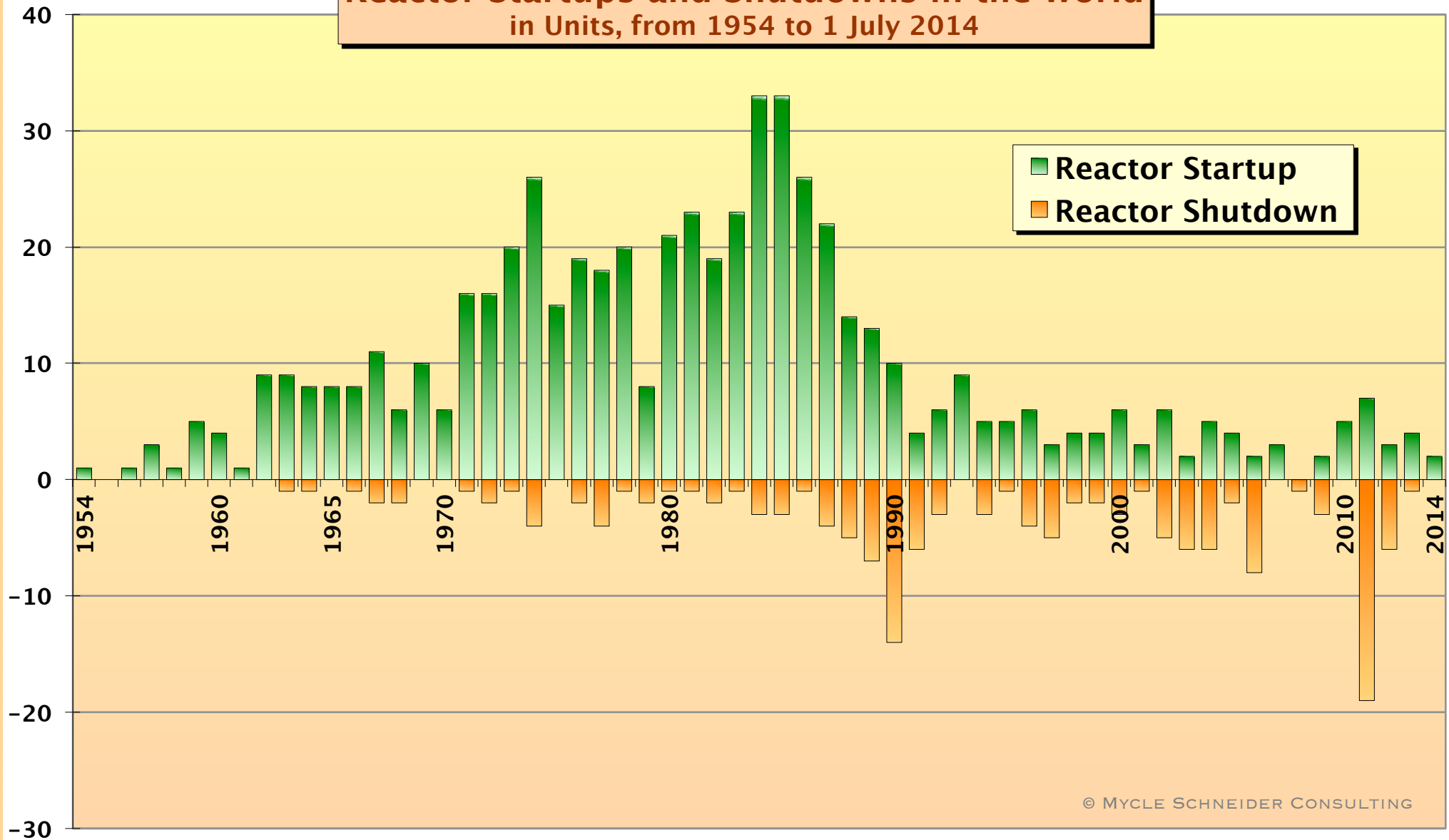
Mycle Schneider

International Consultant on Energy and Nuclear Policy, Paris, France

Convening Lead Author of the World Nuclear Industry Status Report (WNISR)

Heinrich Böll Foundation, Warsaw, Poland, 27 October 2014

Reactor Startups and Shutdowns in the World in Units, from 1954 to 1 July 2014



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Source: IAEA-PRIS, MSC, 2014

Nuclear Power Reactors “in Operation” – Really?

PRIS

The Database on Nuclear Power Reactors

The Power Reactor Information System (PRIS), developed and maintained by the IAEA for over four decades, is a comprehensive database focusing on nuclear power plants worldwide. PRIS contains information on power reactors in operation, under construction or those being... [READ MORE »](#)

Registered User ENTRY

How to Register

SHORTCUTS

Select Country

Select Reactor

2014 - Nuclear Power Reactors in the...

2014 - Operating Experience with NPP...

PRIS STATISTICS – User's Manual

OVERVIEW

Current Status:

437 NUCLEAR POWER REACTORS IN OPERATION

374 504 MWe TOTAL NET INSTALLED CAPACITY

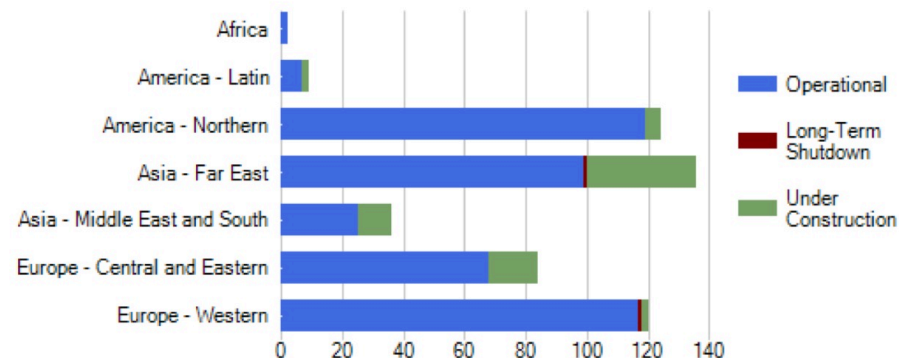
2 NUCLEAR POWER REACTORS IN LONG-TERM SHUTDOWN

72 NUCLEAR POWER REACTORS UNDER CONSTRUCTION



Regional Distribution of Nuclear Power Plants

(Click on the chart for more statistics)



Source: Screenshot IAEA-website 25 October 2014

Japan's Nuclear Fleet "Operational"?

- COUNTRIES
- Argentina
 - Armenia
 - Belarus
 - Belgium
 - Brazil
 - Bulgaria
 - Canada
 - China
 - Czech Republic
 - Finland
 - France
 - Germany
 - Hungary

 **Japan**

SUMMARY

Nuclear Power Reactors

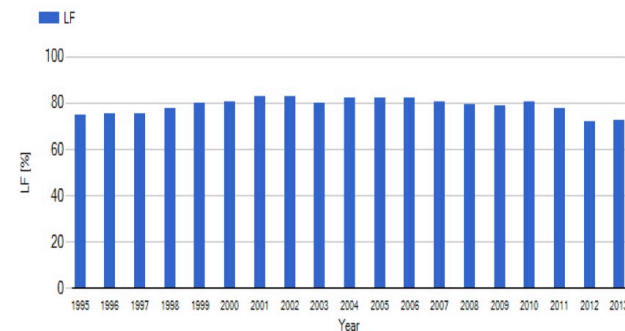
Under Construction	Operational	Long-Term Shutdown	Permanent Shutdown
2	48	1	11



Annual Electrical Power Production

Total Electricity Production (including Nuclear)	Nuclear Electricity Production
812821.00 GW.h (Net, 2013)	13947.00 GW.h (Net, 2013)

Electricity Production Share in 2013



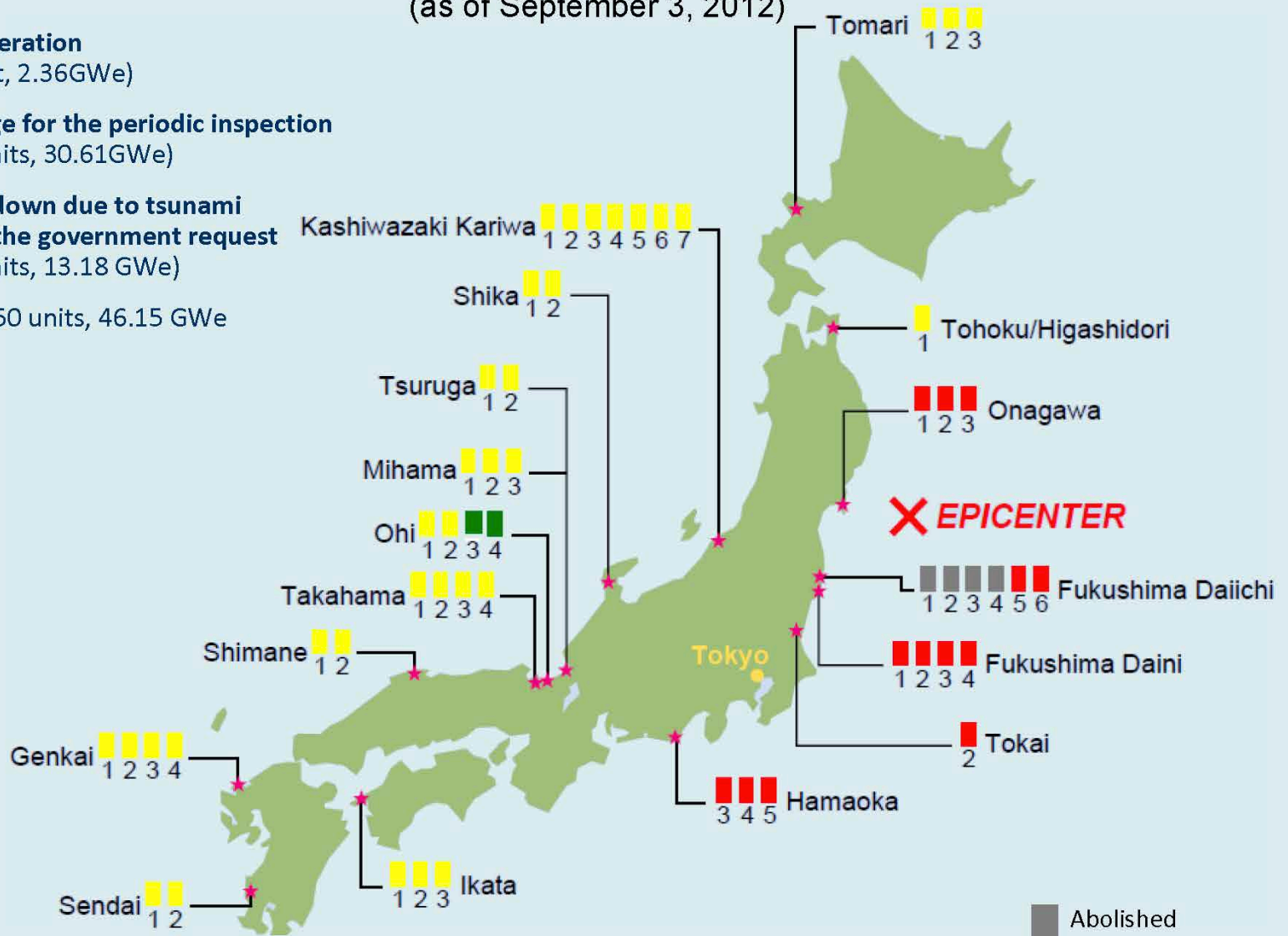
Source: Screenshot IAEA-website 25 October 2014

Current Status of the Nuclear Power Plants in Japan

(as of September 3, 2012)

- : In operation
(2 unit, 2.36GWe)
- : Outage for the periodic inspection
(35 units, 30.61GWe)
- : Shutdown due to tsunami and the government request
(13 units, 13.18 GWe)

TOTAL : 50 units, 46.15 GWe



Source: JAIF, 2012

The WNISR2014 Establishes New Reactor Status Category: Long-Term Outage or LTO

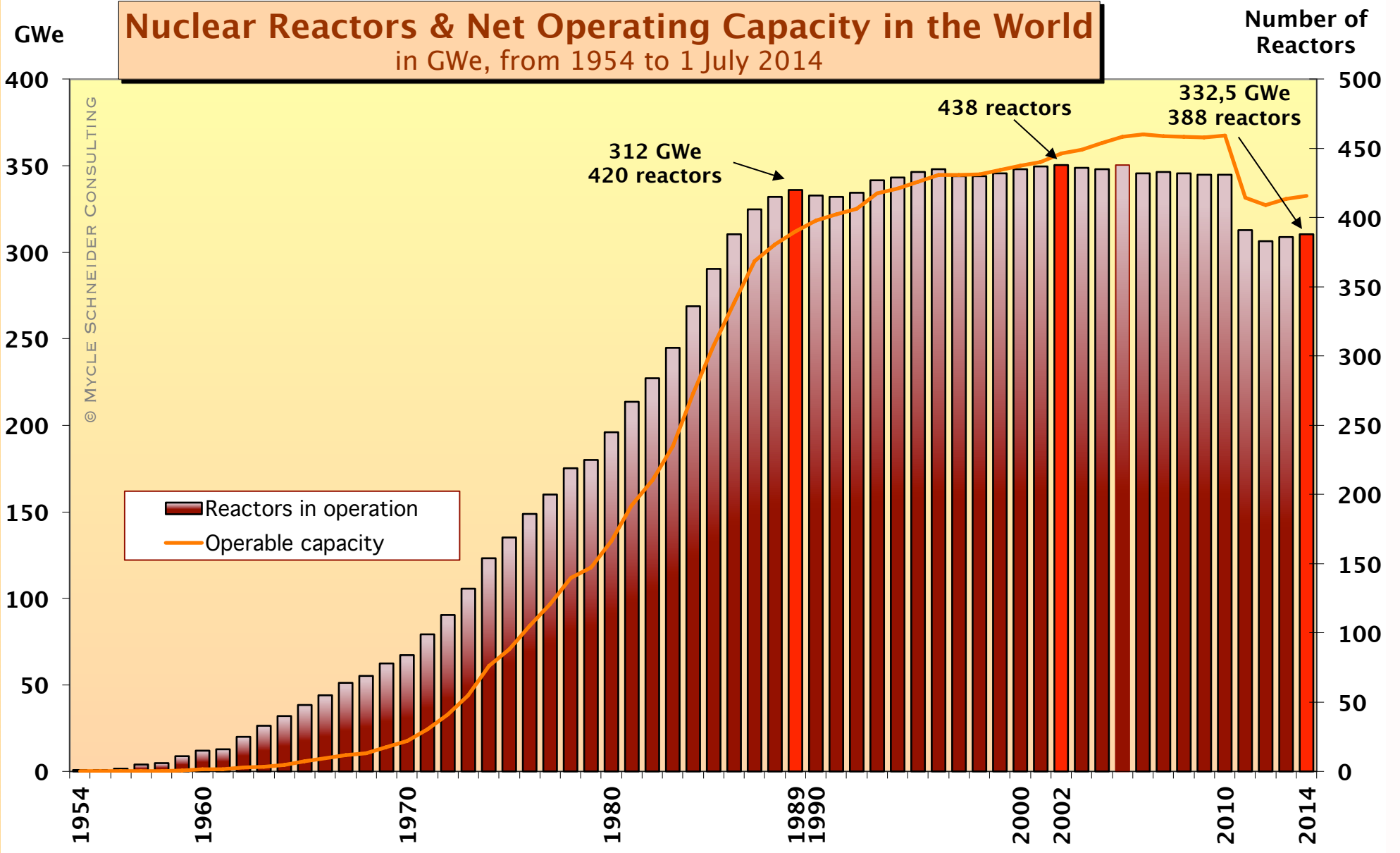
“A nuclear power reactor is considered in Long-Term Outage (LTO) if it has not generated any power in the entire previous calendar year and in the first semester of the current calendar year of the WNISR.”

45 reactors worldwide in LTO

- 43 in Japan, shut down between 1995 and 2012
- 1 in South Korea, Wolsong-1, shut down since 2012
- 1 in India, Rajasthan-1, shut down since 2004

Nuclear Reactors & Net Operating Capacity in the World

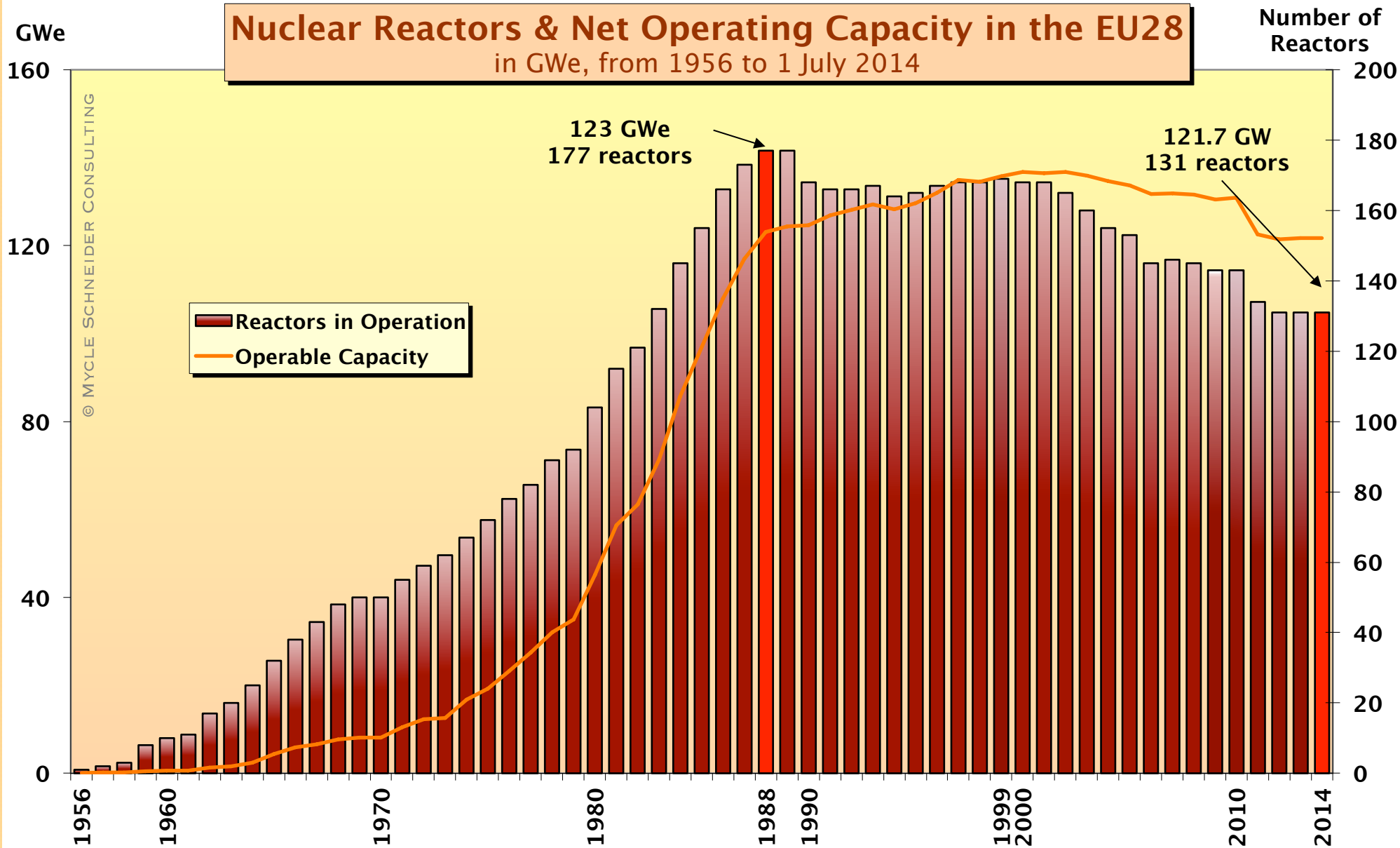
in GWe, from 1954 to 1 July 2014



Source: IAEA-PRIS, MSC, 2014

Nuclear Reactors & Net Operating Capacity in the EU28

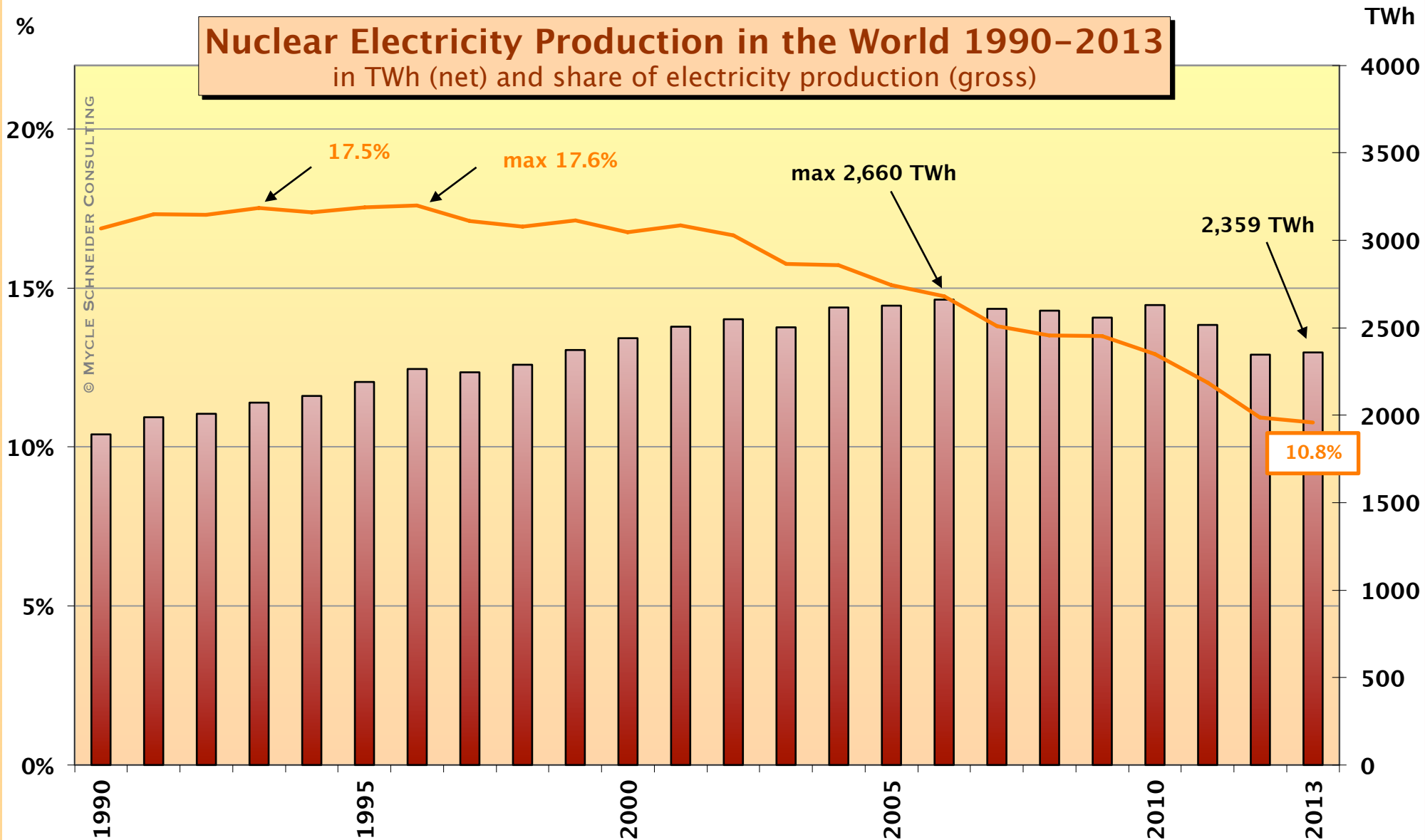
in GWe, from 1956 to 1 July 2014



Source: IAEA-PRIS, MSC, 2014

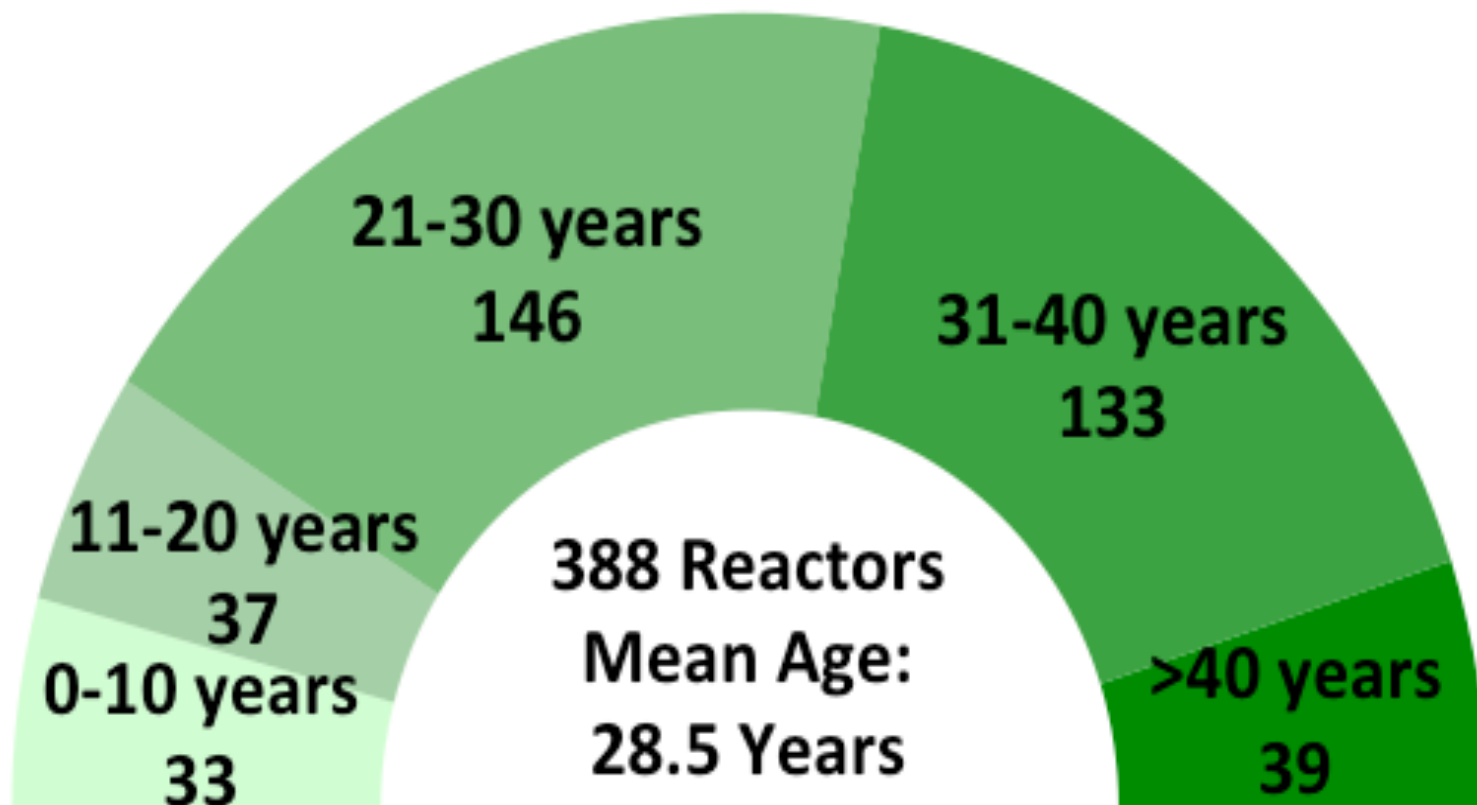
Nuclear Electricity Production in the World 1990-2013

in TWh (net) and share of electricity production (gross)

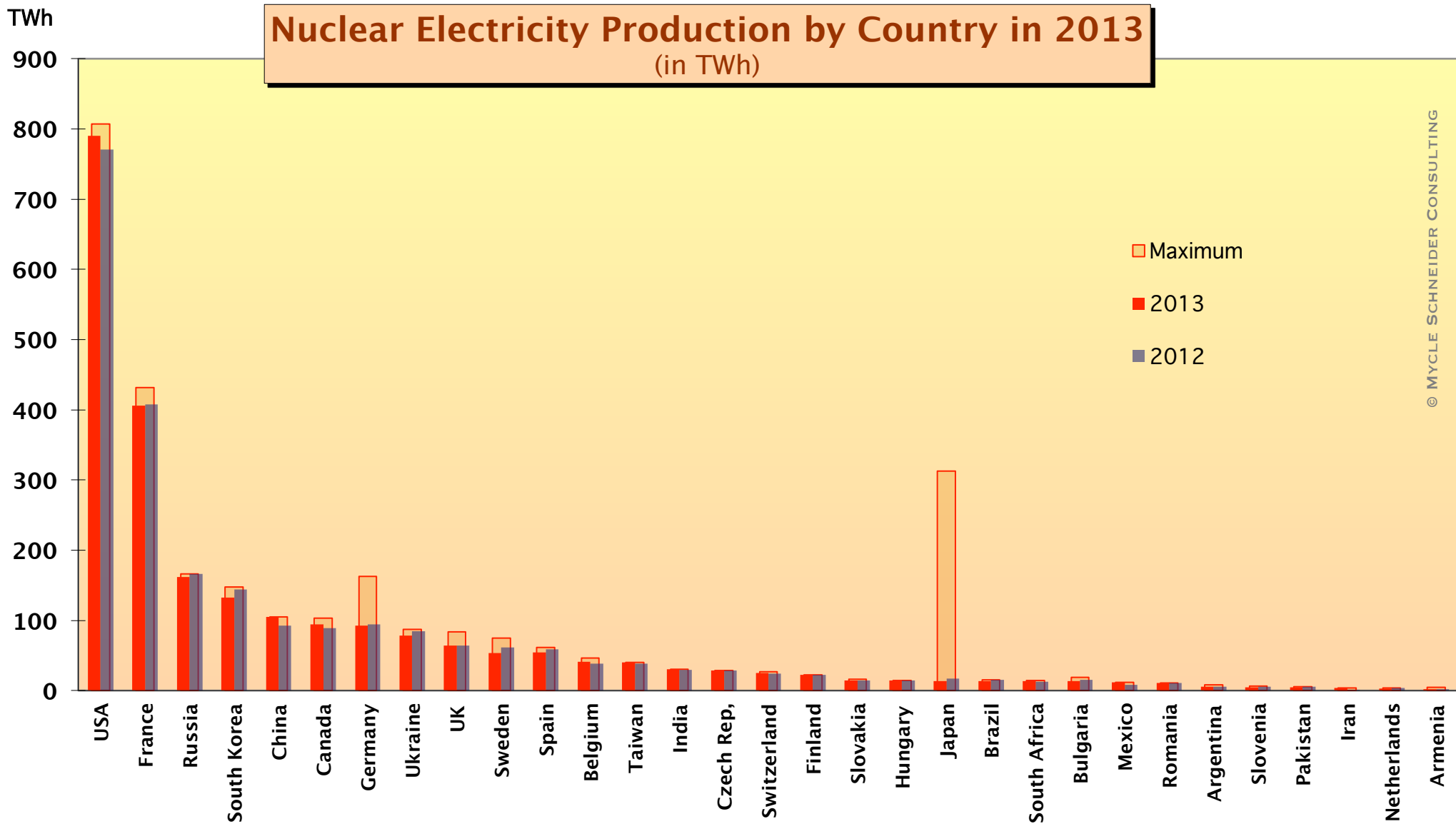


Source: IAEA-PRIS, MSC, 2014

Age of World Nuclear Fleet as of 1 July 2014



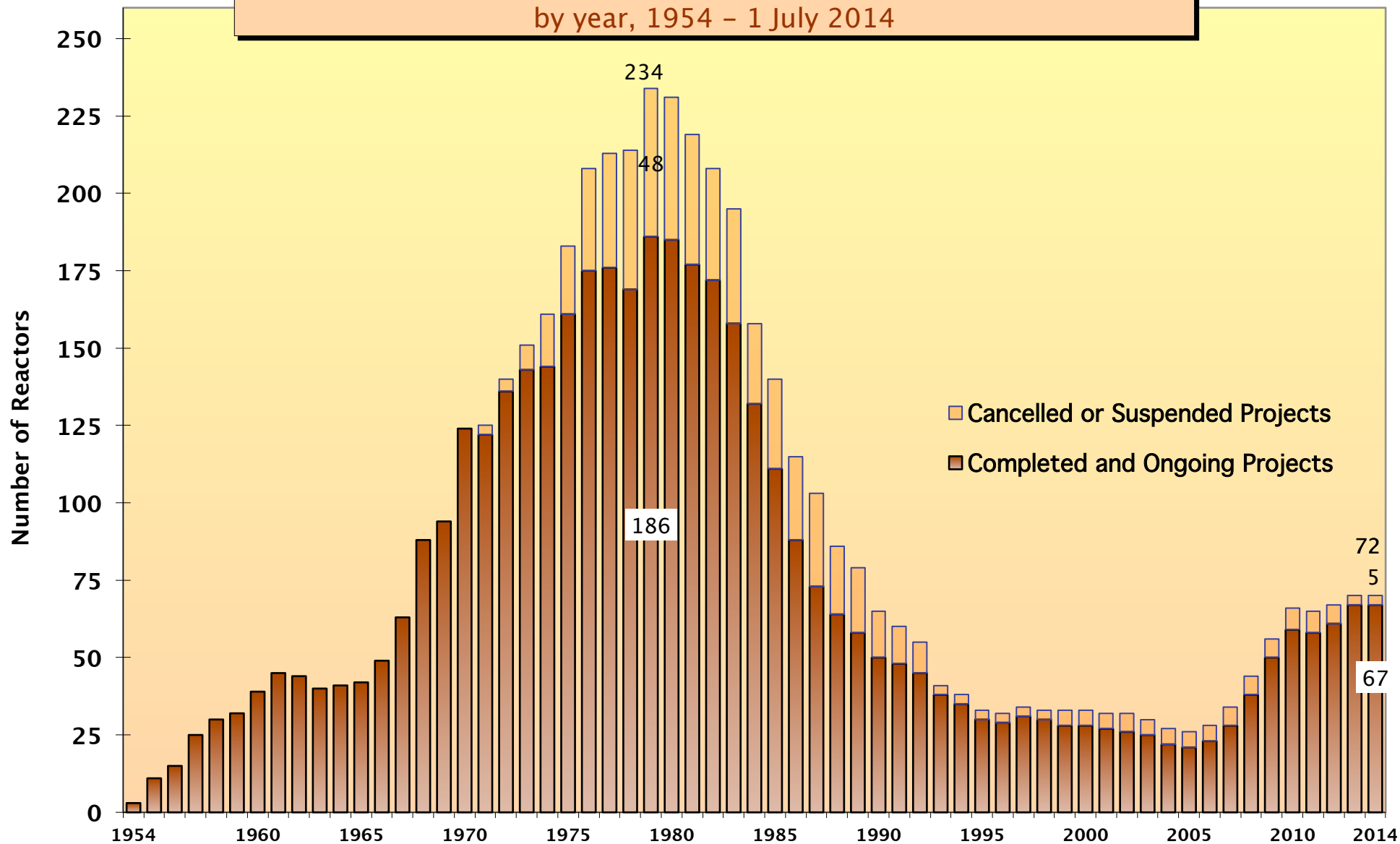
Nuclear Electricity Production by Country in 2013 (in TWh)



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Source: IAEA-PRIS, MSC, 2013

Number of Nuclear Reactors Listed as "Under Construction" by year, 1954 - 1 July 2014



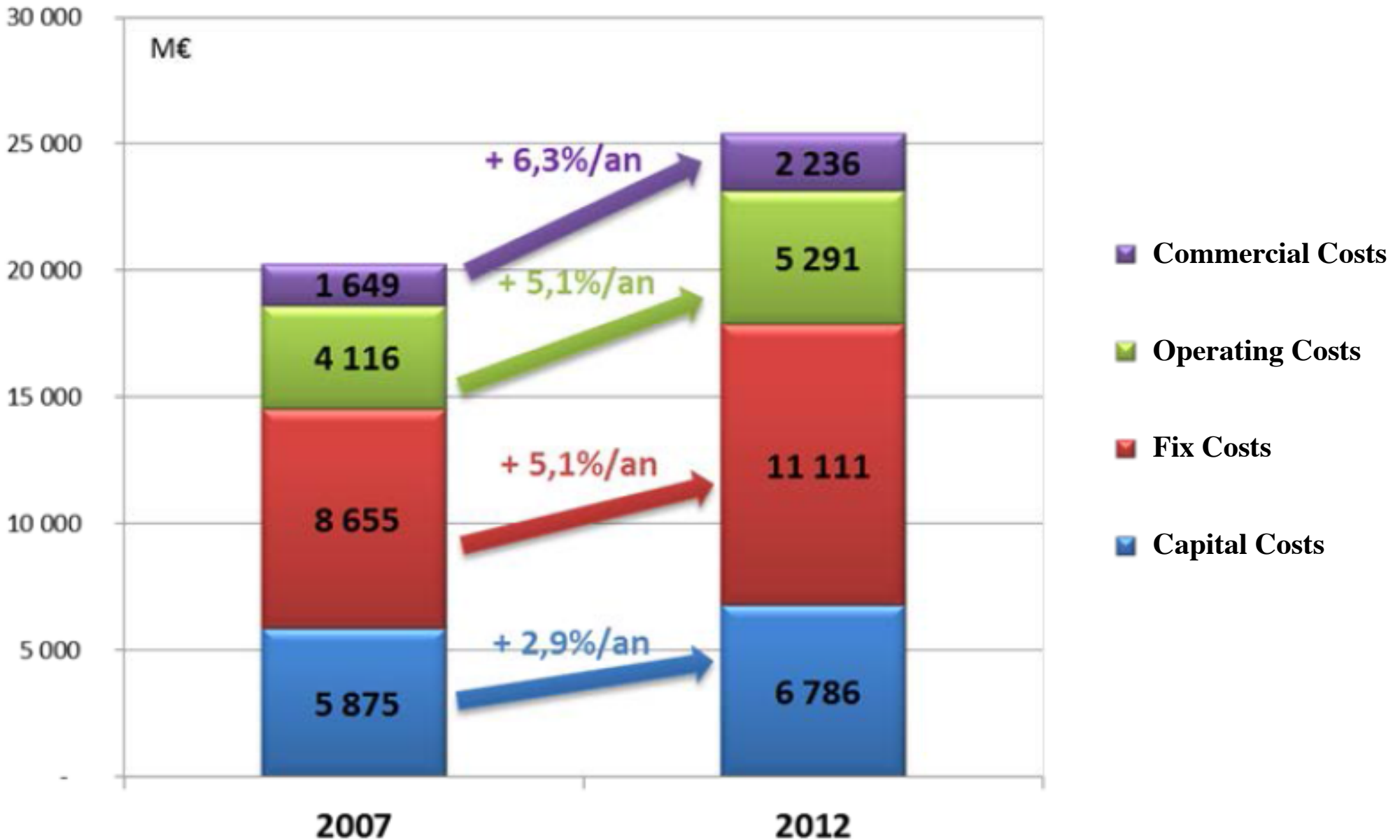
Source: IAEA-PRIS, MSC, 2014

Reactors « Under Construction » in the World (1 October 2014)

Country	Units	MWe (net)	Construction Start	Grid Connection
China	27	26,756	2008-2013	2014-2018
Russia	9	7,273	1983-2019	2014-2019
India	6	3,907	2002-2011	2014-2016
South Korea	5	6,320	2008-2013	2014-2018
USA	5	5,633	1972-2013	2015-2019
UAE	3	4,035	2012-2014	2017-2018
Belarus	2	2,218	2013-2014	2019-2020
Pakistan	2	630	2011	2016-2017
Slovakia	2	880	1985	2014-2015
Ukraine	2	1,900	1986-1987	2015-2016
Argentina	1	25	2014	2018
Brazil	1	1,245	2010	2016
Finland	1	1,600	2005	2018
France	1	1,600	2007	2016
Total	67	65,022	1972-2014	2014-2020

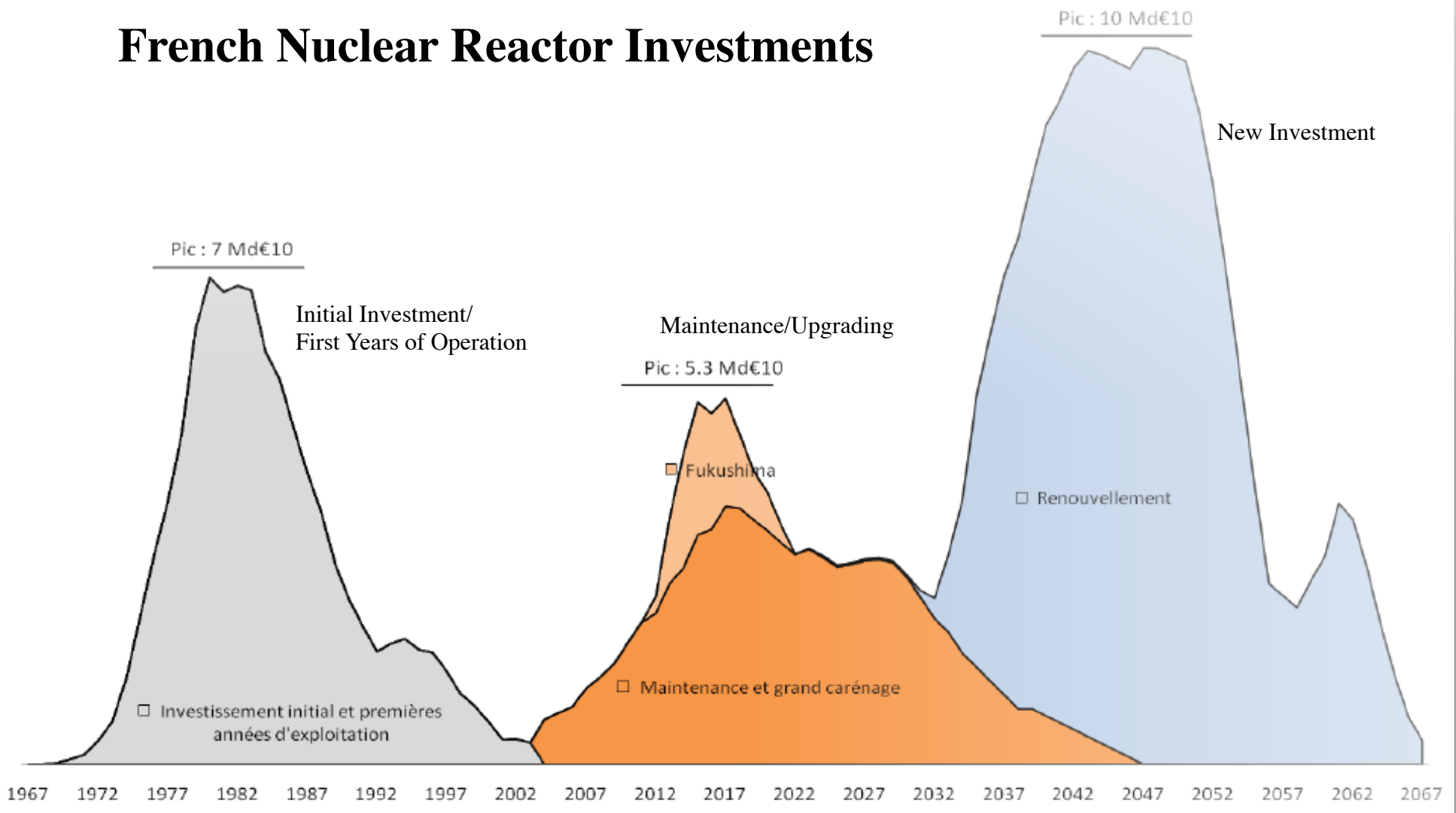
Source: IAEA-PRIS, MSC, 2014

French Electricity Generating and Marketing Costs 2007-2012: +4.5%/a



Source: Rapport de la Commission de régulation de l'énergie, 4 June 2013

French Nuclear Reactor Investments



Traditional Utilities Under Pressure—UBS: “*Time to Join the Revolution*”

The 20 largest European energy utilities lost over half of the €1 trillion stock market value since 2008, some a lot more (EDF, E.ON over 70%).

Europe’s electricity providers face an existential threat.

The Economist, London, October 2013

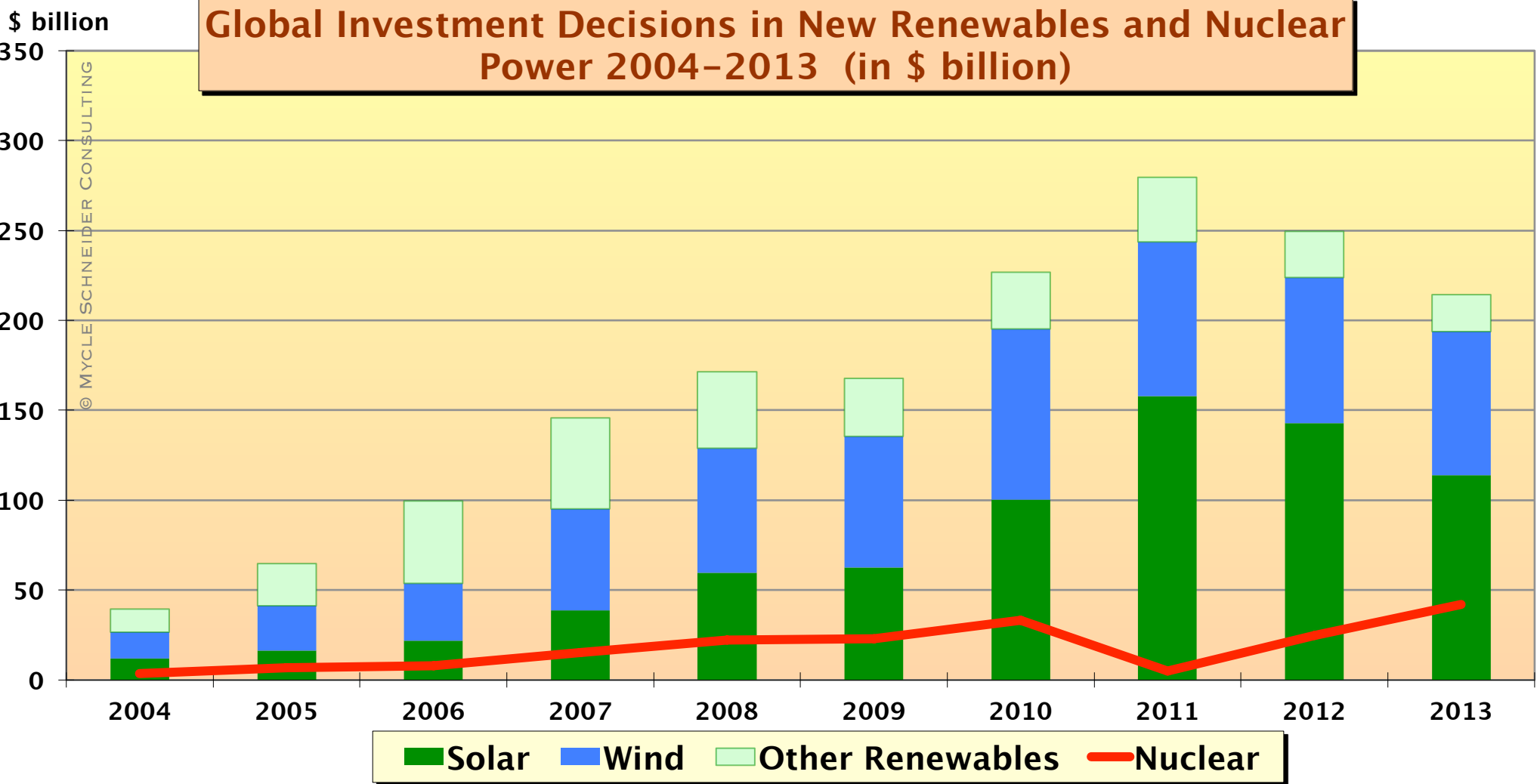
Utility business models are threatened by the dramatic growth in the deployment of technologies that generate electricity onsite or at the distribution grid level.

Navigant Research, Boulder, USA, August 2014

A new technological paradigm in electricity and the end of the reign of the large-scale utilities.

Institute for Public Policy Research, London, September 2014

Global Investment Decisions in New Renewables and Nuclear Power 2004-2013 (in \$ billion)



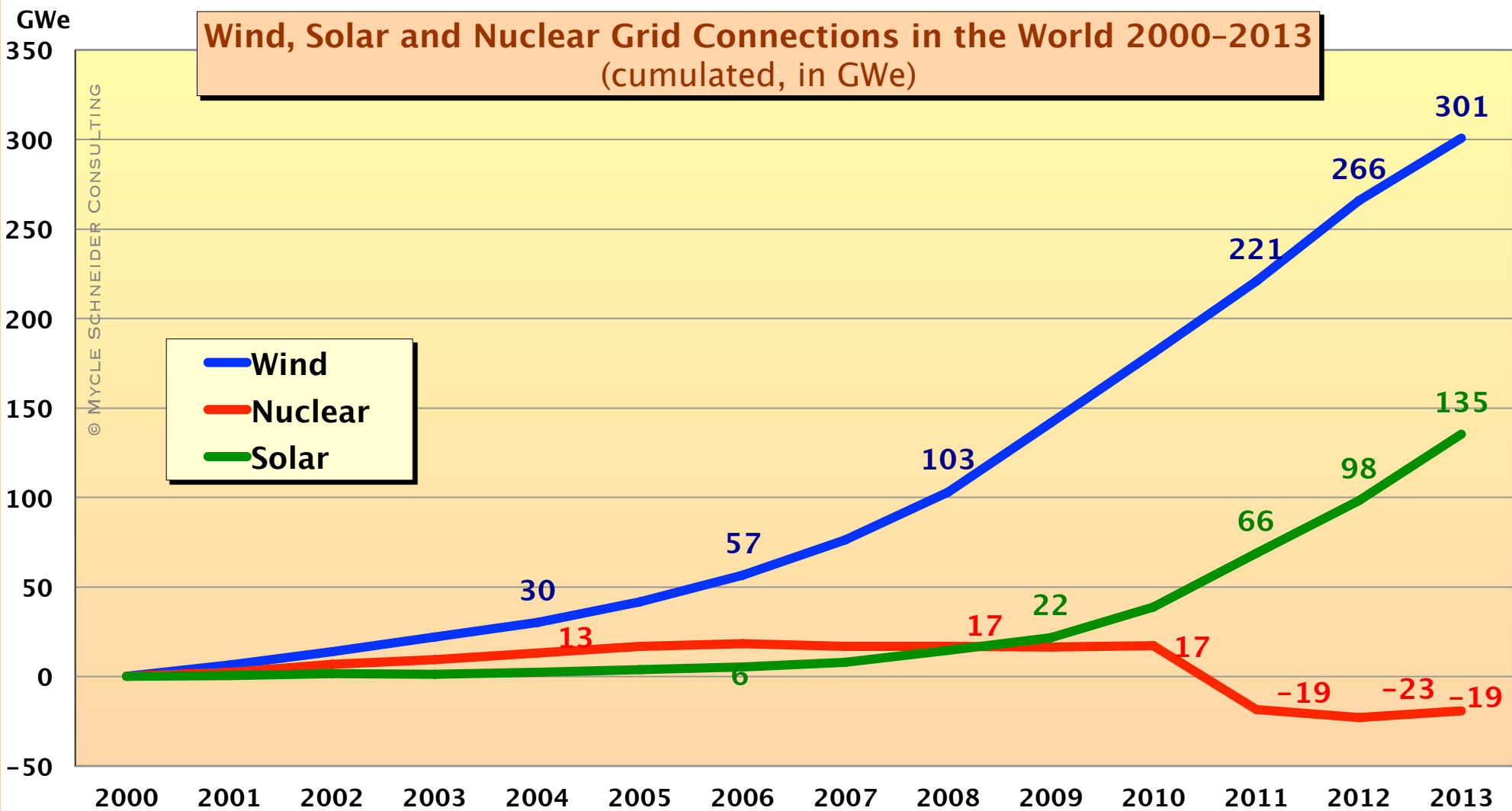
Source: UNEP 2014 and WNISR original research

Top 10 Renewable Energy Investment 2011-2013

(in billion US\$)

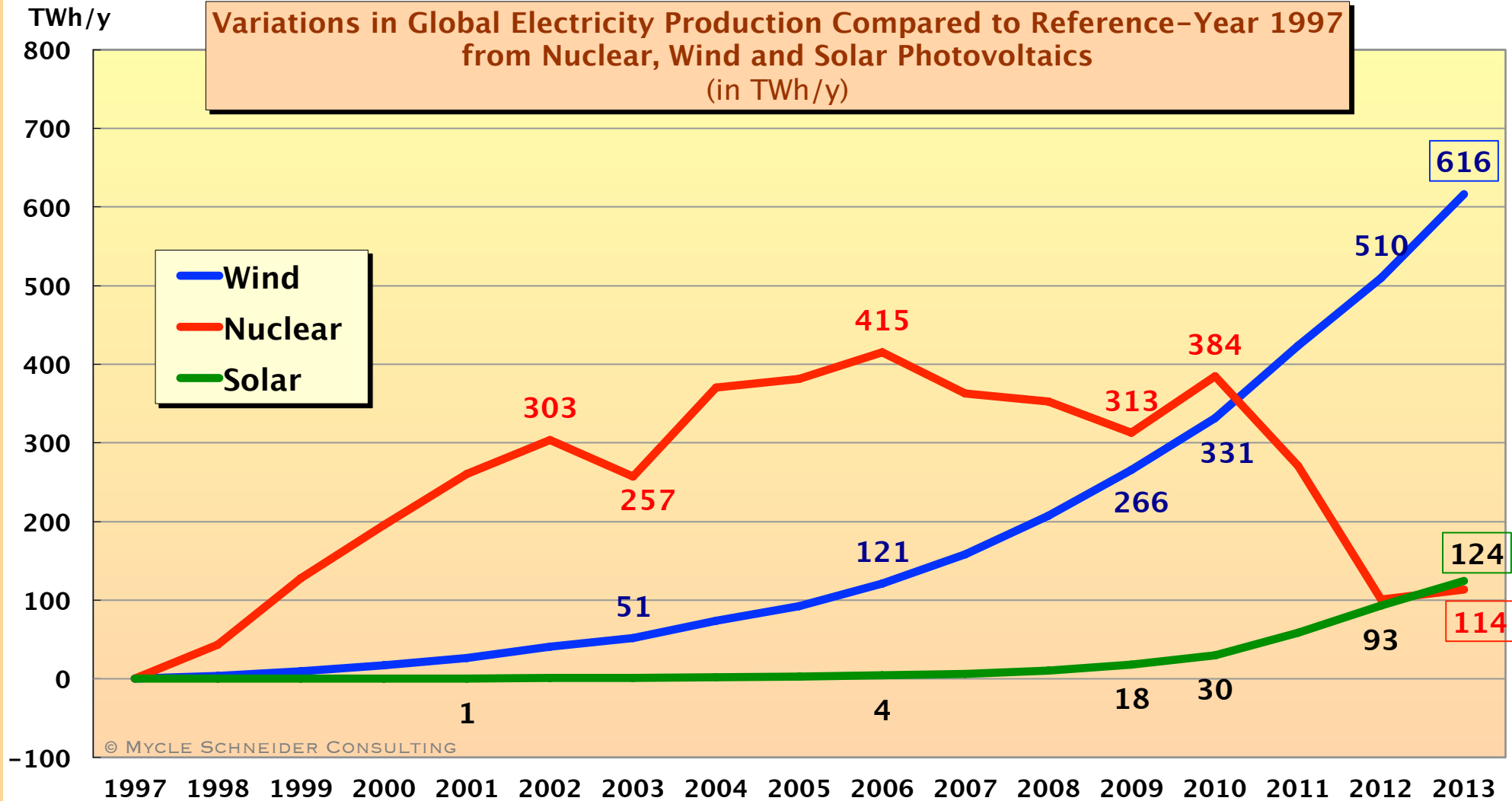
Country	Billion US\$		
	2013	2012	2011
1. China	54.2	67.7	45.5
2. United States	33.9	44.2	48.1
3. Japan	28.6	16.3	8.6
4. UK	12.1	8.3	9.4
5. Germany	9.9	22.8	30.6
6. Canada	6.4	N/A	5.5
7. India	6.0	4.5	10.2
8. South Africa	4.9	5.5	0.03
9. Australia	4.4	N/A	N/A
10. Italy	3.6	14.7	28

Source: Bloomberg New Energy Finance, 2013-14



Source: IAEA-PRIS, EPIA, GWEC 2014

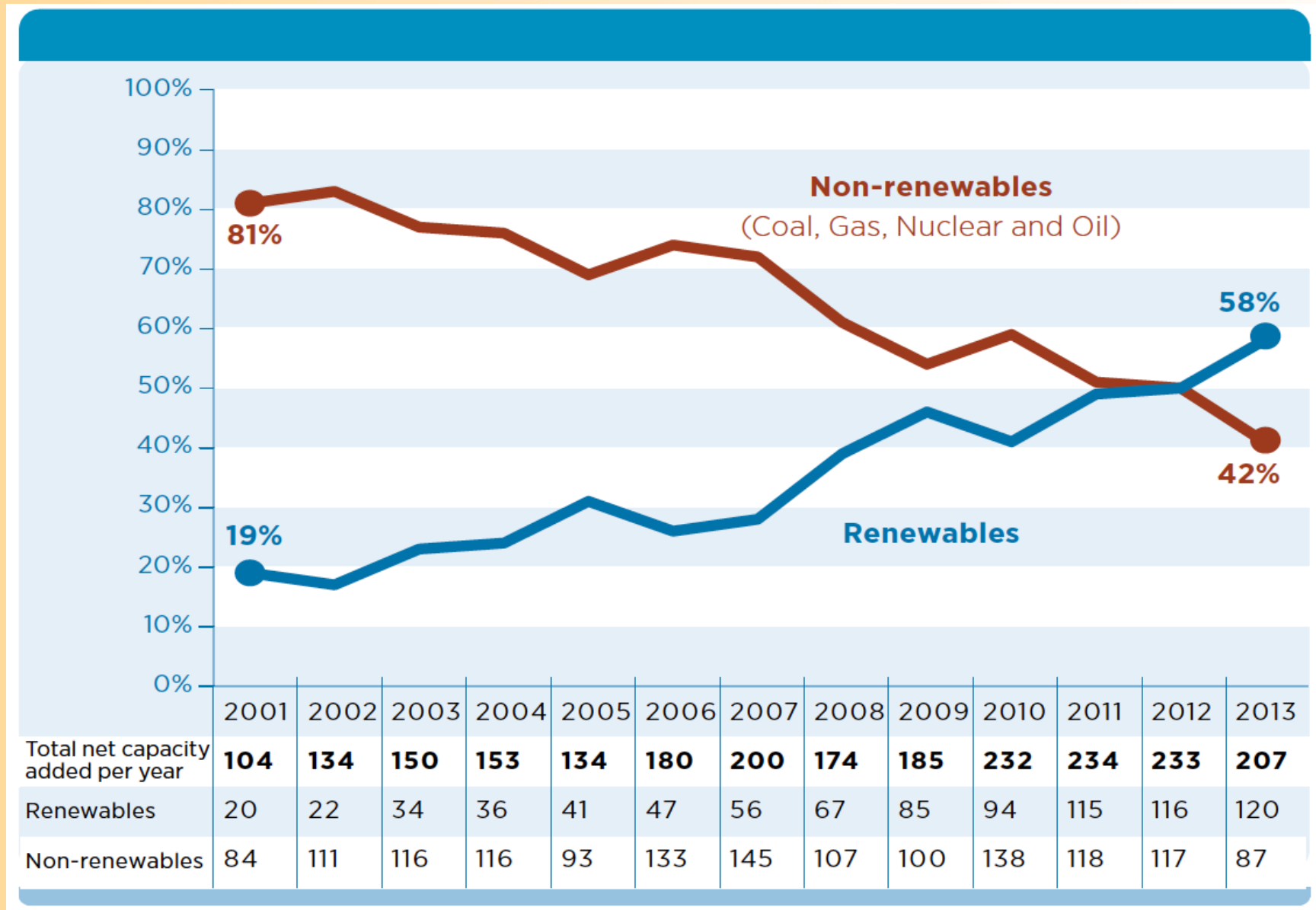
Variations in Global Electricity Production Compared to Reference-Year 1997
from Nuclear, Wind and Solar Photovoltaics
(in TWh/y)



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Sources: BP, IAEA-PRIS, MSC, 2014

Renewables Share of Global Electricity Generating Capacity Additions



Source: IRENA, Rethinking Energy, 2014