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Realization of Energy Independence by Asia Super Grid opportunity for countries

at Asia Super Grid Workshop in Seoul

25 MAY 2016

Mika Ohbayashi
Director, Renewable Energy Institute

REI was born in 2011 in the aftermath of 3.11

with 34/47 prefectures
& 19/20 major cities

(Established in July 2011)

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an institute brings global
knowledges of RE to JP

(Established in Aug. 2011)

Asia Super Grid- opportunities for countries

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Asia Super Grid

(Announced in September 2011)

benefits of grid integration

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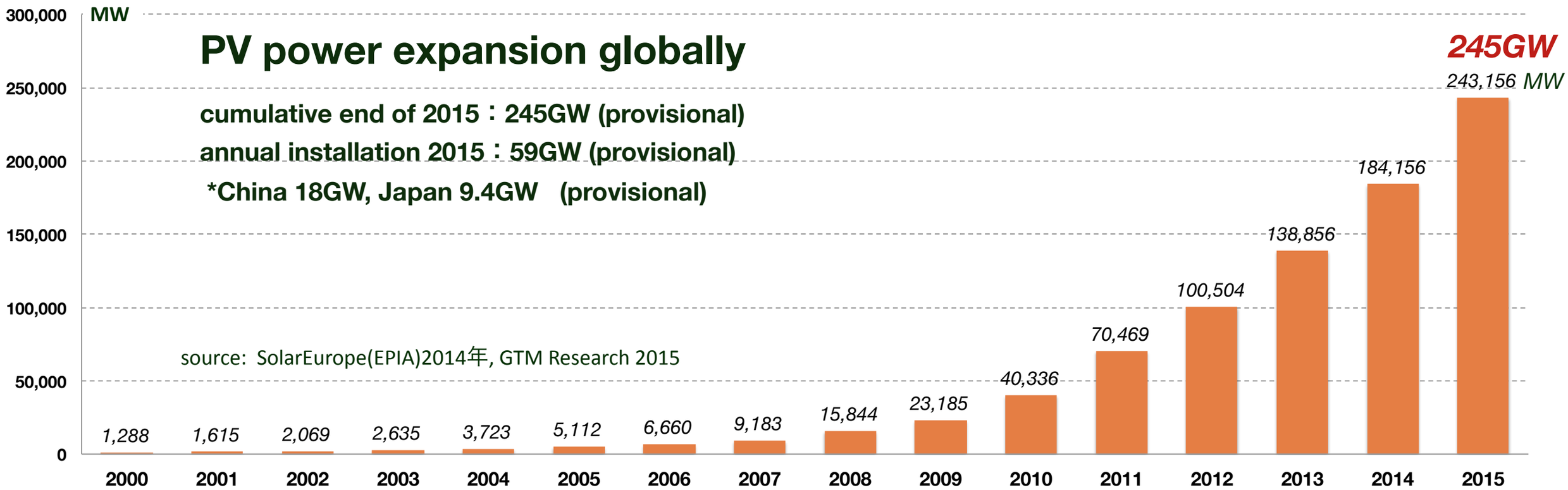
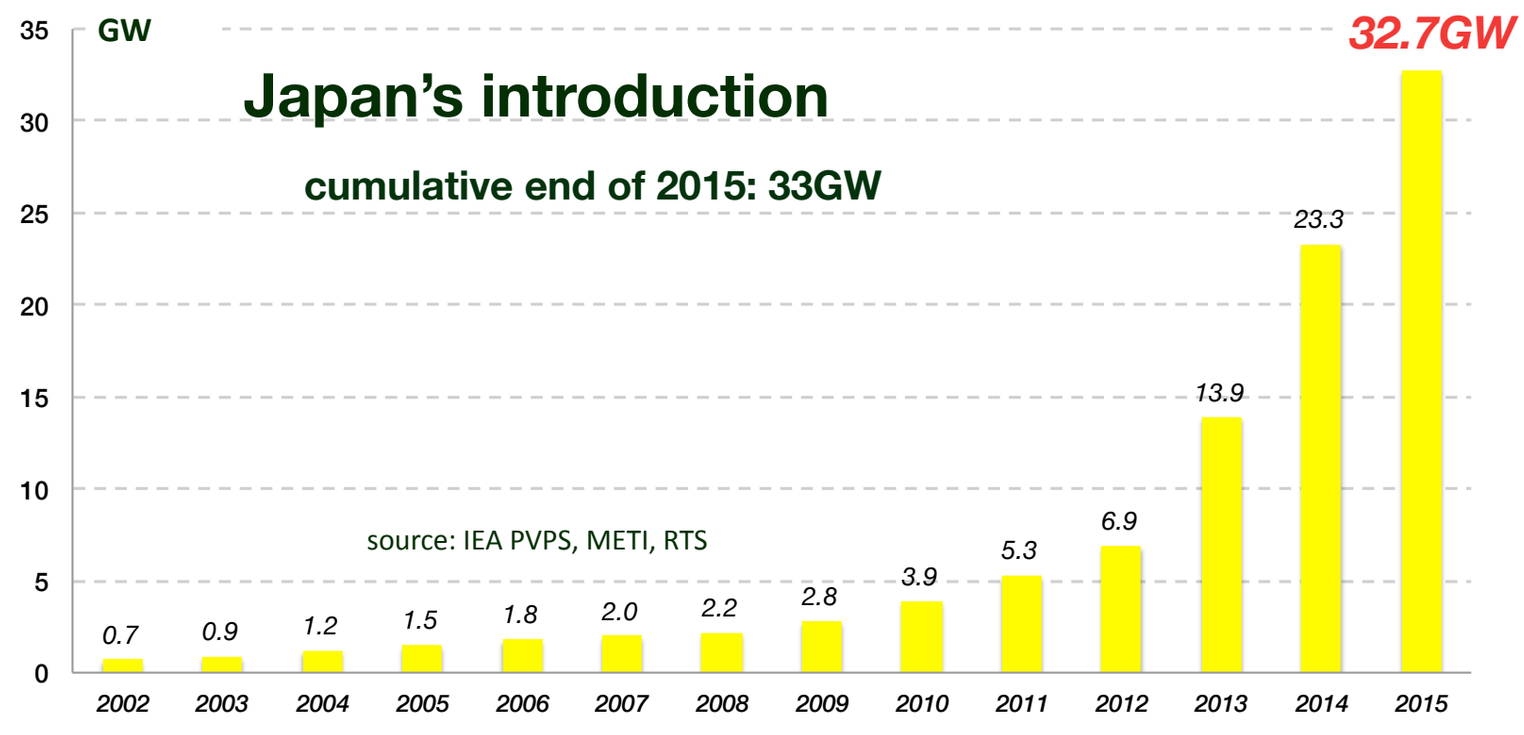


Globally, 50GW and 60GW in 2014 and 2015 accordingly, and prospected 70GW in 2016, surplus 300GW within the year.

Japan is expected to install the largest number of 9.4GW in 2016 (RTS).



benefits of grid integration

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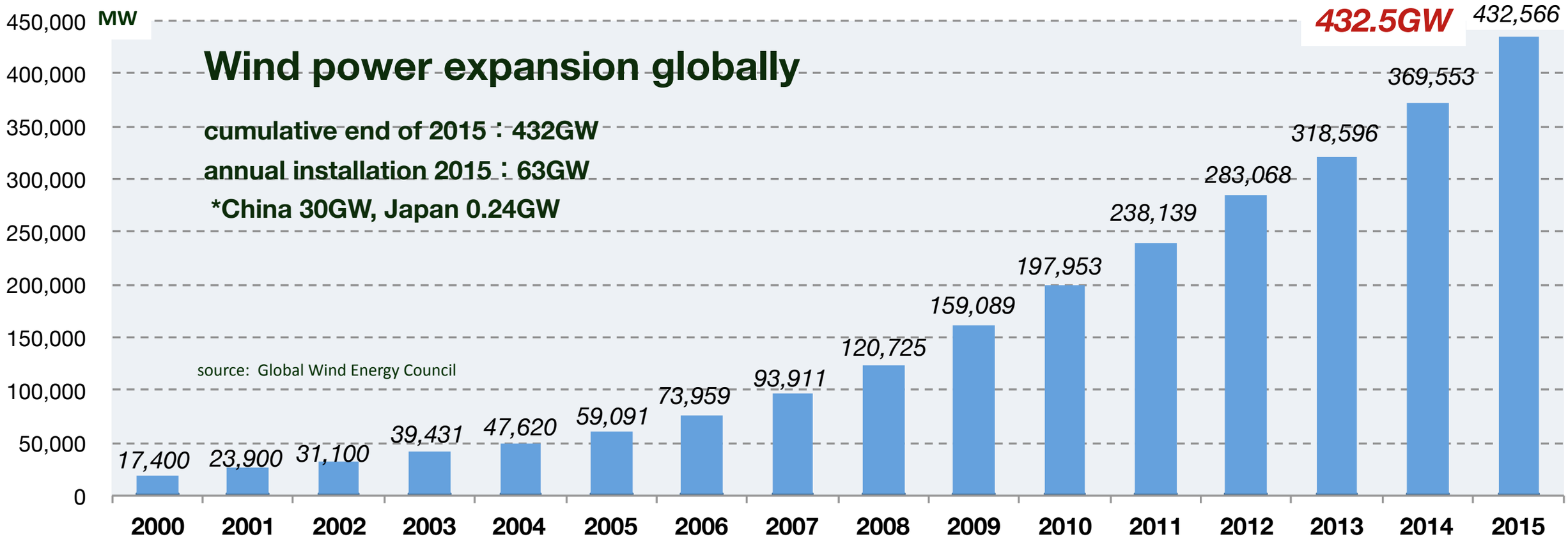

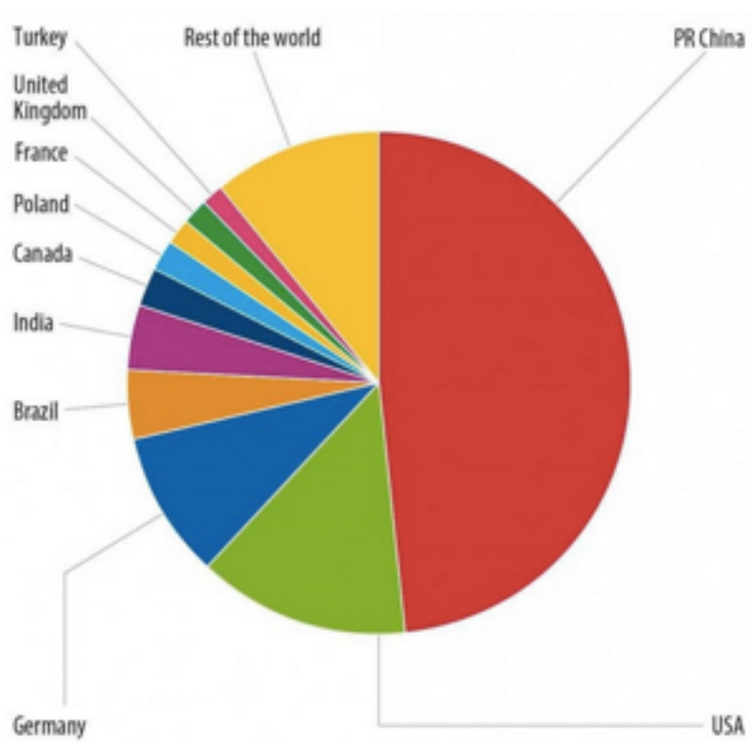

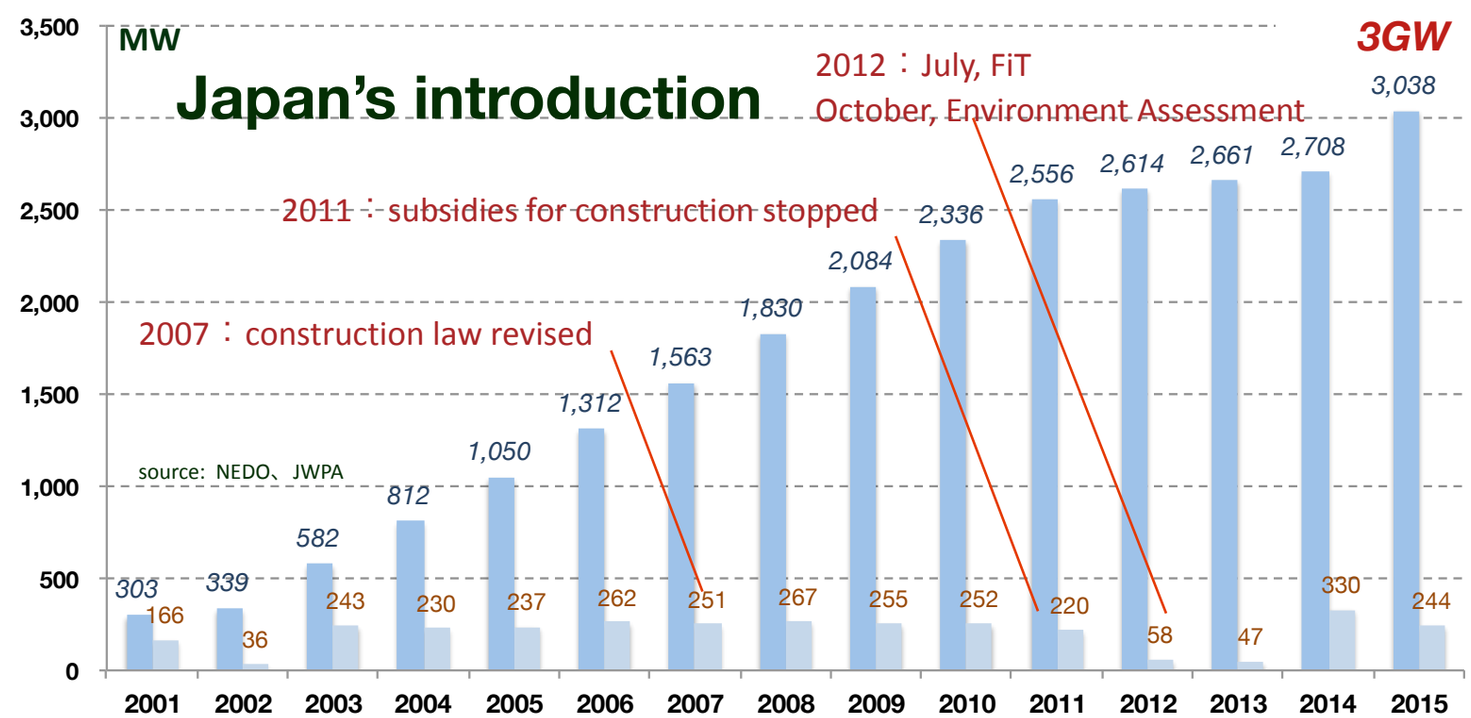

*numbers of abolished turbines are reduced from total

for getting benefits of grid integration

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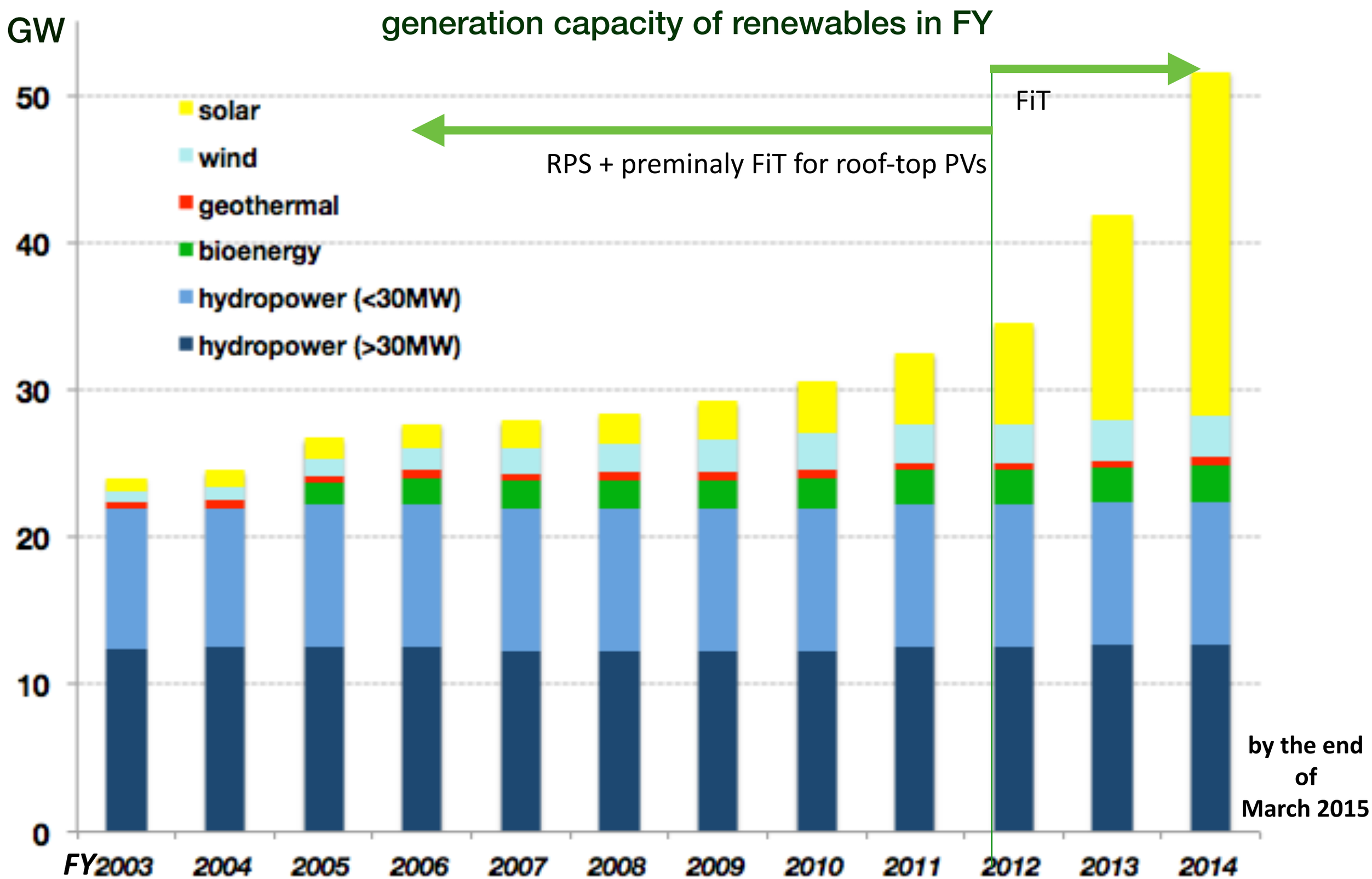

source: Japan Renewable Energy Foundation http://jref.or.jp/en/statistics/annual.php

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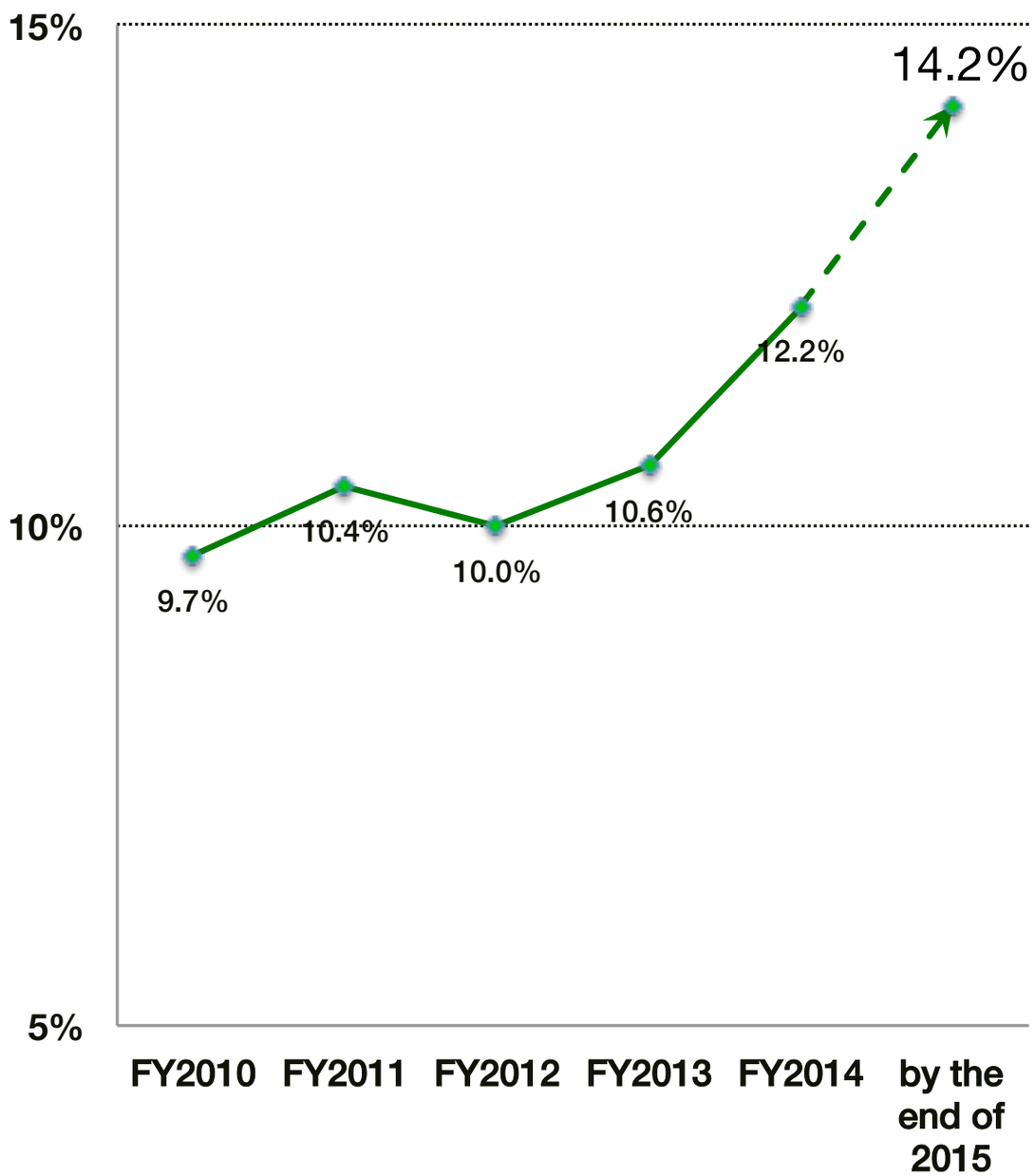
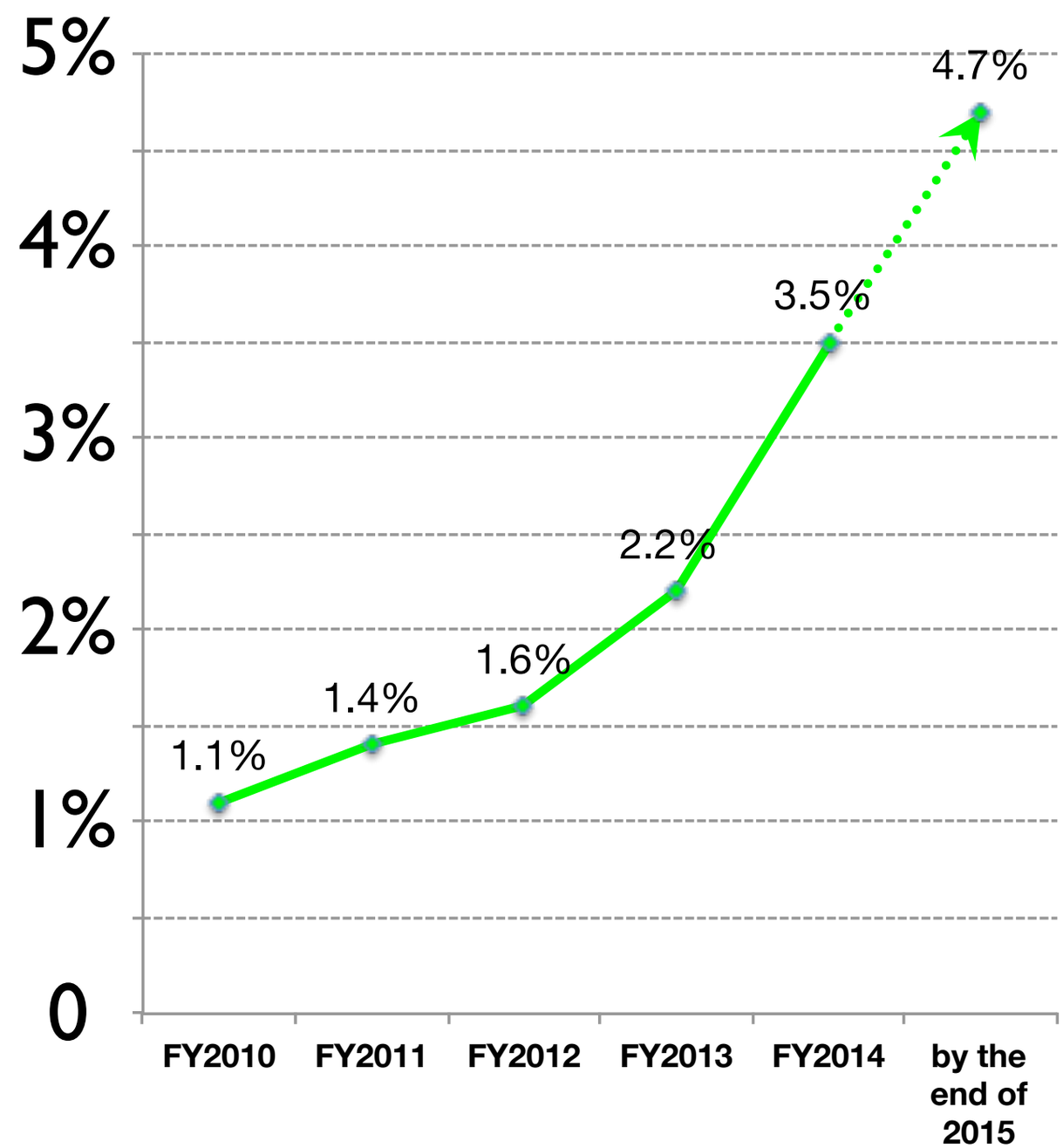
renewables % in electricity mix in Japan

renewables in electricity mix including hydro



renewables in electricity mix excluding hydro



source: 自然エネルギー財団 http://jref.or.jp/en/statistics/annual.php

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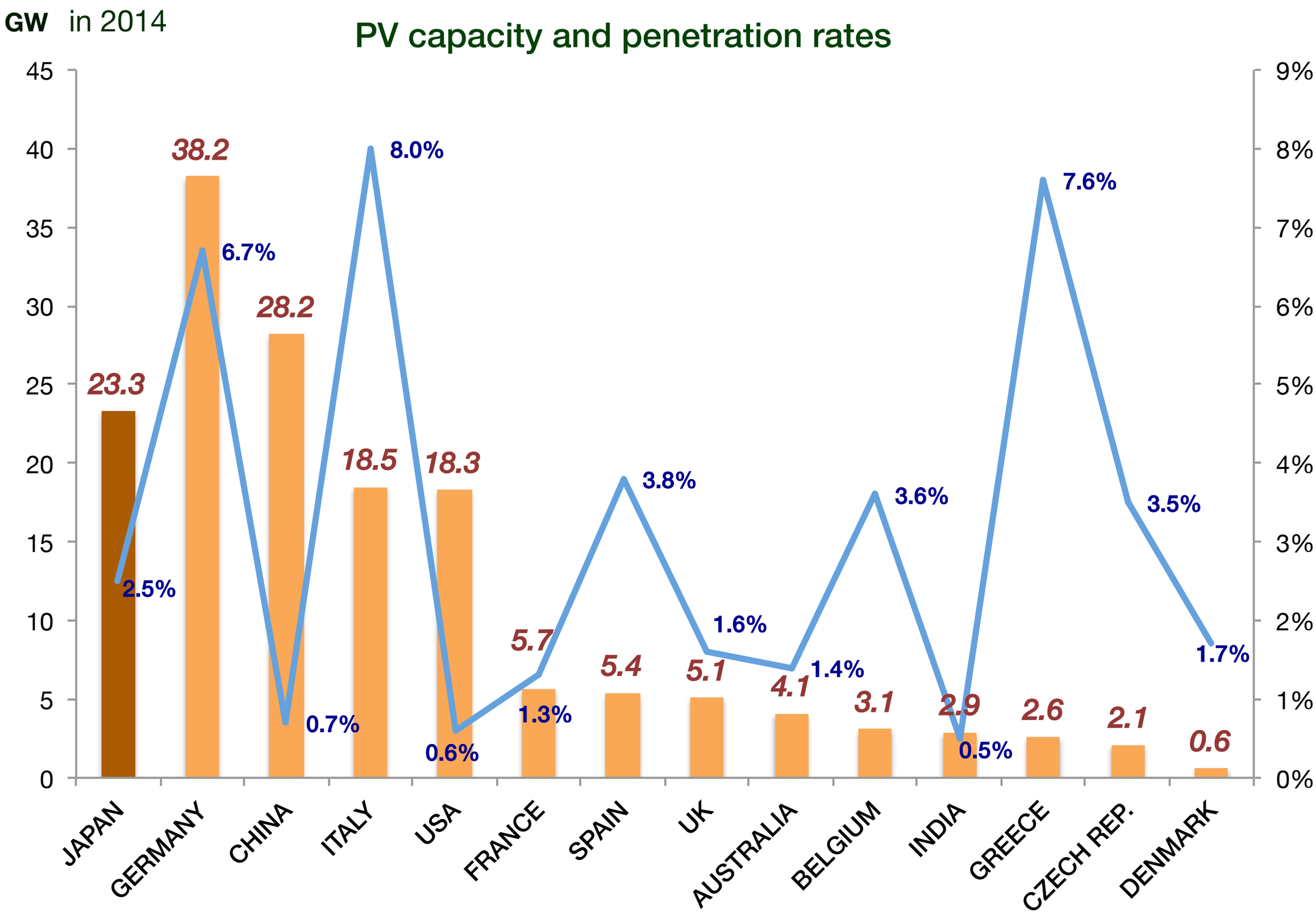

source: IEAPVPS TRENDS2015

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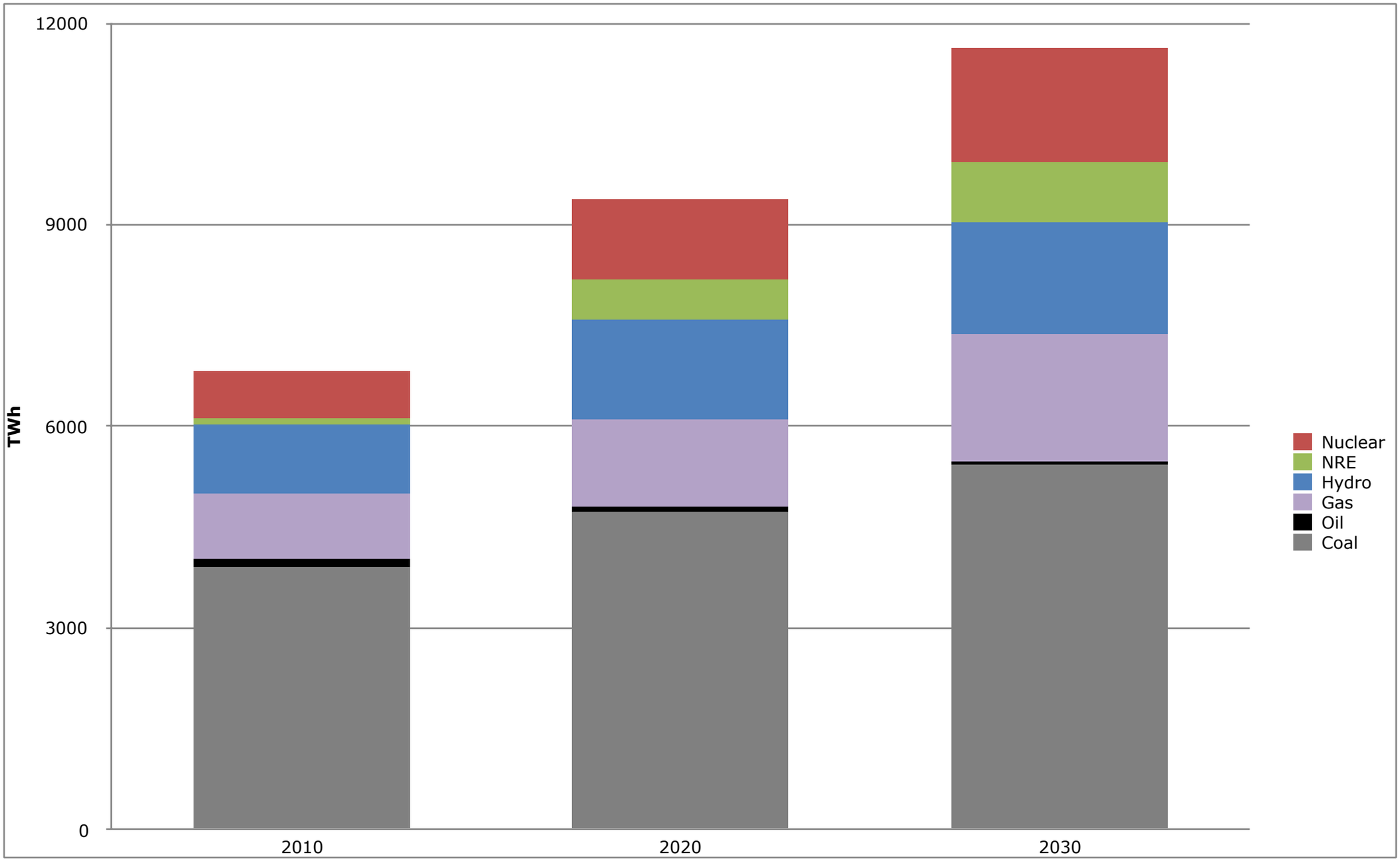
Electricity demand of Northeast Asia by fuel (BAU scenario)



source: based on the study “Gobitecand Asian Super Grid from Renewable Energies in Northeast Asia, 2014”

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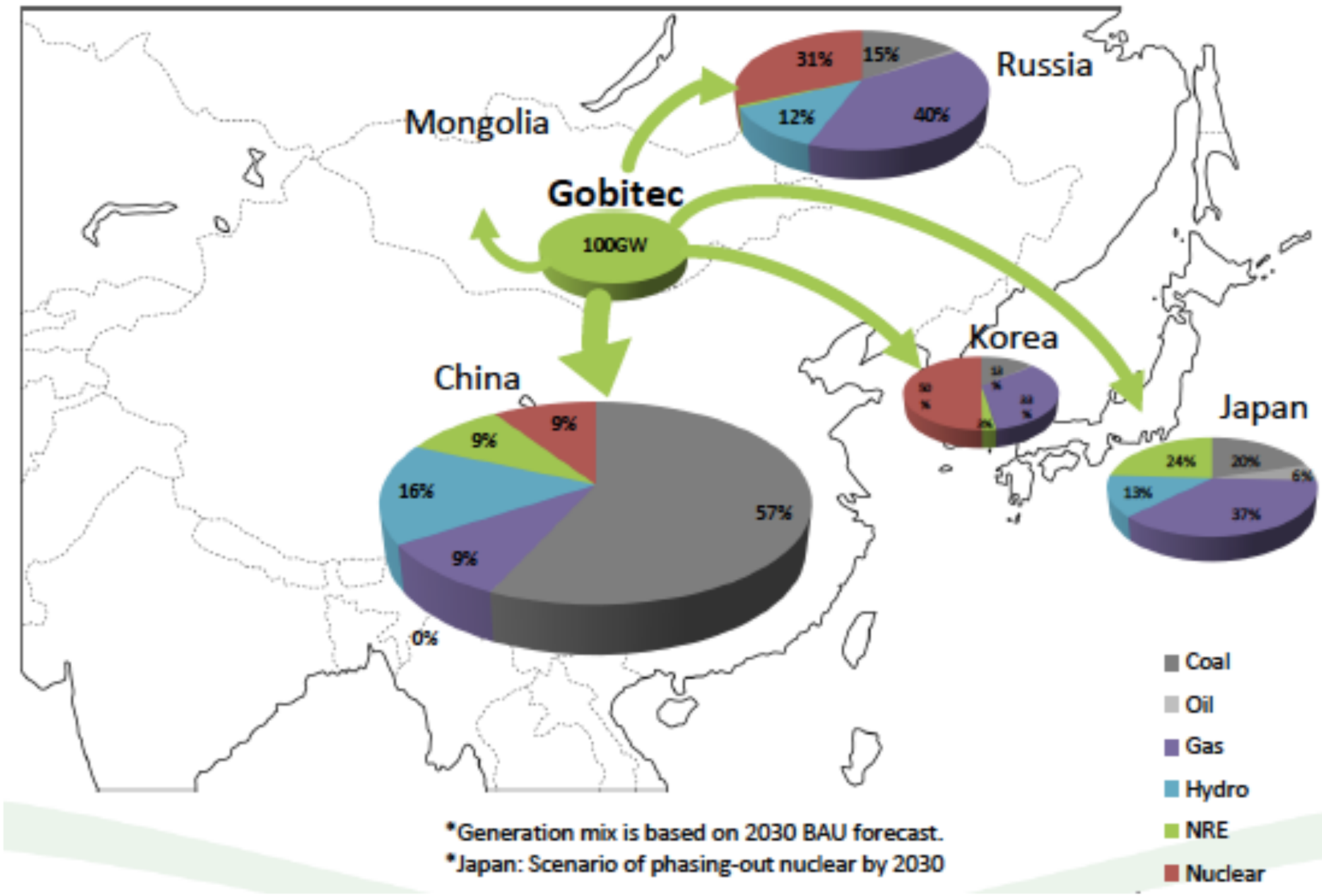
Generation mix of 2030 and RE imports from Gobitec as an example



source: based on the study “Gobitecand Asian Super Grid from Renewable Energies in Northeast Asia, 2014”

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Benefits of Regional Grid Integration

Economic Benefits

All Participating Countries

- Economic advantage from low cost renewable-based electricity
- Increase flexibility and maximize potential renewables in grid systems
- Stable electricity supply to realize energy security
- Job creation
- Creation of low carbon economy
- Diversify the local economy

Social Benefits

All Participating Countries

- Enhance regional cooperations
- Increase national energy security
- Improve infrastructure

Environmental Benefits

All Participating Countries

- Realization of low carbon economy
- Reduce air pollution
- Protect the natural environment

Sharing knowledges and regional resources

source: based on the study “Gobitecand Asian Super Grid from Renewable Energies in Northeast Asia, 2014”

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■ Economic benefits for Mongolia

- Employment effects by manufacturing/construction/installation/O&M for Wind, PV and transmission lines.

Employment and Income effects by 100GW PV and Wind from 2015 to 2030

Direct employment	880,000
Income generated by projects	9 billion USD

■ Economic benefits for Northeast Asia

- Economic benefits through importing low-cost electricity from wind and PV in Gobi desert

Total Supply Unit Cost from Wind and PV
0.056-0.168USD/kWh

⟷

Wholesale Electricity Price in Japan	0.113USD/kWh
Weighted Average Electricity Charge	0.115-0.136USD/kWh

source: based on the study “Gobitecand Asian Super Grid from Renewable Energies in Northeast Asia, 2014”

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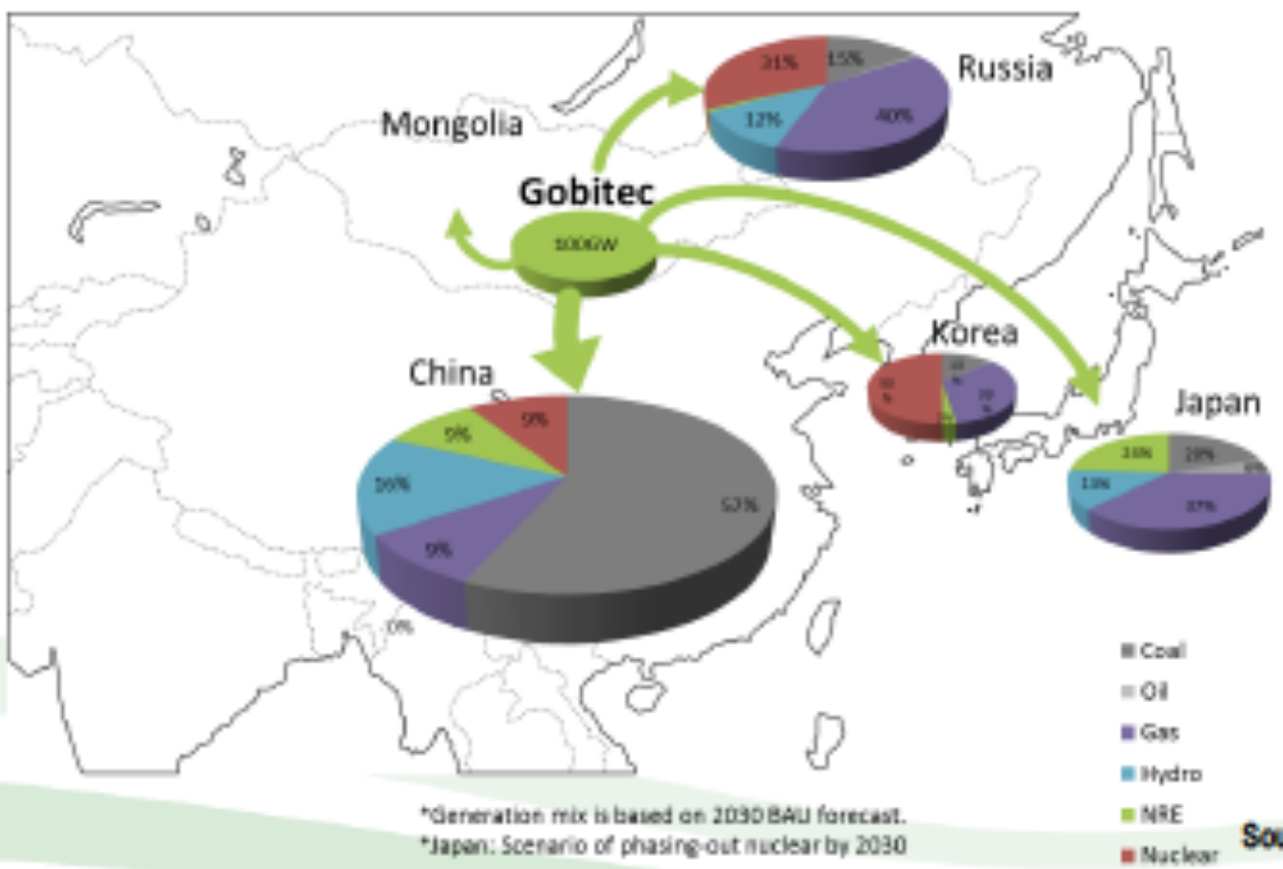
CO_2 Emission Reduction by 100GW PV and Wind

	Unit	Korea	China	Japan	Mongolia	Total
CO_2 emissions per kWh from electricity (2010)	tCO_2/MWh	0.533	0.766	0.510*	1.492	-
Emission Reduction	$GtCO_2$	21	149	13	4	187

Source: IEA CO2 Emissions from Fuel Combustion 2012
*Japan: 2011 emission factor,
The Federation of Electric Power Companies of Japan



Source: Gobitec and Asian Super Grid from Renewable Energies in Northeast Asia, 2014

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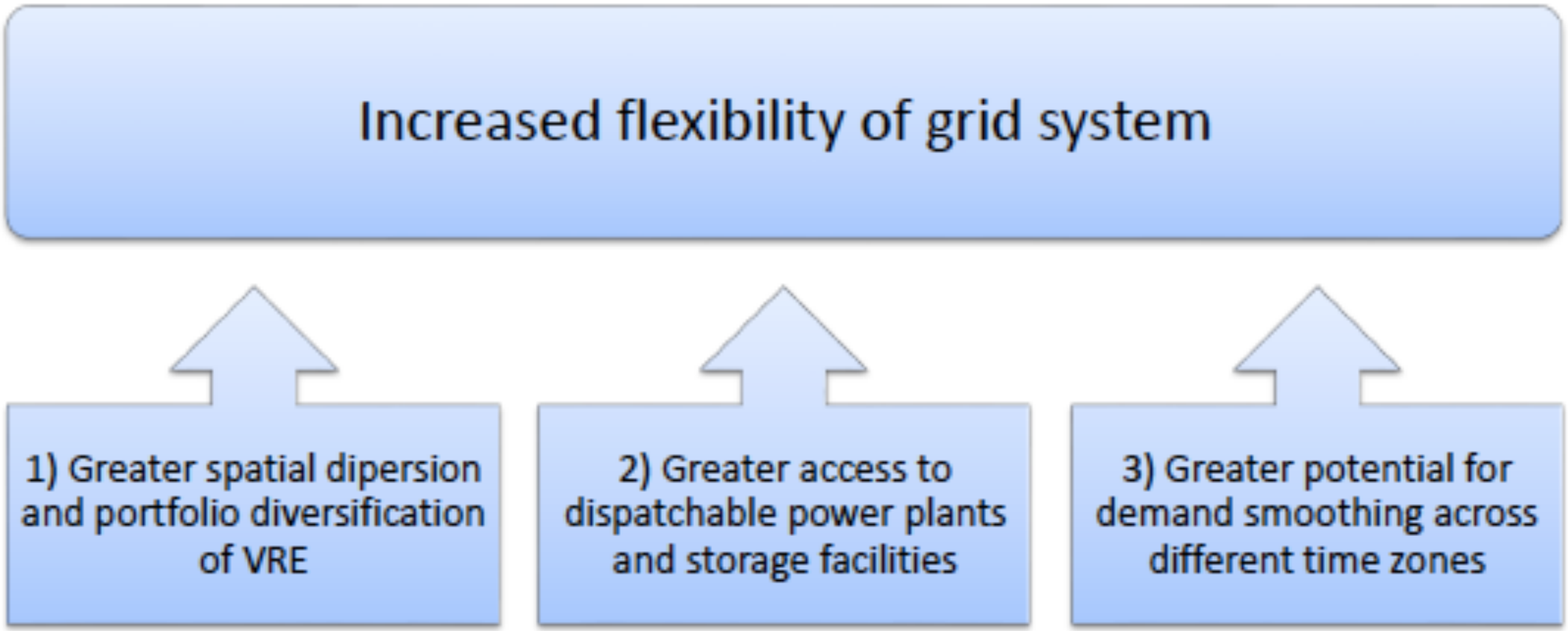
for preparation of high integration of renewables



source: based on the study “Gobitecand Asian Super Grid from Renewable Energies in Northeast Asia, 2014”

Asia Super Grid- opportunities for countries

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Former Chairman
State Grid Co. China

Vice Chairman

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State Grid Co. China

Vice Chairman

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USA

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Mr. Masayoshi Son
Chairman & Founder
Renewable Energy Institute
Chairman & CEO
SoftBank Group Corp.

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Renewable-EI's activities for realizing Asia Super Grid

GEIDCO Working Groups

WG for technology focused

WG for market & finance focused

Asia Development Bank

Technical Assistance Fund

2016-1018

Studies: Asia Power Vision

opportunities and barriers of realization of ASG- what are the barriers in Japan?

organizing workshops

MoU for a pilot project by business companies

Softbank, SGCC, KEPCO, Rosetti

고마웠습니다

Paradigm Shift in Energy for Peace

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