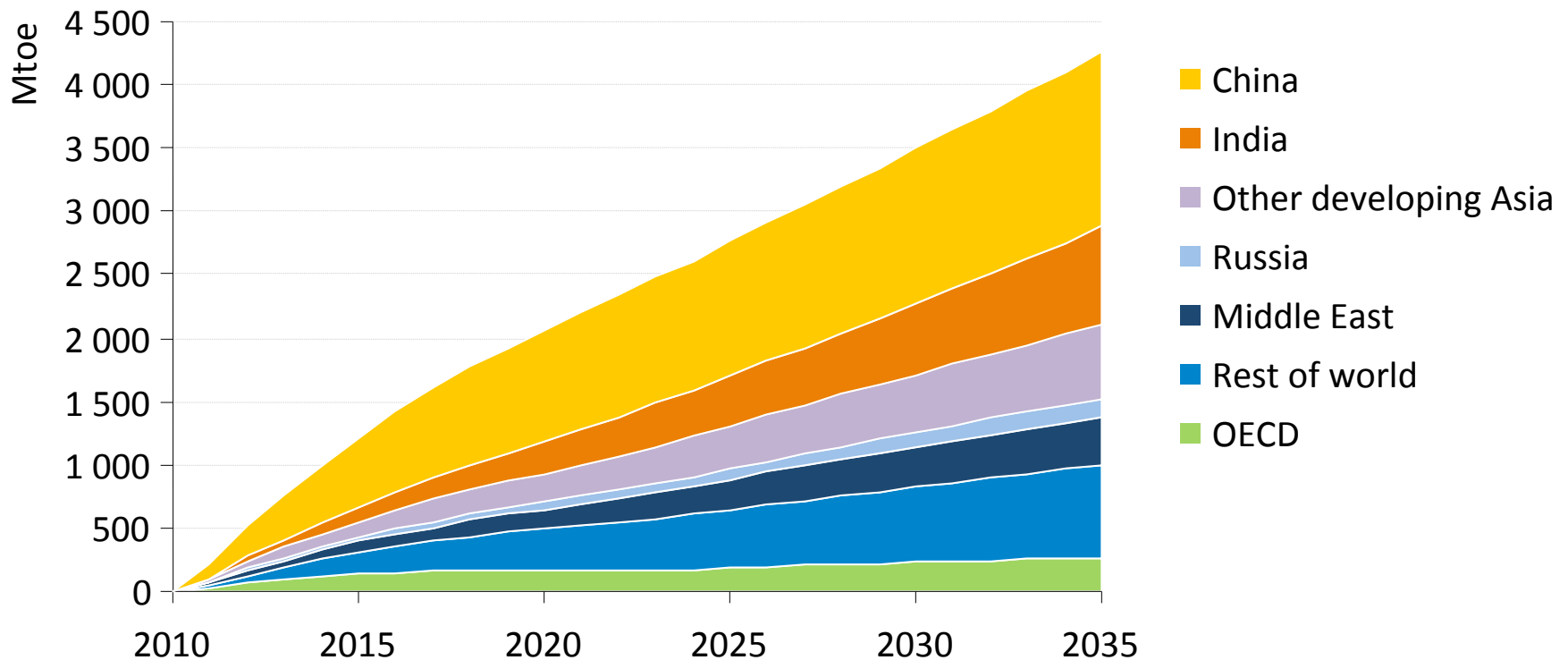




Emerging economies continue to drive global energy demand

Growth in primary energy demand in the New Policies Scenario

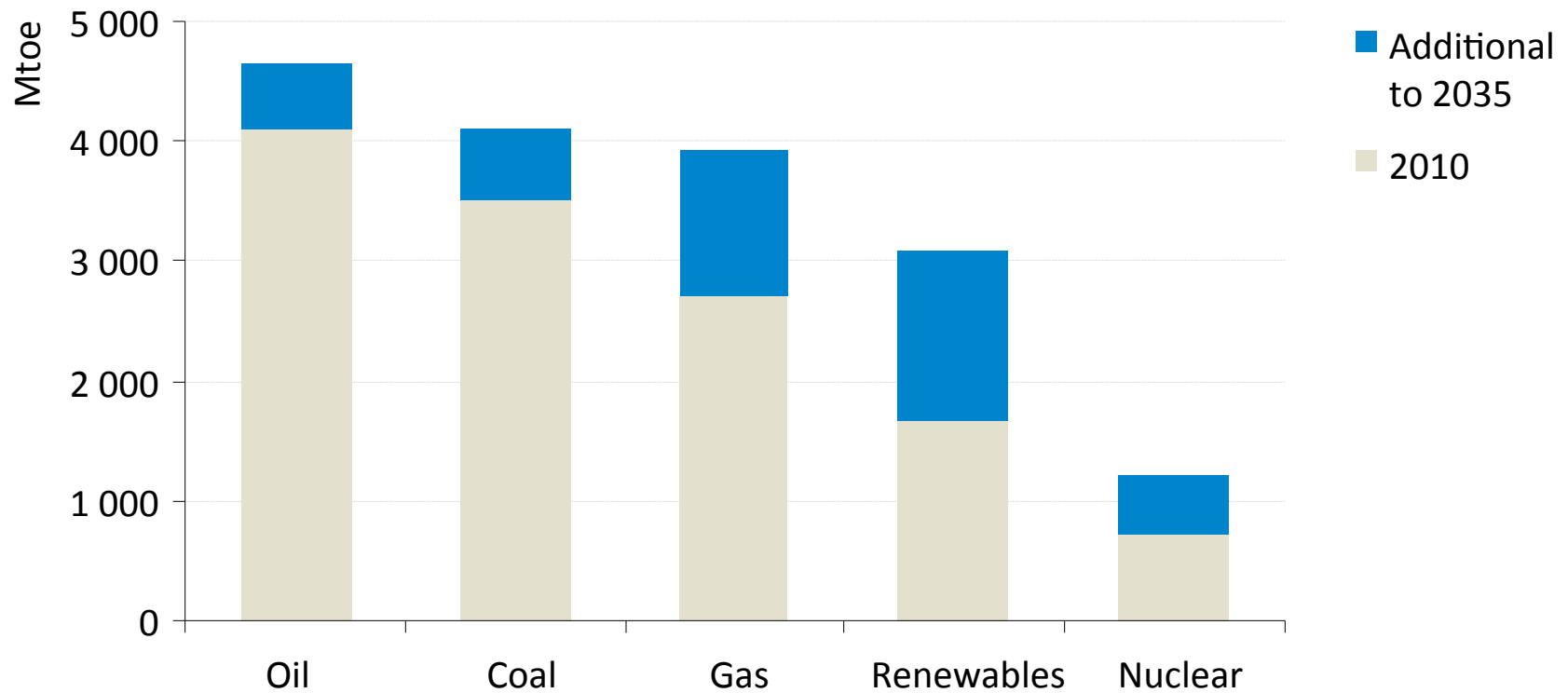


Source: IEA World Energy Outlook 2011

Global energy demand increases by one-third from 2010 to 2035, with China & India accounting for 50% of the growth

Natural gas & renewables become increasingly important

World primary energy demand

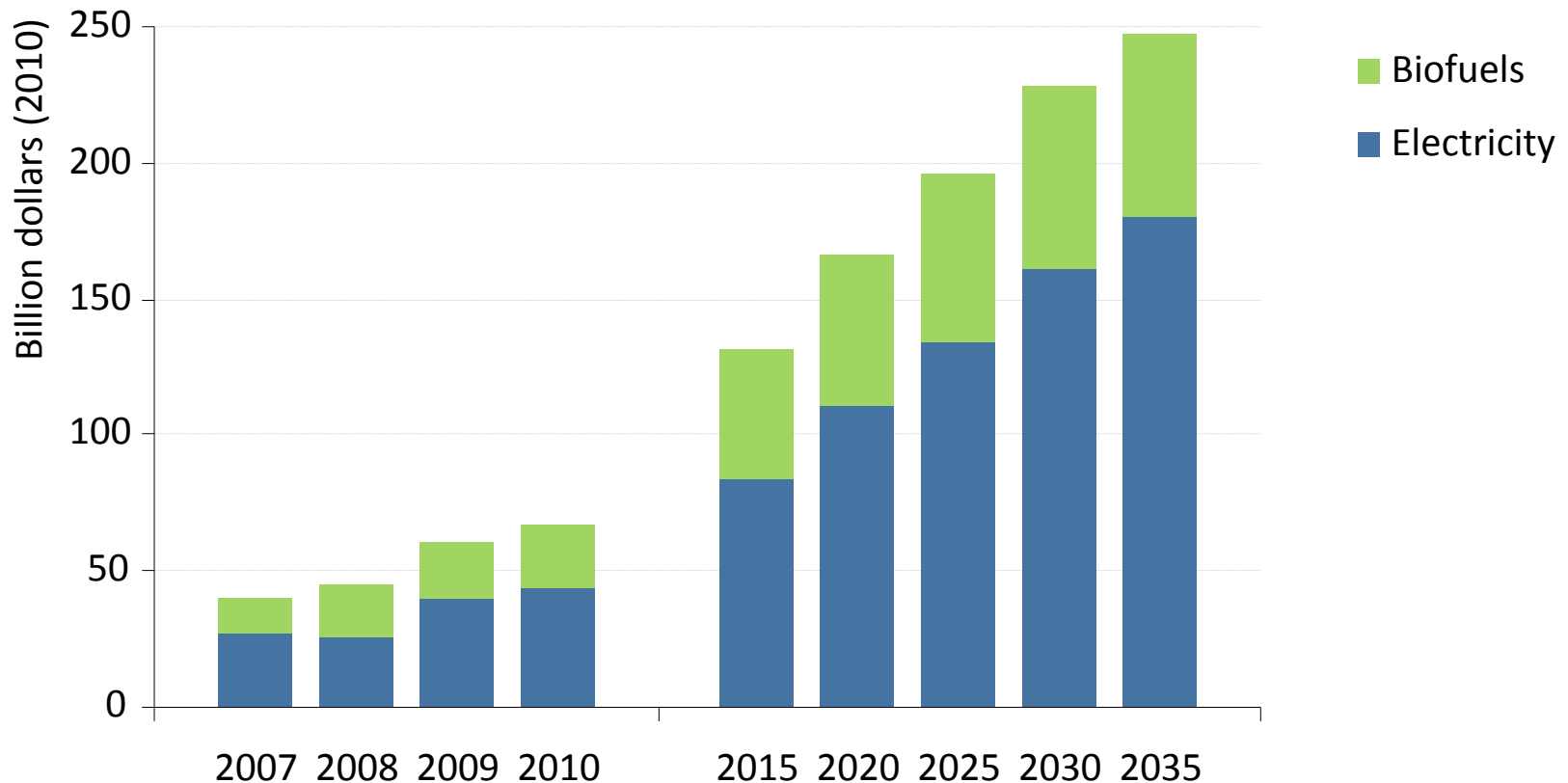


Source: IEA World Energy Outlook 2011

Renewables & natural gas collectively meet almost two-thirds of incremental energy demand in 2010-2035



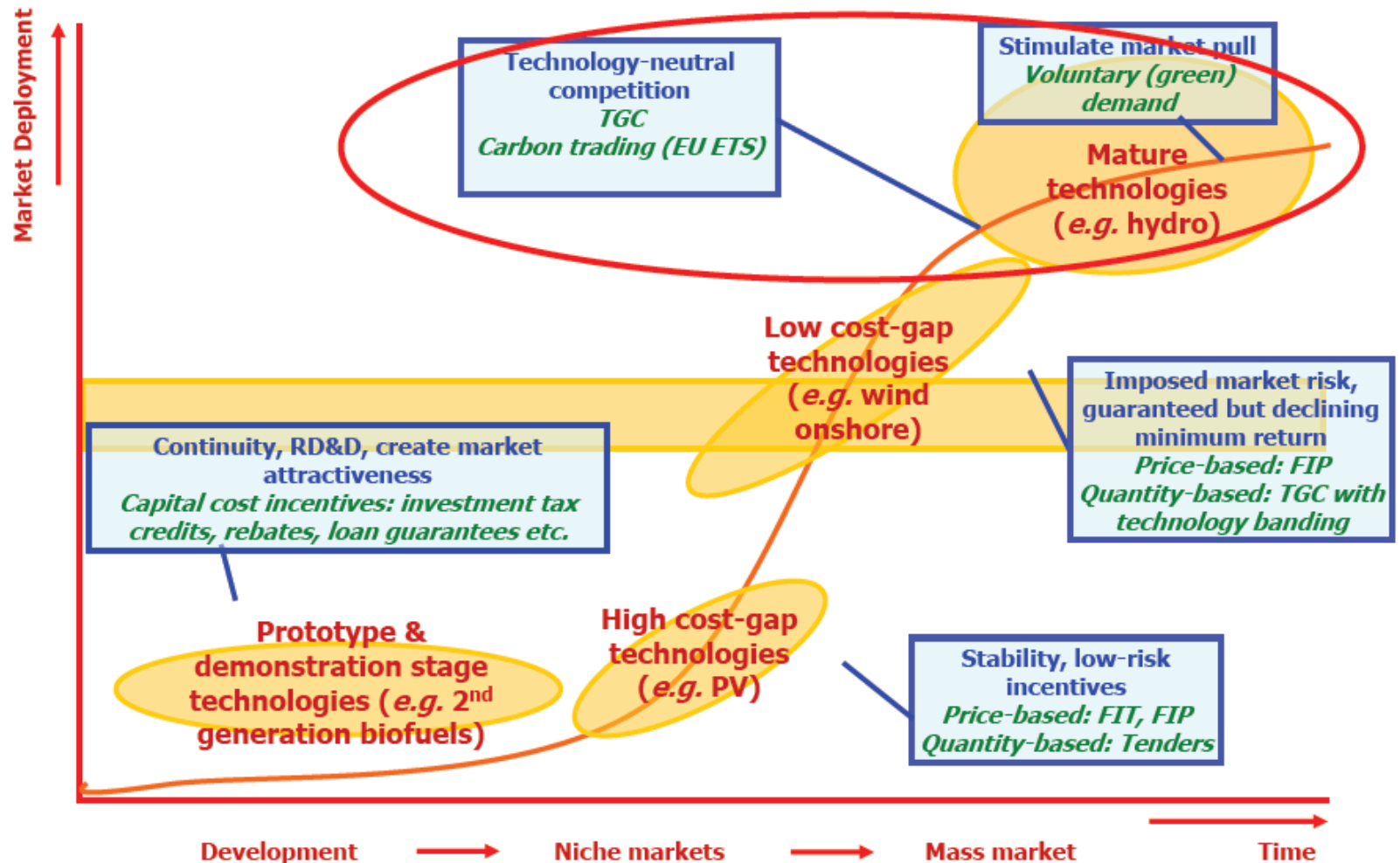
The overall value of subsidies to renewables is set to rise



Source: IEA World Energy Outlook 2011

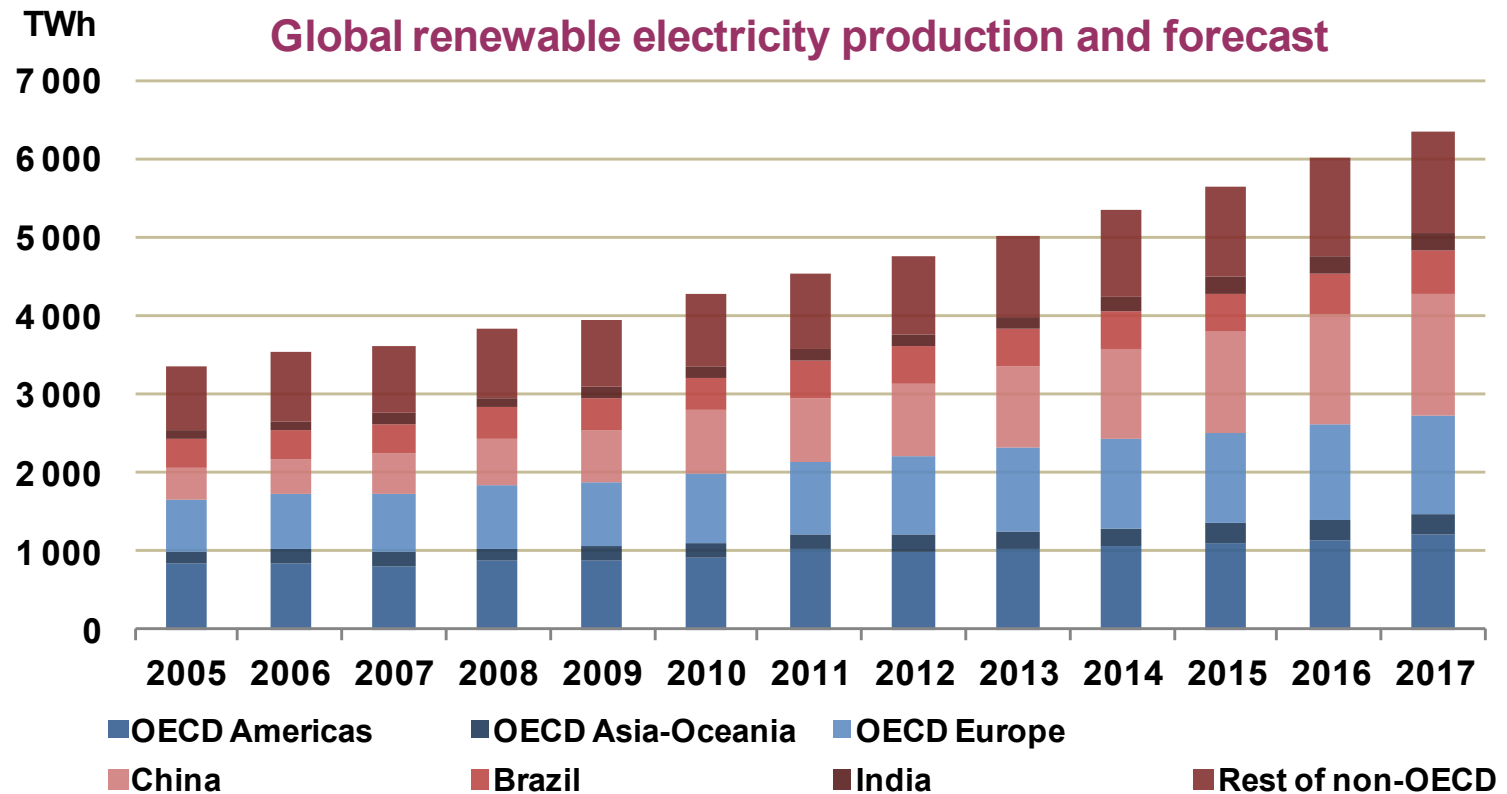
Renewable subsidies of \$66 billion in 2010 (compared with \$409 billion for fossil fuels), need to climb to \$250 billion in 2035 as rising deployment outweighs improved competitiveness

Fostering RETs' transition towards mass market integration

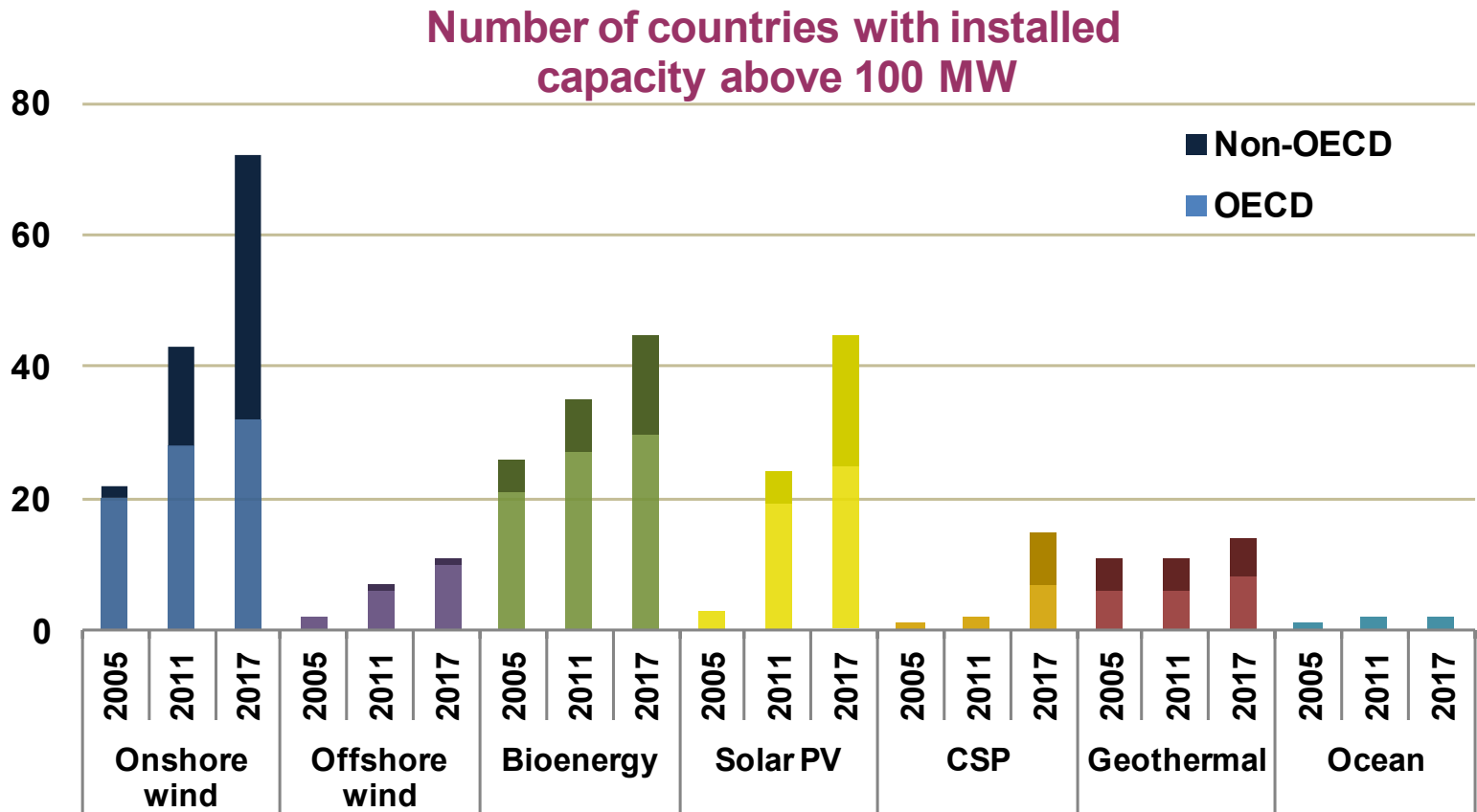


Note: The positions of the various technologies and incentive schemes along the S-curve are an indicative example at a given moment. The actual optimal mix and timing of policy incentives will depend on specific national circumstances. The level of competitiveness will also change in function of the evolving prices of competing technologies.

Medium term Renewable Growth led by non-OECD

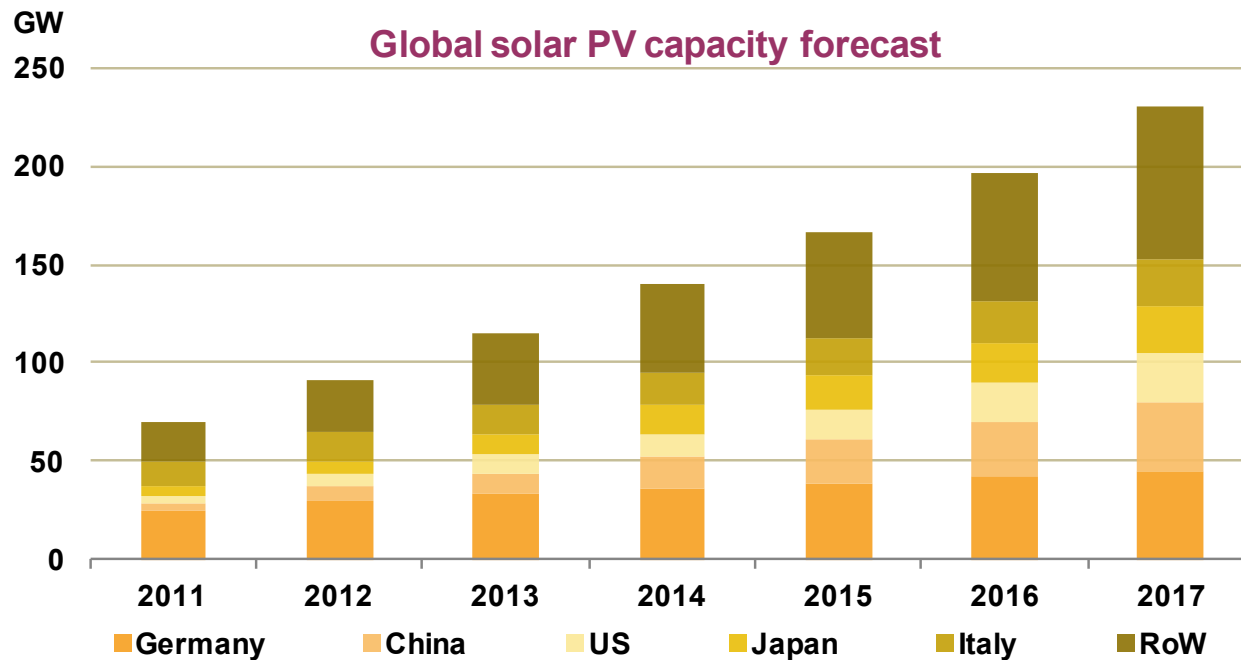


Non-hydro technology deployment spreads out



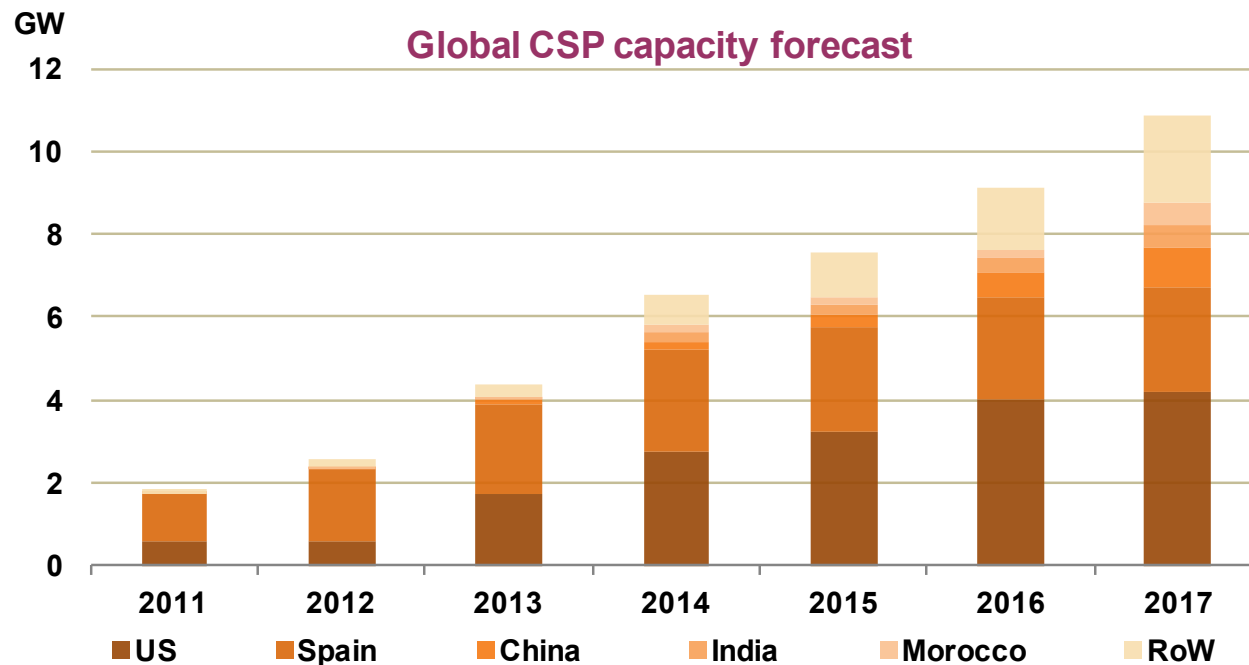
Medium-term solar PV outlook

- **Global capacity will triple to 230 GW in 2017 (conservative)**



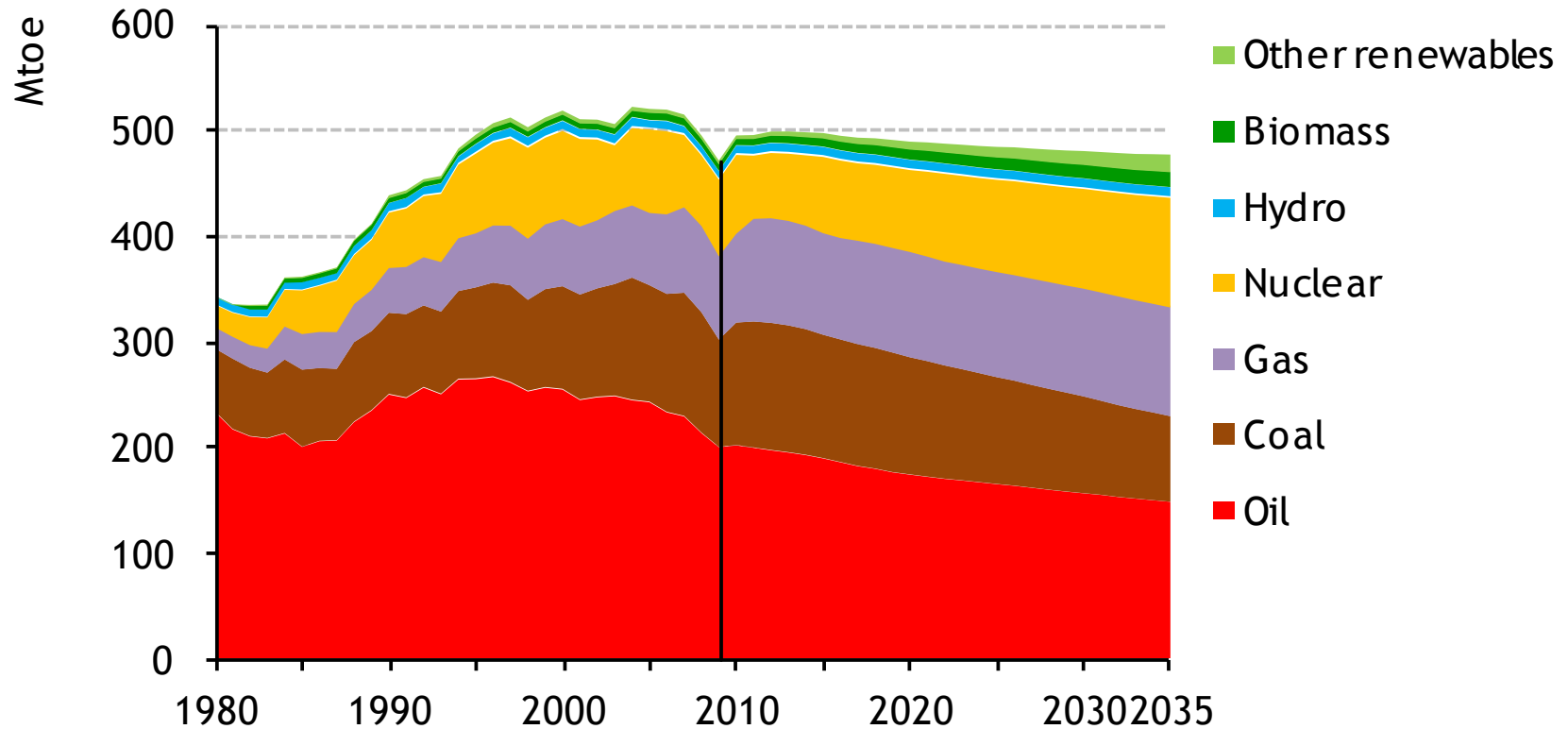
Medium-term CSP outlook

- **Global capacity will grow six-fold to 11 GW in 2017**



Japan's Primary Energy Demand

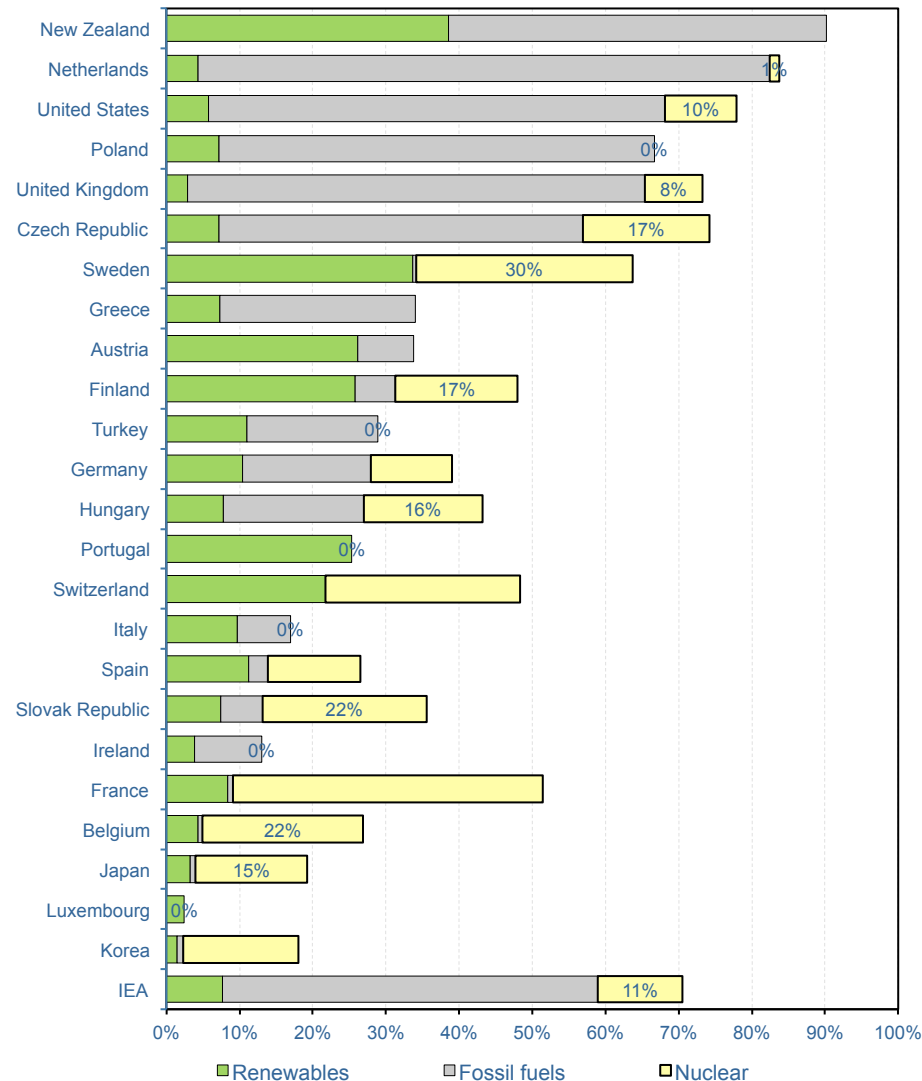
The New Policies Scenario: IEA's central scenario; it takes account of both existing government policies and declared policy intentions.



Source: IEA World Energy Outlook 2011

Energy demand in Japan will hit a peak by 2015 and take a downward turn. While fossil fuel would continue to be the dominant energy source, nuclear power and renewables will increase their shares of the market.

Energy Self-sufficiency Ratio and Energy Mix

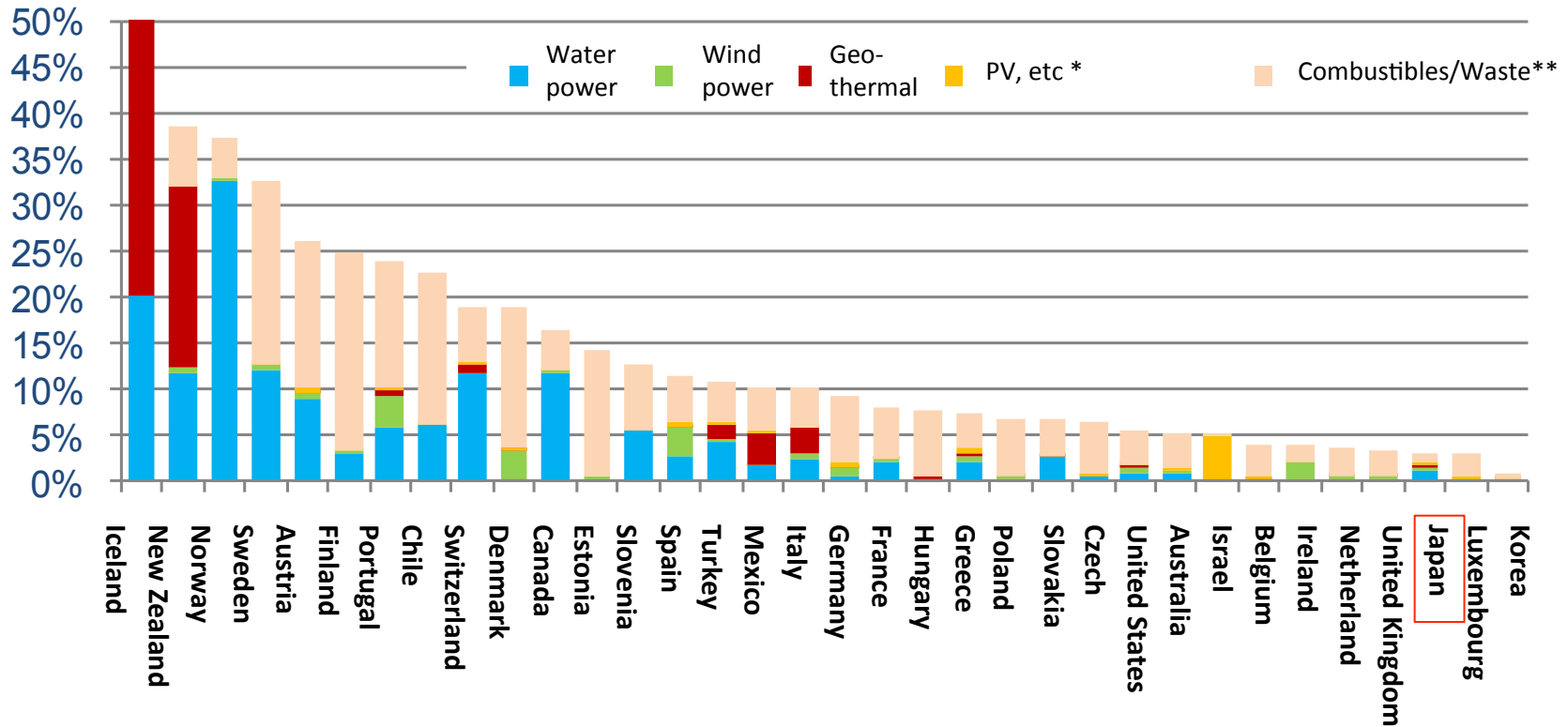


Self sufficiency
=inland production / tpes
(2010 estimates)

Source: IEA

- **Nuclear energy is an important option on energy mix for countries which have low energy self-sufficiency ratio, namely which have scarce domestic energy resource.**

Share of Renewables in Primary Energy Supply



* Including Tidal, wave and ocean power

** Such as biomass, biogas, renewable waste

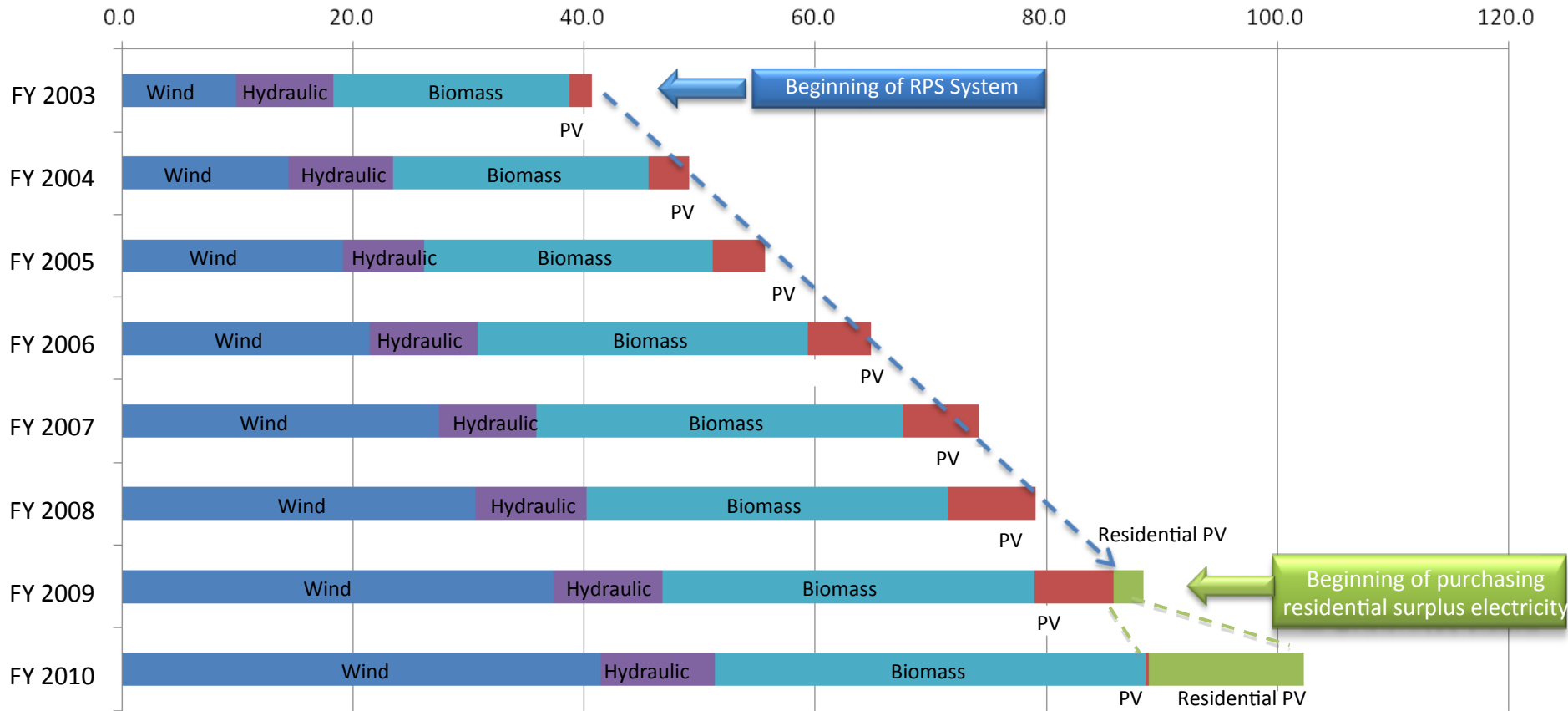
Source: IEA

Share of renewables in Japan's primary energy supply is comparatively lower among IEA member countries.

Changes in Electric Power Supply by Renewable Energy

- Since the introduction of the RPS system in 2003, electric power supply by renewable energy has doubled.
- Moreover, since the surplus electricity purchase system was introduced in 2009, the introduction of residential photovoltaic power generation has largely increased.

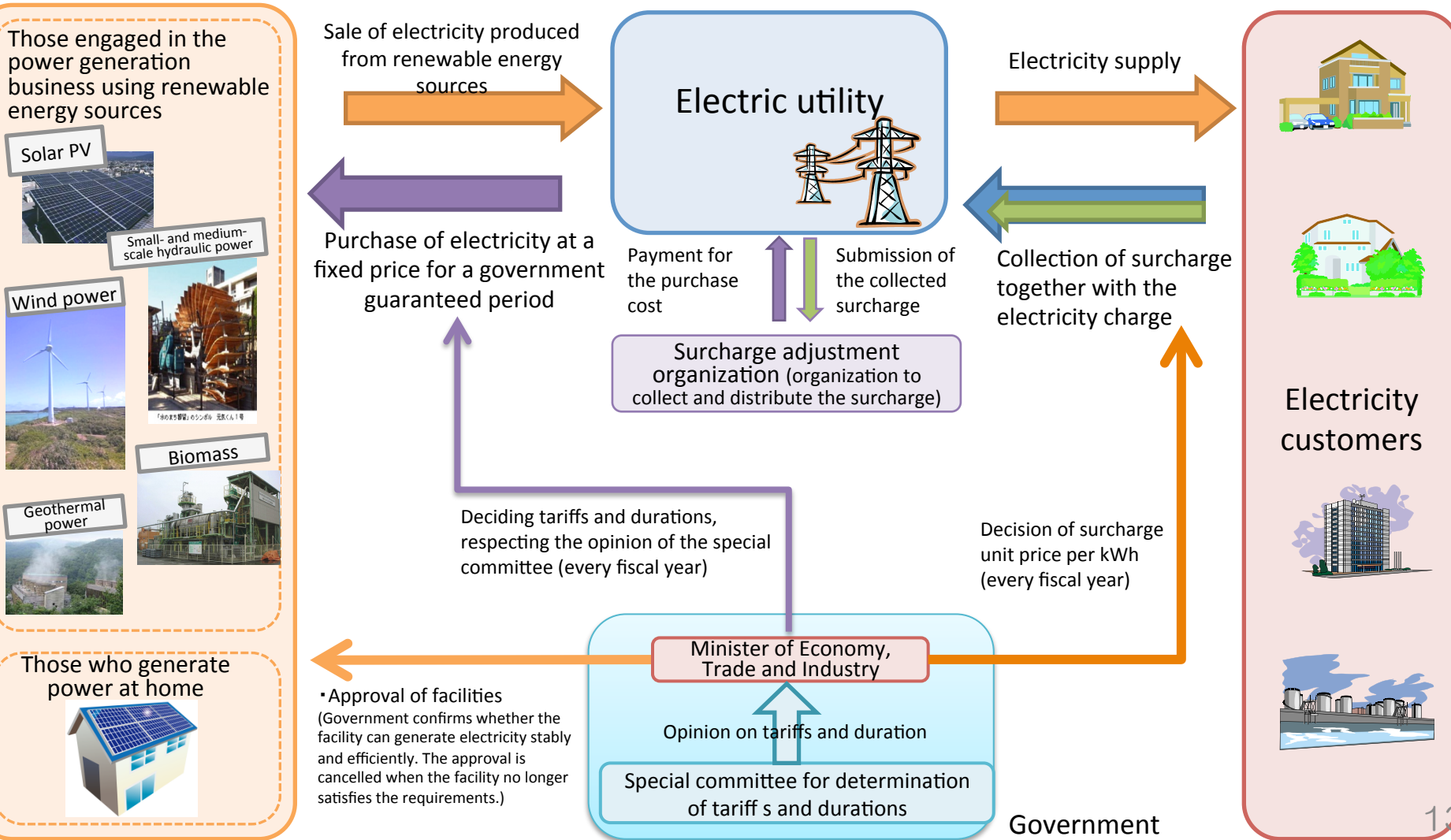
Long-term change in total supply from power-generating facilities of new energy, etc. (100 million kWh)



- 1) This data shows electricity supply from facilities accredited by the RPS Law. Electric energy before the RPS Law was enacted, electric energy generated by facilities that are not currently accredited by the RPS Law, and electric energy that is generated by facilities accredited by the RPS Law and consumed in-house are not included in this data.
- 2) Photovoltaic facilities that have been covered by the surplus electricity purchase system since November 2009 are calculated as specific PV.

Basic Mechanism of the Feed-in Tariff Scheme

Under the feed-in tariff scheme, if a renewable energy producer requests an electric utility to sign a contract to purchase electricity at a fixed price and for a long-term period guaranteed by the government, the electric utility is obligated to accept this request.



- Estimating based on officially announced projects and recent trend, approximately 2.5GW renewable energy facilities would be installed in this fiscal year. (Currently about 19.45GW renewable capacity expects to increase to about 22GW.)

<Renewable energy installation forecast in FY 2012>

	Already installed capacity by FY2011	Forecast of newly installed capacity in FY2012
Residential PV	Approx. 4GW	+ Approx 1.5GW (40% increase from <u>new</u> installation in 2011)
Non-Residential PV	Approx. 0.8GW	+Approx 0.5GW (Estimate by METI)
Wind	Approx. 2.5GW	+ Approx 0.38GW (50 % increase from recent annual installation)
Small and Medium scaled hydro (1MW to 3MW)	Approx. 9.35GW	+ Approx 0.02GW (Estimate by METI)
Small and Medium scaled hydro (Less than 1MW)	Approx. 0.2GW	+ Approx 0.01GW (50 % increase from recent annual installation)
Biomass	Approx. 2.1GW	+ Approx 0.09GW (50 % increase from recent annual installation)
Geothermal	Approx. 0.5GW	+ 0GW
Total	Approx. 19.45GW	+ Approx 2.5GW

1. Realization of a society not dependent on nuclear power

(1) 3 guiding principles towards realization of a society not dependent on nuclear power

○3 guiding principles

- Strictly apply the stipulated rules regarding forty-year limitation of the operation.
 - Restart the operation of nuclear power plants once the Nuclear Regulatory Commission gives safety assurance.
 - Not to plan the new and additional construction of a nuclear power plant.
- The Government will mobilize all possible policy resources to such a level as to even enable zero operation of nuclear power plants in the 2030's. As its first step, the "Framework for Green Development Policy" by the end of this year.

(2) 5 policies towards realization of a society not dependent on nuclear power

- The nuclear fuel cycle policy
- Maintaining and strengthening human resources and technology
- Cooperation with the international community
- Strengthening measures for local areas with nuclear power facilities
- Systems of nuclear power projects and the liability system for nuclear-related damages

(3) Review of the path towards a society not dependent on nuclear power

- Review and constantly re-examine the path towards realization of a society not dependent on nuclear power in order to be sufficiently flexible and responsive to any unforeseen changes in the future

2. Realization of green energy revolution

- Compose the “Framework for Green Development Policy” by the end of this year.
- Electricity Saving: Reduce more than 110BWh by FY 2030
- Energy Saving: Reduce more than 72 million kl by FY 2030
- Renewables: Develop more than 300BWh by FY 2030

(All compared with FY 2010)

3. For ensuring stable supply of energy

- Intensive use of thermal power generation
- Intensive use of heat such as the introduction of co-generation systems of 150 BWh
- Technologies related to the next generation energy
- Stable and inexpensive securement and supply of fossil fuels

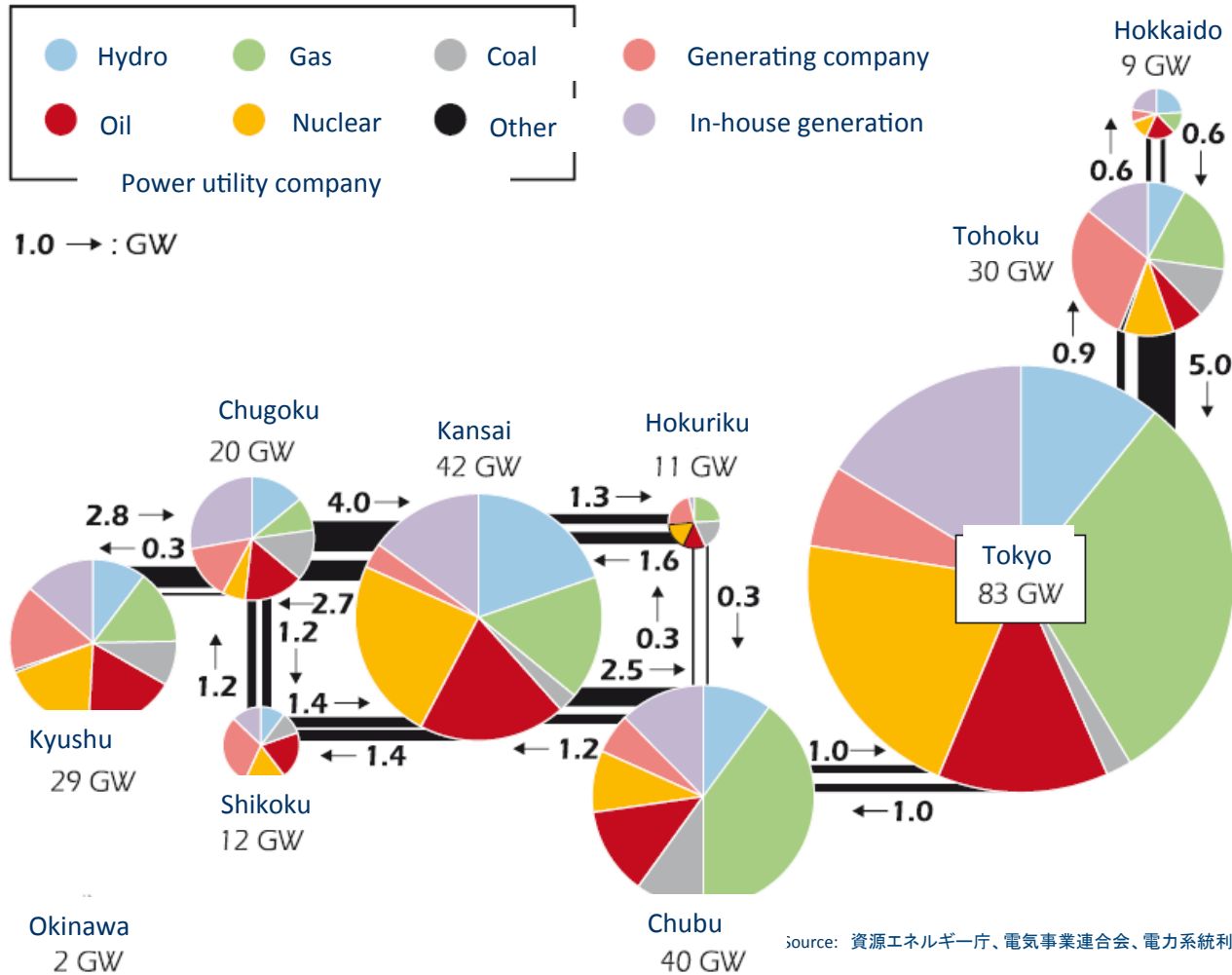
4. Bold implementation of reform of electric power system (Compose the Strategy for the “Reform of Electricity Power Systems (tentative)” by the end of this year)

5. Steady implementation of global warming countermeasures (Formulate the “Global Warming Action Plan” for the period from after 2013 by the end of this year)



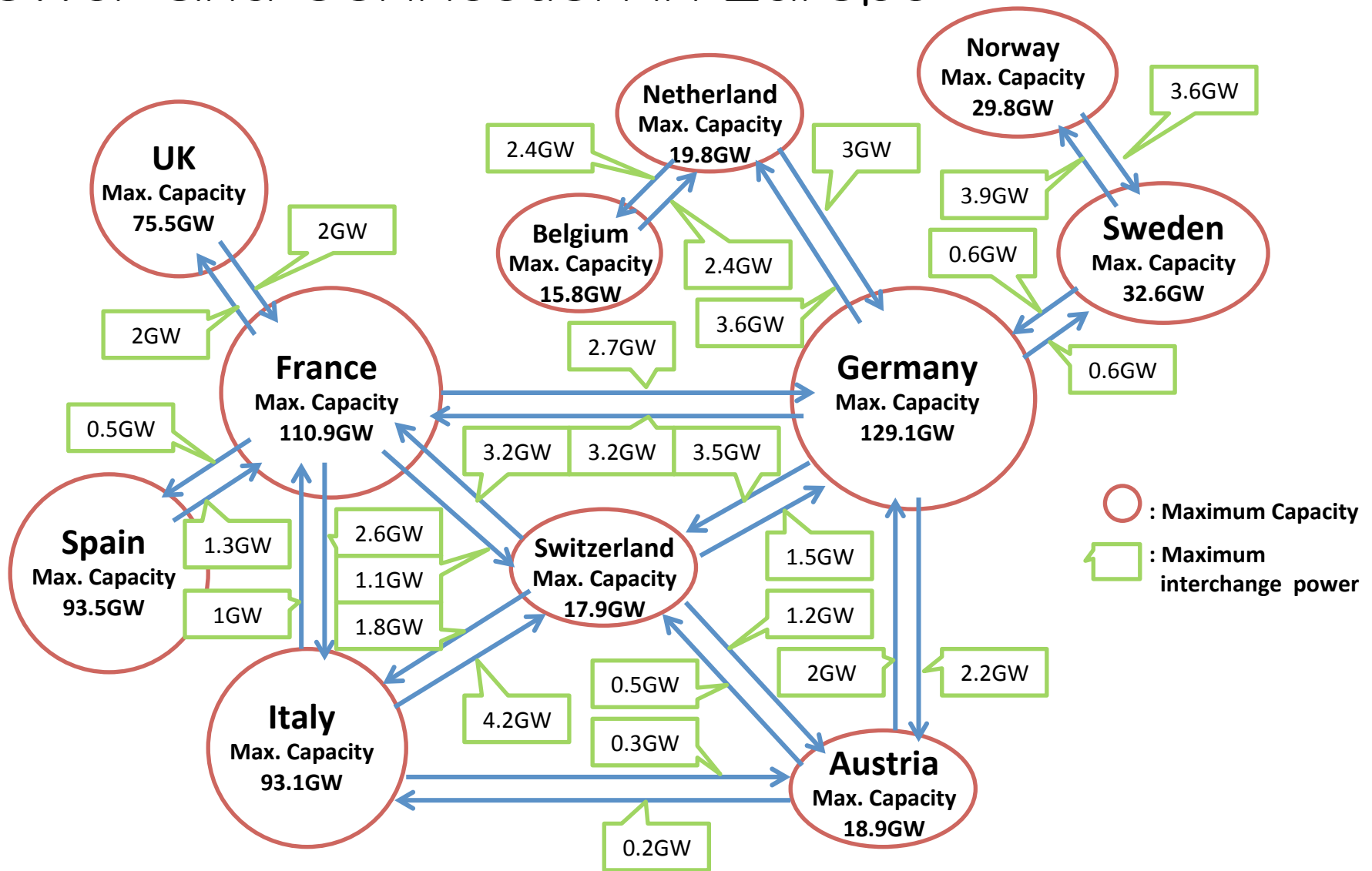
- Disclose information in a detailed manner through a process that will sufficiently ensure transparency and review and constantly re-examine them

Power grid in Japan





Power Grid Connection in Europe



Source: IEA "Electricity Information 2010"

Indicative value for Net Transfer Capacities (NTC) in Continental Europe

Deregulation and systemic issues that need to be addressed in order to popularize the use of renewable energy



Type of regulation/related legislation

Issues relating to deregulation and systems

Regulations on Location

Agricultural Land Act Agricultural Land Promotion Act	MAFF	Allowing Type 1 agricultural land that is no longer being farmed to be used for renewable energy generation	Currently, private-sector companies other than the nation's nine electric power utilities are not allowed to utilize large areas of Type 1 agricultural land for non-farming purposes.
National Forests Act Public Accounting Act	Forestry Agency Ministry of Finance	Allowing private-sector electric power companies and geothermal steam-production companies to rent state-owned forest or moorland	Currently, private-sector companies other than the nation's nine electric power utilities are not allowed to conclude discretionary contracts for the renting of areas in national forests for purposes that are not classified as public works.
Forest Act	Forestry Agency	Delisting protected forests and laying down concrete rules for the granting of licenses to use such forests for energy projects	Procedures for the delisting of protected forests often do not proceed because local authorities are unwilling to take action due to a lack of precedents, and because the central government strictly requires the submission of proof that there are no other suitable candidate sites for development.
Natural Parks Act	Ministry of the Environment	Ending the prohibition of surveying and drilling within special areas in national parks for the purpose of using geothermal energy to generate electric power	In special areas within national and quasi-national parks, geothermal energy development projects are effectively prohibited.
Hot Springs Law	Ministry of the Environment	Redrafting the drilling permission standards on a strict scientific basis	The meaning of the statement found within the standards for granting licenses to drill for hot spring resources—"when it is deemed that [the drilling] will affect the volume of steam released by the hot spring resources, the temperature of the resources, and/or their mineral constituents"—is unclear, and consequently permission is seldom granted.
Factory Location Act	METI	Exempting photovoltaic power generation site from application of the area restrictions applied to production facilities, and revising the greenery set-aside requirements	Because photovoltaic power generation sites are classified as "production facilities," the regulations allow the photovoltaic panels to be laid on only up to 50% of the total site area, and the developer must also set aside a certain percentage of the land for greenery.

Safety Regulations

Fire Service Act	Ministry of Internal Affairs and Communications	Amending the regulations the Fire Service Act with respect to lithium-ion batteries	The electrolytic solution used in batteries is classed as a dangerous substance under the law, and thus in the event of the storage or installation of batteries above a certain volume limit, the owners are required to take anti-fire measures (such as constructing fire walls) out of all proportion to any actual potential danger.
Building Standards Act	Ministry of Land, Infrastructure, Transport and Tourism	Creation of a system regulating the construction of offshore wind farms (debate on the appropriate structural criteria)	The structural criteria that developers of offshore wind farms are required to apply (structural strength, rollover resistance, etc.) are unclear.

- **In a world full of uncertainty, one thing is sure: rising incomes & population will push energy needs higher**
- **Concerning primary energy demand, renewables are the most incremental among energy sources. Along with this, subsidies for renewables will increase.**
- **Global solar power generation (PV+CSP) will more than triple by 2017**
- **Introduction of renewables will accelerate in Japan owing to the FIT scheme.**
- **Challenges for Japan to further disseminate renewables are: Reinforcement of power grid and deregulations**