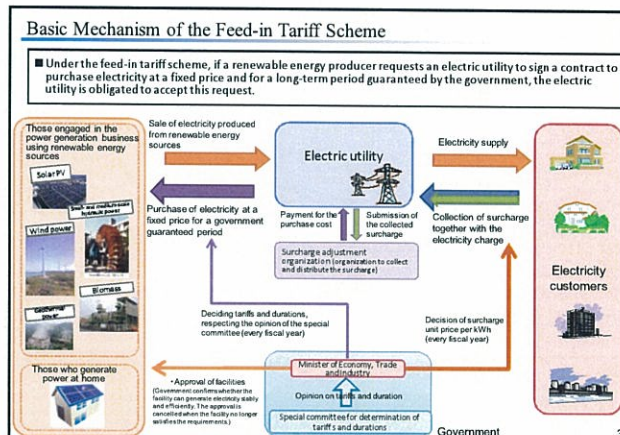


Renewable Energy Policy and Offshore Wind in Japan

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Current State of Renewable Energy

- Renewable energy accounted for approximately 10.7% of power generation in 2013.
- More specifically, hydroelectric power generated by large-scale dams, etc., accounted for 8.5%, with solar PV, wind, geothermal and biomass power accounting for 2.2%.

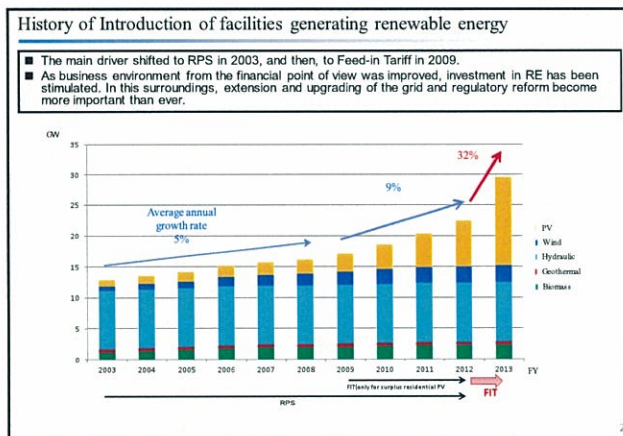
Source: Federation of Electric Power Companies of Japan, Composition of power generation by energy source

Tariffs and Durations for FY2014

Energy source	Solar PV		Wind power		Offshore Wind	Geothermal power	
	10 kW or more	Less than 10 kW (purchase of excess electricity)	20 kW or more	Less than 20 kW	20 kW or more	15,000 kW or more	Less than 15,000 kW
Tariff (per kWh)	32 yen (+ tax)	37 yen	22 yen (+ tax)	55 yen (+ tax)	36 yen (+ tax)	26 yen (+ tax)	48 yen (+ tax)
Procurement period	20 years	10 years	20 years	20 years	20 years	15 years	15 years

Energy source	Small- and medium-scale hydroelectric power			Small- and medium-scale hydroelectric power (utilization of old-style hydroelectric)		
	1,000 kW or more but less than 50,000 kW	200 kW or more but less than 1,000 kW	Less than 200 kW	1,000 kW or more but less than 50,000 kW	200 kW or more but less than 1,000 kW	Less than 200 kW
Tariff (per kWh)	24 yen (+ tax)	28 yen (+ tax)	34 yen (+ tax)	14 yen (+ tax)	21 yen (+ tax)	25 yen (+ tax)
Procurement period	20 years			20 years		

Energy source	Biomass				
	Biogas	Wood fired power plant (Timber from forest thinning)	Wood fired power plant (Other wood materials)	Wastes (excluding woody wastes)	Wood fired power plant (Recycled wood)
Tariff (per kWh)	38 yen (+ tax)	32 yen (+ tax)	24 yen (+ tax)	17 yen (+ tax)	13 yen (+ tax)
Procurement period	20 years				



Status after the start of the Feed-in Tariff

- Since FIT start (July 2012), 11,857MW of renewable energy capacity has been deployed until the end of March 2014.
- More than 50% increase in the total RE capacity.

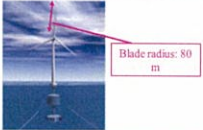

<Deployment of renewable energy (as of the end of July 2014)>

	Accumulated capacity before FIT started	Capacity of facilities that started operation since FIT start (July 2012)
Solar power (residential)	Approx. 4,700MW	2,483MW
Solar power (non-residential)	Approx. 900MW	9,145MW
Wind	Approx. 2,600MW	112MW
Mid- to small-sized hydroelectric (Less than 30MW)	Approx. 9,600MW	29MW
Biomass	Approx. 2,300MW	89MW
Geothermal	Approx. 500MW	1MW
Total	Approx. 20,600MW	11,857MW

Acceleration of introduction of renewable energy

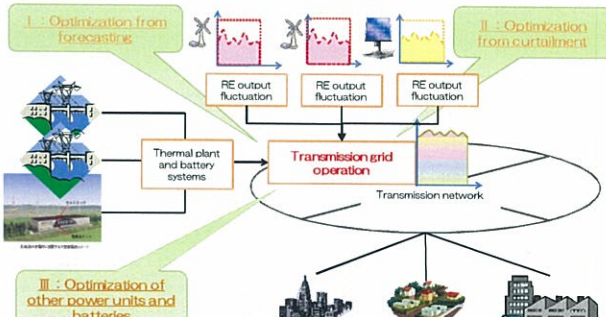
Steps toward problem solution – Technology development & corroboration, transmission & distribution network construction, rationalization of procedure for environmental assessment

- Technology development & corroboration** [7MW station, world's largest in scale]
 - Floating wind power generation station off Fukushima aiming at first actual operation in world (7MW station will be installed from 2014 and onward: **¥28 billion**)
- Construction of transmission and distribution networks**
 - GOJ paying for half the cost of constructing and testing transmission and distribution networks in appropriate places for wind power in Hokkaido and Tohoku (2013: **¥25 billion**, 2014: **¥15.05 billion**)
- Rationalization of procedure for environmental assessment**
 - To shorten period of procedure for environment assessment of wind and thermal power generation, which usually takes 3 or 4 years (2014: **¥2 billion**)

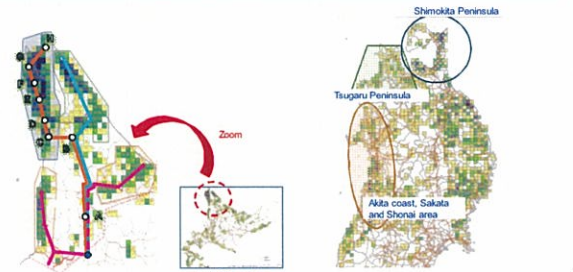
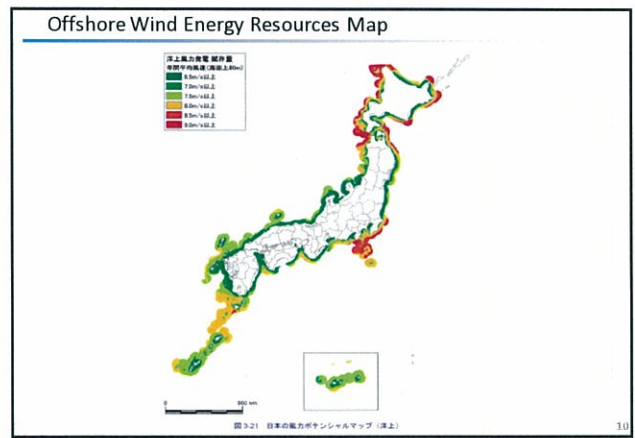
Developing technology for forecasting wind power fluctuation

By taking full advantage of forecasting technology of wind power fluctuation, efficient combination with thermal power plants and battery systems, and minimum curtailment of wind farms all at once, an advanced grid operation simulator system will be developed.



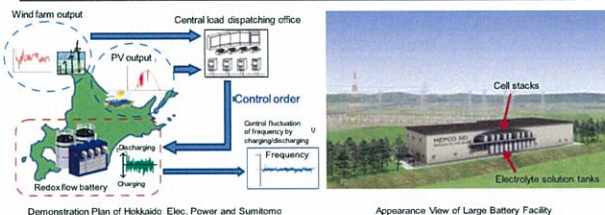
Buildup of the super-long transmission line for the wind power

- In order to promote private capital's building transmission lines that convey the wind electricity from wind abundant area, and to verify necessary technologies, METI subsidizes SPC's building such a transmission lines in northern parts of Hokkaido and Tohoku area.
- SPC is required to be sponsored by wind power generators, who agree to pay fee to the SPC for transmitting services.

Large scaled storage battery system for the power grid

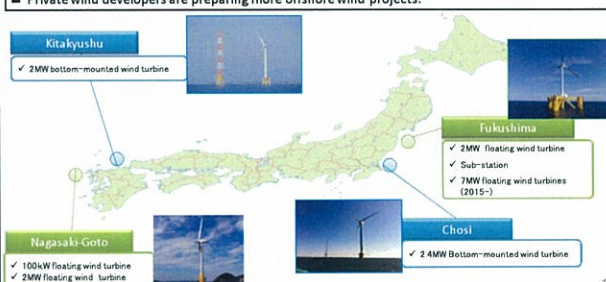
- Hokkaido and Tohoku introduce enormous storage battery systems nearby their central load dispatching office for the purpose of frequency control and supply-demand adjustment.
- With this effort, they would be able to accept more RE within the grids.

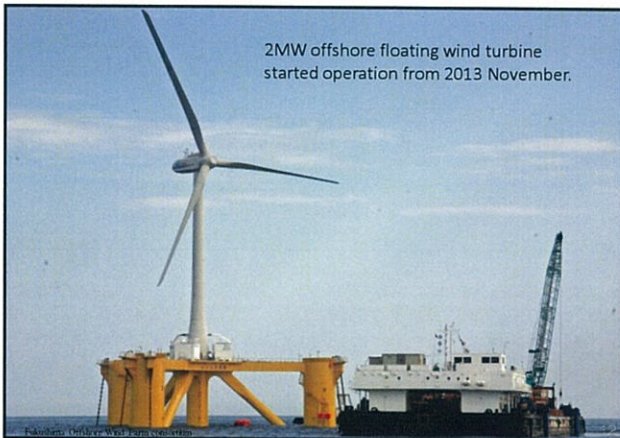


Operator	Battery Type	Output [kW]	Capacity [kWh]	Location
Hokkaido Electric Power/ Sumitomo Electric	Redox flow battery	15,000 kW	60,000 kWh	Minami-Hayakita Substation
Tohoku Electric Power	Li-Ion Battery	40,000 kW	20,000 kWh	Nishi-Sendai Substation

Offshore Wind Projects in Japan

- Offshore wind is the key to achieve ambitious renewable target in 2030 (at least 10 billion watts).
- Japan is challenging offshore wind demonstration projects:
 - Offshore bottom-mounted wind turbines off the coast of Choshi and Kitakyushu
 - Offshore floating wind turbine off the coast of Fukushima and Nagasaki.
- Private wind developers are preparing more offshore wind projects.





2MW offshore floating wind turbine started operation from 2013 November.

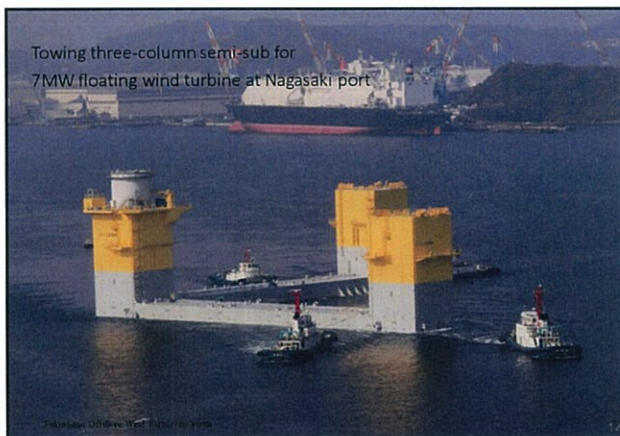
Promotion Measures for Renewable Energy Deployment	
<ul style="list-style-type: none"> ■ In addition to FIT, METI takes all available policies and measures including subsidies, preferential taxation, and R&D in order to boost RE. 	
Subsidy	<p>RE generators for non-residence(non FIT users)</p> <ul style="list-style-type: none"> ○ Grant up to 33% of total cost of facilities for business operators, or 50% for municipalities, NPO etc.
Tax	<p>PV system for residence</p> <ul style="list-style-type: none"> ○ Income tax deduction if PV system introduced as a part of energy saving renovation <p>RE generators approved by FIT</p> <ul style="list-style-type: none"> ○ 7% tax exemption for smaller business ○ Special initial depreciation up to 100% ○ Reduction of 1/3 of property tax
R&D	<p>PV system: Highly advanced cells, low-cost manufacturing technologies</p> <p>Wind power generation system: Very large floating wind generators</p> <p>Storage batteries: Advanced EV batteries, battery systems for the power grid</p> <p>Geothermal turbine: Advanced binary generating system</p> <p>Small hydraulic: Demonstration of power generation on complicated terrain</p> <p>Biofuel: Demonstration of production of cellulosic ethanol, algae-biofuel, etc.</p> <p>Oceanic energy: Generator activated by tidal power, wave power etc.</p>



offshore floating sub-station

Japan Starts the Discussion about Renewable Energy Policy

- On April 11, 2014, the Cabinet approved the Strategic Energy Plan. And in line with the Act on Special Measures concerning the Procurement of Renewable Electric Energy by Operators of Electric Utilities, we should implement an overhaul of the measures for renewable energy and examine the additional measures required, while taking into consideration the details of the new Strategic Energy Plan.
- METI's Renewable Energy Subcommittee under the Advisory Committee for Natural Resources and Energy started discussion since June 17 (Tue.), 2014. In the meetings, ideal approaches to implementing necessary measures for fleshing out the policies concerning renewable energy, including FIT and RE target, are discussed.



Towing three-column semi-sub for 7MW floating wind turbine at Nagasaki port

Temporary Grid Access Suspension

- Five utilities (Kyushu, Hokkaido, Tohoku, Shikoku, Okinawa) temporarily suspend responding grid-access applications from developers of solar, wind, geothermal, hydroelectric and biomass for safety assessment.
- For example, Kyushu Electric Power Co. claims grid-access applications from renewable-energy developers had reached 12.6GW by the end of July, above its minimum daytime demand of 8GW.
- METI's Working Group is reviewing how much renewable energy the utilities can accept and is studying options that increase their capacity. The WG will reach a conclusion by the end of 2014.