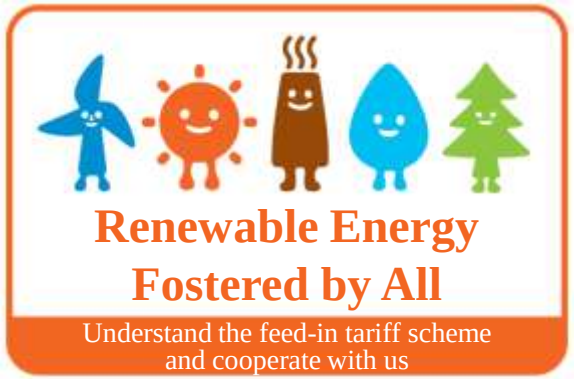
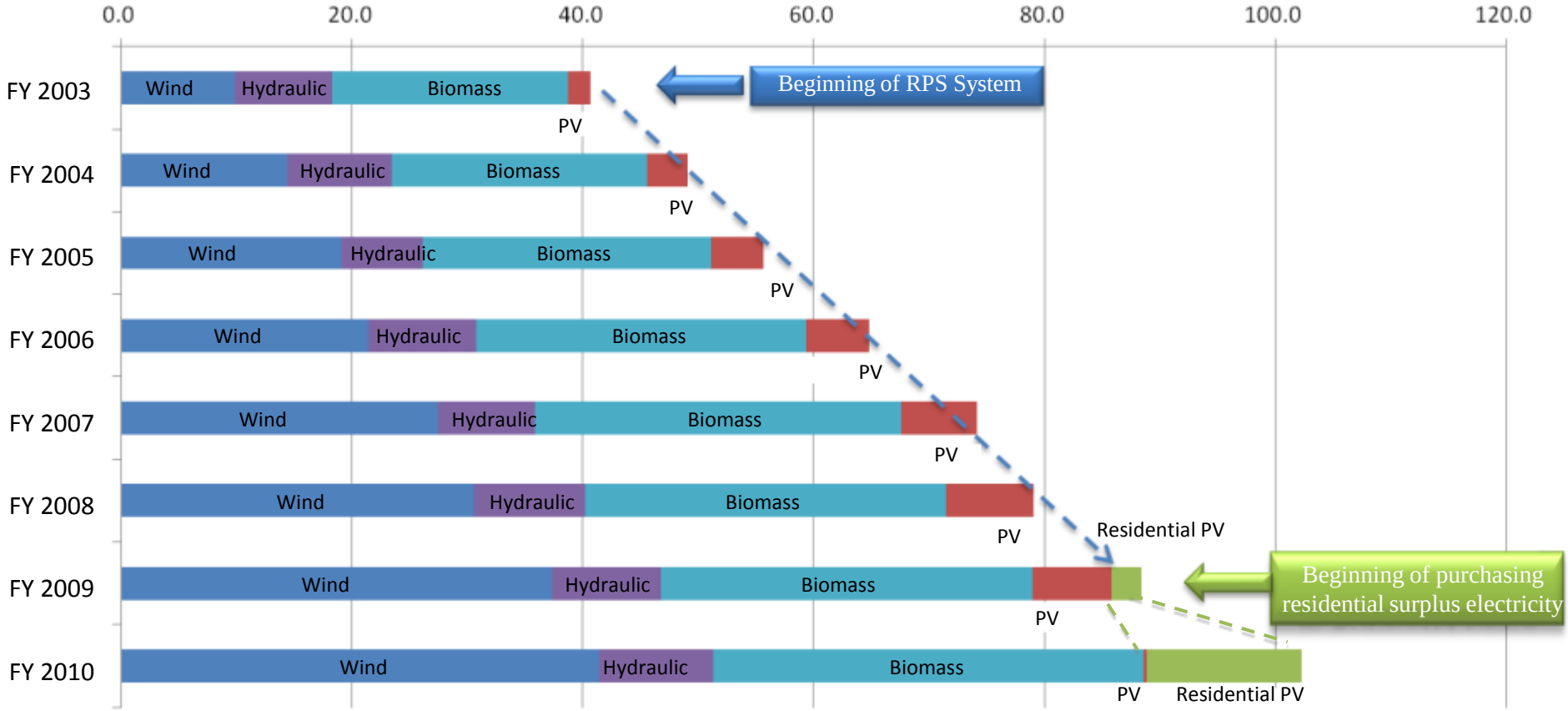
FEED-IN TARIFF SCHEME IN JAPAN



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)

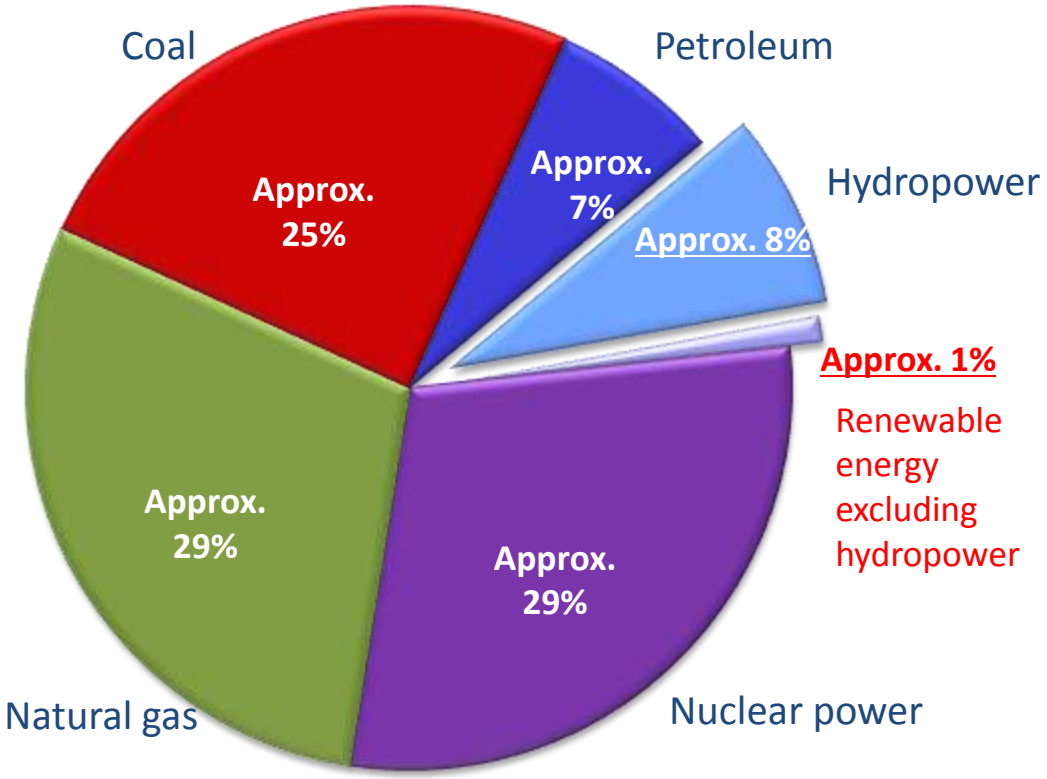


1) This data shows electricity supply from facilities accredited by the RPS Law. Electric energy before the RPS Law was enacted, electric energy generated by facilities that are not currently accredited by the RPS Law, and electric energy that is generated by facilities accredited by the RPS Law and 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.

Current Composition of Power Sources in Japan

- Among the total electricity generated in fiscal 2009, renewable energy, etc. accounted for approximately 9%; approximately 8% of which is hydraulic power generation.
- Other renewable energy is still cost prohibitive.

Composition of annual electricity generated in Japan (FY 2009)

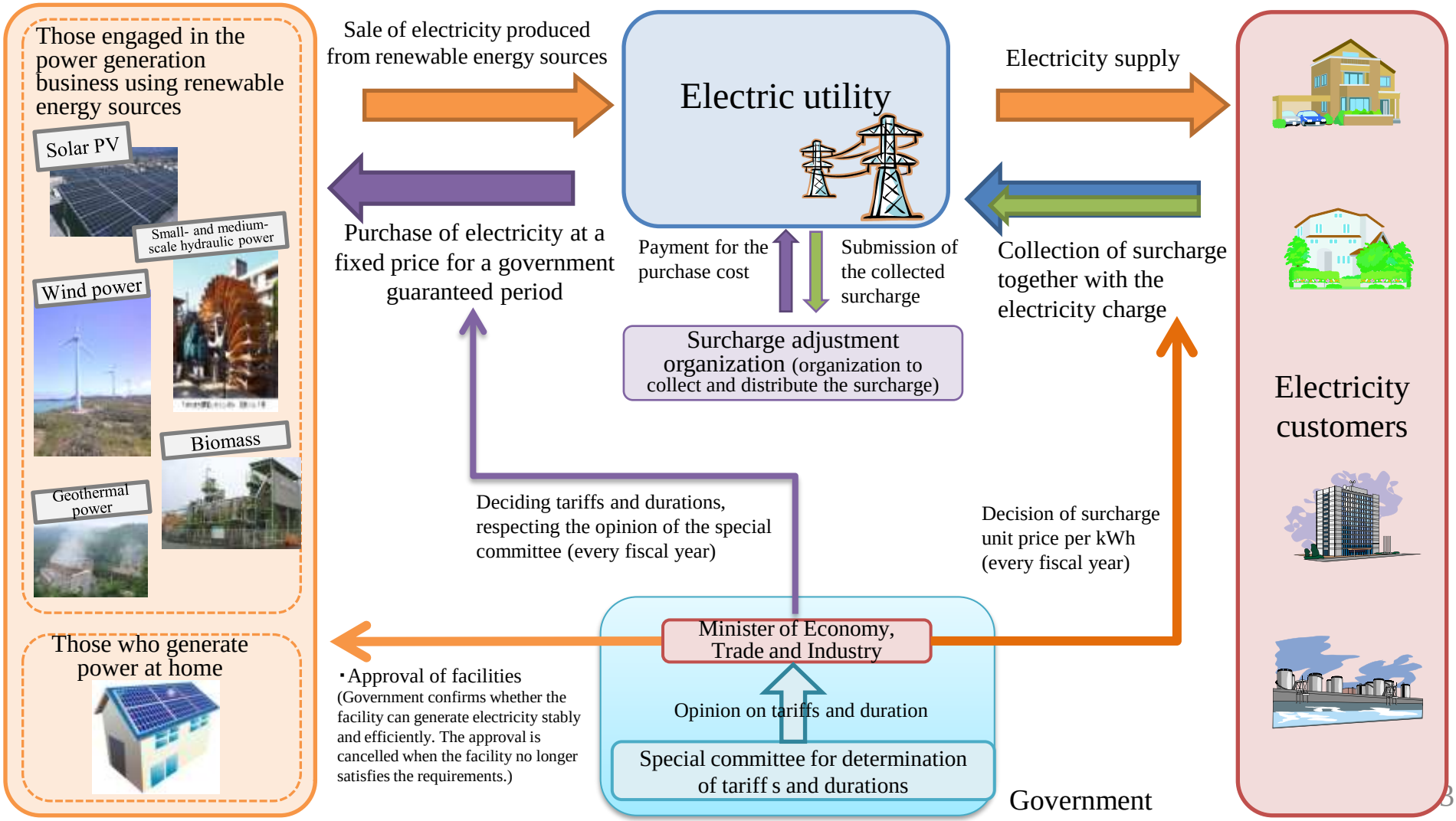


Note: "Etc." of "Renewable energy, etc." includes the recovery of energy derived from waste, refuse derived fuel (RDF) products, heat supply utilizing waste heat, industrial steam recovery, and industrial electricity recovery.

Source: Prepared based on the Agency for Natural Resources and Energy's "Outline of Electric Power Development in FY 2010"

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.



Tariffs and Durations (PV, Wind, Geothermal and Hydro)

Energy source		Solar PV		Wind power		Geothermal power		Small- and medium-scale hydraulic power		
Procurement category		10 kW or more	Less than 10 kW (purchase of excess electricity)	20 kW or more	Less than 20 kW	15MW or more	Less than 15MW	1MW or more but less than 3MW	200 kW or more but less than 1MW	Less than 200 kW
Cost	Installation cost	325,000 yen/kW	466,000 yen/kW	300,000 yen/kW	1,250,000 yen/kW	790,000 yen/kW	1,230,000 yen/kW	850,000 yen/kW	800,000 yen/kW	1,000,000 yen/kW
	Operating and maintenance costs (per year)	10,000 yen/kW	4,700 yen/kW	6,000 yen/kW	—	33,000 yen/kW	48,000 yen/kW	9,500 yen/kW	69,000 yen/kW	75,000 yen/kW
Pre-tax IRR (Internal Rate of Return)		6%	3.2%(*1)	8%	1.8%	13%(*2)		7%	7%	
Tariff (per kWh)	Tax inclusive (*3)	**42.00 yen**	**42 yen(*1)**	**23.10 yen**	**57.75 yen**	**27.30 yen**	**42.00 yen**	**25.20 yen**	**30.45 yen**	**35.70 yen**
	Tax exclusive	40 yen	42 yen	22 yen	55 yen	26 yen	40 yen	24 yen	29 yen	34 yen
Duration		20 years	10 years	20 years	20 years	15 years	15 years	20 years		

(*1) Solar PV power generation using systems for residences

The price for solar PV power generation of less than 10 kW is seemingly the same as that for solar PV power generation of 10 kW or more. However, considering the subsidy of 35,000 yen per kW (FY2012) granted for power generation using systems for residences, the price will be 48 yen in effect.

(*2) IRR for geothermal power generation

Given that about 4.6 billion yen is required for site development, including surface surveying and exploration well drilling, and that the rate of successfully starting practical operation is low (about 7%), the IRR (Internal Rate of Return) for geothermal power generation is set higher than that of the other energy sources, at 13%.

(*3) Treatment of consumption tax

With regard to consumption tax, both the tax-inclusive price and the tax-exclusive price are indicated, assuming that the tax rate may change in the future. However, the tax-inclusive and tax-exclusive prices are the same for the purchase of excess electricity produced from solar PV, which is mostly intended for general consumers.

Tariffs and Durations (Biomass)

Energy source		Biomass				
Biomass type		Biogas	Wood fired power plant (Timber from forest thinning)	Wood fired power plant (Other woody materials)	Wastes (excluding woody wastes)	Wood fired power plant (Recycled wood)
Cost	Installation cost	3,920,000 yen/kW	410,000 yen/kW	410,000 yen/kW	310,000 yen/kW	350,000 yen/kW
	Operating and maintenance costs (per year)	184,000 yen/kW	27,000 yen/kW	27,000 yen/kW	22,000 yen/kW	27,000 yen/kW
Pre-tax IRR (Internal Rate of Return)		1%	8%	4%	4%	4%
Tariff (per kWh)	**Tax inclusive**	**40.95 yen**	**33.60 yen**	**25.20 yen**	**17.85 yen**	**13.65 yen**
	Tax exclusive	39 yen	32 yen	24 yen	17 yen	13 yen
Duration		20 years				

Certification of FIT Facilities (1)

(i) The facility must be capable of stably and efficiently generating electricity during the guaranteed period.

(ii) The facility must be capable of transparently and fairly measuring the amount of the electricity produced from renewable energy that is supplied to the electric utility.

(iii) The facility to be used for power generation must be specified in detail.

[Common standards for all energy sources]

1. Maintenance system must be secured for the facility.
2. The facility must have a structure that is capable of making proper measurements using a measuring instrument
3. The power generation facility must be specified in detail (e.g., the manufacturer and the model code of the product)
4. The renewable energy producer must record and periodically submit the breakdown of the costs for installing the facility (the facility cost, the land cost, the cost for access to the electric power system, the maintenance cost, etc.) and the breakdown of annual fiscal costs for operating the system.

Certification of FIT Facilities (Re: Article 6 of the Act)

Certification of FIT Facilities(2)

[Energy source-specific standards]

Solar PV

- A solar PV facility of less than 10 kW must have received certification for conformity to JIS product standards or equivalent certification (certification by the Japan Electrical Safety & Environment Technology Laboratories (JET) or equivalent certification by an overseas certification body) .

- A solar PV facility of less than 10 kW must have wiring for supplying excess electricity (a wiring structure for first allocating the generated electricity to power consumption within the residence, and then supplying the remaining electricity to the electric utility).

- The following requirements are imposed on the so-called “roof-lending business” (only such business with a total power output of 10 kW or more):

  (1) Each residence must have wiring for supplying the electricity directly to the electric utility.

  (2) The roof-lending contract document must be attached.

- When using the following types of solar panels, the power generation efficiency must be those respectively indicated for the following types:

  Monocrystal or Polycrystal silicon: 13.5% or higher
  Thin-film semiconductor: 7.0% or higher
  Compound semiconductor: 8.0% or higher

Certification of FIT Facilities(3)

[Energy source-specific standards]

Wind power

- A small wind power facility of under 20 kW, which could also be installed in residences, must have received certification for conformity to JIS product standards (JISC1400-2) or equivalent certification (certification for conformity to standards formulated by the Japan Small Wind Turbines Association [JSWTA] or equivalent certification by an overseas certification body).

Hydroelectric power

- The facility output (when the facility consists of multiple power generators, the total output of those generators) must be less than 3MW (written notification of construction of electric facilities under the Electricity Business Act must be attached in order to prove this fact).
- The facility must not be a pumped-storage facility.

Geothermal power

- No energy source-specific requirement is imposed.

Certification of FIT Facilities(4)

[Energy source-specific standards]

Biomass

- The resource energy producer must secure a system for precisely calculating the biomass ratio and create a system for calculating the biomass ratio once every month.
- The biomass fuel to be used must not be one of which the use has a serious impact on the industries currently using that biomass. (a document indicating the source of the biomass to be used must be attached).

* If the category of the wood fired power plant cannot be determined, the lowest tariff will be applied.

Other Individual Matters

(i) Time of application of the tariff

The tariff to be adopted is the tariff at the time when the electric utility receives the application form for a contract on access to the electric power system or when the Minister of Economy, Trade and Industry approves the facility, whichever is later.

(ii) Time of commencement of the duration

The duration commences at the time of initiation of electricity supply under a specified contract.

(iv) In the case of new installation or addition/modification to an important part of the facility

When there is any change to an already approved facility, it is necessary to obtain approval for the facility anew.

When the incremental amount of electricity supplied through additional installation or repowering can be clearly measured and this fact can be confirmed by wiring diagram or the like, the incremental output can be made subject to purchase.

Renewable Energy Forecast (FY2012)

■ 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 new 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

Photovoltaic Generation

Residential photovoltaic generation

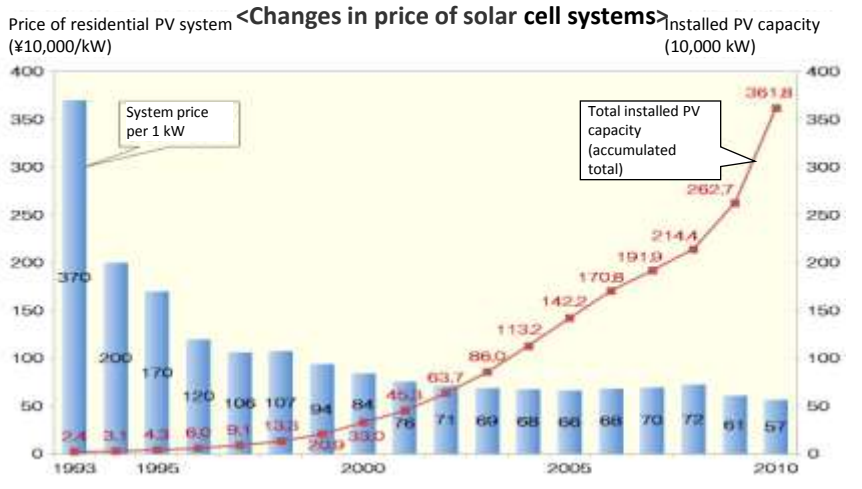
- Japan is ranked third in the world in terms of installed photovoltaic generation capacity (3,618 thousand kW), of which, residential use accounts for 80% and non-residential use accounts for 20% (the ratio is opposite in Europe and the U.S.).
- Following the introduction of the surplus electricity purchase system in 2009, the installed photovoltaic generation capacity for residential use has increased rapidly. PV generation has spread to 900,000 households (the total number of detached houses in Japan is 27 million).
- In the future, the key is to make PV systems “household appliances” in cooperation with rechargeable batteries and smart meters.

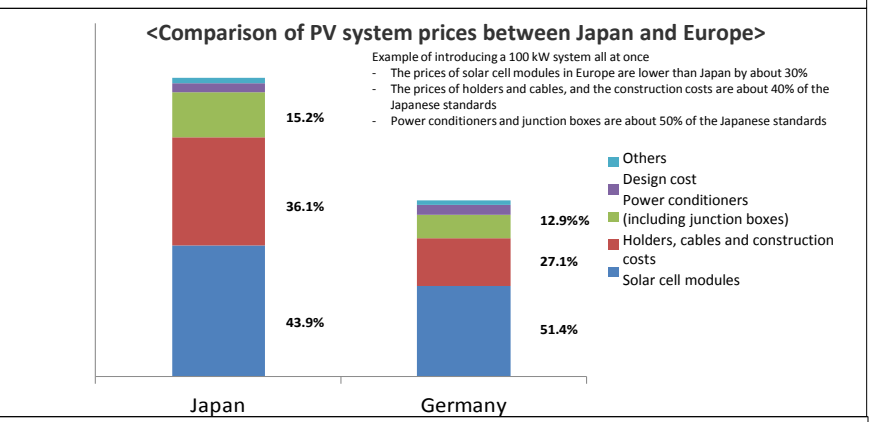
Mega solar power plants

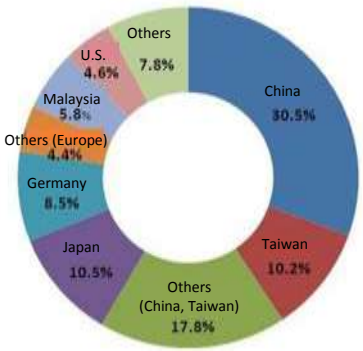
- There are about 40 mega solar facilities across the country. Most of them are built for the purpose of CSR and experiment studies based on existing subsidies. Now is the transitional period moving towards commercialization. The cost is still high, usually around ¥400,000–500,000/kW (there are cases where the cost is less than ¥300,000 abroad).
- With China’s entry in this field, the cost of panels has sharply dropped. The panel industry is rapidly shifting to the smile-curve phenomenon. In terms of international competitiveness, the costs of installing holders and supplementary equipment and the capacity of integrators will be important factors.

Challenges

- Coping with the panel market, which has an overabundance of stocks
- Discovering untapped idle land that is suitable for mega solar, and reviewing location regulations including the Building Standards Act and the Factory Location Act.
- Exploring measures to diffuse PV in the medium-sized market ranging from 10 kW to 1 MW (public facilities, plants, etc.)







<Output by company>

1st	*Suntech (China)*	*1,584 MW*
2nd	*JA Solar (China)*	*1,464 MW*
3rd	*First Solar (U.S.)*	*1,400 MW*
4th	*Yingli Green Energy (China)*	*1,117 MW*
5th	*Trina Solar (China)*	*1,116 MW*
6th	***Sharp (Japan)***	***1,109 MW***
10th	***Kyocera (Japan)***	***650 MW***

Wind Power Generation

Onshore wind power

- Among 479 operators in Japan, 393 have installed at most 5 generators. Greatly biased to small-scale business. (The largest farm in China, now under construction, has 2,500 generators.)
- Japan is mountainous, while Europe and the US are flatter. Because of Japan's unique wind conditions, such as upward turbulence from the ground affecting wind turbines installed on the roof, many businesses became unprofitable due to unexpected maintenance costs.
- The key is concentrated geographical location. Deregulation and system organization are required.

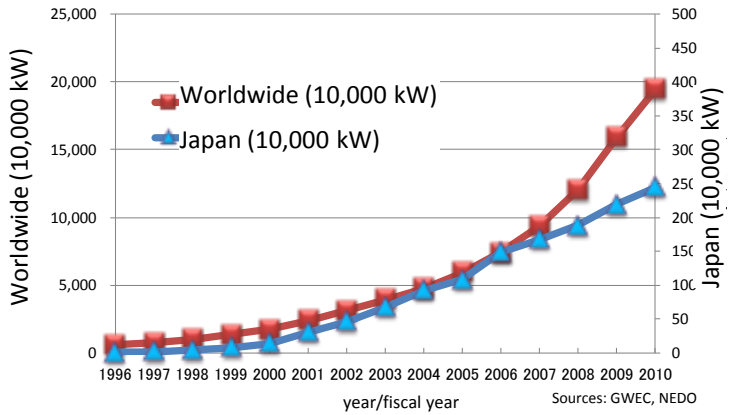
Offshore wind power

- Ongoing business. Costs are high, but geographical potential is not low. At present, generators anchored to the seabed are feasible.
- European seas have shallow, small-gradient beds suitable for seabed anchored-type generators, whereas floating types should be considered for Japanese oceans which quickly become deep. However, the cost including connection lines may soar.
- At the request of Fukushima prefecture, a 5-year demonstration project to create the world's largest floating-type offshore wind power farm started this fiscal year.

Problems

- Technical development to address Japan's unique conditions, such as lightning protection, wind forecasting/control, etc. Increase of the operating rate by using such techniques, and cost reduction.
- Regulatory reform to encourage large-scale wind farms (conversion from agriculture land, use of national parks, landscape regulations, utilization of national forest, etc.)
- Improvement of electric system measures, such as against night-time surplus production (so-called insufficient reduction margin), reinforcement of power system to consumption areas, etc.

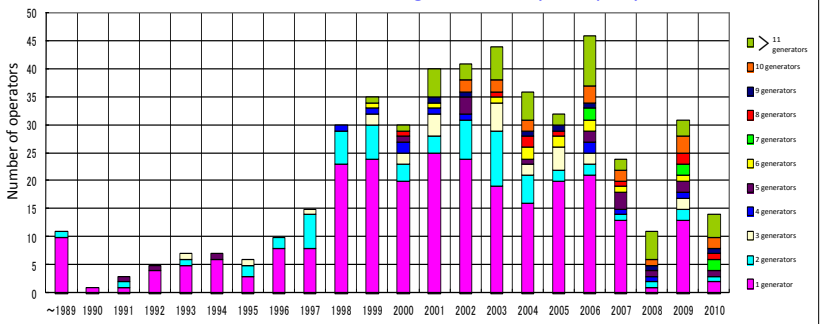
Transition of cumulative installed capacity of wind power



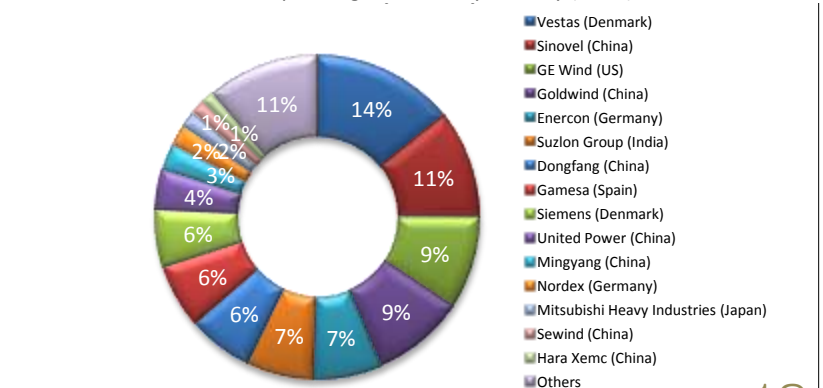
Sources: GWEC, NEDO

* The capacity is summed up by year for worldwide, and by fiscal year for Japan.

Transition of installed generators by company



<Production amount of wind power generators by country (2010)> Total 40,722 MW



(Source) Drafted by ANRE based on "BTM Consult –A Part of Navigant Consulting - March 2011"

Geothermal Power Generation

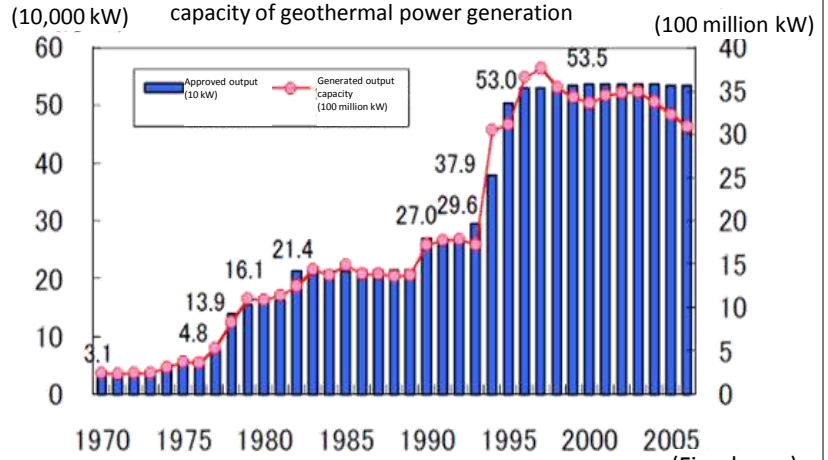
Features of the geothermal power generation market

- Japan has the third largest volume of geothermal resources in the world. However, only 10% of potential resources are currently used because installed capacity is at most 0.54 million kW.
- No new development plans have been concretely submitted since the Hachijyojima geothermal power plant was set up in 1999, and output capacity is also decreasing.
- Japanese companies have a big advantage in the geothermal power plant market, with an almost 70% share of the world market. It is our opinion that this field holds great potential.

Issues

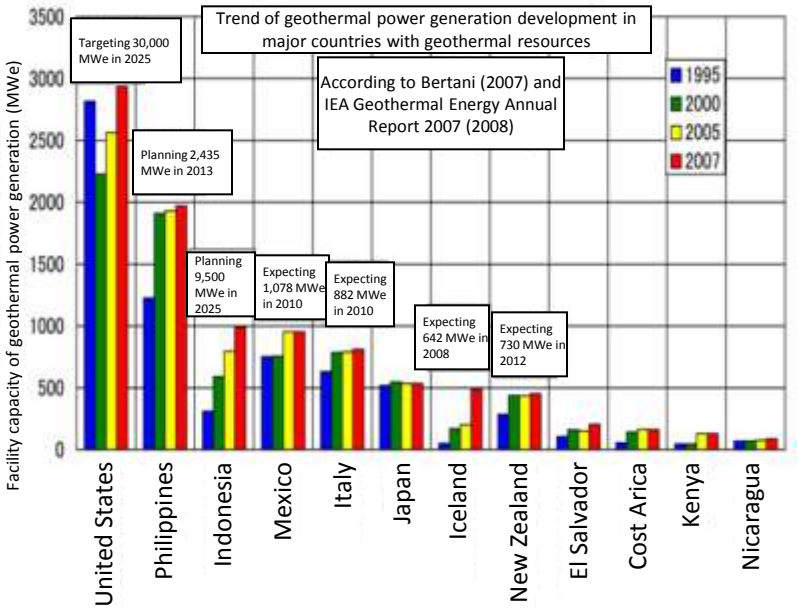
- Since most geothermal resources are located in natural parks, a review of relevant regulations is required to expand geothermal power generation.
- Detailed drilling surveys of geothermal resources, etc. is also necessary.
- Problems of cost increases including electric cable wiring and material transportation, etc need to be considered because of site location.

Transition of approved output capacity and generated electric capacity of geothermal power generation

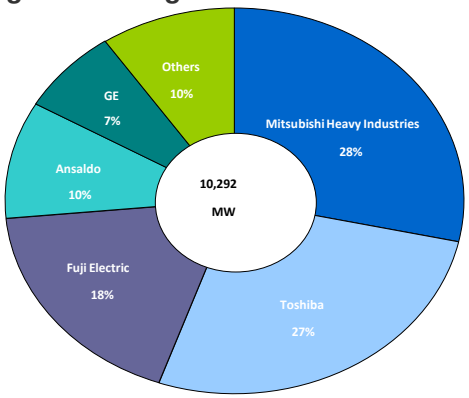


Transition of facility capacity and generated electric capacity of geothermal power generation

Source: Drafted from the "Interim Report of Study Group for Geothermal Power Generation"



Production volumes of flush-type geothermal generator manufacturers



Amount of geothermal resources in the world

Country	Amount of geothermal resources(MW)
Indonesia	27,791
US	23,000
Japan	20,540
Philippines	6,000
Mexico	6,000
Iceland	5,800
New Zealand	3,650
Italy	3,267

Hydroelectric Power Generation

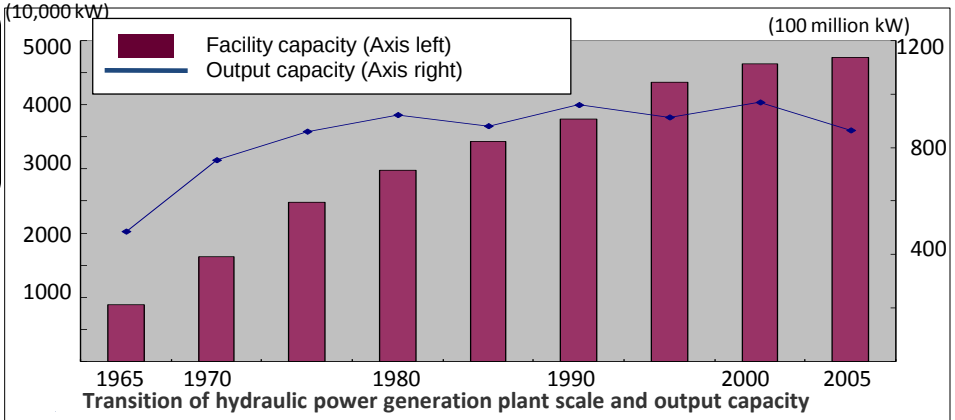
Data (as of FY 2009)
- Installed capacity: approx. 47.97 million kW

Long-term energy supply-demand outlook (Best case)
- Targeting installed capacity of approx. 49.25 million kW in 2020

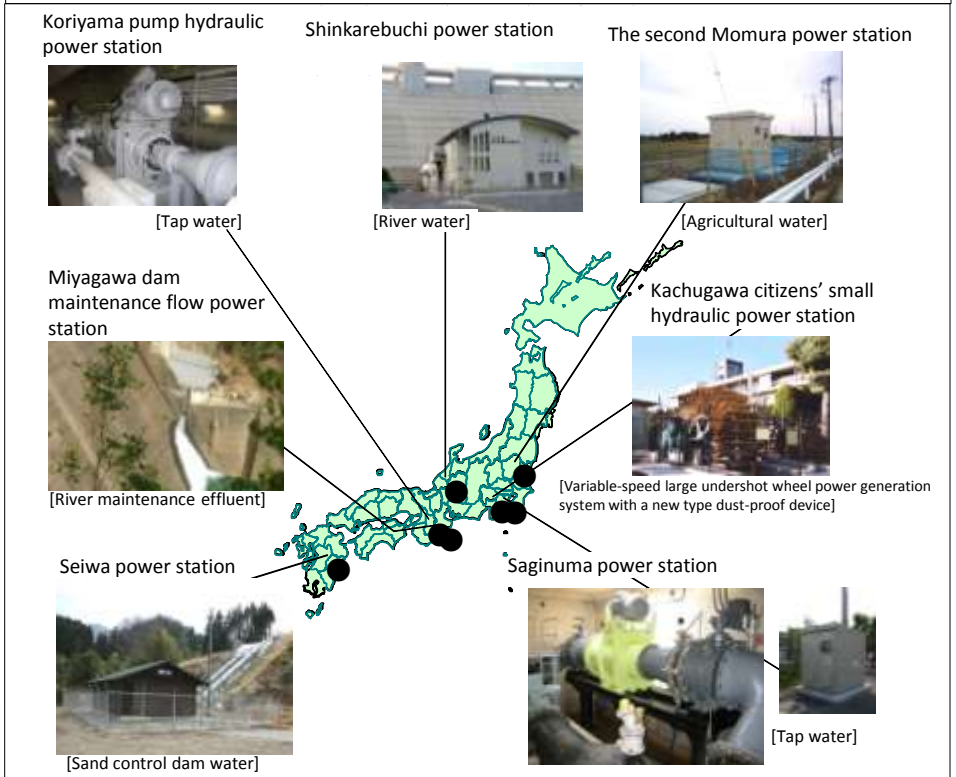
Features
- Stable power generation
- Well-developed technique

Issues
- Greatly limited by the site location.
- The site is being transferred upcountry, which may cause an increase to the generation cost, including electric cable wiring and material transportation, etc.
- Necessary to coordinate water rights.

Current measures to promote installation
- RPS system(Hydraulic power of 1,000 kW or less)



Transition of hydraulic power generation plant scale and output capacity



Installation examples of middle- and small-scale hydraulic power generation facilities

Biomass Power Generation

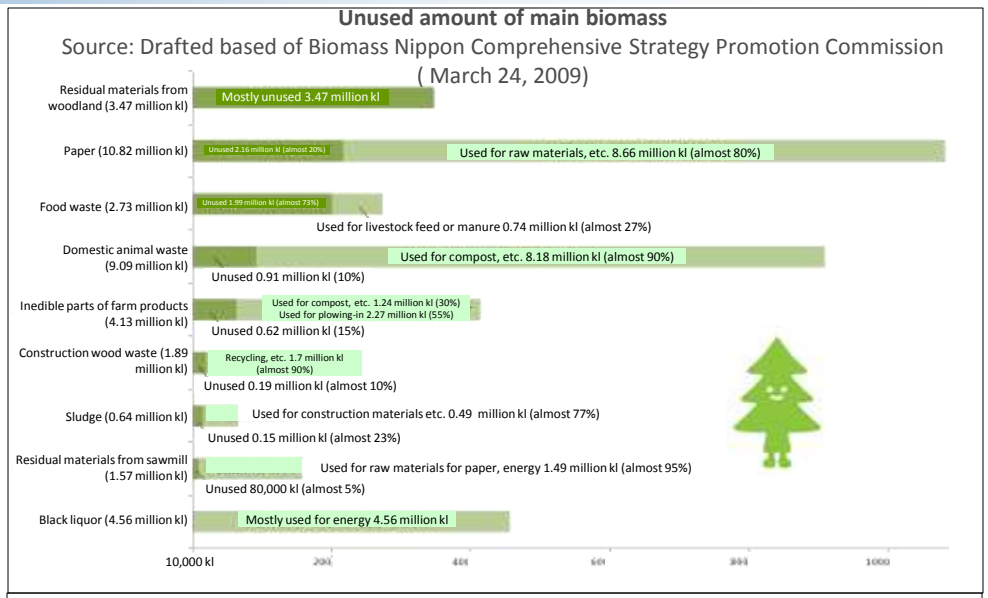
Data (as of FY 2009)
Installed capacity: Approx. 1.54 million kW

Long-term energy supply-demand outlook (Maximum case)
Targeting installed capacity of approx 2.17 million kW by 2020.

Features
- Unused resources in local areas are available.
- Fuel biomass has a wide range of uses such as heat and material utilization in addition to power generation.
- Cost may greatly vary depending on type and use.
- Supply amount and price may change because biomass is actually a limited resource.

Issues
- Competitiveness in terms of material utilization, etc.
- A stable supply of raw materials is required for massive installation.

Current measures to promote installation
○ Tax system
○ RPS system
○ Research & development, demonstration tests



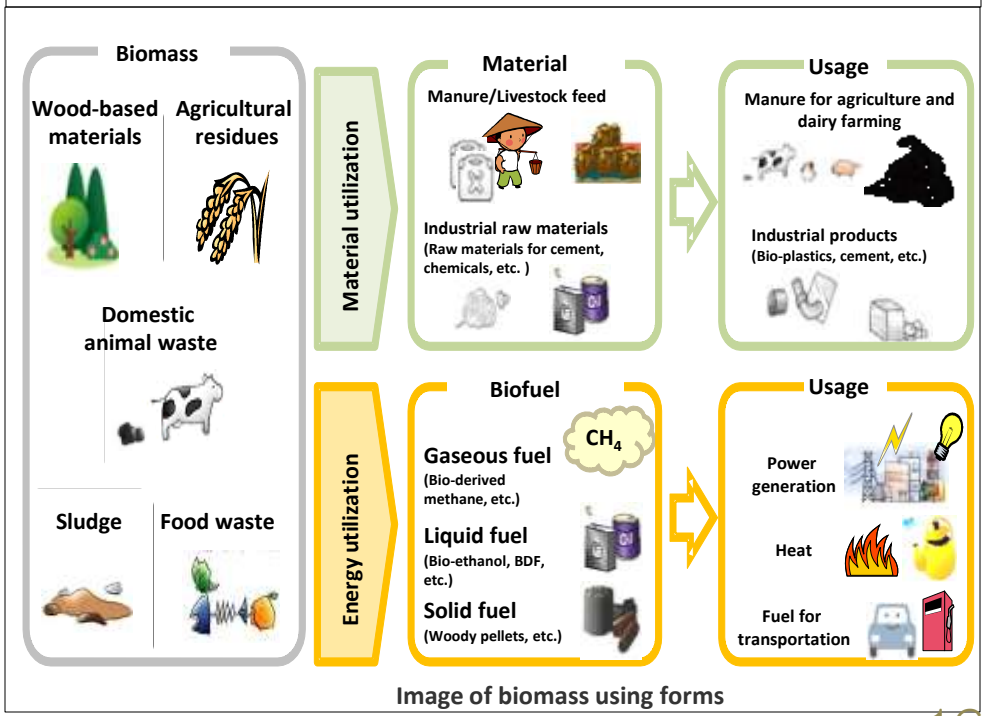


Image of biomass using forms