

# Hydro and geothermal development in Japan

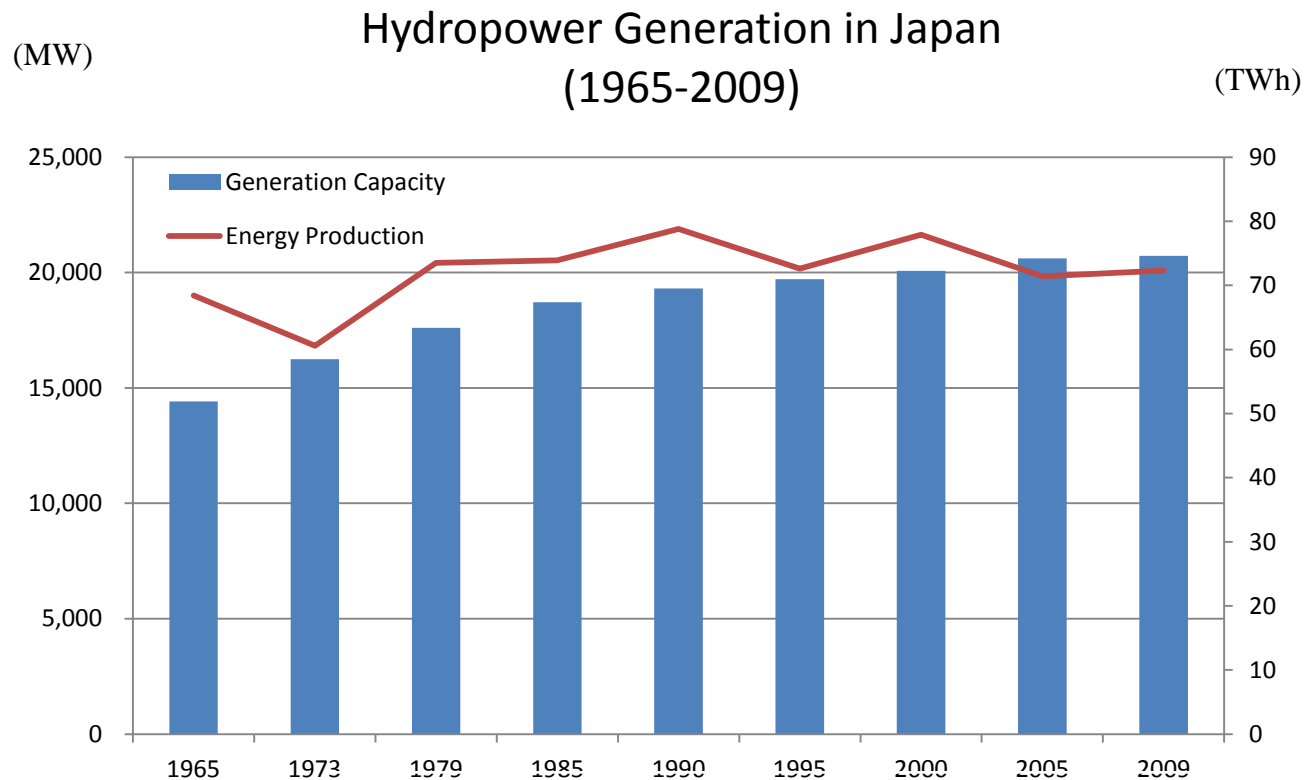


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# Hydropower Generation in Japan



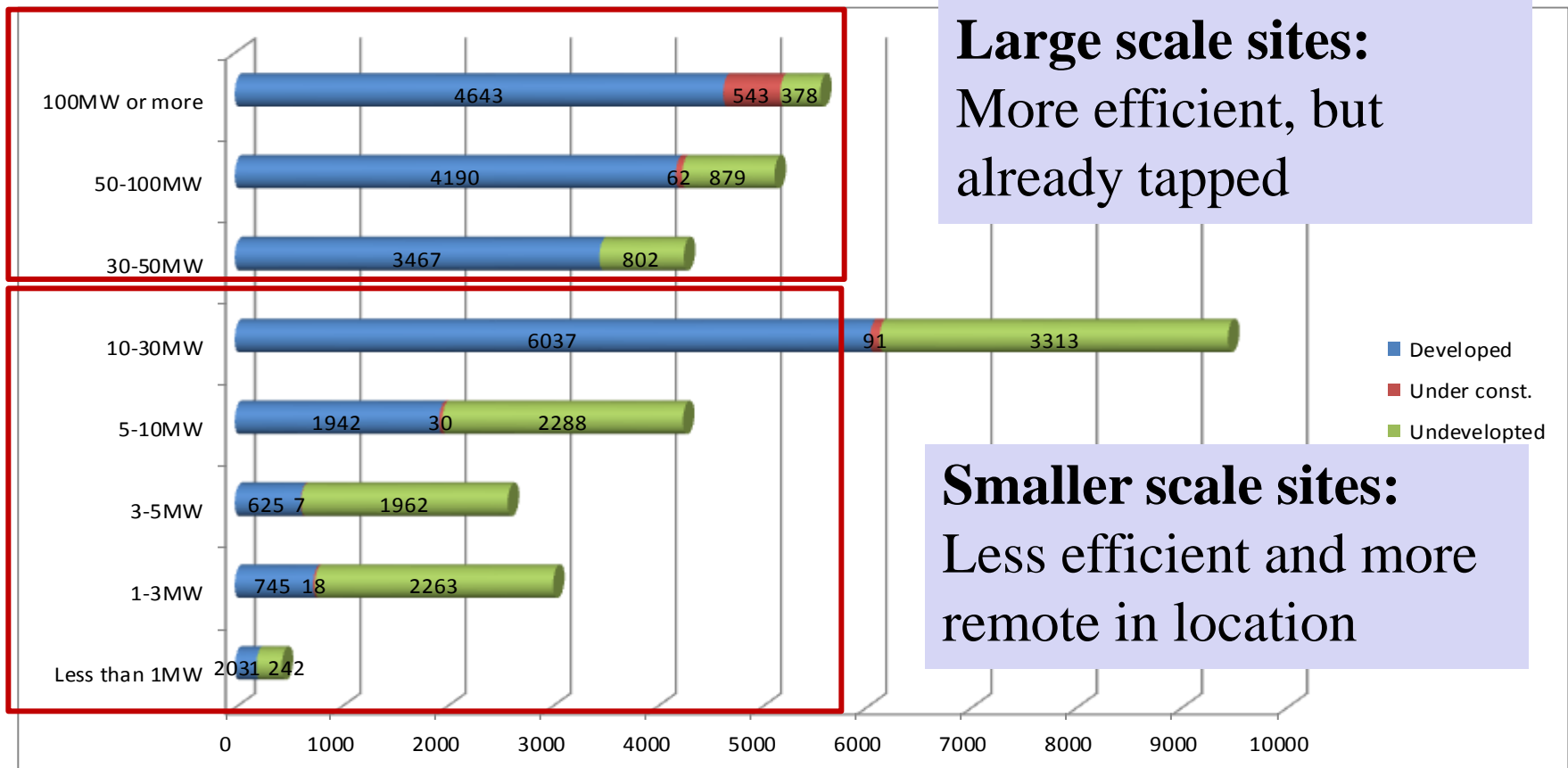
- Japan has a potential of 34.7GW of hydroelectric power
- Conventional hydropower represents generation capacity of approx. 10% (21GW)



Source: Ministry of Economy, Trade and Industry (METI) *Dengen Kaihatsu no Gaiyou 2010*

# Development of Hydropower Generation in Japan

- Larger scale sites ( $>30\text{MW}$ ) have already been developed
- Previous subsidies and RPS schemes were not enough to promote development of smaller sites



# FIT and other ways to support Hydropower Projects



- FIT scheme (July 2012) is expected to suit smaller-scale sites
- Other incentives and further deregulation would promote development

## FIT Scheme

- FIT scheme to support development cost

## Incentives

- Preferential taxation and loan schemes

## De-regulation

- Clarification of licensing criteria regarding water rights etc.

### Purchase rate and duration set for Feed-in-Tariff (FY2012)

Rate : 1\$ = 95 JPY

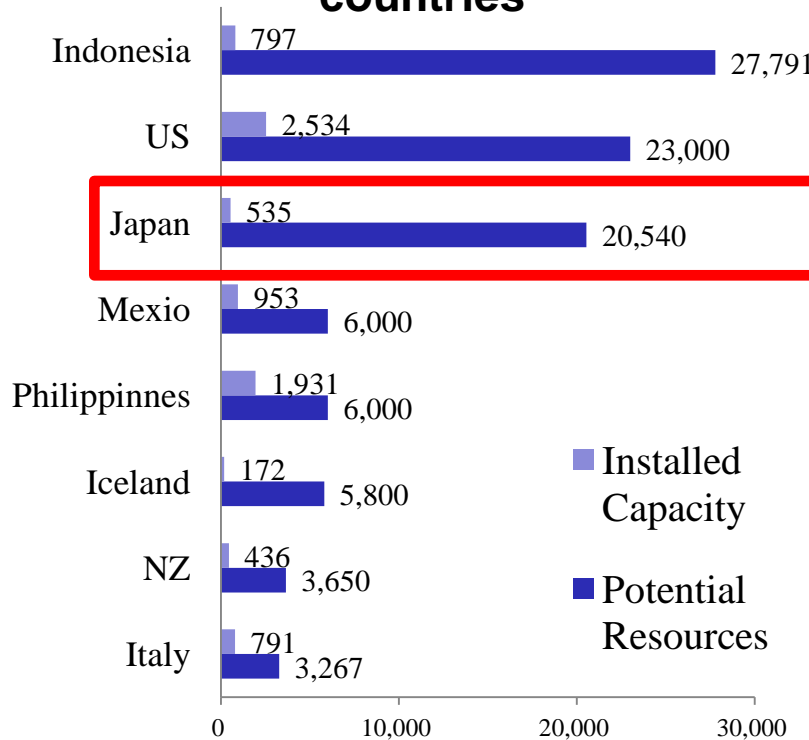
Procurement category	1MW or more but less than 30MW	0.2MW or more but less than 1MW	Less than 0.2MW
Tariff (exclusive tax)	25.3 US cents/kWh	30.5 US cents/kWh	35.8 US cents/kWh
Duration	20 years	20 years	20 years

# Features of Geothermal Power Generation

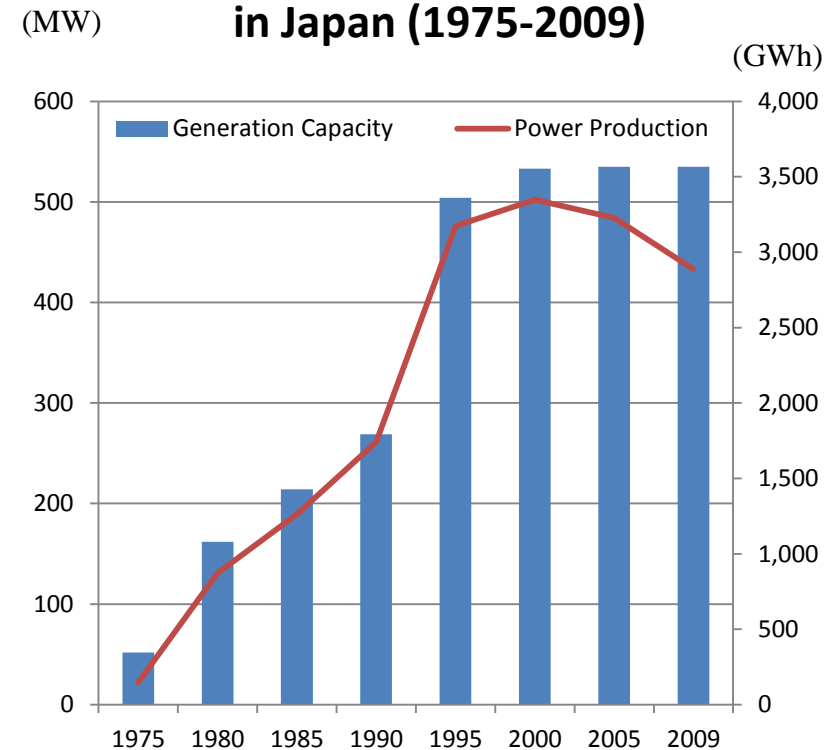


- Japan ranks 3<sup>rd</sup> in the world for potential geothermal resources
- Geothermal power accounts for 0.2% of total capacity and 0.3% of generated electricity in Japan
- No new capacity has been added since 1999

## Geothermal resources by countries



## Geothermal Power Production in Japan (1975-2009)



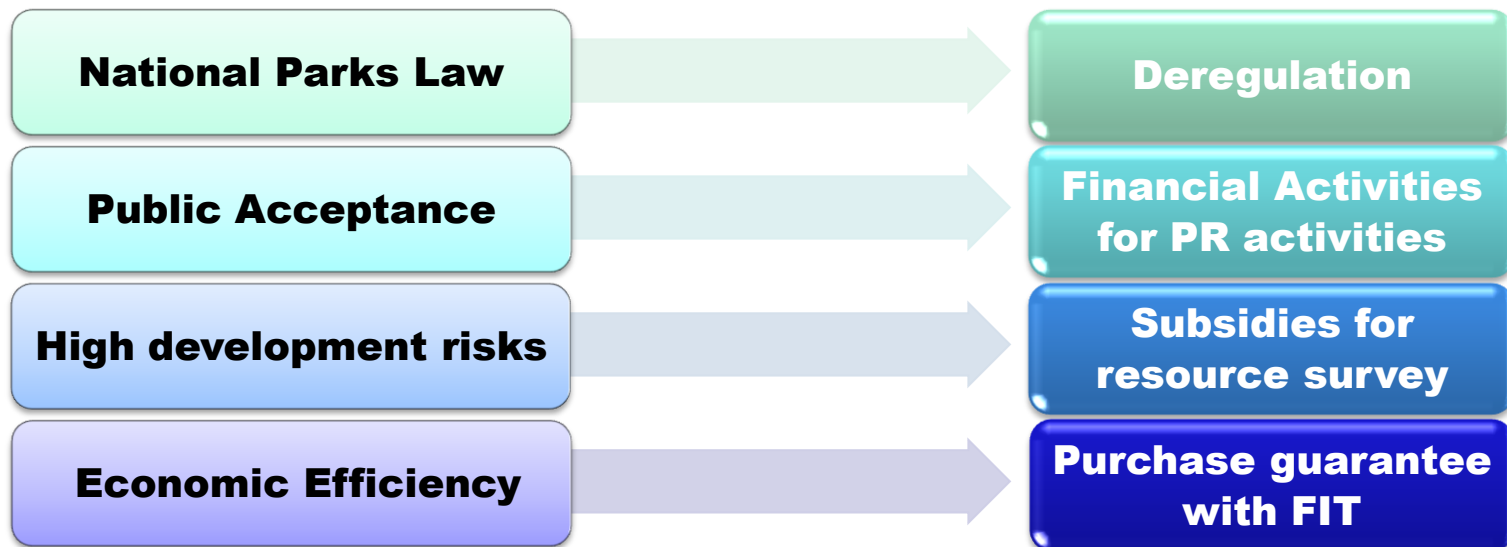
Sources:

Potential Resources : Preliminary report by a committee regarding geothermal, published Aug. 2009, Agency for Natural resources and Energy. Installed Capacity : *Chinetsu hatsuden-no Genjo to Dohko*, 2009, by Thermal and Nuclear Power Engineering Society

Source: *Denki Jigyo Binran 2011*, compiled by Federation of Electric Power Companies of Japan (FEPC) 5

# Issues & Solutions for Geothermal Projects

- Restriction by National Parks Law and hot spring business have left geothermal resources untapped
- Deregulation and financial support including FIT scheme will promote development in medium to long term
- Due to a long lead-time and high development cost caused by uncertainty in potential resources, risks for operators remain high



## Purchase rate and duration set for Feed-in-Tariff (FY2012)

Rate : 1\$ = 95 JPY

Procurement category	15MW or more	Less than 15MW
Tariff (exclusive tax)	27.4 US cents/kWh	42.1 US cents/kWh
Duration	15 years	15 years