



5th International Conference On Smart Energy Systems

4th Generation District Heating, Electrification, Electrofuels and Energy Efficiency

10-11 September 2019 · Copenhagen

“Establishment of 4DH forum in Japan” Background and issues of DH and RE heat policy

Sept. 11th 2019

Institute for
Sustainable
energy
policies



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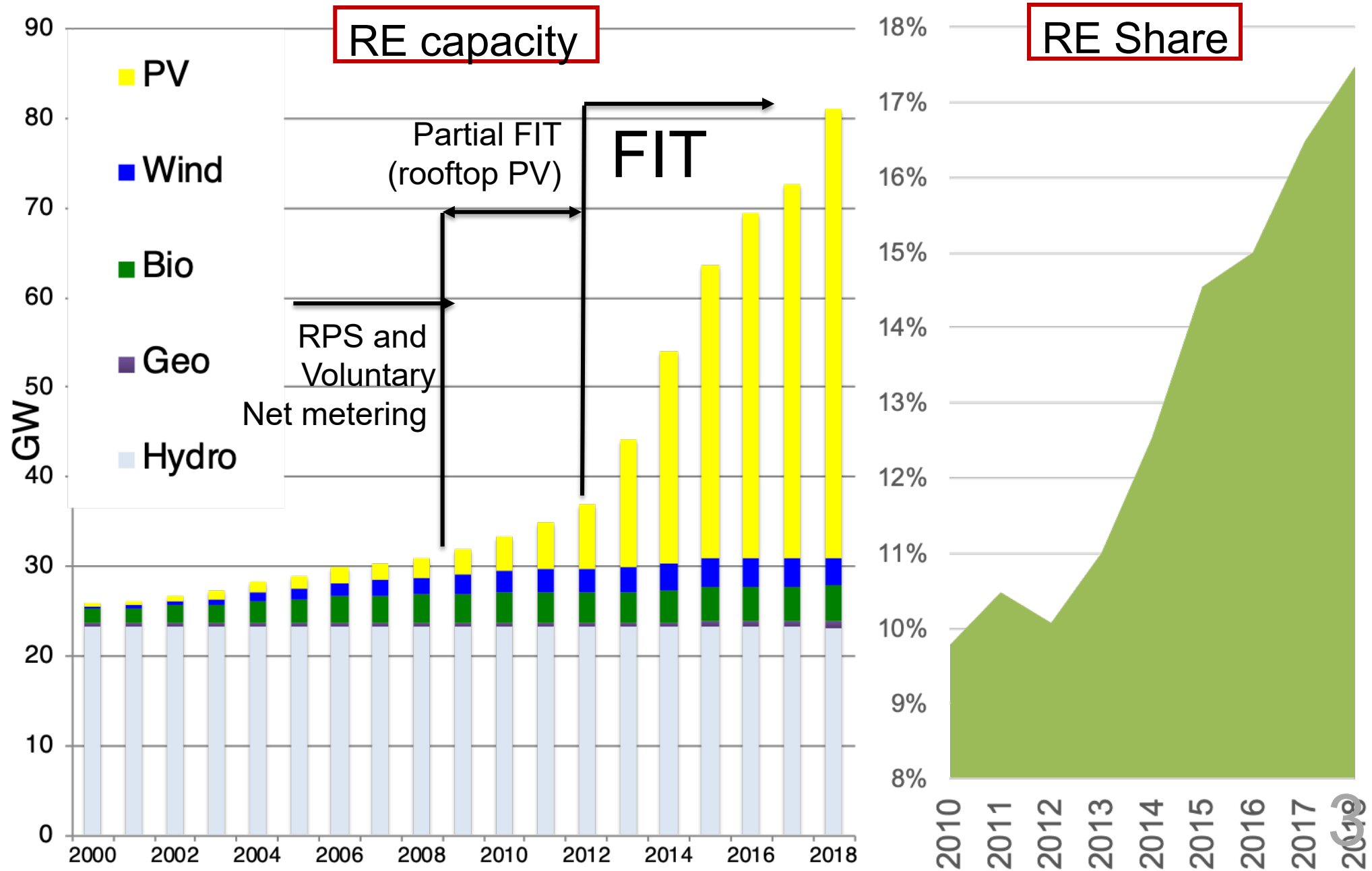


Last 6 years on 4DH and Japan, or myself

- 2014 Denmark – Japan Energy Tech-transfer program launched
 - DH became one of important focal technology area
- 2015 Encountered the concept of “4DH”, attend 1st 4DH Conf.
 - while none of Japan’s expert have never heard “4DH” concept
- 2016 My presentation about Japan’s situation at 2nd 4DH Conf.
 - while interest growing in Japan, mutual collaboration developed.
- 2017 Feasibility studies on several local cities
 - Found both possibilities and barriers
- 2018 Launching Japan 4DH Forum with various interest group
 - Preparing 4DH guidebook
- 2019 Japan’s Government first focus on 4DH in its program
 - Planning 1st 4DH international conf. in Japan in 2020



Renewable EL successfully increasing, so far





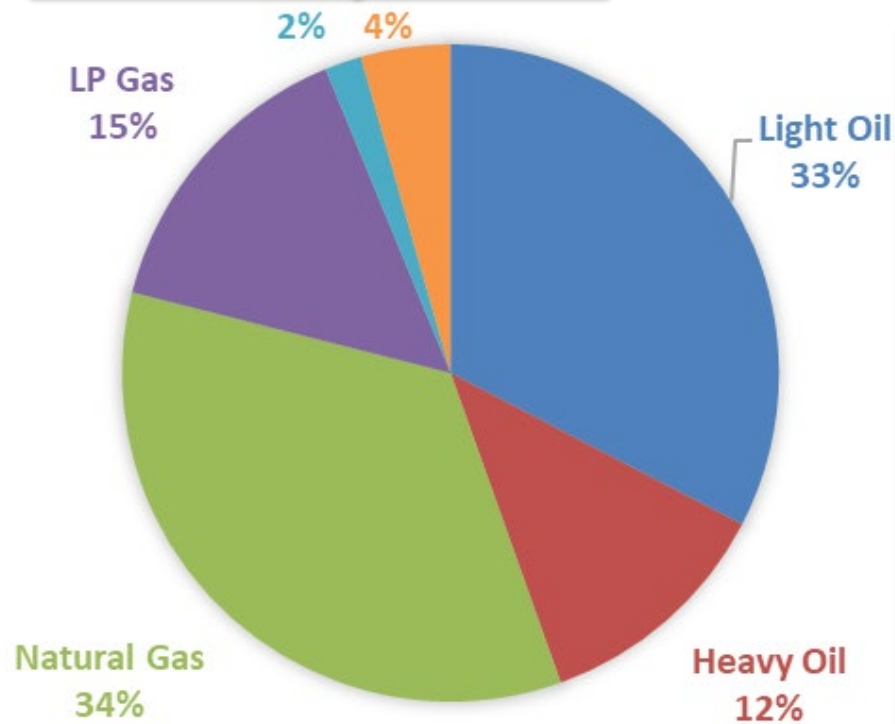
However, DH and RE heat supply in Japan stay behind

- Share of DH in heat sector* is only 2% in Japan
- Share of RE heat sector is about 4% in Japan

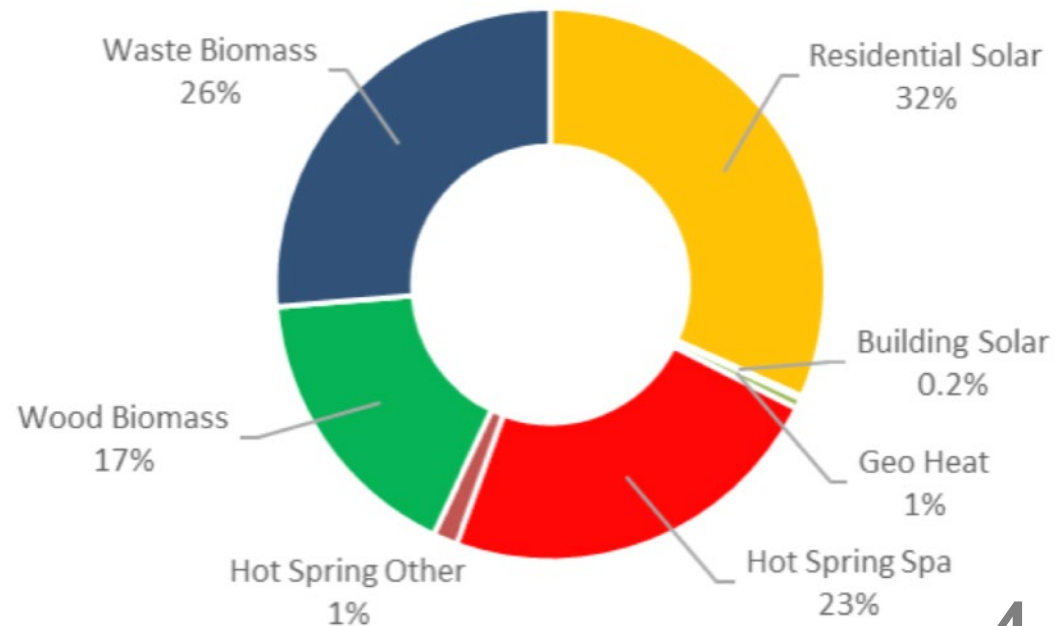
District Heating

Renewable

FY2017



Renewable Heat Supply



*residential and commercial sectors with agriculture and forestry

Source: Sustainable Zone Study



Oil and electricity dominant for space heating



25millions (ca. 50%)

- declining but still dominant
- 89 killed ('05-'10)

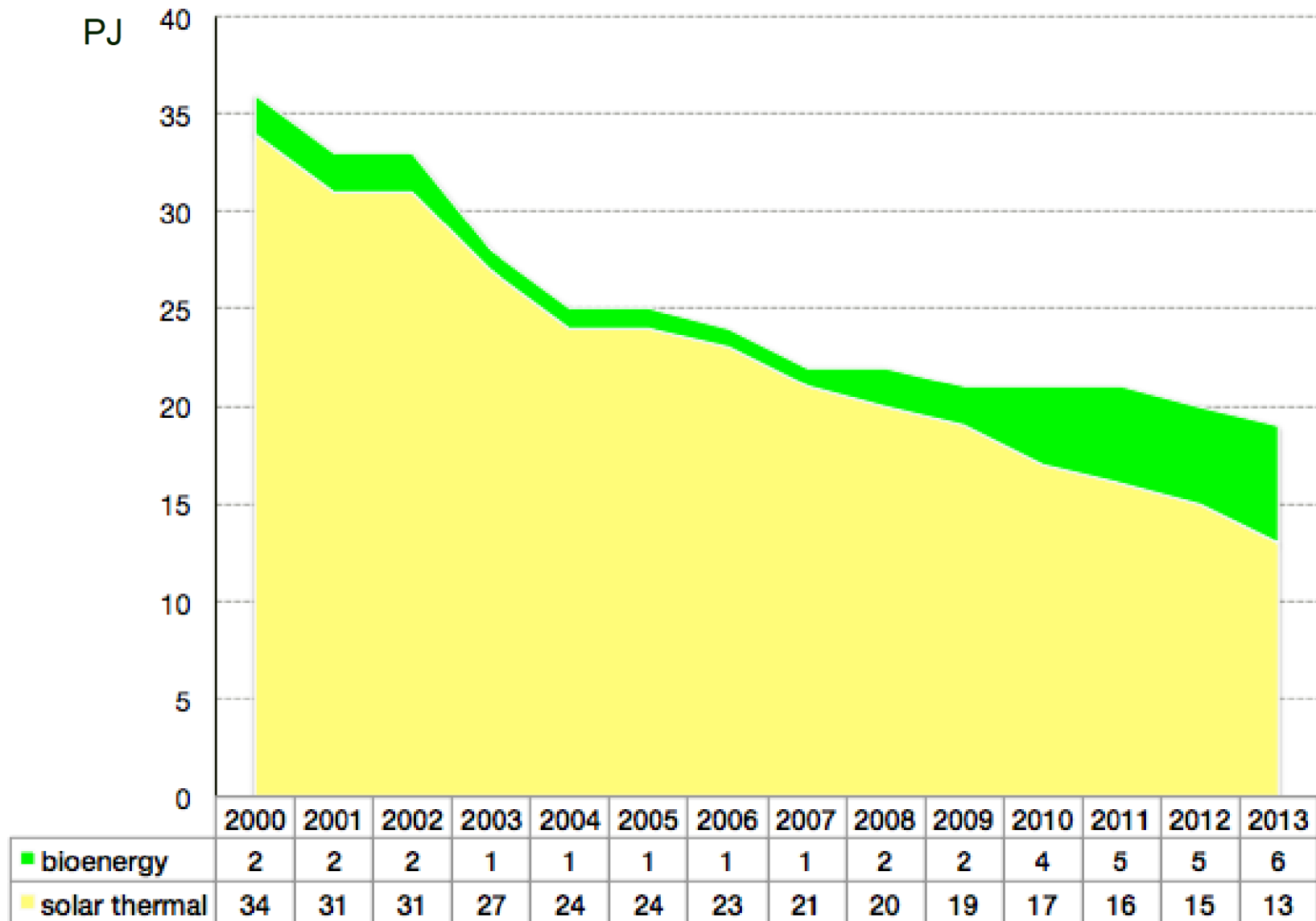


45millions (ca. 90%)

- increasing with electrification



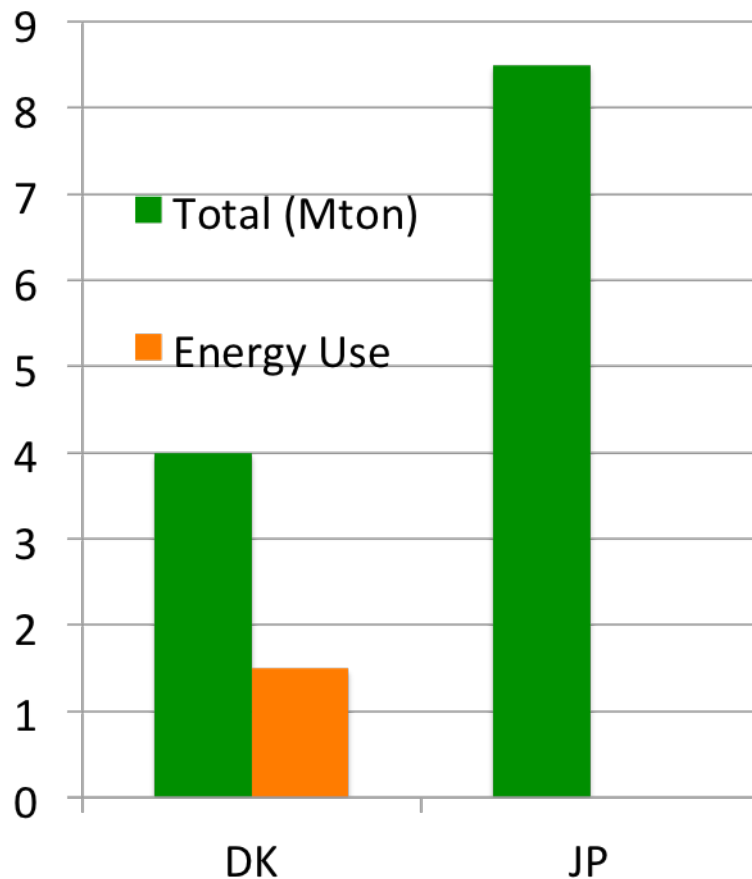
Even, RE heat has been declining in Japan



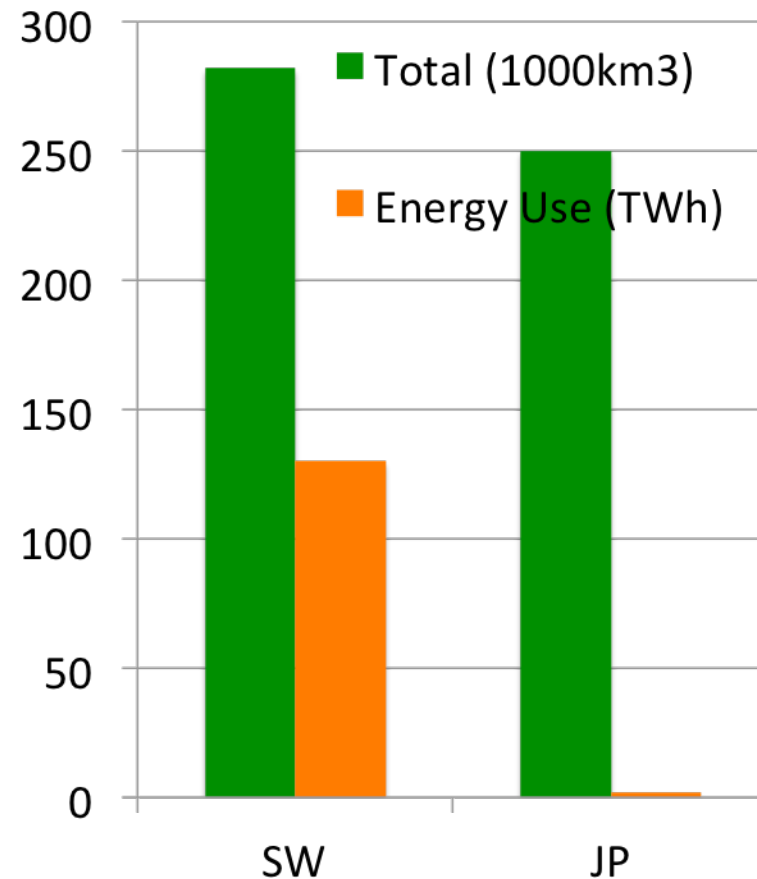


Huge potential biomass resource, but unused behind

Straw



Forest





District Heating(DH) in Japan gradually declining

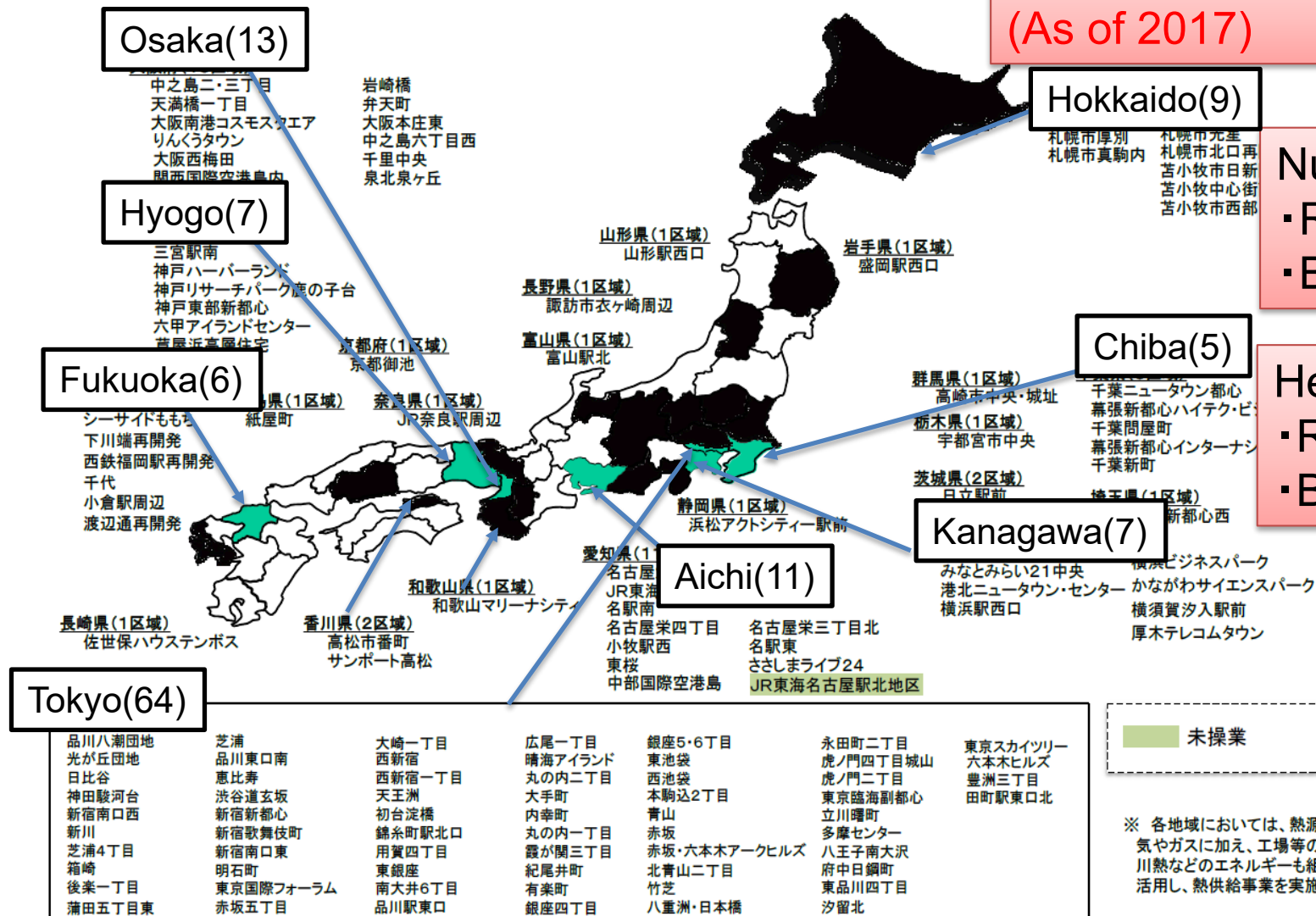
76 Companies, 134 Regions
(As of 2017)

Number of Users:

- Residential: 34,000
- Business: 1,200

Heat Supply:

- Residential: 5%
- Business: 95%

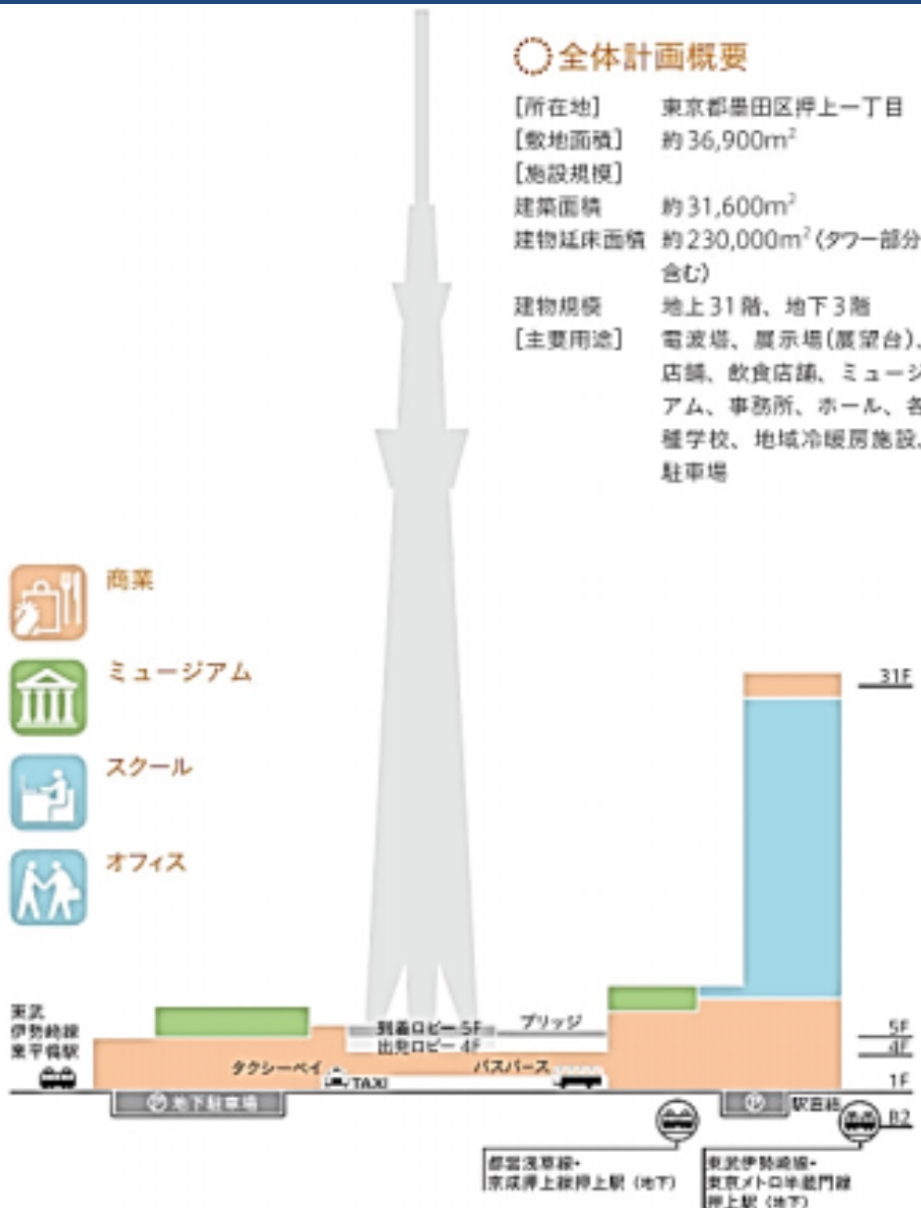


Source: METI

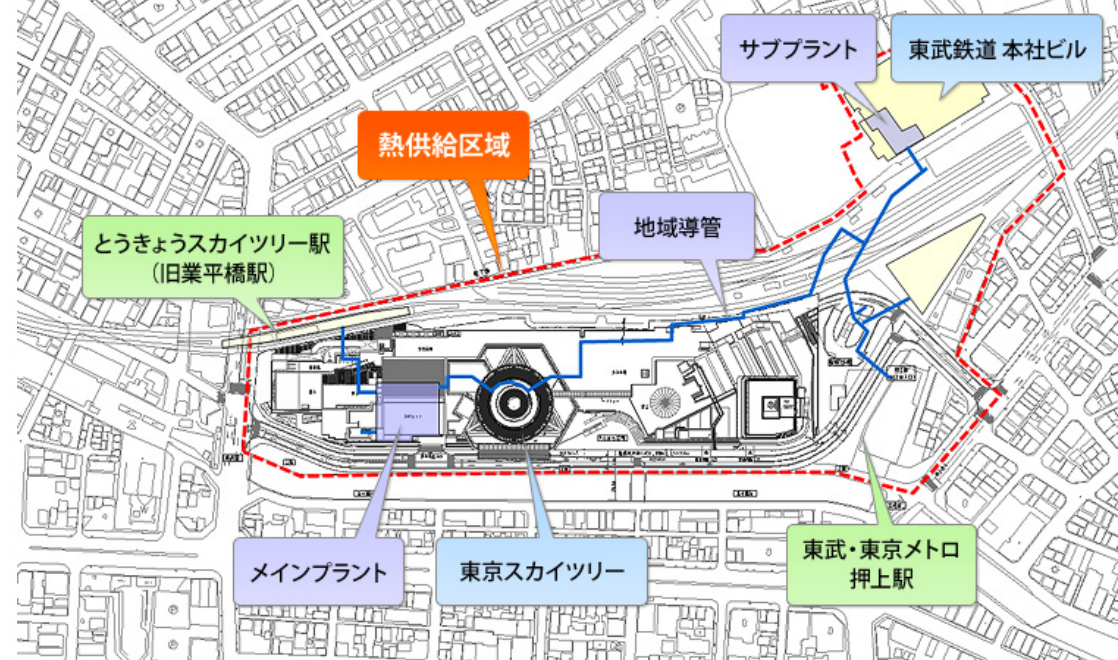
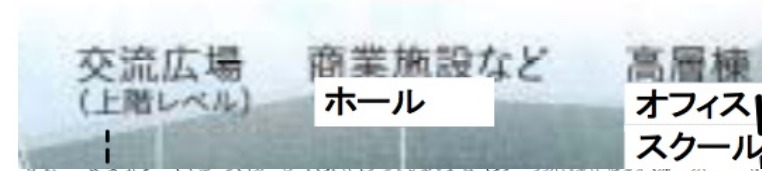


Typical DH in city center – case in Tokyo

Heat density highly concentrated



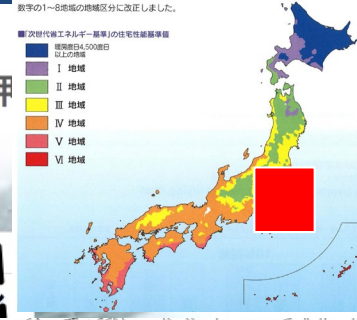
100m)



イーストヤード
(約119,000m²)

全体
(約230,000m²)

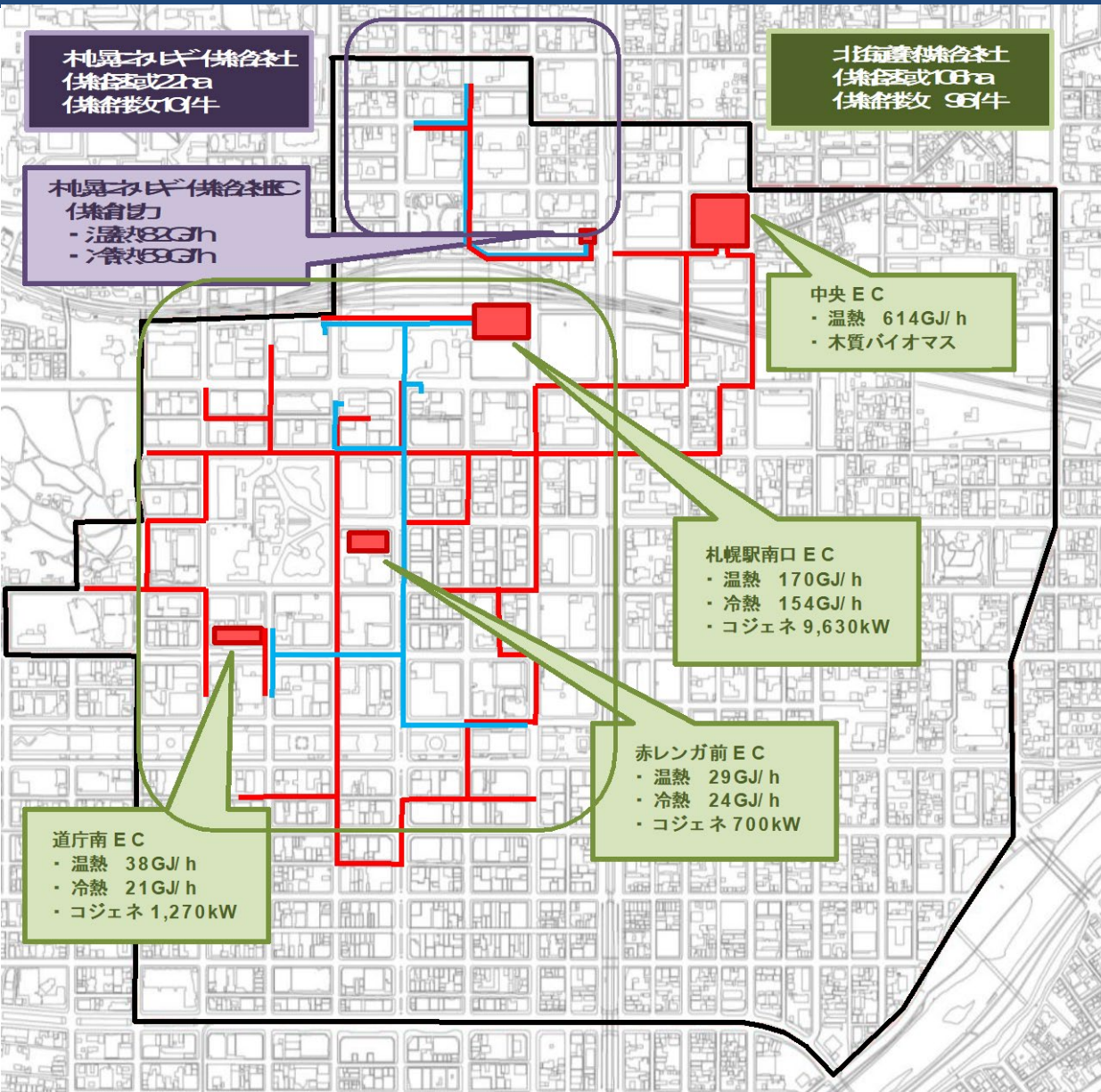
南北約90m)





District heating in Japan – case in Sapporo

1st DH (Steam) and 2nd DH (higher temperature water) dominant

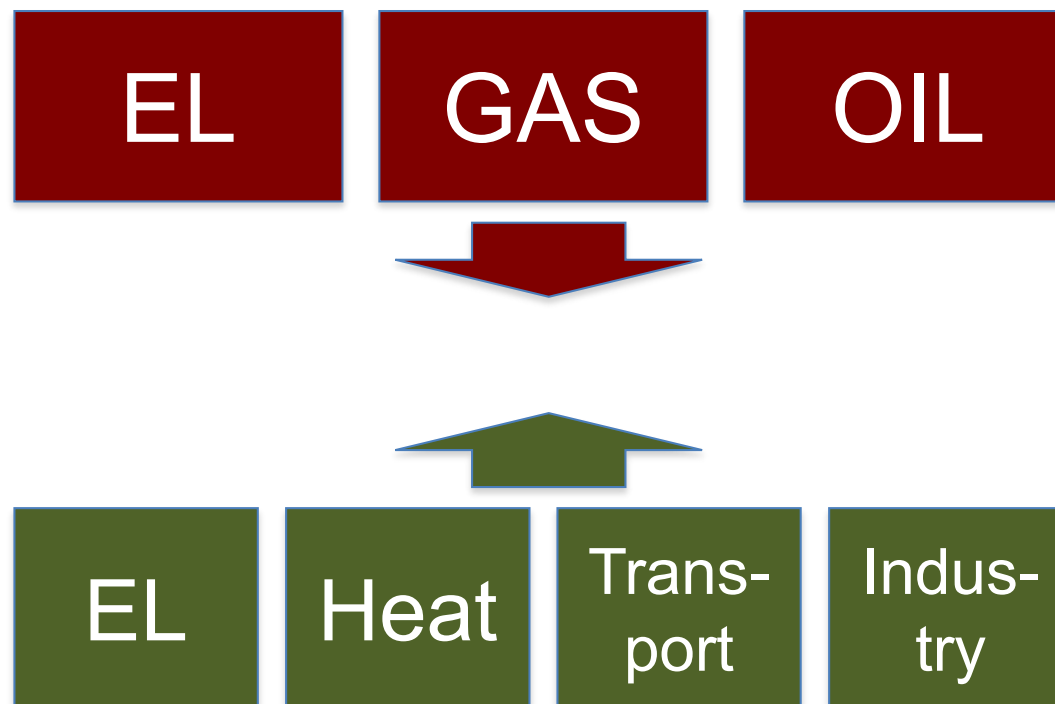


- Steam
 - Hotter water (180°C)
 - Hot water (80°C)
 - Cooling (6°C)
- 10



Policy : Structural reason for lack of heat policy in Japan

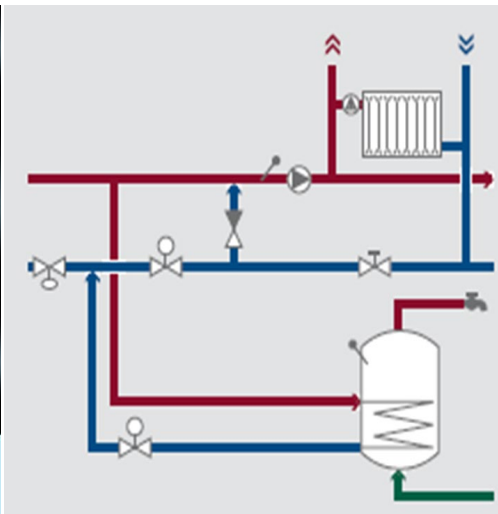
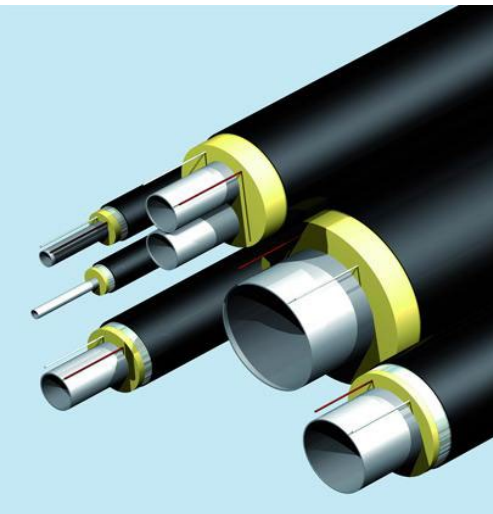
- a. Historical lack of “heat policy” in energy policy
- b. Energy industries’ interest and its top-down view
- c. Giant energy industry dominant in heat market
- d. Poor or no consumer education





Technology : DH relating technologies stay behind

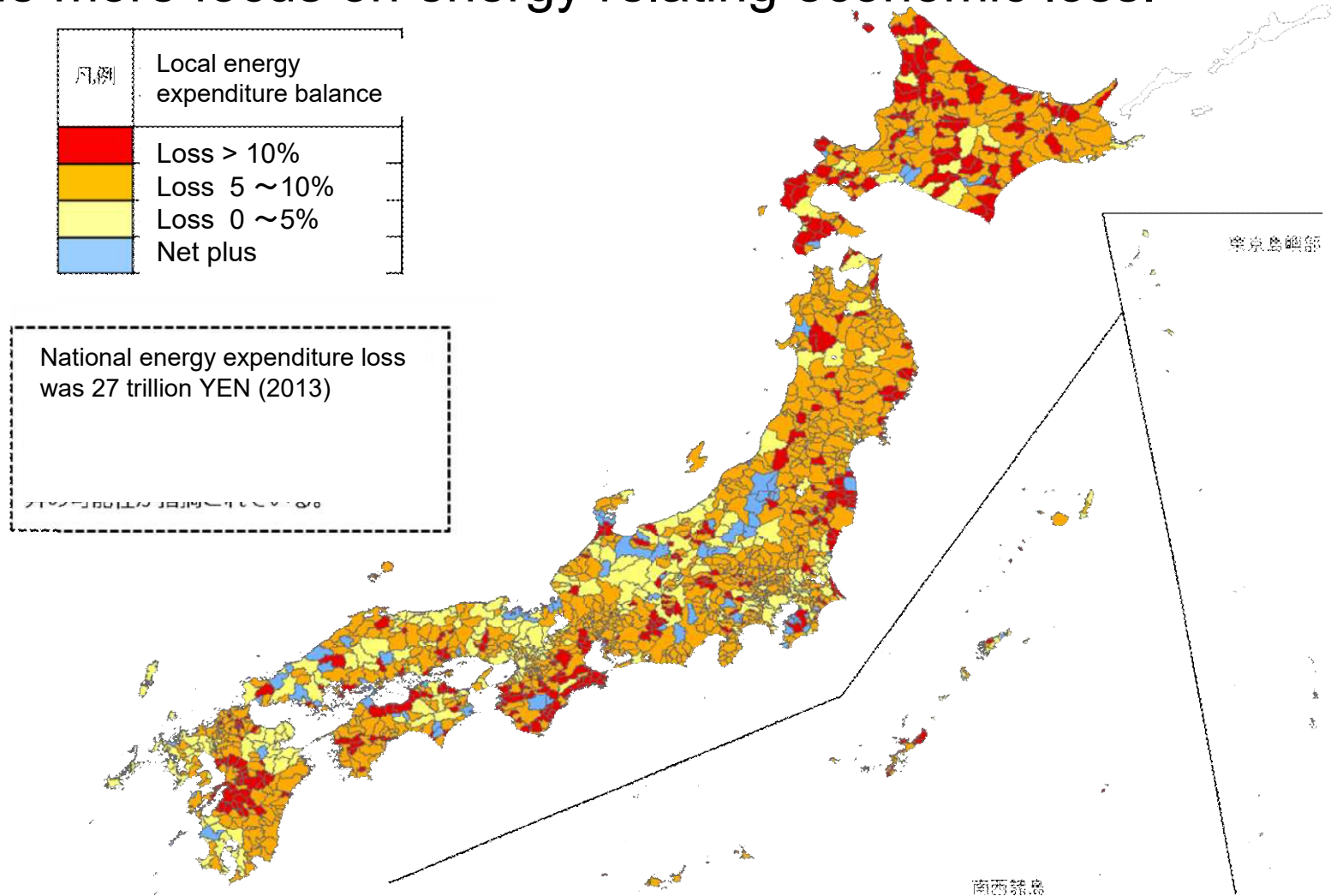
- Pre-insulated pipe
 - Heat meter
 - Biomass boiler and Flue Gas Condenser
 - Heat exchanger and heat panel
 - Designing input/output temperature
 - Optimization of piping design
- etc.





Economy : Loss of local economy along with fossil energy use

- In addition to climate change and nuclear power, the Government become more focus on energy relating economic loss.





Launching Japan 4DH Forum

- It is composed of related researchers, administrators, NGOs, etc. in cooperation with related organizations in Denmark as a place for research, discussion to promote heating energy policy for renewable energy and dissemination of heat use “4th Generation District Heating Forum” (Japan 4 DH Forum) was launched by ISEP in October 2018.
- In addition to trying to share knowledge and experiences of 4DH system based on the heating and cooling strategy for Europe and Heat Roadmap Europe 2050 based on the Paris Agreement, participating in conference, holding research workshop and symposiums, Aim for network formation to disseminate renewable energy heat utilization. And guidebook of 4DH will be released for knowledge base of 4DH in Japan.

