DH in Japan – current situation, challenges and possibilities

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General information on Japan

- Very densely populated
- Climate varies within
- Northern area is even colder than Denmark
Heating methods in Japan

Air conditioner

Water heater (gas)

Oil stove

Kotatsu
(Table with blanket and heater inside)
DH market

- First introduced in 1970 (Natural gas)
- 140 cases have been installed since then
- Households are not the main target among players
- Natural gas and electricity are the predominant fuels

Supplied heat from DH

Fuel consumption with DH

- Natural gas: 70%
- Electricity: 16%
- Industrial excess heat: 8%
- Petroleum: 1%
- Others: 5%
- Service: 95%
- Households: 5%
Renewable-based DH

• In line with a rapid expansion of RE power production since 2011 (Fukushima nuclear disaster), attentions on RE-based DH started to grow

• Private companies are active for biomass power-only plant to sell electricity with FIT but not focus on heat utilization

• Municipalities show interest in RE-based DH, especially the area that aims to revitalize their local economy by utilizing local resources
Heat policy in Japan

• No target set for heating in national energy policy
• “Electrification of heating” has been rather on focus
  → Electricity market had been monopoly till liberalization in 2016; Large power companies have even been promoting “all-electrified-house” in which heat is also generated by electrical devices. *(fossil fuel based electricity)*
• A few subsidy has started for renewable heat recently

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www.4dh.eu  www.reinvestproject.eu  www.heatroadmap.eu
Challenge (1). Poor insulation

- 3/4 of existing houses are almost not insulated
- Very loose building code for insulation
- 90% of window frame is made of Aluminium, which transfer heat very much
- There’s small hope in cold areas; relatively good insulation
Challenge (2). Small heat demand

- **Space Heating GJ/household·year**
  - Germany
  - France
  - Denmark
  - UK
  - Sweden
  - Italy
  - Hokkaido
  - Tokoku
  - Hokuriku
  - Kanto
  - Tokai
  - Kinki
  - Chugoku
  - Shikoku
  - Kyushu

- **Hot water GJ/household·year**
  - Germany
  - France
  - Denmark
  - UK
  - Sweden
  - Italy
  - Hokkaido
  - Tokoku
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Relatively high demand for hot water

- Every households, including flats in an apartment have bath tube
- Public bath can be found everywhere in Japan
- Hotels too have such a large bath, not only individual bath in each room
- Temperature of hot spring is not always high enough for bathing; In many cases boilers are used for additional heating
Challenge (3). Lack of experts & experienced manufacturers

- Distribution pipes are separated for space heating / hot water
- Pipes and pumps as the same number as customer buildings (or more); huge investment and heat loss
- Manual cleaning of the boiler; once in 2 weeks the boiler needs to be stopped
Short summary of current situation

• DH has been minor option, but the interests are growing little by little especially as a new way of renewable utilization

• Heat demand for space heating is small, even in areas that are colder than many of European countries

• Other barriers for DH development in Japan are: Poor insulation of buildings and lack of experiences
Steps for DH development

Suitable site for DH are:
- cold area in which houses are relatively well insulated
- consisting of large customers located close one another

Keys for successful practices are:
- Continuous effort for keeping up with up-to-date information
- Cooperation with leading countries

Improvement of external conditions:
- Insulation standard is expected to be stricter in 2020
- Awareness would be raised by establishing successful practices

Further development
Thank you so much!

If you’re interested in DH market in Japan, please jump in - there are challenges ahead, but potential is also high!