

Energy Solutions for Cities of the Future:
Enabling the Integration of Low Temperature Renewable
Energy Sources into District Heating and Cooling Networks



WEBINAR 2:
**Enabling Framework Conditions: Ownership models, Regulations and
Financing for District Heating and Cooling**

14 May 2020

Series of Webinars on DHC

- ❑ Webinar 1: 20 April 2020 - strategic heating and cooling planning for the Integration of low-temperature renewable energy sources in district Energy networks: what key success factors?
- ❑ **Webinar 2: 14 May 2020 - Enabling framework conditions: Ownership model, Regulations and financing for district heating and cooling**
- ❑ Webinar 3: 26 May 2020 - Integration of low-temperature renewable energy sources into existing district energy networks and buildings

Agenda of the webinar

Introduction – **Jack Kiruja**, IRENA

Presentations

- ❑ Ownership structure, financing, and regulation for district heating and cooling: Experience and innovative approaches - **Søren Djørup**, Aalborg University
- ❑ Financing renewable and efficient district energy systems: Opportunities and challenges - **Greg Gebrail**, EBRD

Questions and answers (part 1)

- ❑ Developing enabling frameworks for geothermal heating: The case of The Netherlands - **Paul Ramsak**, Netherlands Enterprise Agency (RVO)
- ❑ Geothermal district heating and cooling: Perspectives from the industry– **Dr. Marit Brommer**, International Geothermal Association

Questions and answers (Part 2)

Speakers

Søren R. Djørup	Greg Gebrail
	
Assistant professor, Aalborg University	Principal Specialist for District Energy, European Bank for Reconstruction and Development

Paul Ramsak	Dr. Marit Brommer	Jack Kiruja
		
Netherlands Enterprise Agency	Executive Director, International Geothermal Association (IGA)	Associate Programme Officer, Geothermal Energy, IRENA



GLOBAL GEOTHERMAL ALLIANCE



Integration of Low Temperature Renewable Energy Sources into District Heating and Cooling Networks

Webinar 2 of 3: 14 May 2020

GGA Members and Partners

46 COUNTRIES AND 40 PARTNER INSTITUTIONS ACCROSS THE GLOBE

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- Guatemala
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- Nicaragua
- Peru
- Saint Vincent and the Grenadines
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- CARILEC
- CEGA (Chile)
- CeMIEGeo (Mexico)
- Geothermal Canada
- GRC (USA)
- IDB
- OAS
- OECS
- US Energy Association

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- Portugal
- Romania
- Switzerland
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- EIHP
- European Geothermal Energy Council
- GeoDeep (France)
- GeoEnergy Celle e.V. (Germany)
- Geothermal Power Plants Investors Association (Turkey)
- Iceland Geothermal Cluster
- ISOR (Iceland GeoSurvey)
- Macedonia Geothermal Association
- NEA (Iceland)
- Nordic Development Fund
- Serbian Geological Society
- **Serbian Geothermal Association**
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GLOBAL

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- Islamic Development Bank
- UNEP
- UNIDO
- World Bank - ESMAP

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- Comoros
- Djibouti
- Egypt
- Ethiopia
- Kenya
- Tanzania
- Uganda
- Zambia
- Zimbabwe
- AfDB
- AUC
- EAPP
- NEPAD
- RCREEE
- SAPP

ASIA

- India
- Indonesia
- Japan
- Malaysia
- Pakistan
- Philippines
- CREIA (China)

PACIFIC / OCEANIA

- Fiji
- New Zealand
- Papua New Guinea
- Solomon Islands
- Tonga
- Vanuatu
- Pacific Community

*In orange: Members/partners joining in 2020

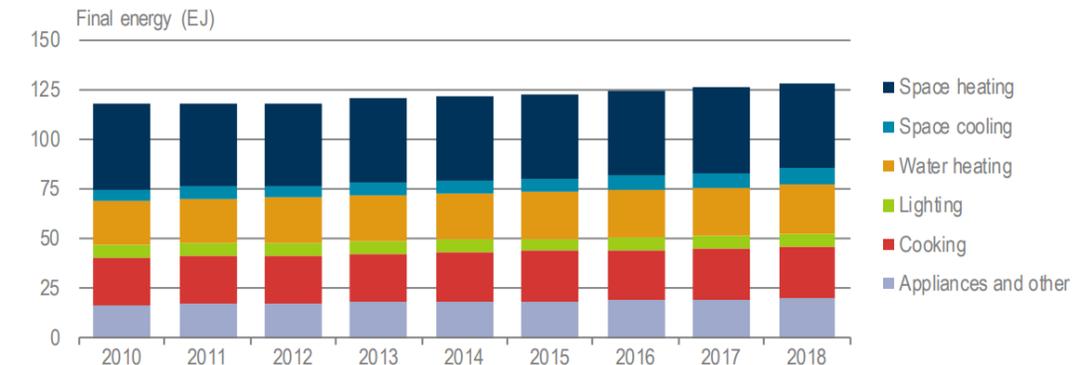
Context – Status and key role of heating and cooling in buildings and cities



Status: High share of individual heating systems & fossil fuels

- 55% of world population reside in cities. Expected to rise to 68% by 2050
- 65% of energy utilisation takes place in cities, and cities generate 70% of carbon emissions.
- Heating sector accounts for about 50% of the global energy demand, 90% of heating is generated from fossil fuels (**results in emissions and pollution**).
- Individual standalone fossil-based heating systems are dominant (**inefficiency in operation and pollution**)

Global buildings sector final energy consumption by end-use



IEA (2019). All rights reserved.

Integration of low-temperature RE in district energy

Main Drivers

- Reducing air pollution
- Increasing concerns on security of supply
- Decarbonisation objectives for the heating sector

Main Enablers

- Improved EE in buildings, requiring lower temperature heating systems
- Increased efficiency of heat pumps, enabling harnessing of low-T resources at shallow depths
- Development of new generation district heating, allowing integration of low-grade geothermal and other RE sources

Enabling Technologies

- Heat pumps
- Thermal storage

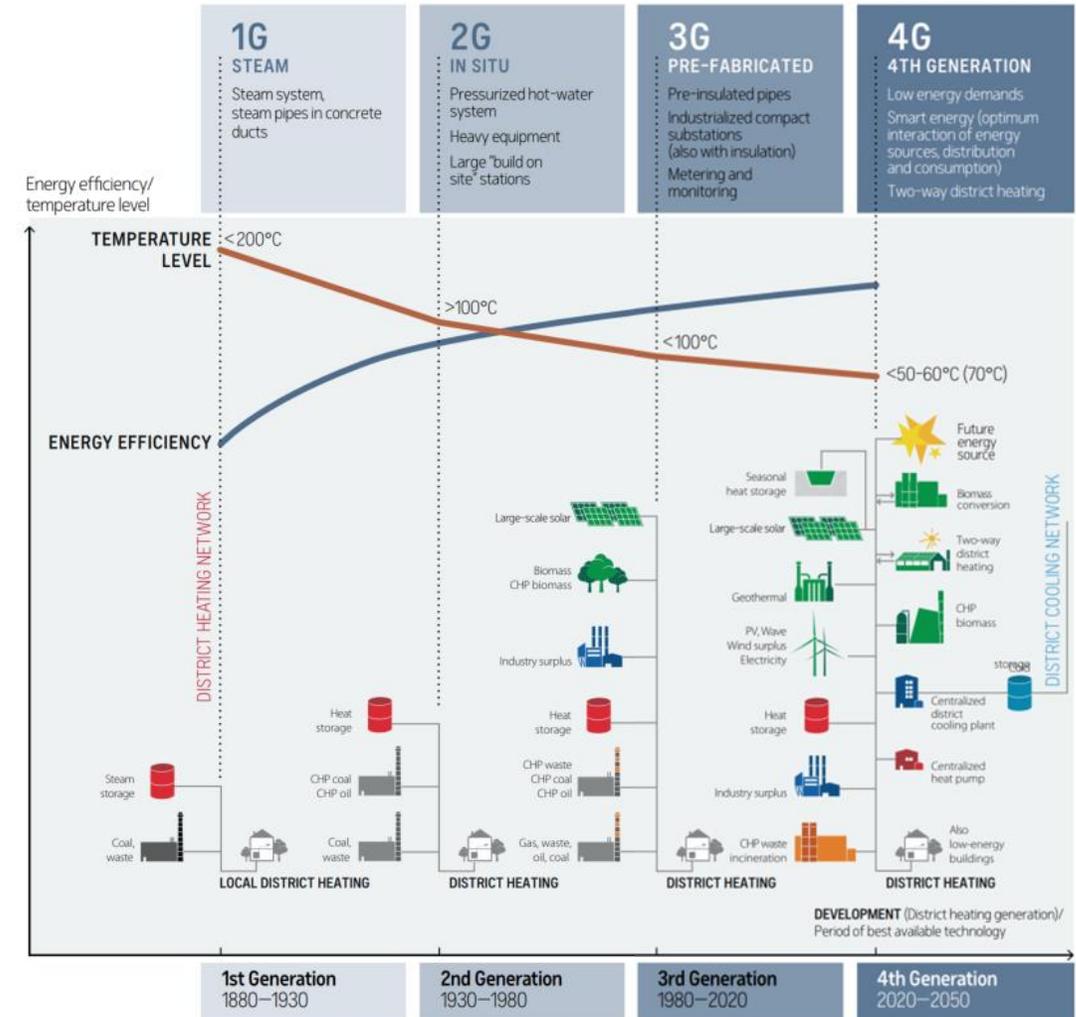
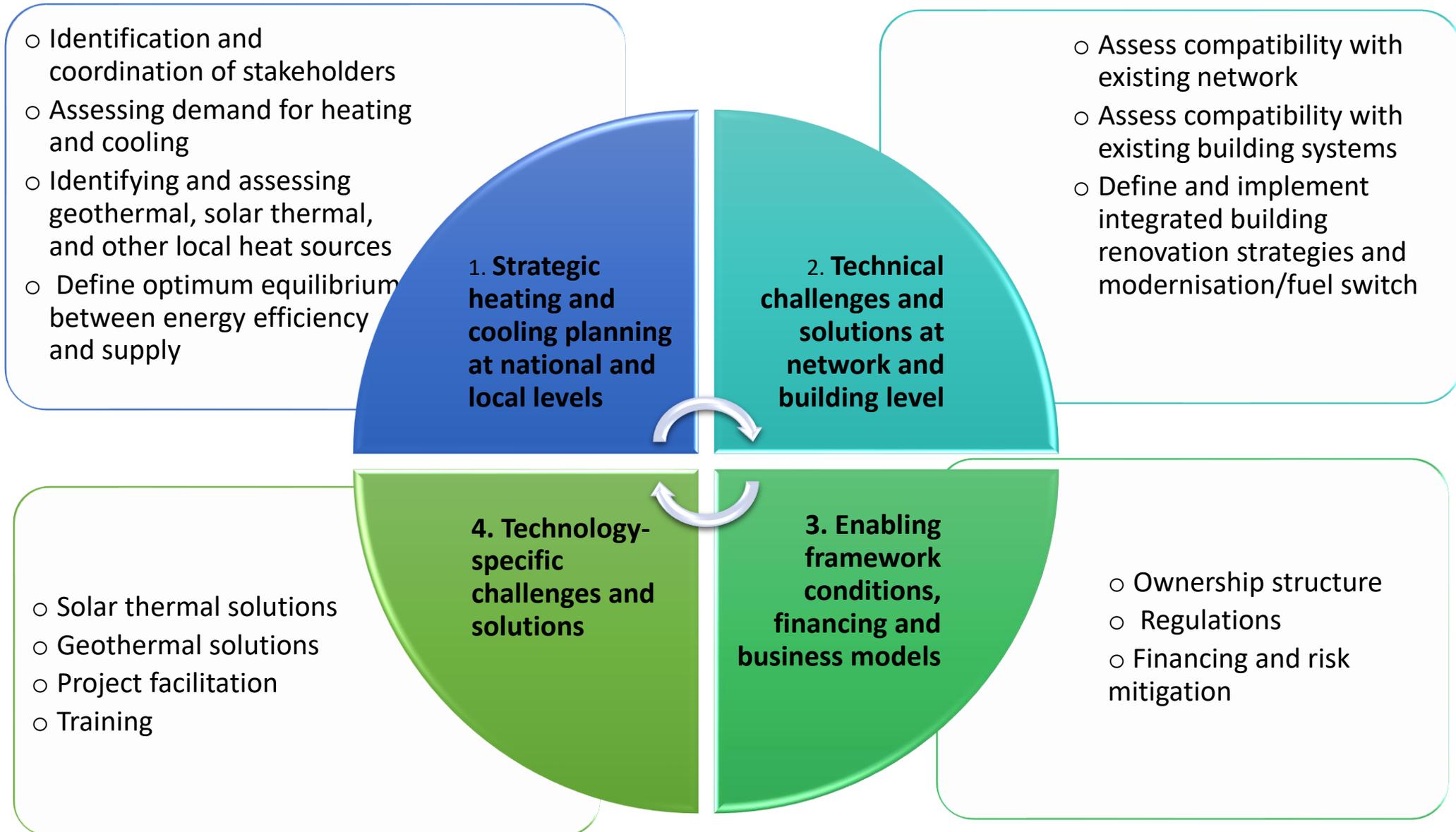
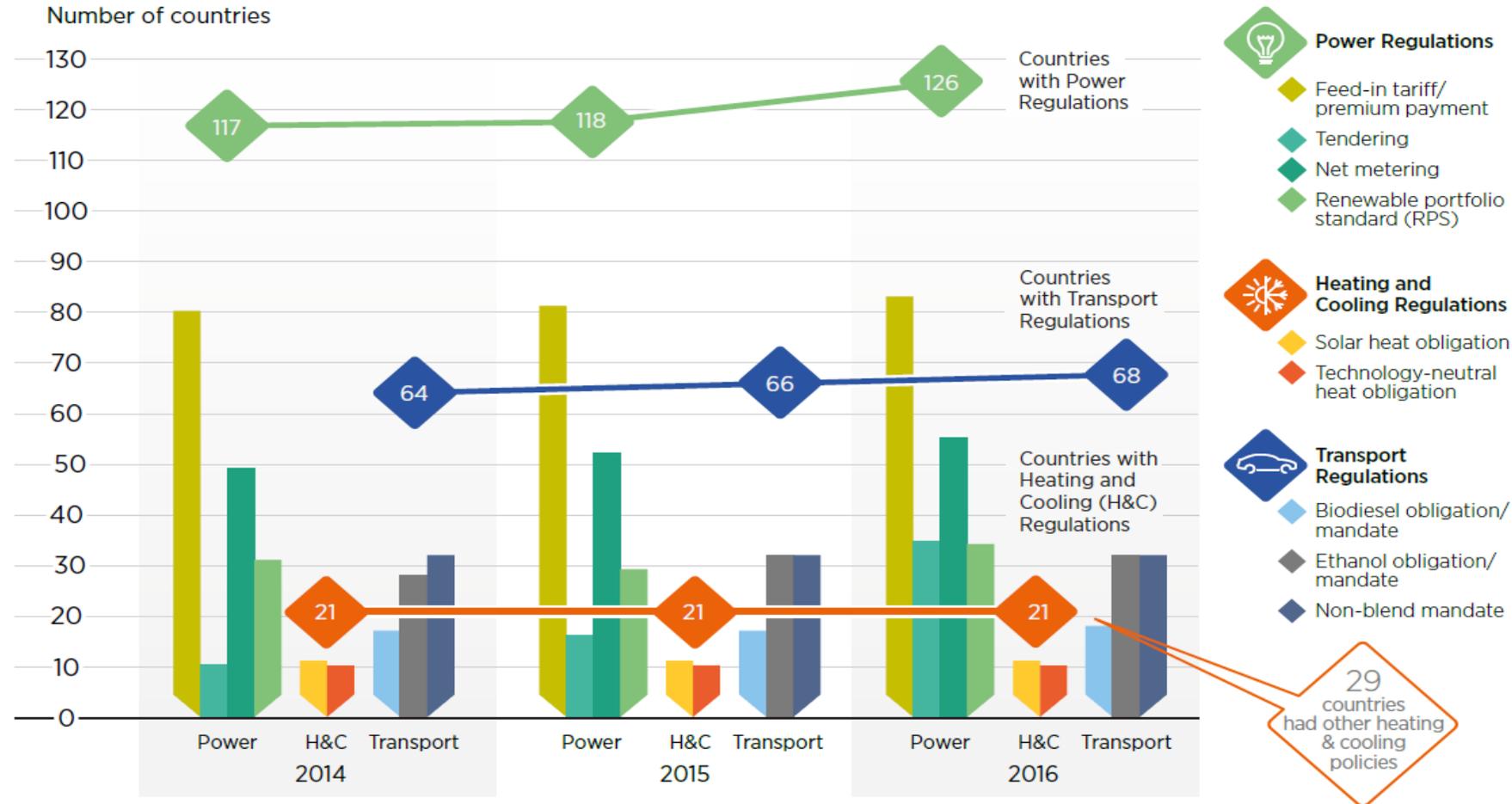


Illustration of the concept of 4th Generation District Heating in comparison to the previous three generations. Source: Lund et al. (2014)

Key focus areas for the webinar



Comparison of regulations for DHC vs other sectors



Note: Figure does not show all policy types in use. In many cases countries have enacted additional fiscal incentives or public finance mechanisms to support renewable energy. Heating and cooling policies do not include renewable heat FITs (i.e., in the United Kingdom). Countries are considered to have policies when at least one national or state/provincial-level policy is in place. A country is counted a single time if it has one or more national and/or state/provincial level policies. Some transport policies include both biodiesel and ethanol; in this case, the policy is counted once in each category (biodiesel and ethanol). Tendering policies are presented in a given year if a jurisdiction has held at least one tender during that year.



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THANK YOU

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