# IEA TECHNOLOGY COLLABORATION PROGRAMME ON HEAT PUMPING TECHNOLOGIES (HPT TCP)

Research, Development, Demonstration and Deployment of Heat Pumping Technology

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www.heatpumpingtechnologies.org

# What is the HPT TCP?

A Technology Collaboration Programme (TCP) within **the IEA** since 1978

An international framework of **cooperation** and **networking** for different HP actors

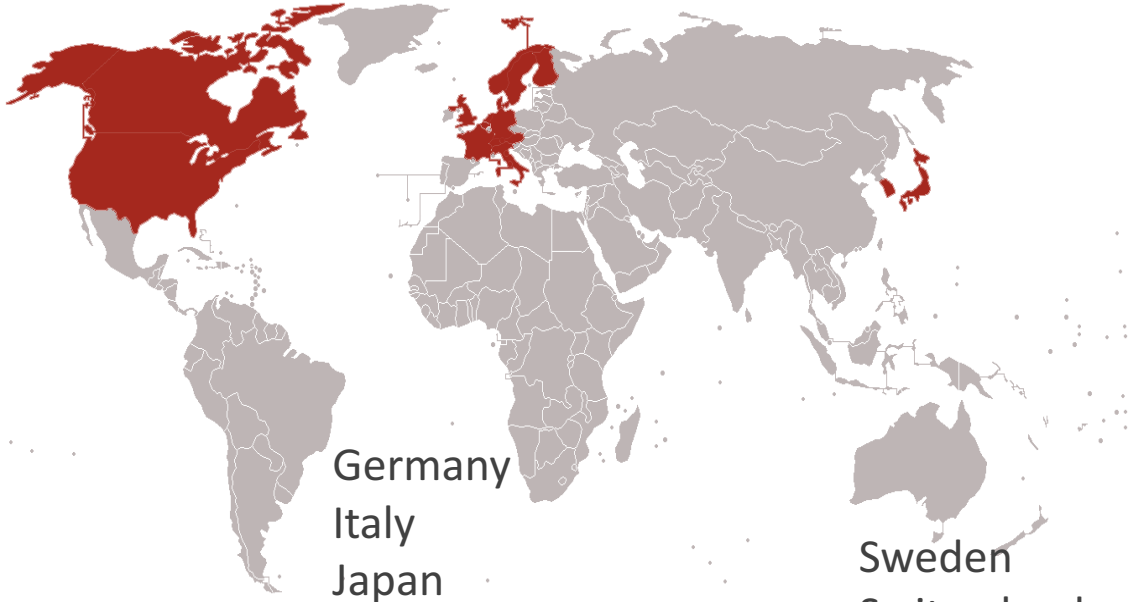
A forum to exchange **knowledge** and **experience**

A contributor to **technology improvements** by RDD&D projects

# The HPT TCP is

The foremost worldwide source of **independent information and expertise** on environmental and energy conservation benefits of heat pumping technologies

# CURRENT 16 PARTICIPATING COUNTRIES



Austria
Belgium
Canada
Denmark
Finland
France
Germany
Italy
Japan
Netherlands
Norway
South Korea
Sweden
Switzerland
United Kingdom
United States

# HOW DO WE WORK?


## Executive Committee

Board of HPT TCP – decides Strategy and Annexes

## National Teams

Representing national HP activities
Networking and creation of new ideas

## Annexes

Elaborating projects. Collaboration among organisations of member countries

## Heat Pump Centre

Operation and communication center

# THE HEAT PUMP CENTRE

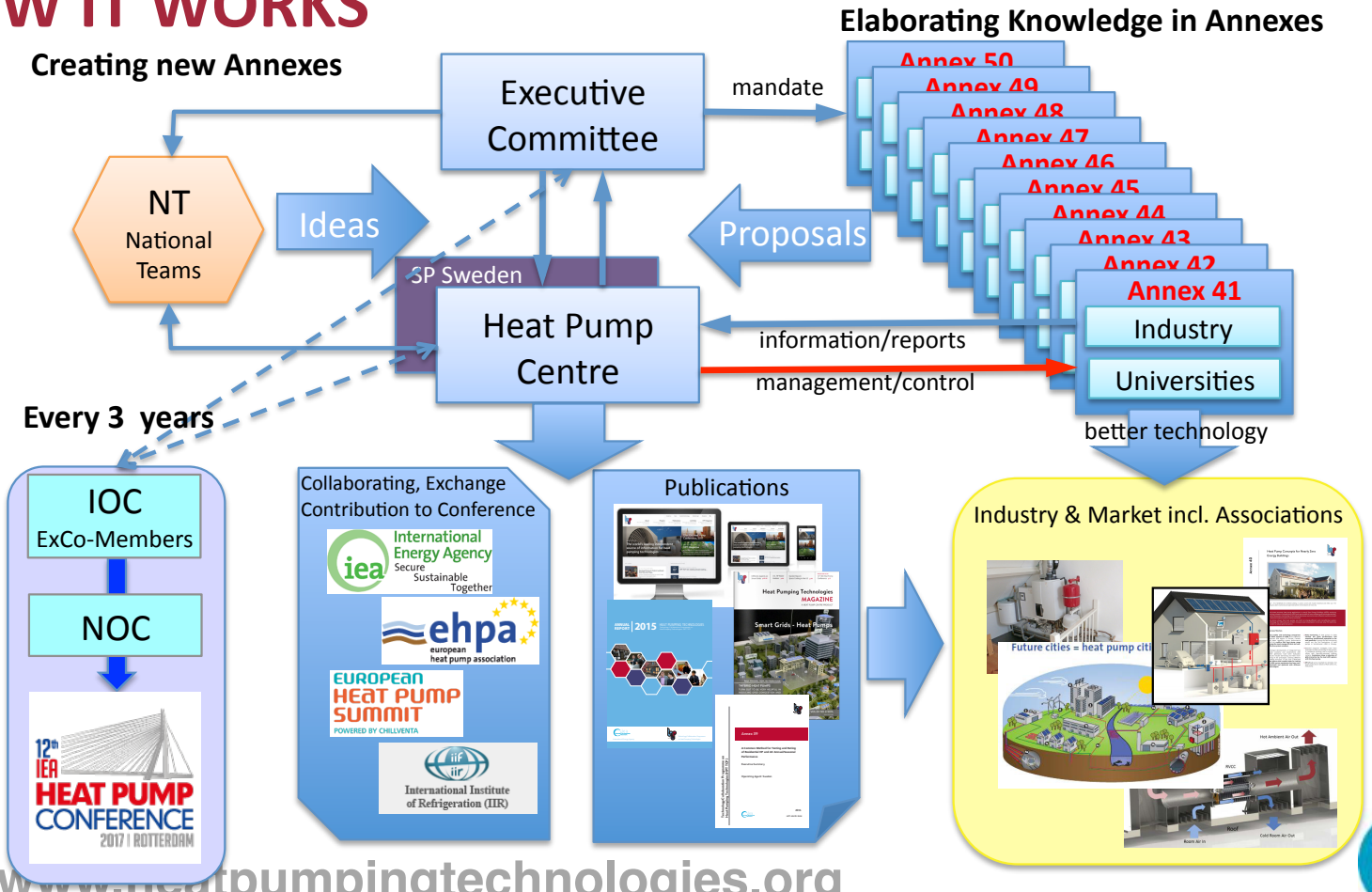
## Information dissemination

- Publications (e.g. Annex reports)
- HPT Magazine (digital publishing)
- Annual Report
- Website www.heatpumpingtechnologies.org
- LinkedIn and Twitter @heatpumpingtech
- National, International Conferences

## Programme Support

- ExCo, NTs and Annexes
- IEA Headquaters (ETP, WEO)
- Generation of new activities
- National Teams meetings


# HOW IT WORKS


Creating new Annexes
Executive Committee
mandate
Elaborating Knowledge in Annexes
Annex 50
Annex 49
Annex 48
Annex 47
Annex 46
Annex 45
Annex 44
Annex 43
Annex 42
Annex 41
Industry
Universities
NT
National Teams
Ideas
Proposals
SP Sweden
Heat Pump Centre
information/reports
management/control
better technology
Every 3 years
IOC
ExCo-Members
NOC
12th IEA HEAT PUMP CONFERENCE 2017 | ROTTERDAM
Collaborating, Exchange
Contribution to Conference
International Energy Agency
Secure Sustainable Together
ehpa european heat pump association
EUROPEAN HEAT PUMP SUMMIT
POWERED BY CHILLVENTA
International Institute of Refrigeration (IIR)
Publications
Industry & Market incl. Associations

# ANNEX 42 HEAT PUMPS IN SMART GRIDS

**The issue**

How can heat pumps be used best in smart grids to reduce energy consumption, $CO_2$-emissions and energy costs?

**Work to do**

Inventory of critical success factors for implementation of heat pumping technologies smart grids and smart cities.

**Results & benefits**

A scenario tool for smart grids in order to support decision makers to select the most competitive solution.

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# ANNEX 47 HEAT PUMPS IN DISTRICT HEATING AND COOLING SYSTEMS

## The issue

How can heat pumps in DHC systems be implemented in the best way?

## Work to do

Mapping existing solutions, develop new ones, and study market and energy reduction potential and implementation barriers.

## Results & benefits

Suggest how heat pumps can be implemented in both new and old district heating systems in the best way and describe the different types of integration.

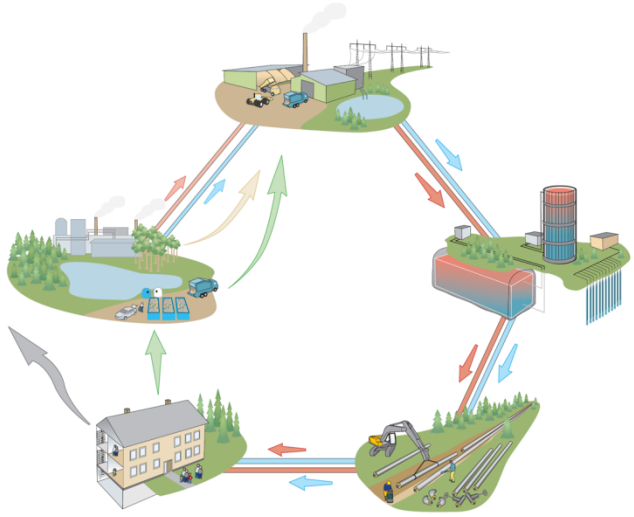

Image source: RISE Research Institutes of Sweden

# ANNEX 48 INDUSTRIAL HEAT PUMP, SECOND PHASE

**The issue**

How can we overcome existing difficulties and barriers for the larger scale market deployment of industrial heat pumps?

**Work to do**

Analyze case studies with large saving potentials and develop a simplified model for integration of heat pumps into a process.

**Results & benefits**

Condensed information material for policy makers, associations, industries and training courses showing the potential of IHP.

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# ANNEX 49 DESIGN AND INTEGRATION OF HEAT PUMPS FOR NZEB

**The issue**

Find criteria for further developments of current marketable heat pump systems to exploit specific performance opportunities in nZEB.

**Work to do**

Investigation of heat pump integration options for nZEBs and nZE neighbourhoods. Design and control for heat pumps in nZEB and the integration into energy systems.

**Results & benefits**

Groups of buildings open up opportunities for load balancing between different use patterns and energy needs.

The Annex 49 is a follow-on of the work in Annex 40 on heat pump concepts for nZEB, with an **extended scope**, e.g. regarding the balance of single buildings and groups of buildings/neighbourhoods.

# IEA SCENARIO FOR THE BUILDING SECTOR 2050

Population, household numbers and service sector activity will grow significantly faster in developing countries than in the OECD

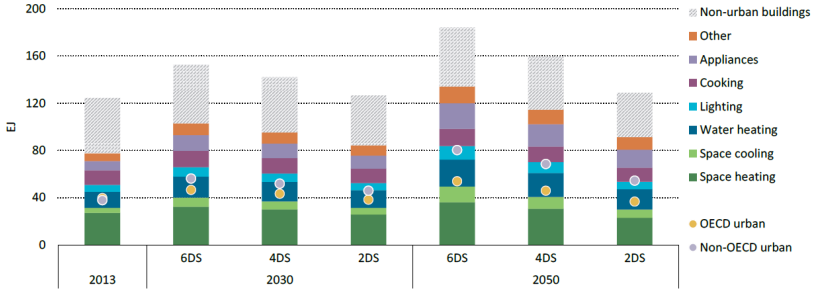
In developing countries, cooling loads are much more important than heating.

Residential buildings in OECD countries are very long-lived and have significant space heat loads

# TO REACH THE ”WELL BELOW 2D” CHALLENGE

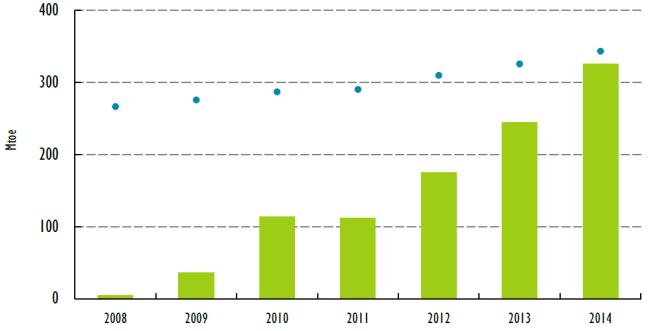
- Energy efficiency measures are necessary
- Fossil fuels must be replaced by renewable energy

**Urban buildings energy demand and savings potential to 2050**




*Urban building energy consumption could increase as much as 70% by 2050. Under the 2DS, urban building energy demand is cut by 1/3 in 2050.*

**Primary energy savings since 2000 in China**




*Dramatic progress on energy efficiency saved 350 Mtoe in 2014. Energy savings are as large as China’s renewable energy supply.*

➢ **Heat pumping technology can contribute to both!**

# HEAT PUMPING TECHNOLOGIES IN THE FUTURE

**Heat pumping technology (HPT) =**

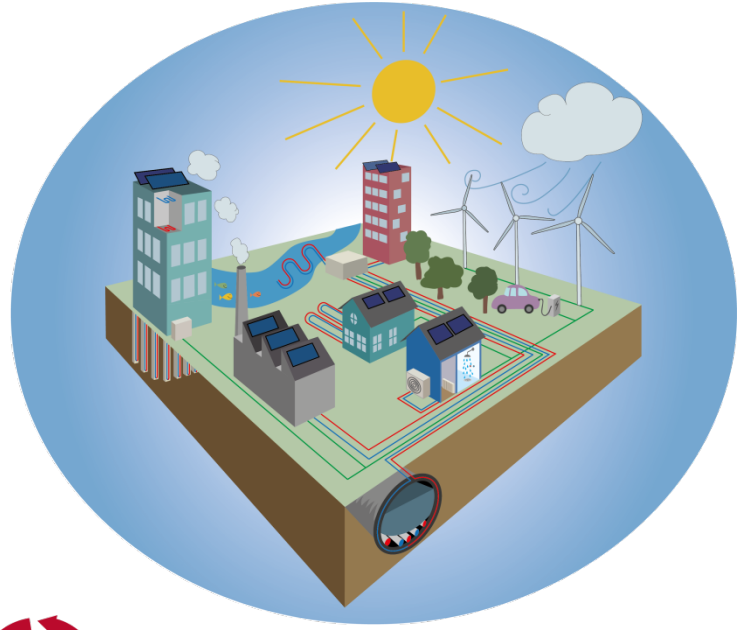
**an enabling technology in future energy solutions**

- **HPT** can significantly contribute to **reduction of $CO_2$**-emissions
- **HPT** is an excellent electricity sink in order to **balance the grid** to **handle intermittent production**
- Greening the grid makes **HPT** even greener!

**HPT = efficient and renewable**

# HEAT PUMPS ARE ENERGY EFFICIENT AND RENEWABLE!

Building → Industry → City → Grid → **Future**



## Rethink Energy, Act NOW

12th IEA HEAT PUMP CONFERENCE 2017 | ROTTERDAM

**IEA HPT TCP wishes you a successful Conference. Thanks for attending**

# WELCOME TO CONTACT US

hpc@heatpumpcentre.org

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# HPT TCP SURVEY

## https://www.surveymonkey.com/r/P6LRBKT

- Please take a few minutes to fill out our survey
- Your answers are important!
- Online **or** Paper
  - The Survey link is also available from our website
  - Paper survey available in booth 18 - Heat Pump Centre