



# Heat Pumps - the key technology to decarbonizing heating

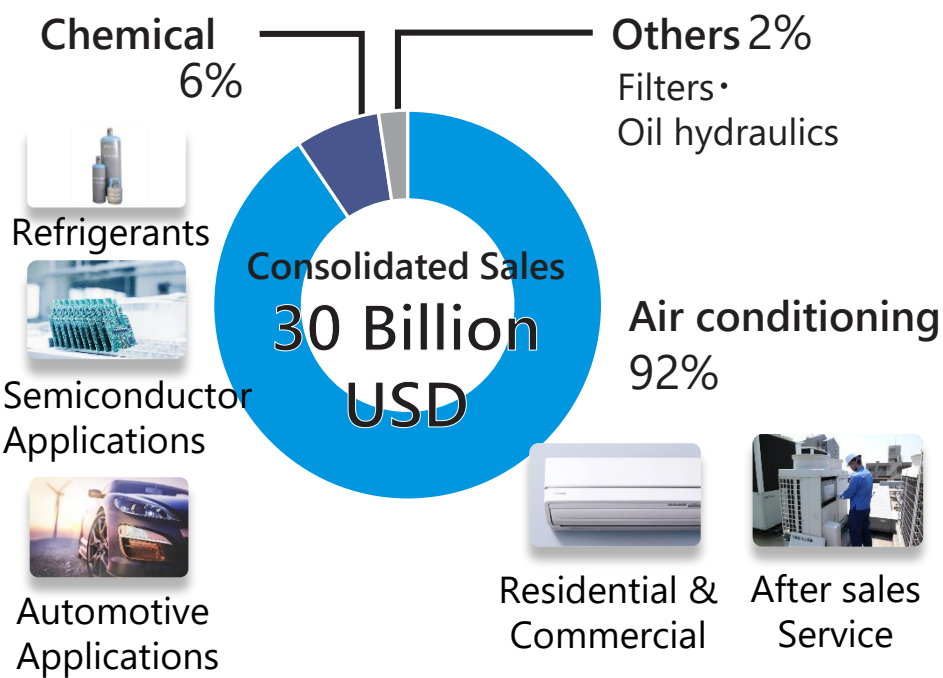
**COP29 Side Event on Japan's Efforts for Building Decarbonization**

organized by the Ministry of the Environment and the Ministry of Land, Infrastructure, Transport and Tourism, Japan

**Nov 18<sup>th</sup>, 2024**

**DAIKIN INDUSTRIES, LTD.**

# The Overview of Daikin Group and Our Efforts towards Net Zero



Founded in **1924**  
100 Years of History

**120+**  
Production Bases  
Worldwide

Business Development  
**170+**  
Countries

**98,000+**  
Employees

## Toward Net Zero GHG Emissions

Result, 2023FY

**Scope 3 Up Stream**

**4 million tons-CO2**

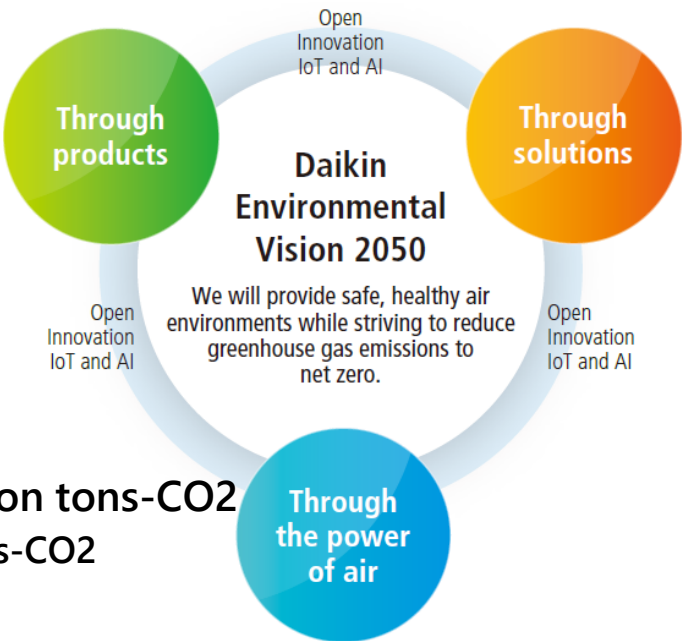
**Scope 1+2**

**1 million tons-CO2**

**Scope 3 Down Stream**

**323 million tons-CO2**

- Usage/Energy+HFCs : **276 million tons-CO2**
- End of Life/ HFCs : **47 million tons-CO2**



## APPROACH TO ACHIEVING CARBON NEUTRALITY

Reduce electricity consumption during use

Promote the spread of inverter products

Convert from combustion heating using fossil fuels

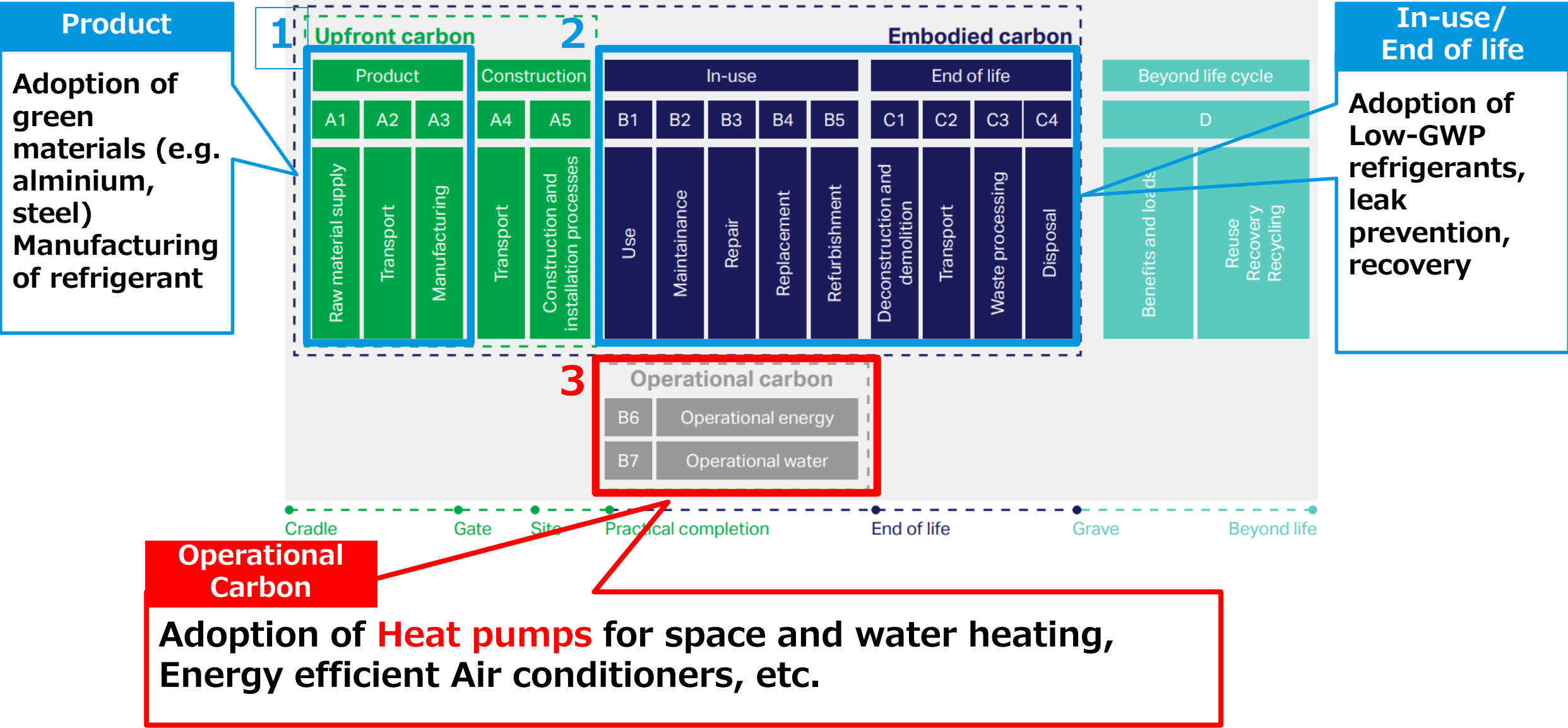
Spread and expand heat-pumps

Reduce impacts of refrigerants

Switch to refrigerants with lower global warming potential and build recovery/reclamation scheme

# The Relevance of ACs and Heat Pumps and Whole Life Carbon of Buildings

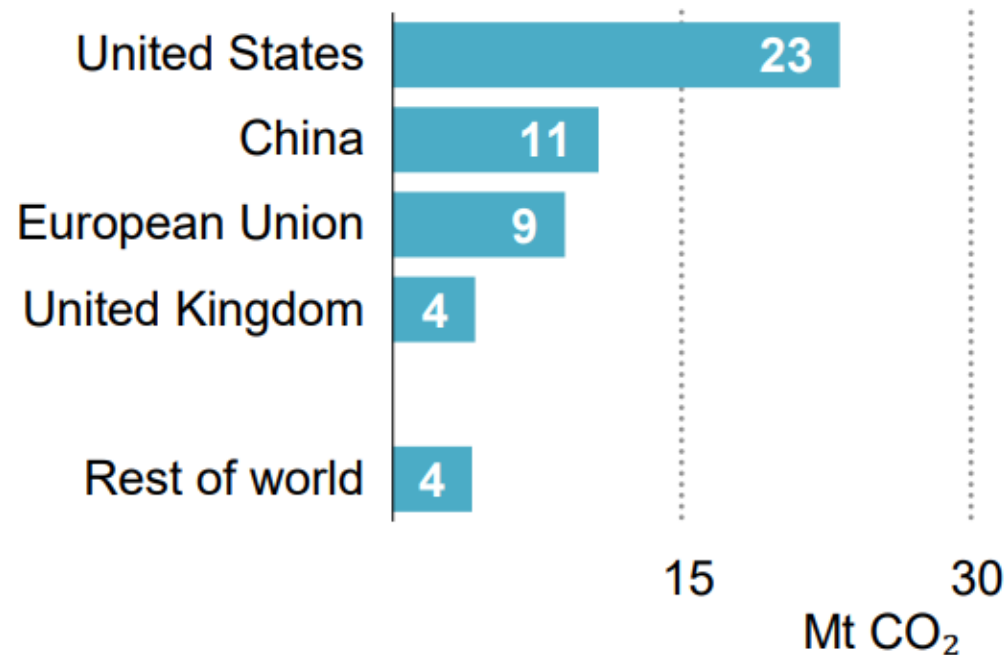
Whole life cycle stages (Source: [Net-zero buildings: Where do we stand?](#), 2021, WBCSD)



# Heat Pumps are ready for decarbonizing heating!

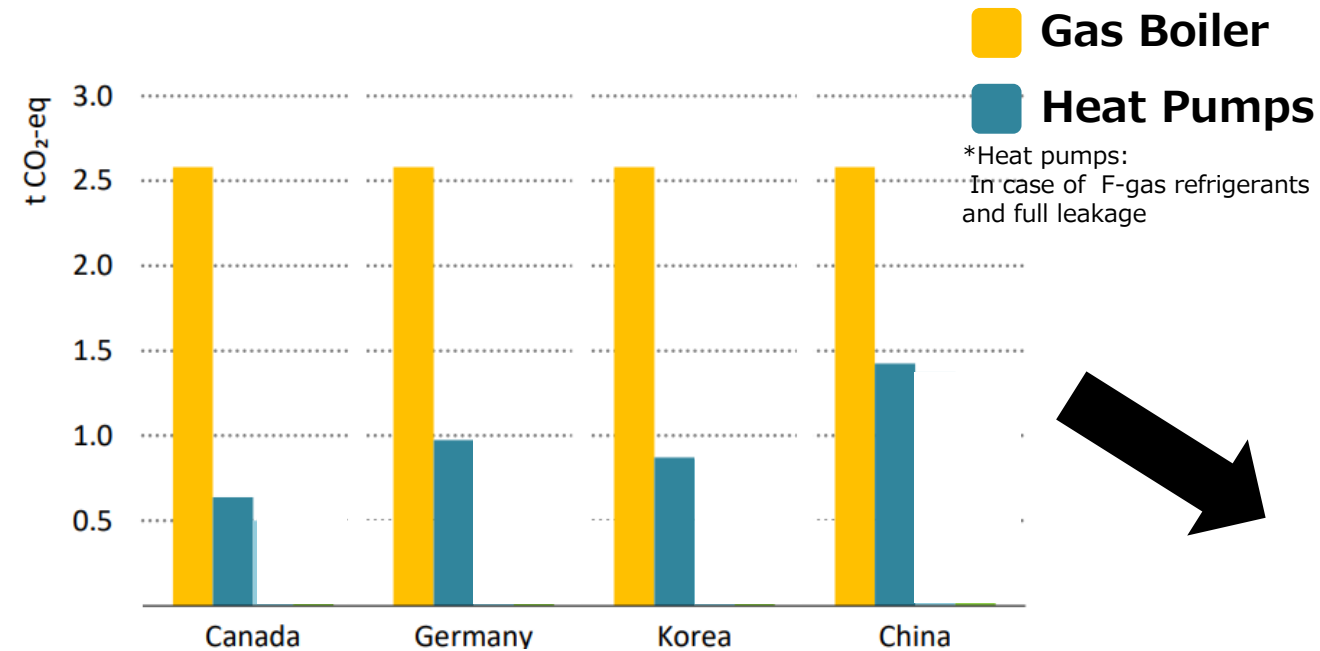
Heat Pumps are proven technology that has already been and will be greatly contributing to the decarbonization of buildings!

**50 Mt-CO<sub>2</sub> are already avoided annually by heat pumps**  
for space and water heating installed from 2019 to 2023



Source: [Clean Energy Market Monitor March 2024, IEA](#)

With cleaner electricity, **the contribution of heat pumps will be even greater** in the future.



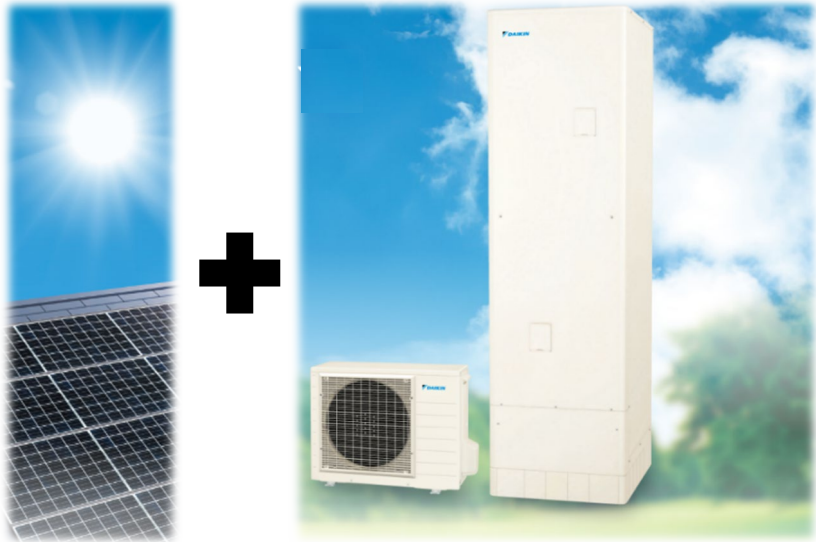
Source: Based on IEA, modified by Daikin  
[The Future of Heat Pumps, IEA](#)

# Heat Pumps are enabling “renewable energy society”

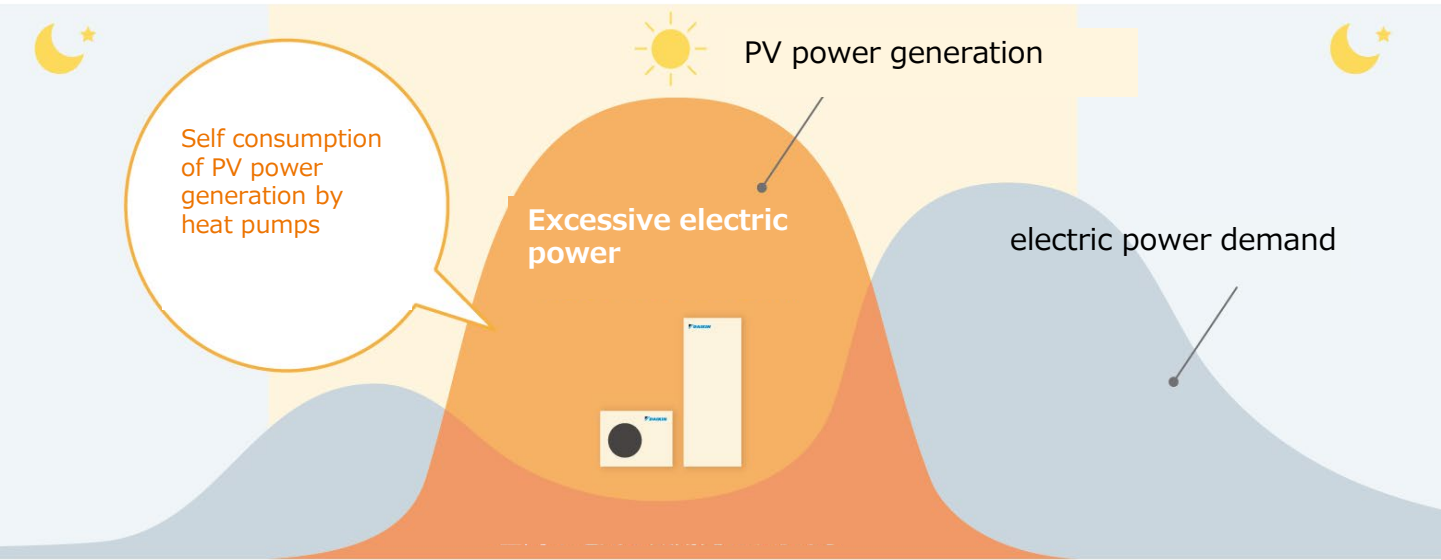
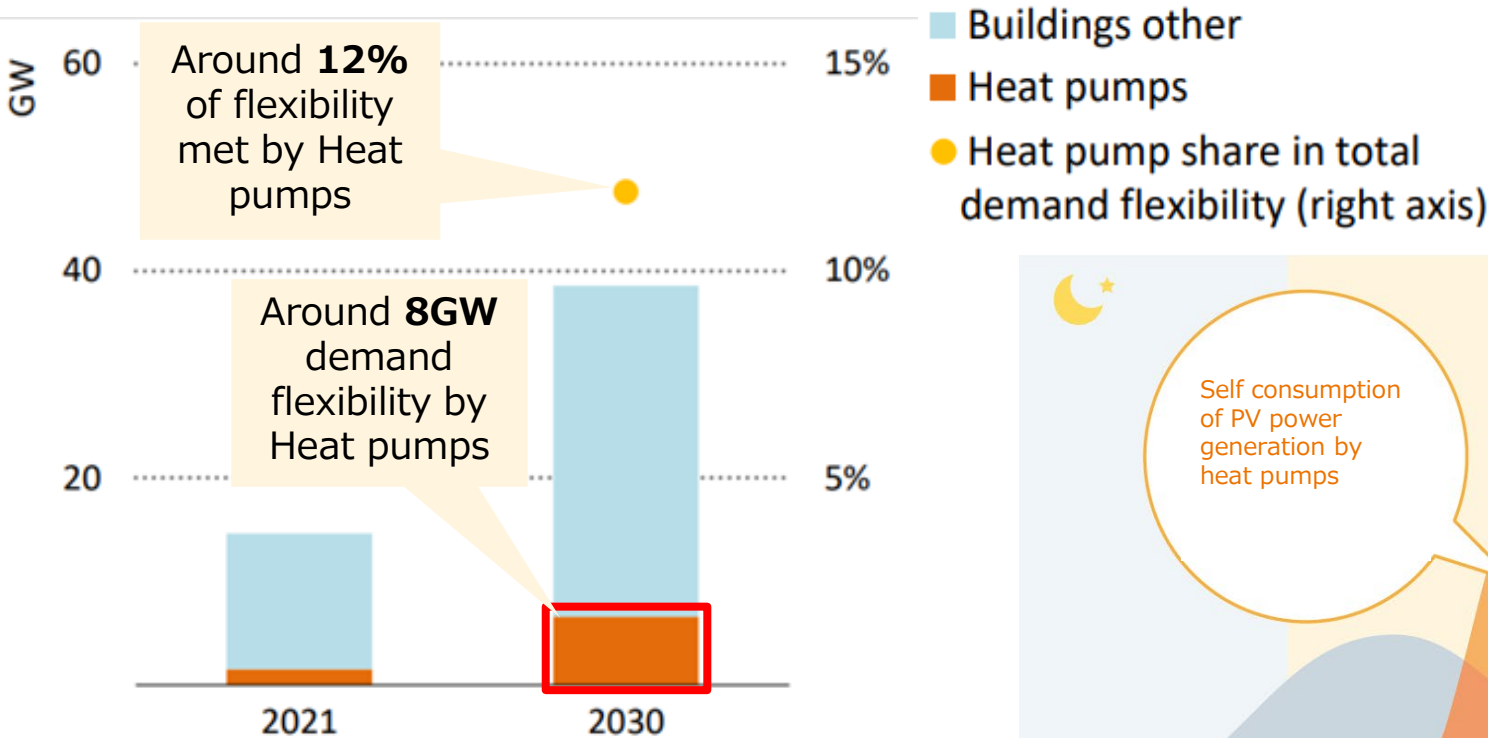


Heat Pumps also contribute to the grid by providing flexibility, thus underpinning the global target of tripling renewable power capacity to be achieved.

Heat pumps are expected to play an important role by providing demand-side flexibility



PV Heat Pump Water Heater



Source: [The Future of Heat Pumps, IEA](#) Figure 2.3

## 1. Setting Policy target

- NDC and other high-level policies

## 2. Reducing the price gap between electricity and gas

- Measures to make clean heating technology more attractive economically

## 3. Public funding to overcome upfront cost

- Compared to fossil fuel boilers, heat pumps have a higher initial cost.

## 4. Raising awareness (debunking the myth)

- Heat pumps can operate under extremely cold region
- Heat pumps are ready-to-implement to decarbonize GHGs around the world!

Down to  
**-25°C !!**



