

# Heat pumps as key integrator technology for a below 2° C scenario

**Thomas Nowak**

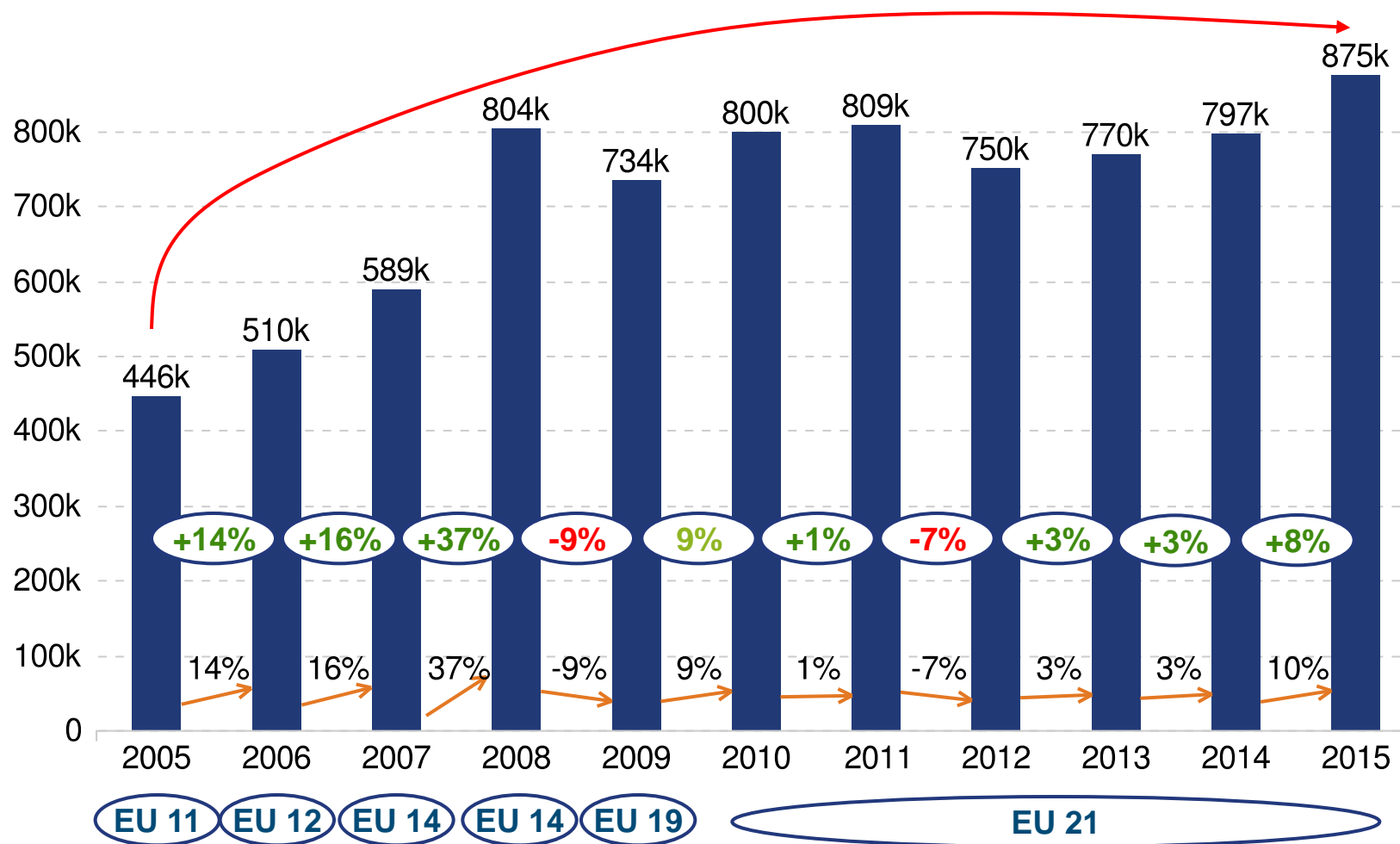
Secretary General EHPA

[thomas.nowak@ehpa.org](mailto:thomas.nowak@ehpa.org)

+49 176 6320 1140

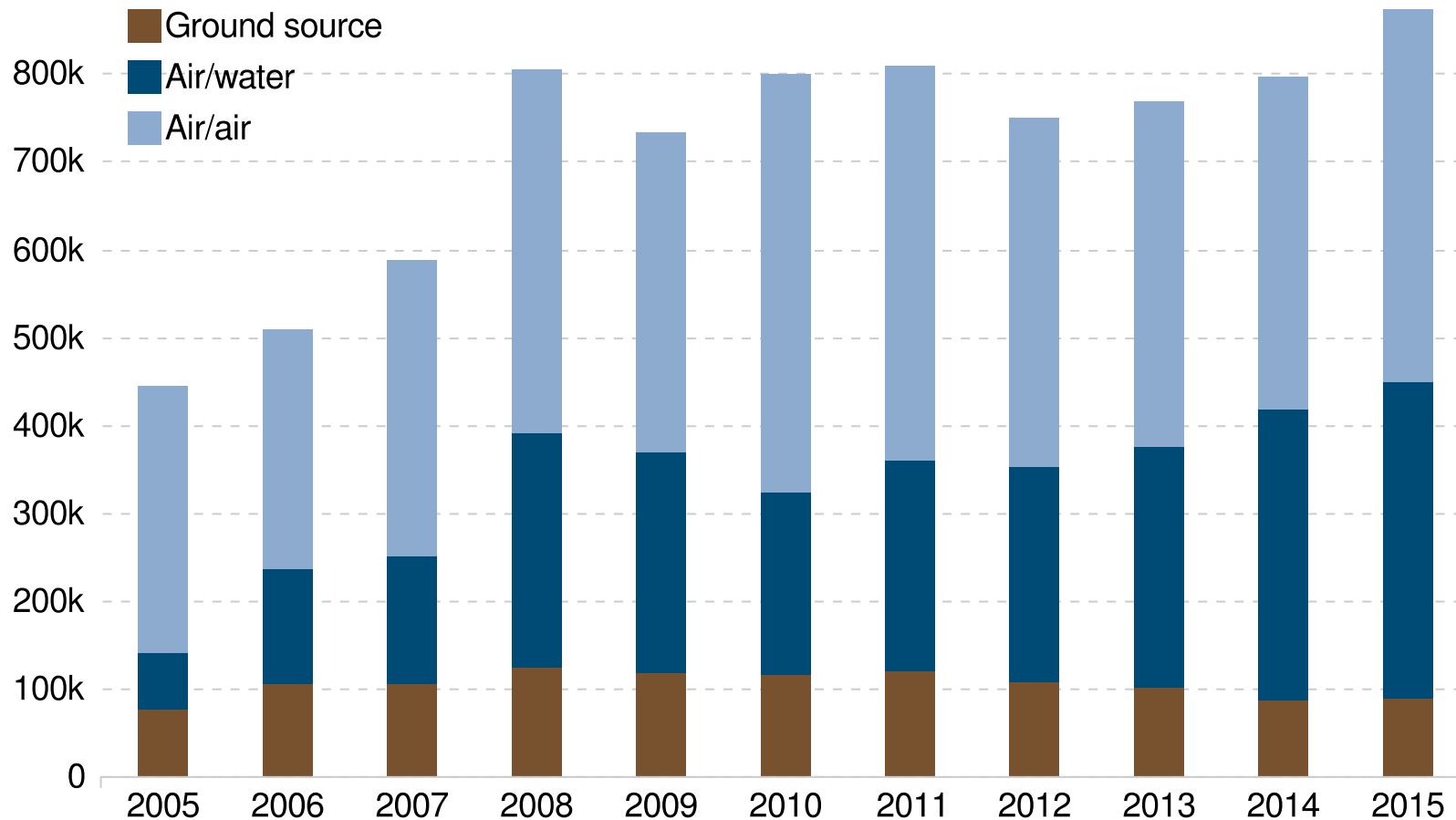
# market development 2005 – 2015

## accumulated: 8.3 million units installed



# heat pump sales in Europe by energy source

**Trend #1: air source**

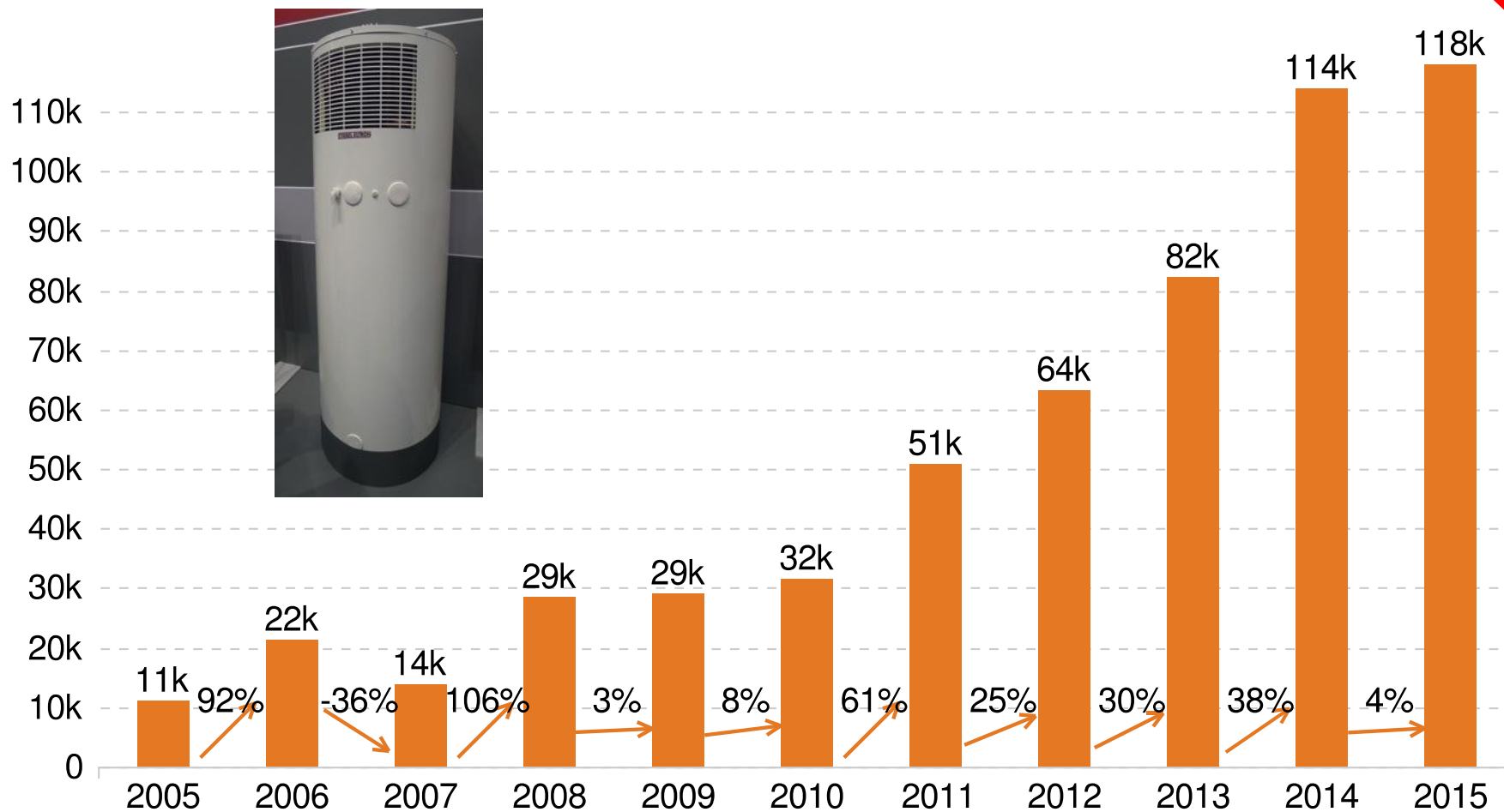


\*For some definitions of heat pumps the energy source is unknown (e.g. district heating). Those are omitted here.

IEA 2DS scenario with heat pumps | Paris | 20.6.2016

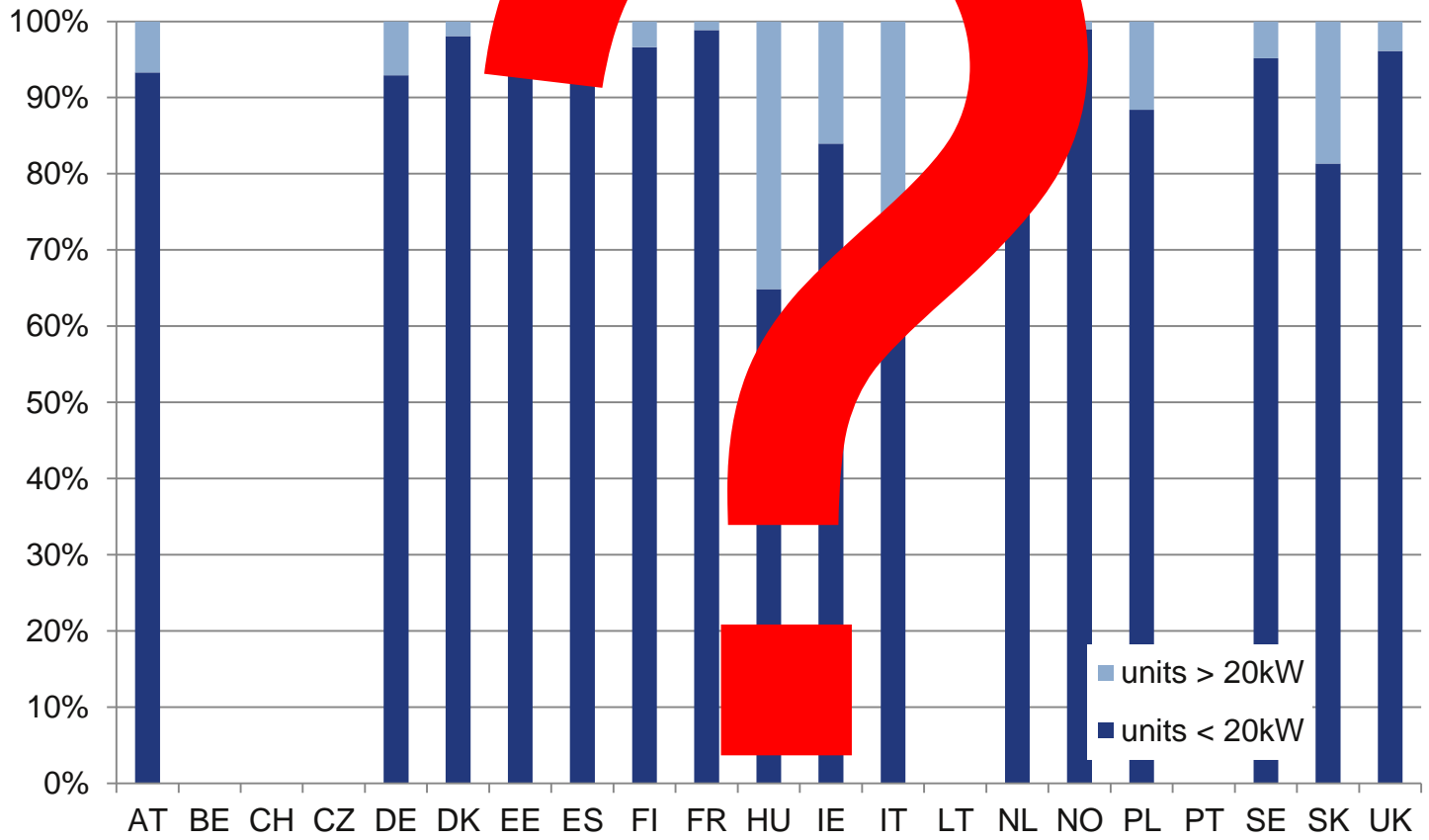
# sanitary hot water heat pumps

Trend #2: hot water

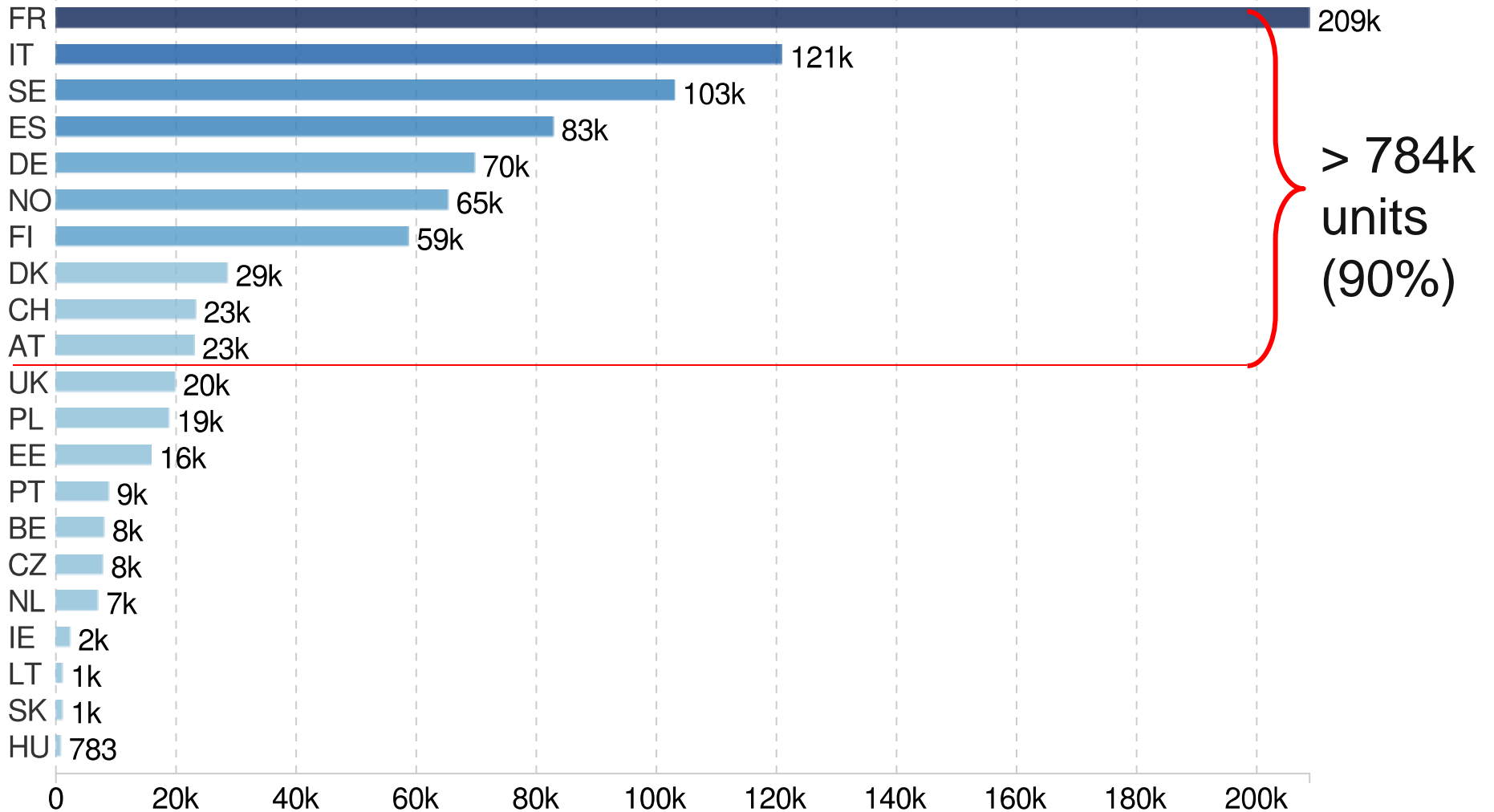


# split of heat pump sales by capacity

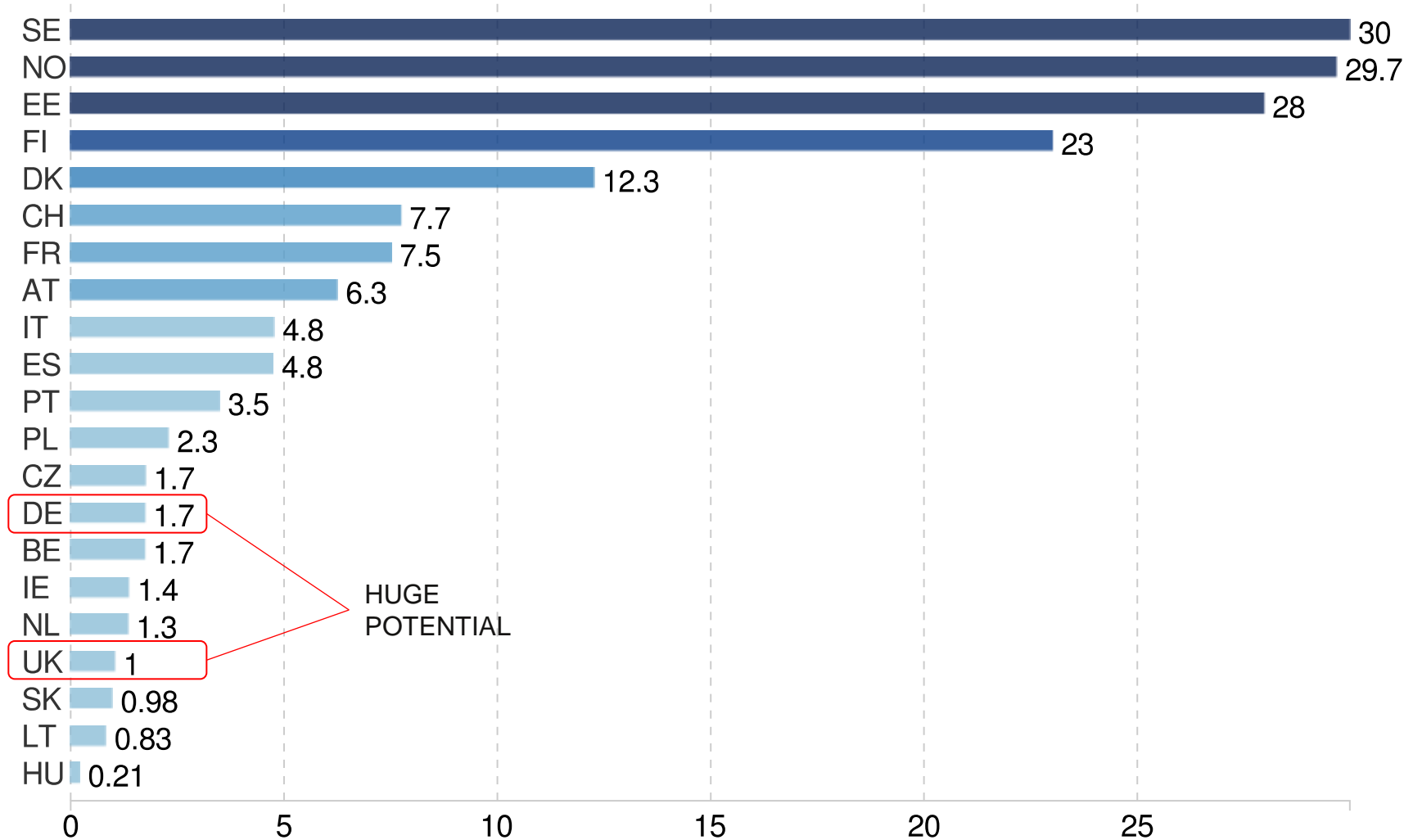
Lack of data for Large HP units – trend #3?



# top 10 heat pump markets by volume

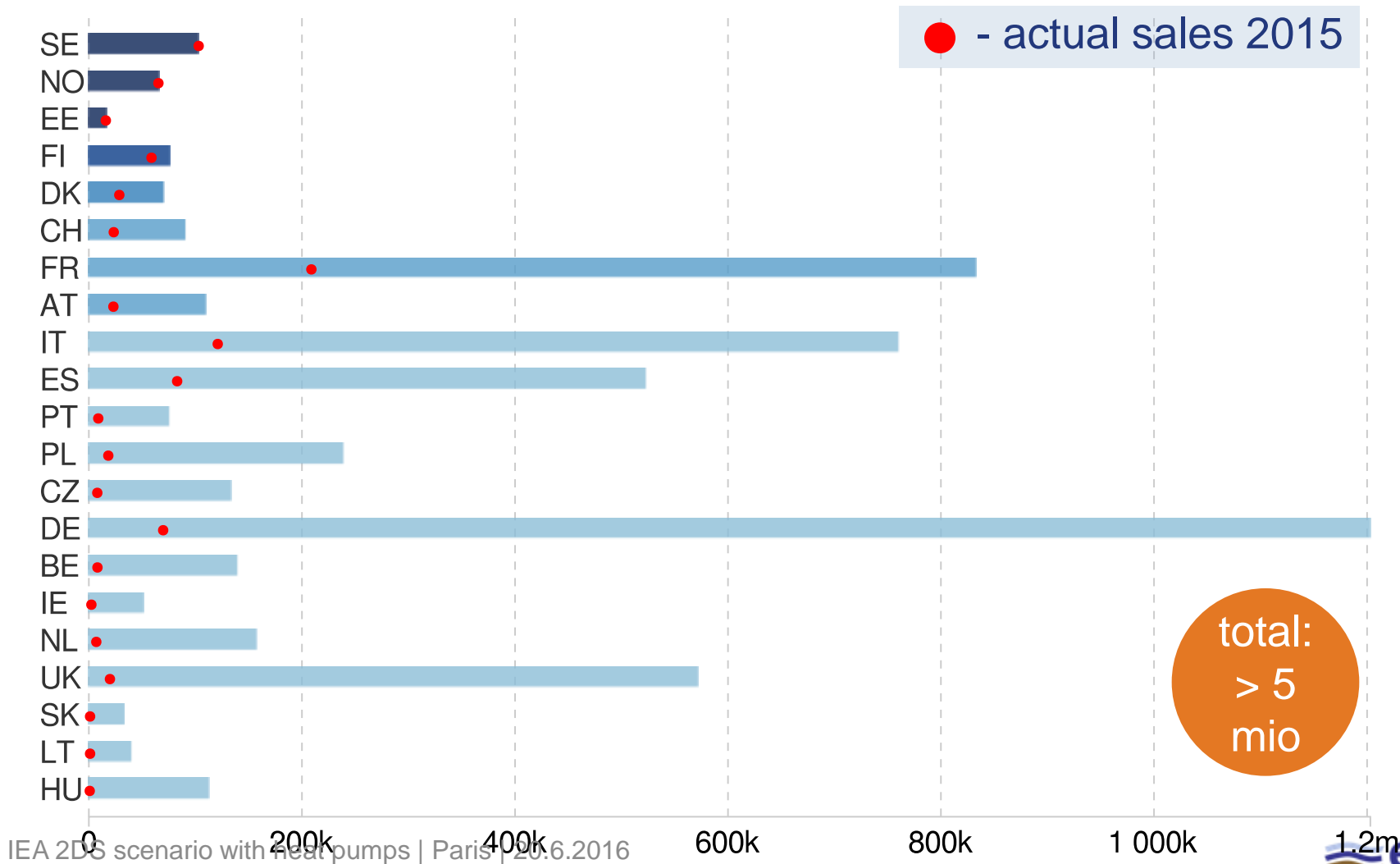


# market performance = sales per 1000 households



# market potentials

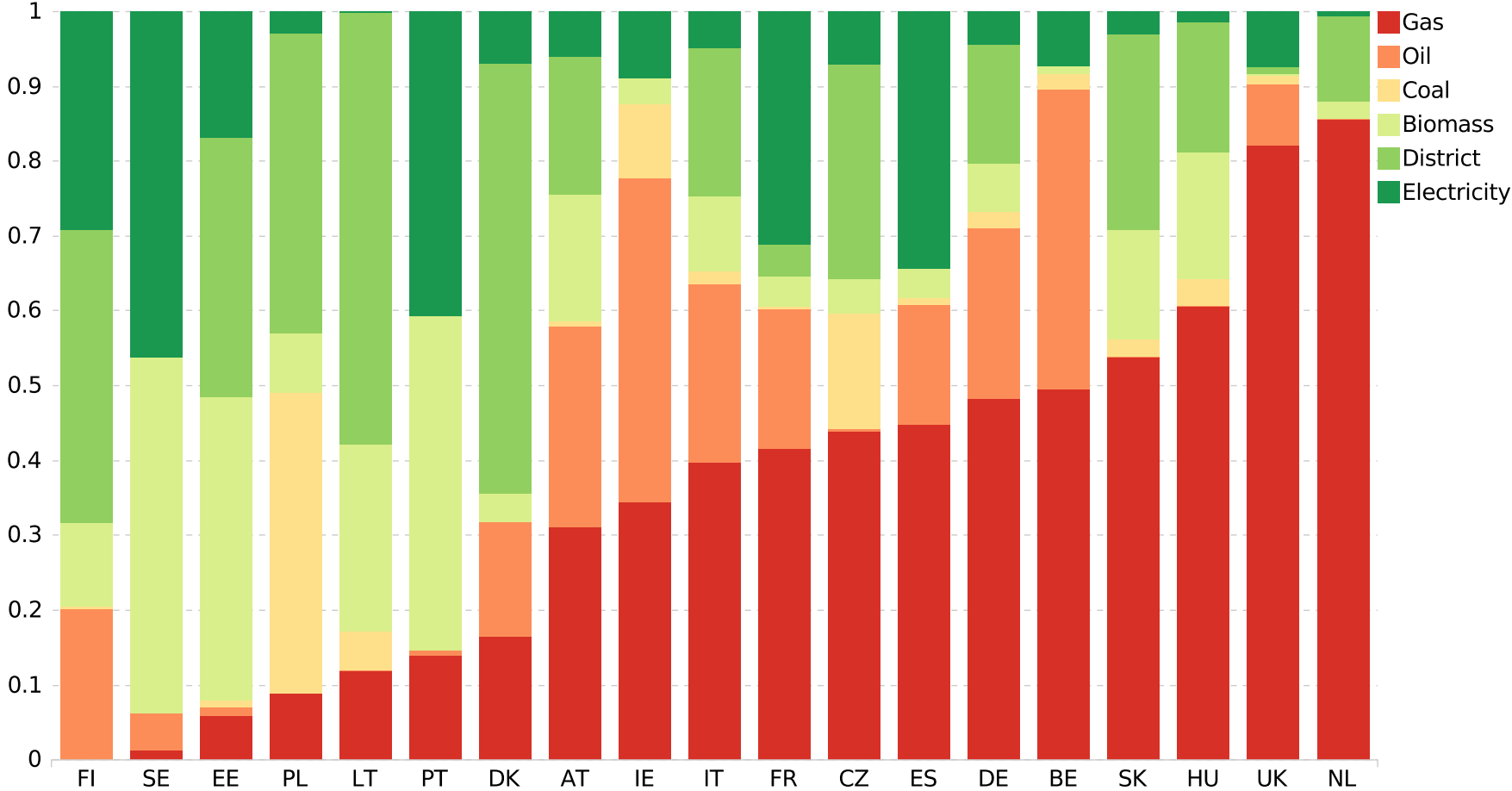
## “if Sweden was everywhere”



total:  
> 5  
mio



# dwelling stock by energy used for space heating

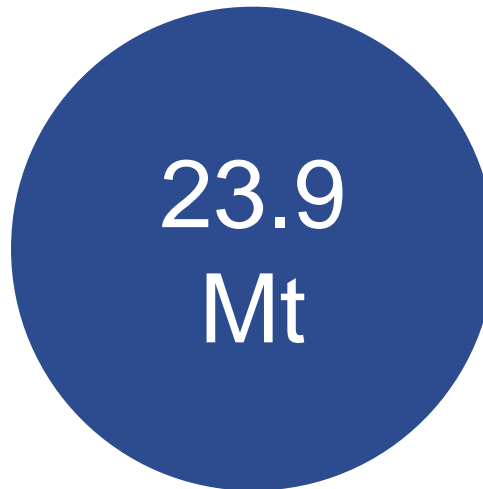


# heat pump benefits 2015: triple dividend

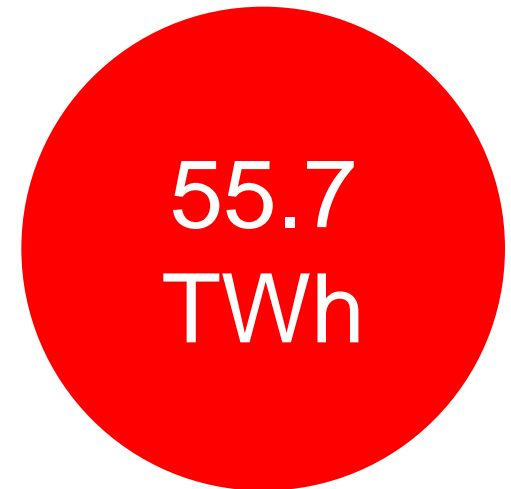
Renewable energy  
contribution



CO<sub>2</sub> savings



Primary energy  
savings



# In 2015 195 nations adopt climate agreement: 2° C max, better yet, 1.5° C



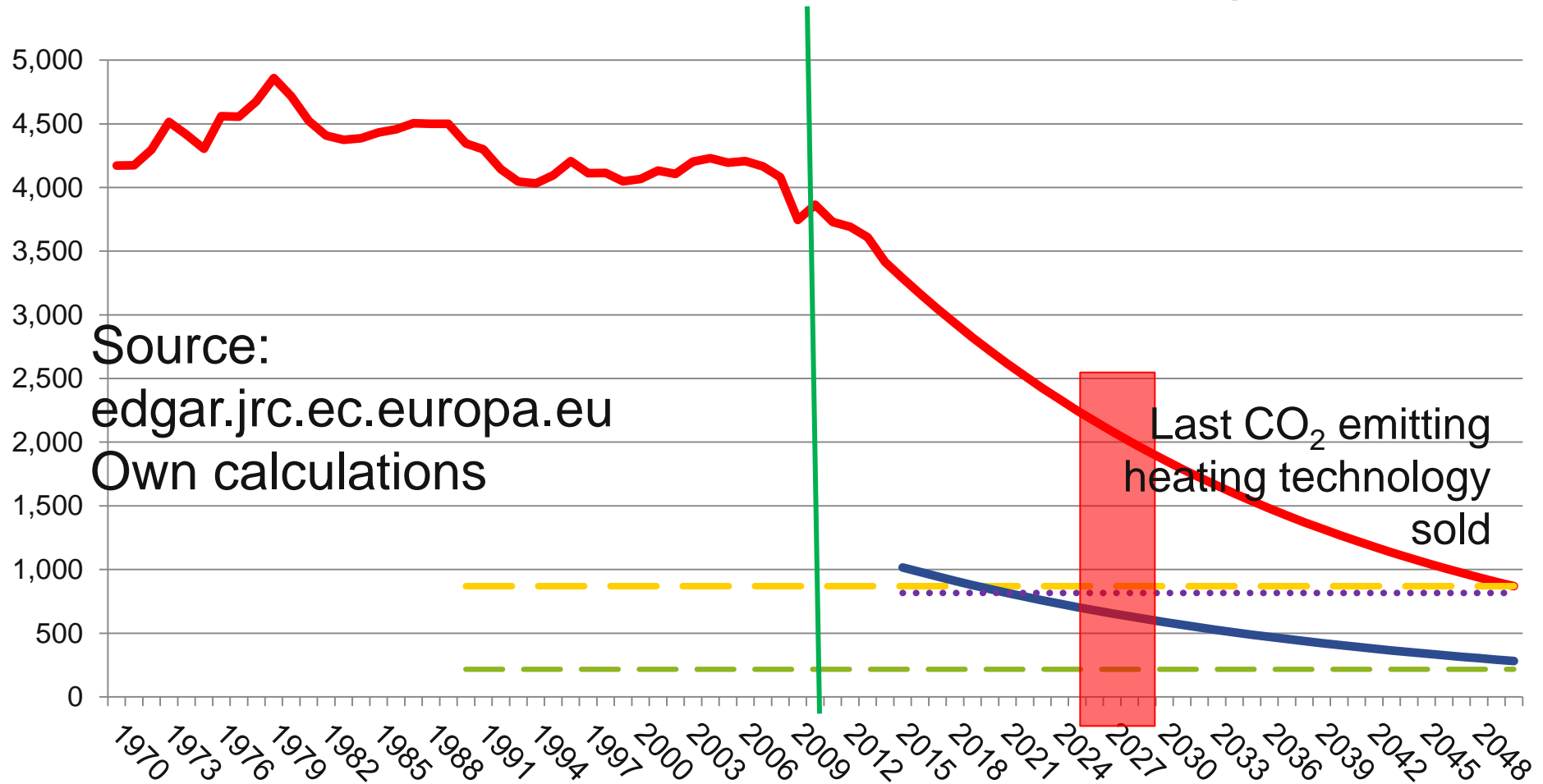
COP21 - CMP11  
**PARIS 2015**  
UN CLIMATE CHANGE CONFERENCE



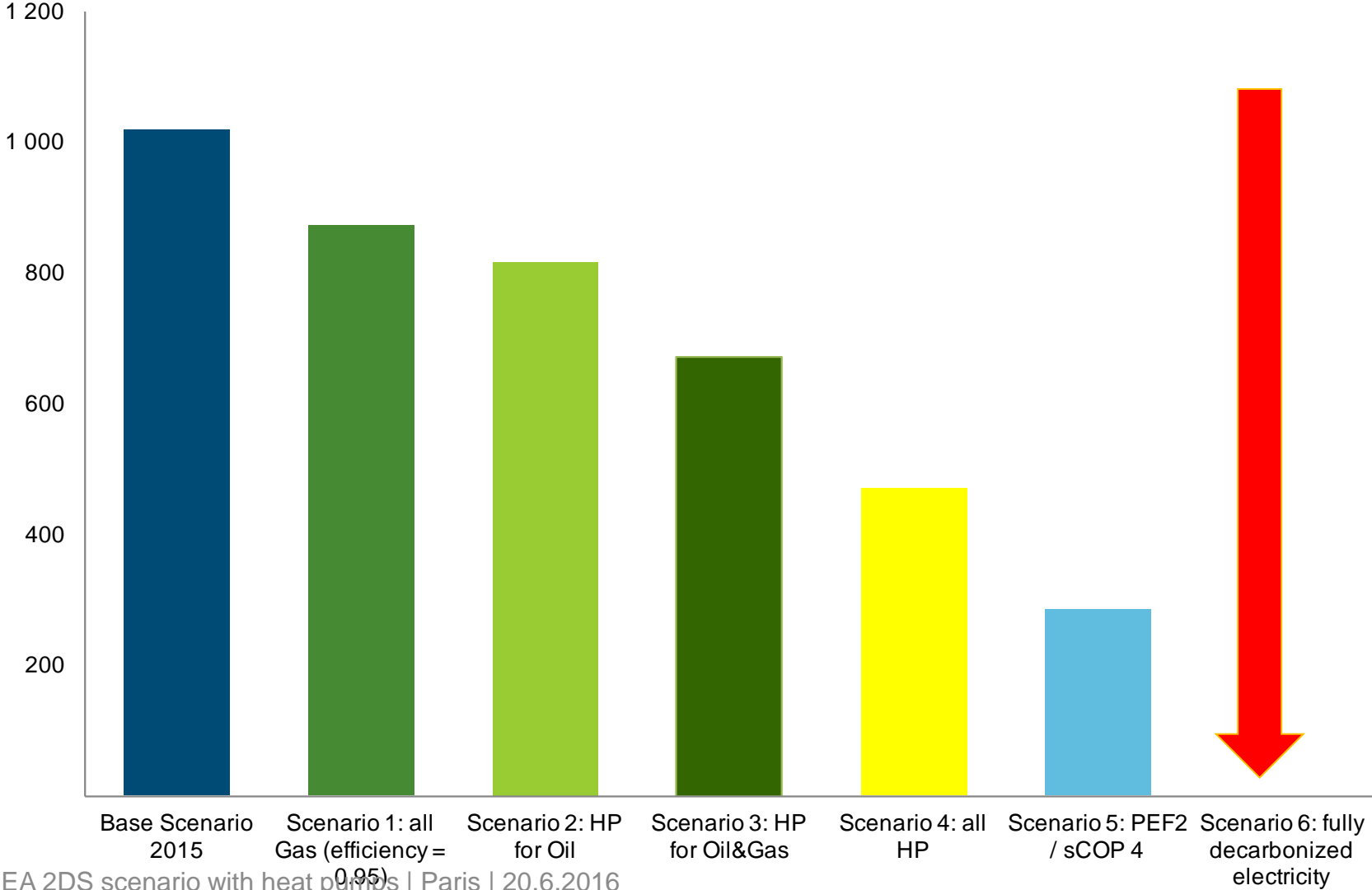
# Decarbonizing the energy system

## How much CO<sub>2</sub> emissions are available for heating?

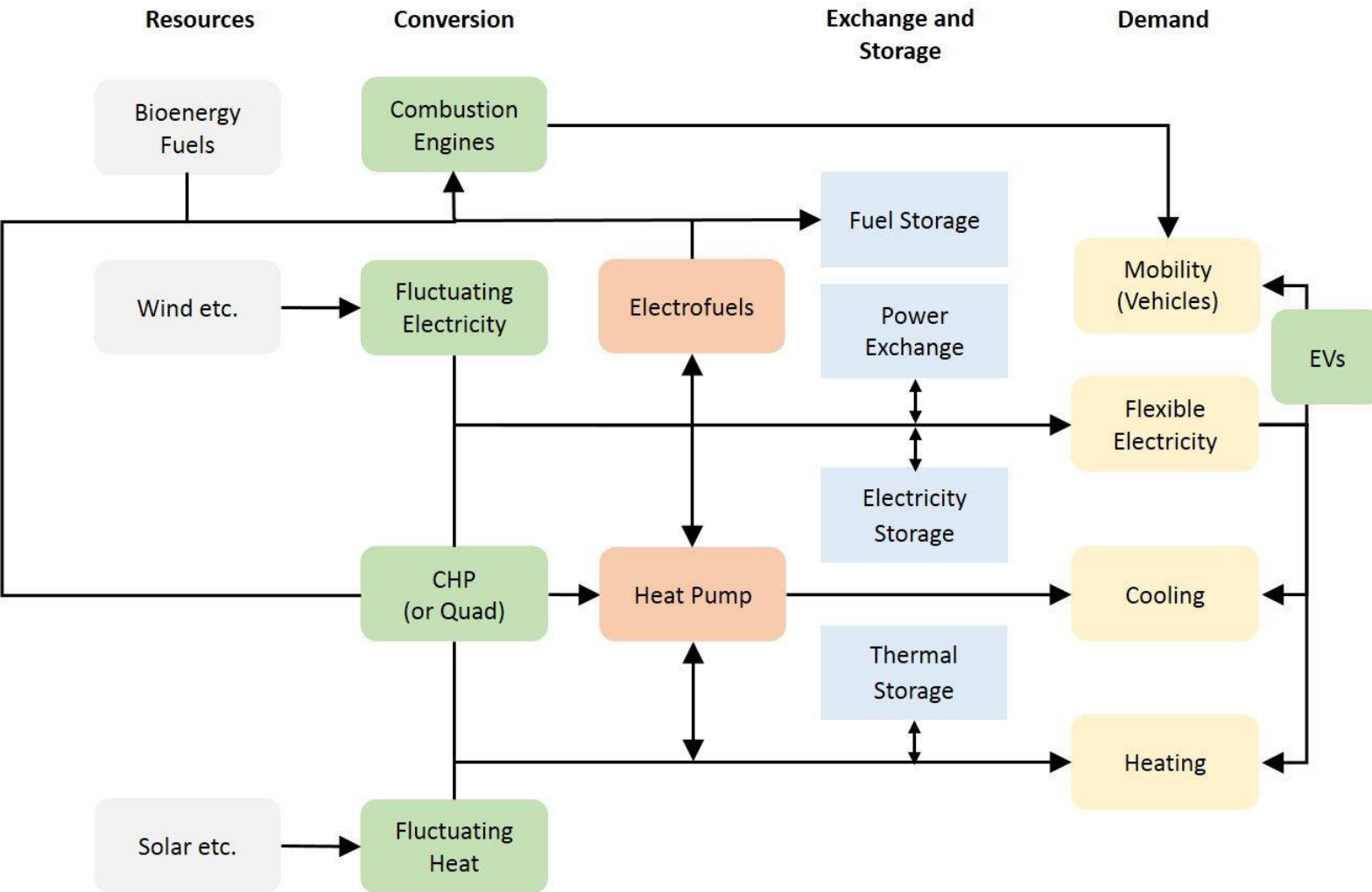
Mt



# HP market penetration scenarios



# Moving heat pumps at the center of the energy system



Source: <http://www.energyplan.eu/>

# Decarbonising Heat in Buildings



Dense Urban – 22%

Heat networks are a more efficient option for denser urban areas where there is limited space for individual heat pumps. Coupled with heat storage they can help balance the grid.

Suburban – 59%

Lower energy demand in all sectors through increasing thermal efficiency of buildings and changing consumer behaviour

High efficiency condensing boilers remain a useful technology in this sector into the 2030s

**Gas absorption heat pumps** use gas more efficiently...  
...as do **hybrid systems** containing a boiler and an electric heat pump

Rural – 19%

High **electric heat pump penetration** faces fewer barriers in homes that are less clustered, starting with buildings off the gas grid, which are more likely to have space and be using high carbon and more expensive fuels like heating oil.

UK Building Stock



# Future cities can be heat pump cities

