

# Market development of heat pumps in Germany

## 德国热泵市场发展概况

**China Heat Pump Conference 2023年中国热泵行业年会**

2. August 2023

Dr. Martin Sabel - Bundesverband Wärmepumpe e.V. (German Heat Pump Association)

Martin Sabel 博士 德国热泵协会

# Agenda 目录

- Status quo of the Energy transition in Germany

德国能源转型的现状

- Heat Pump Market in Germany: up-to-date data and perspective

德国热泵市场：最新数据和展望



# Renewable Energy Share in Germany: Electricity 德国的可再生能源份额：电力



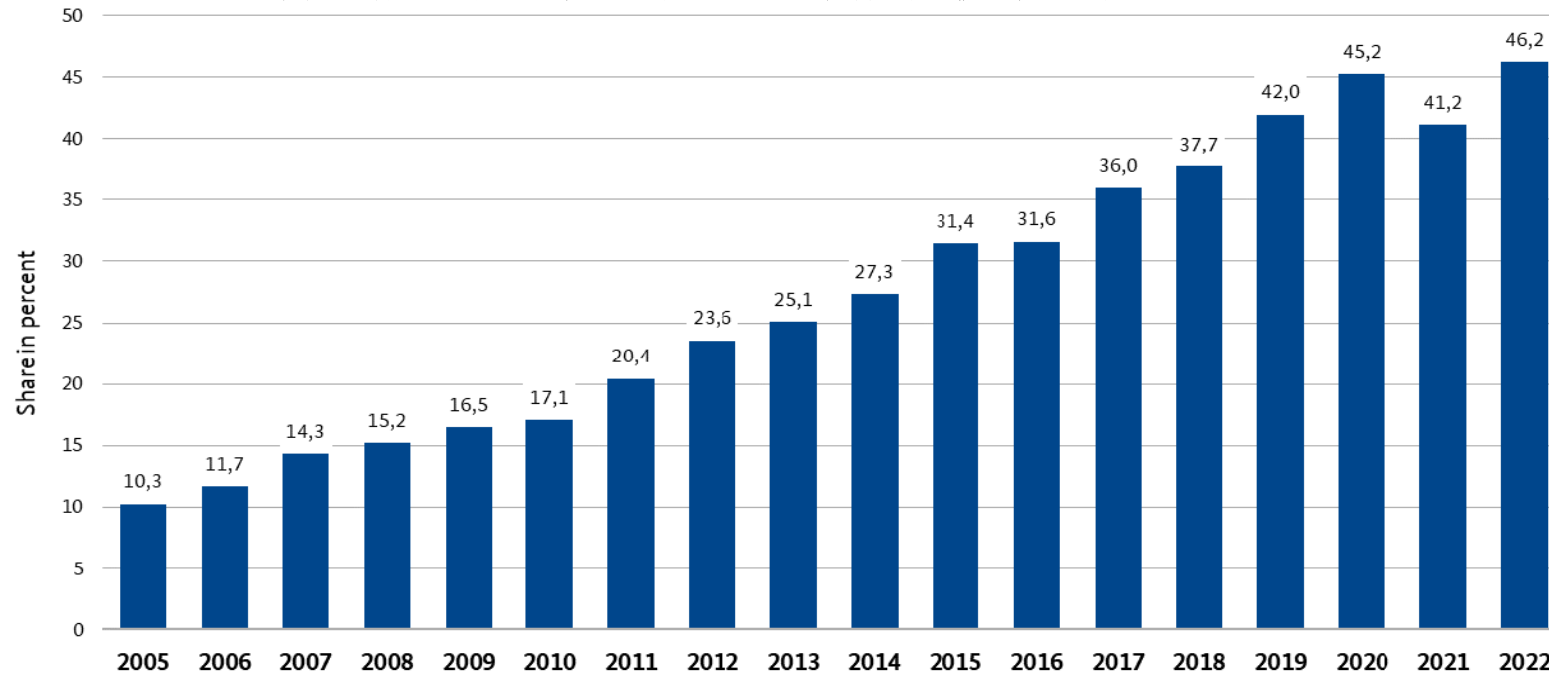
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## Development of renewable energy share of gross electricity consumption in Germany

### 德国可再生能源在电力消费总量中所占份额的发展



Source: Working Group on Renewable Energy-Statistics (AGEE-Stat); as of February 2023

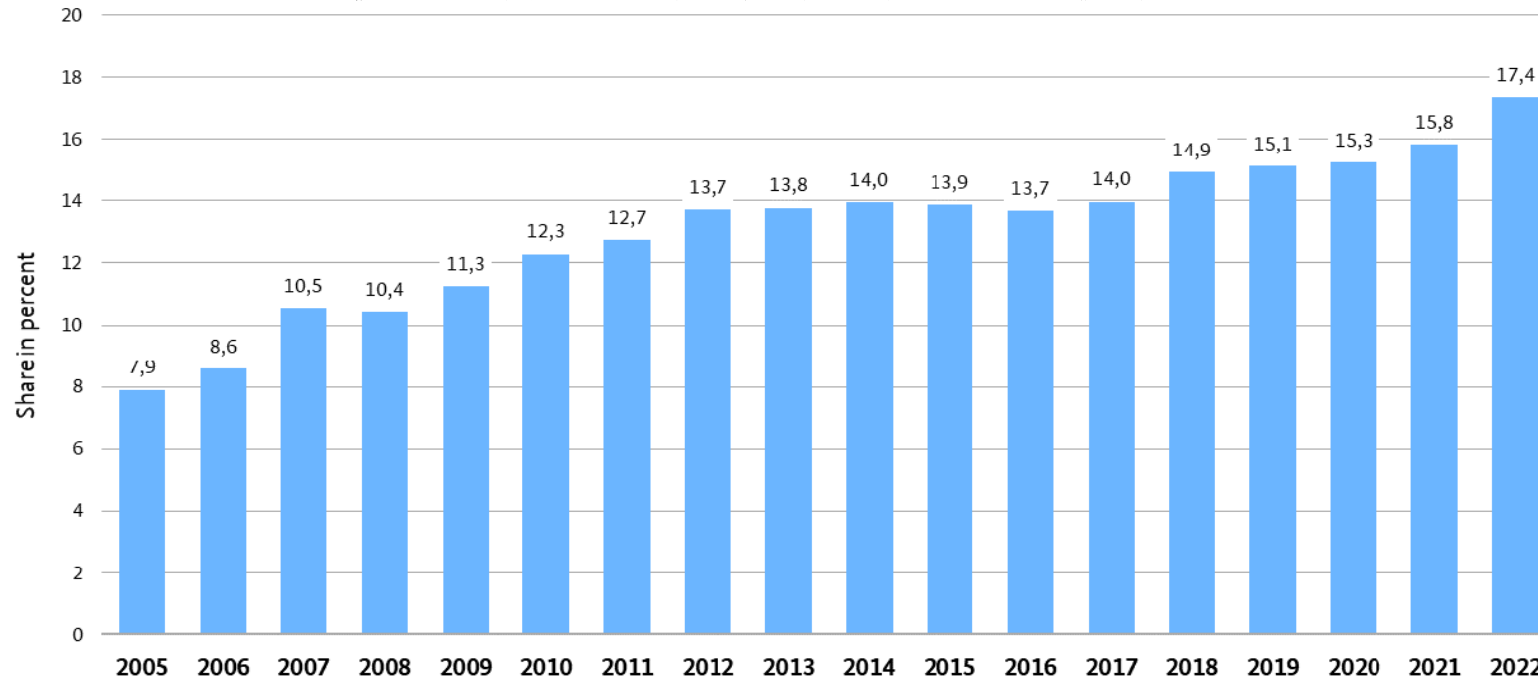
# Renewable Energy Share in Germany: Heating and Cooling 德国可再生能源份额：供热和制冷



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Development of renewable energy share of final energy consumption for heating and cooling in Germany  
德国供热和制冷终端能耗中可再生能源份额的发展



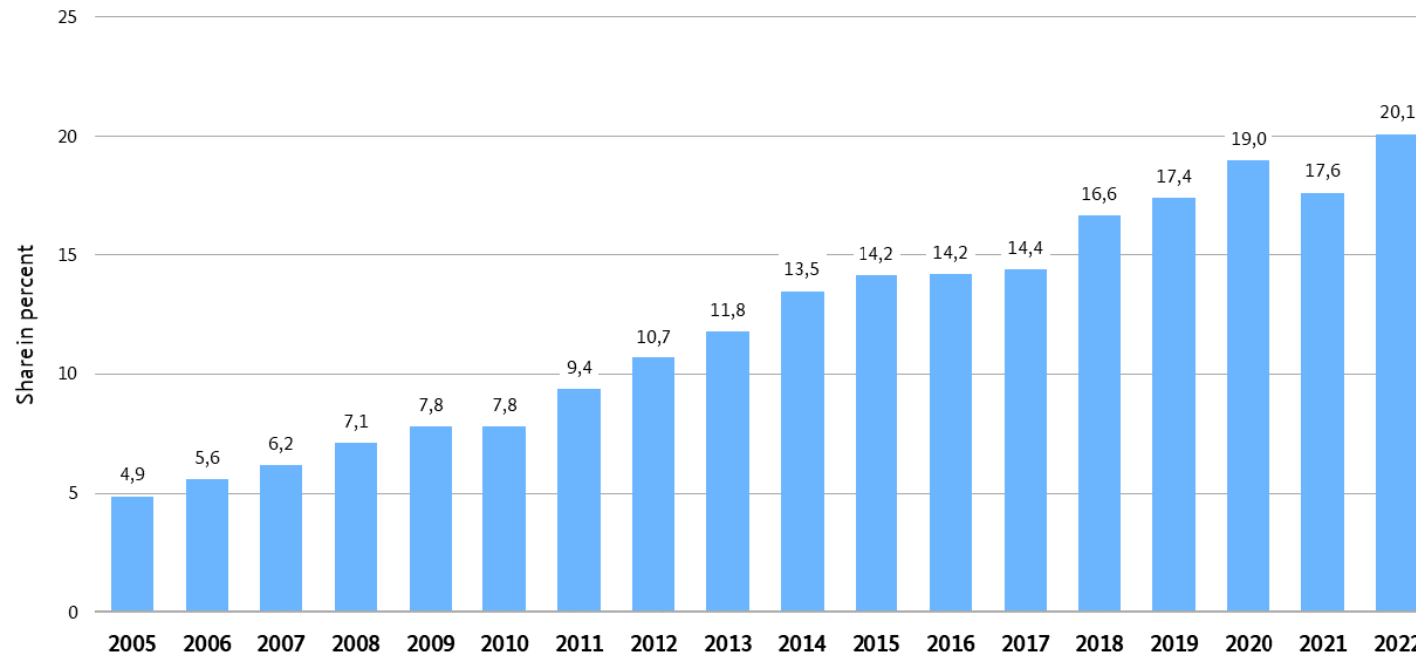
# Renewable Energy Share in Germany: District Heat 德国可再生能源份额：集中供热



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Development of the share of district heat produced from renewable energy sources  
in Germany 德国可再生能源占集中供热份额的发展



Source: Working Group on Renewable Energy-Statistics (AGEE-Stat); as of February 2023

# Renewable Energy Share in Germany: Transport 德国可再生能源份额：交通

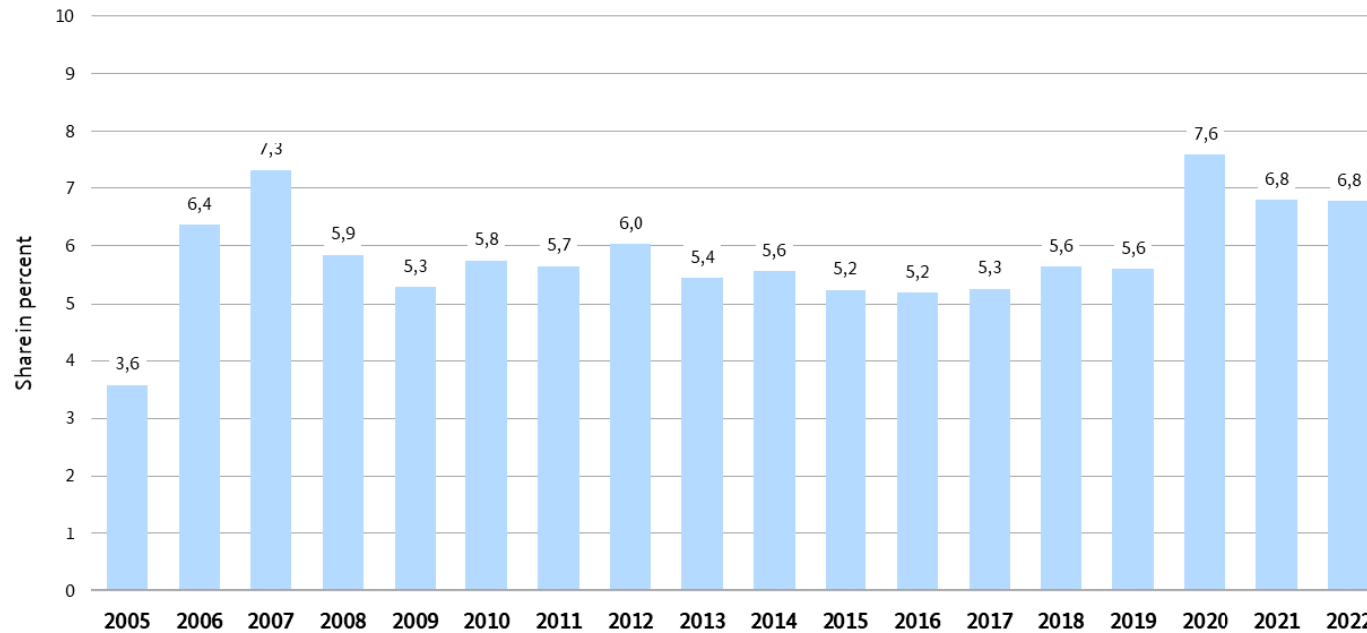


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## Development of renewable energy share of final energy consumption in the transport sector in Germany 德国可再生能源在交通部门终端能耗中份额的发展



Source: Working Group on Renewable Energy-Statistics (AGEE-Stat); as of February 2023

# Development of Heat Pumps 热泵的发展



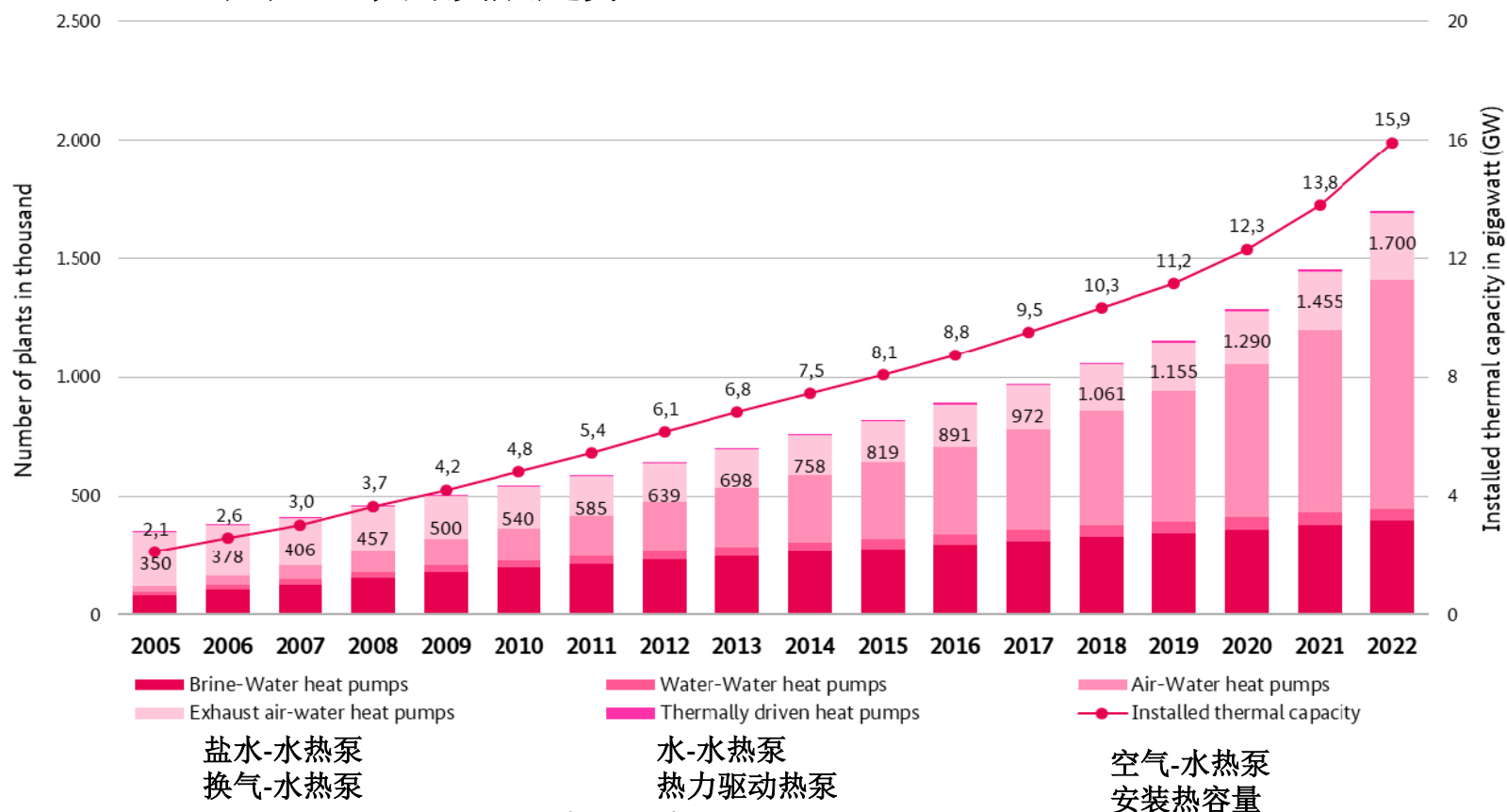
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## Development of heat pumps in Germany

### 德国热泵的发展趋势



Source: Working Group on Renewable Energy-Statistics (AGEE-Stat); as of February 2023

# Electricity becomes central energy Carrier 电力成为核心能源载体

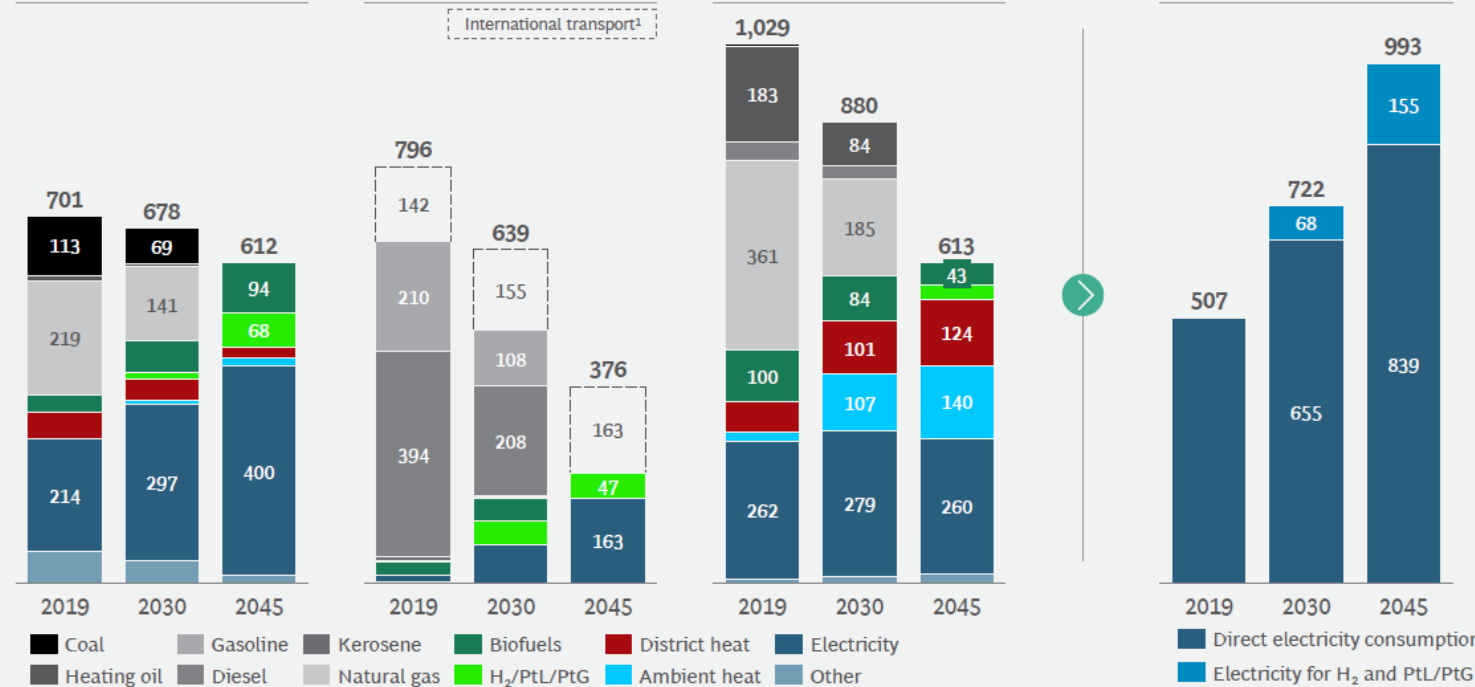
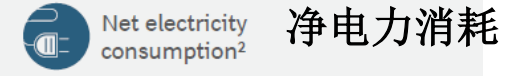
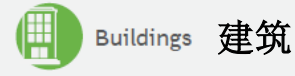
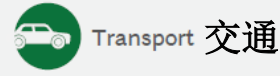
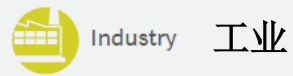
Electricity is the transformation's central energy carrier

电力是转型的核心能源载体

EXHIBIT 2 | Final energy consumption and net electricity consumption

终端能耗和净电力消耗

TWh 太瓦时



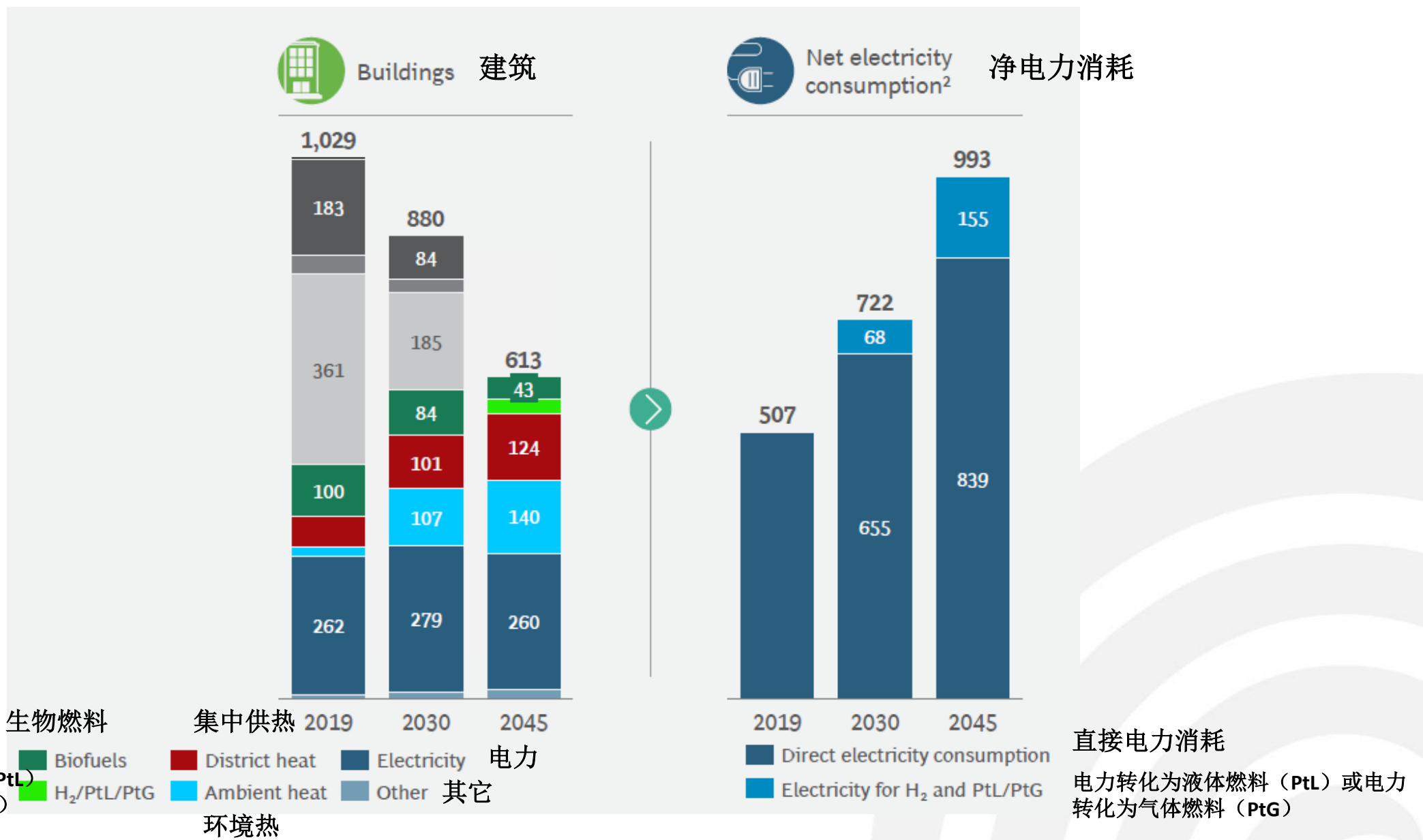
直接电力消耗

电力转化为液体燃料 (PtL) 或电力转化为气体燃料 (PtG)

1. Assumption: International transport originating in Germany should also be converted to carbon-neutral fuels by 2045 2. Total power consumption from all sector applications excl. the power plant's own consumption or import/export; includes domestic hydrogen production  
 Note: Excl. material consumption H<sub>2</sub>/PtL/PtG for naphtha and bitumen  
 Source: BCG analysis

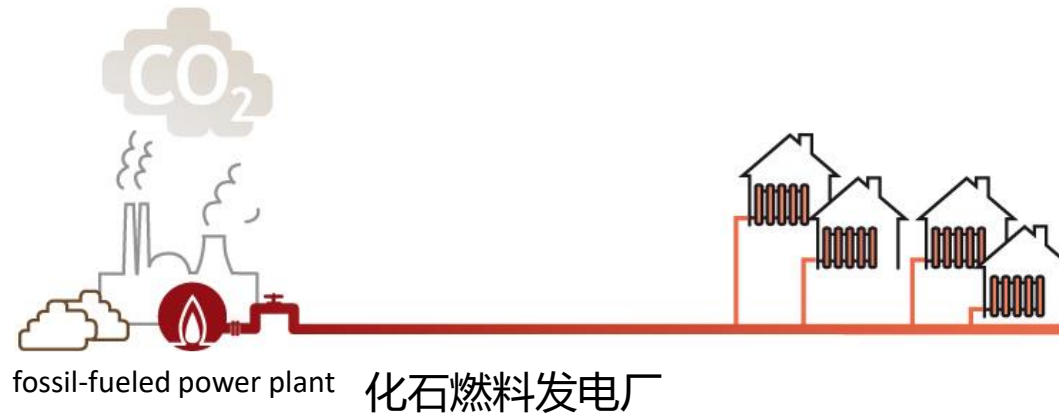


# Electricity becomes central energy Carrier 电力成为核心能源载体

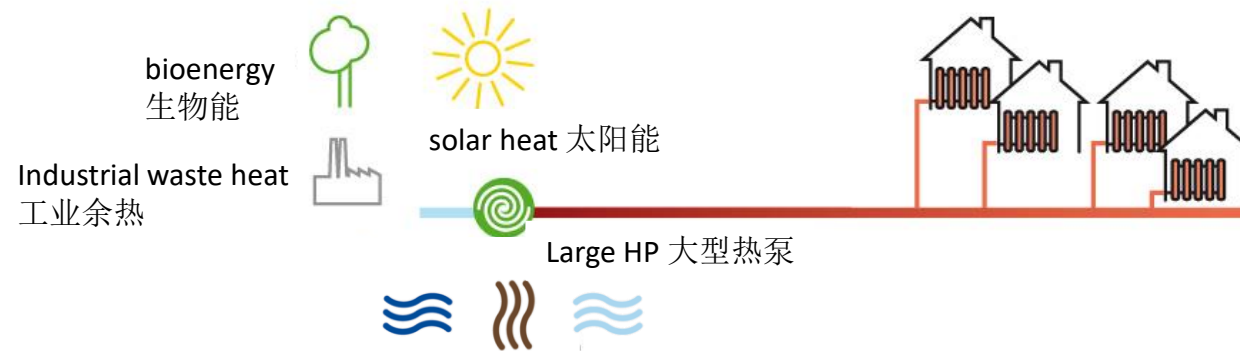


# District Heating 集中供热

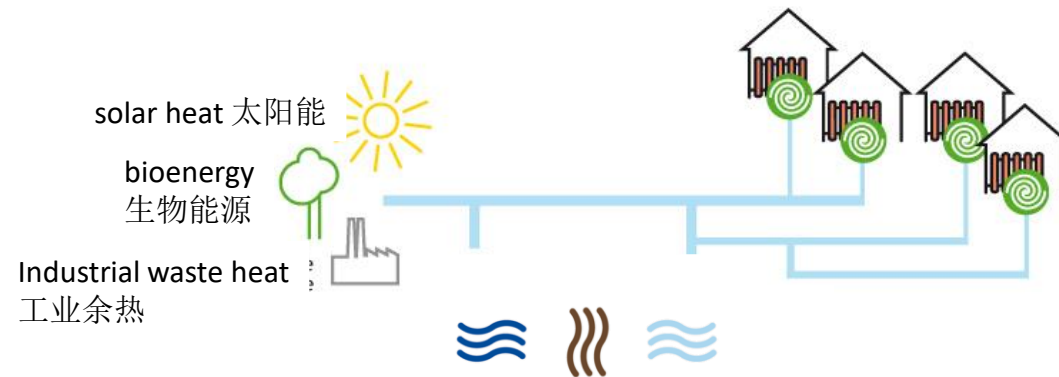
District heating:  
fossil-fueled power plant  
集中供热:  
化石燃料发电厂



District heating:  
Large HP  
集中供热:  
大型热泵

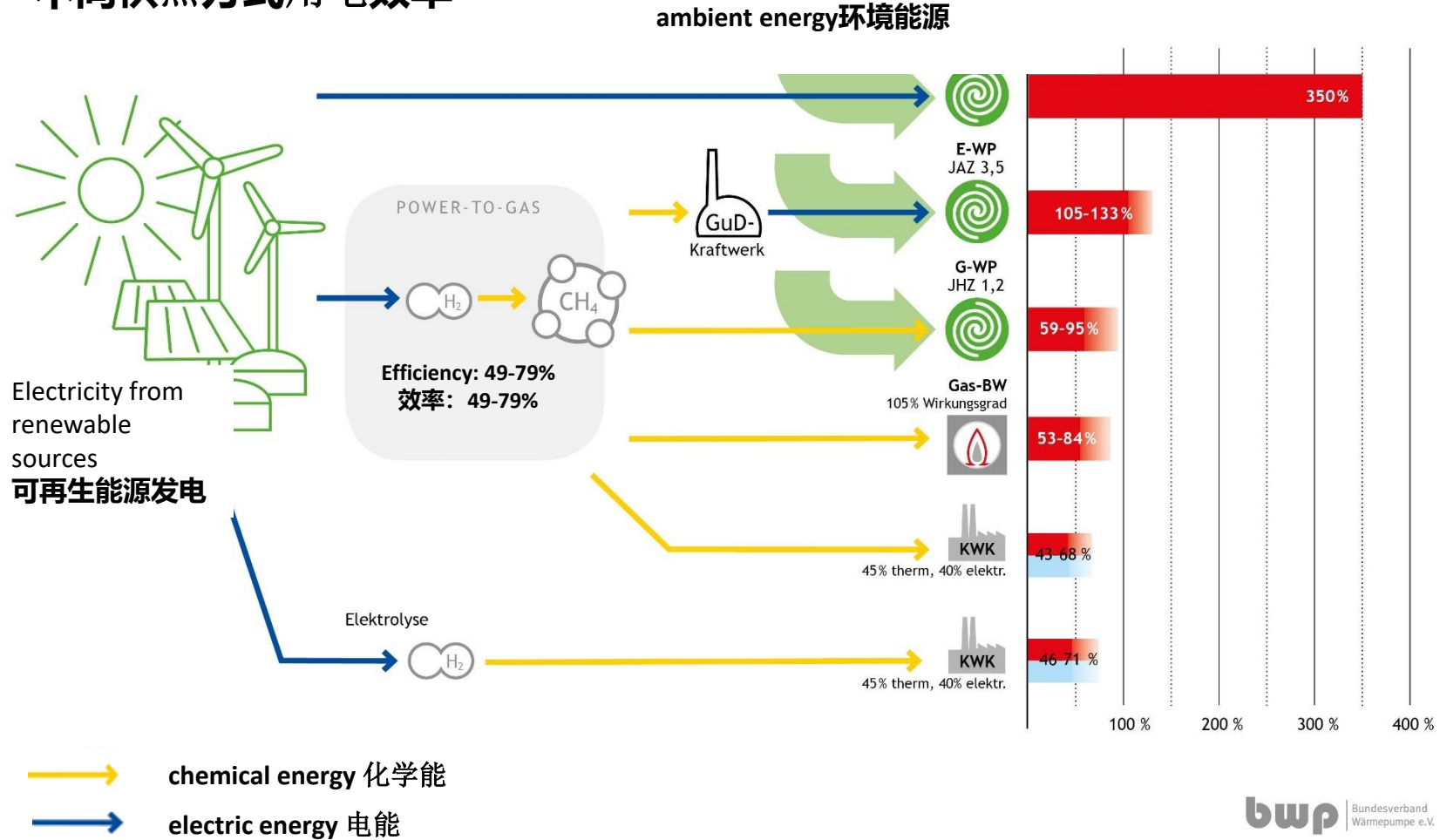


cold district heating network:  
低温热网:

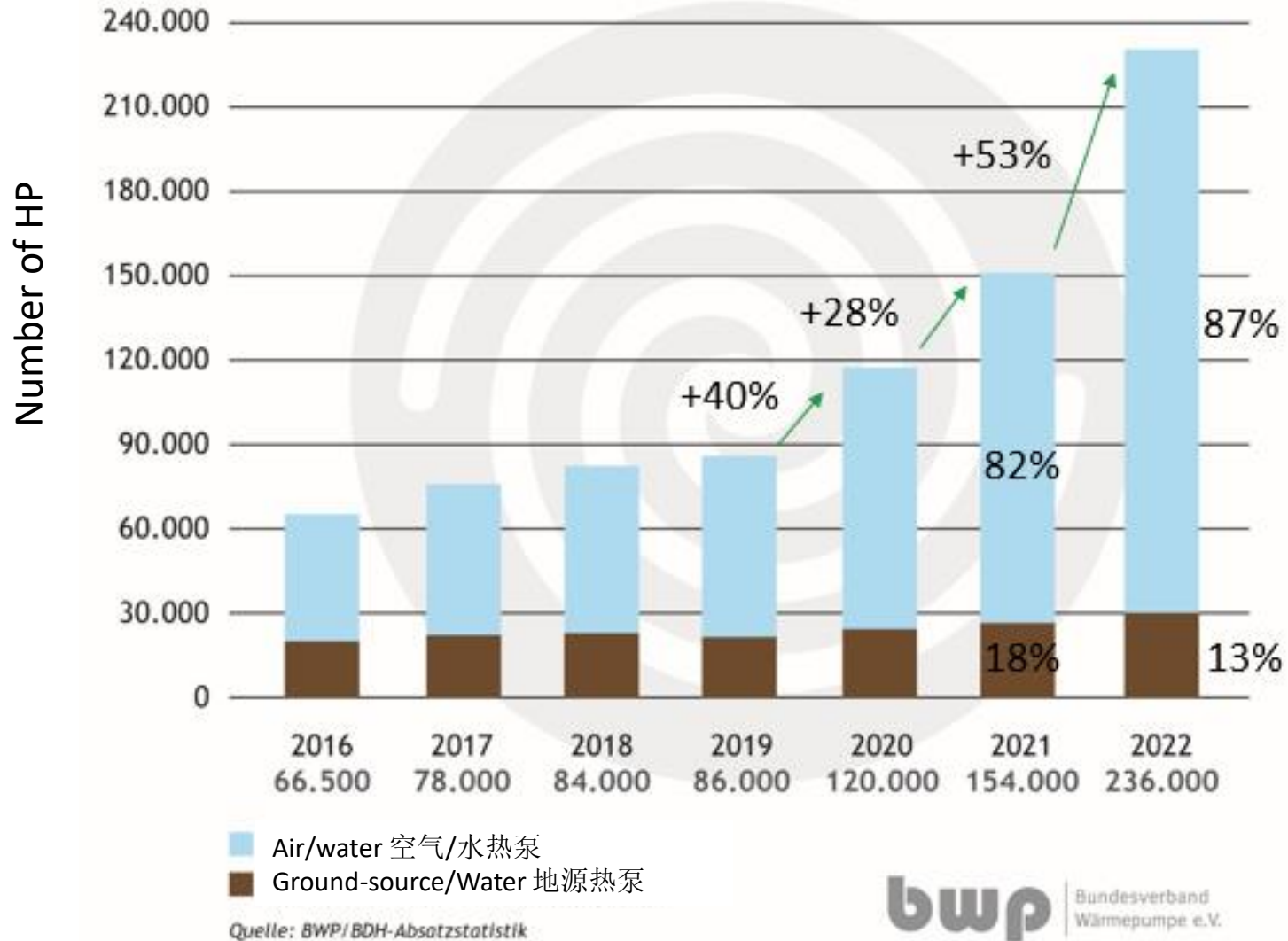


# Sector Coupling: Efficiency 部门耦合：效率

## Efficiency of different ways to use electricity for heating 不同供热方式用电效率



# Germany: HP Sales 2016-2022 德国热泵2016-2022年销售额

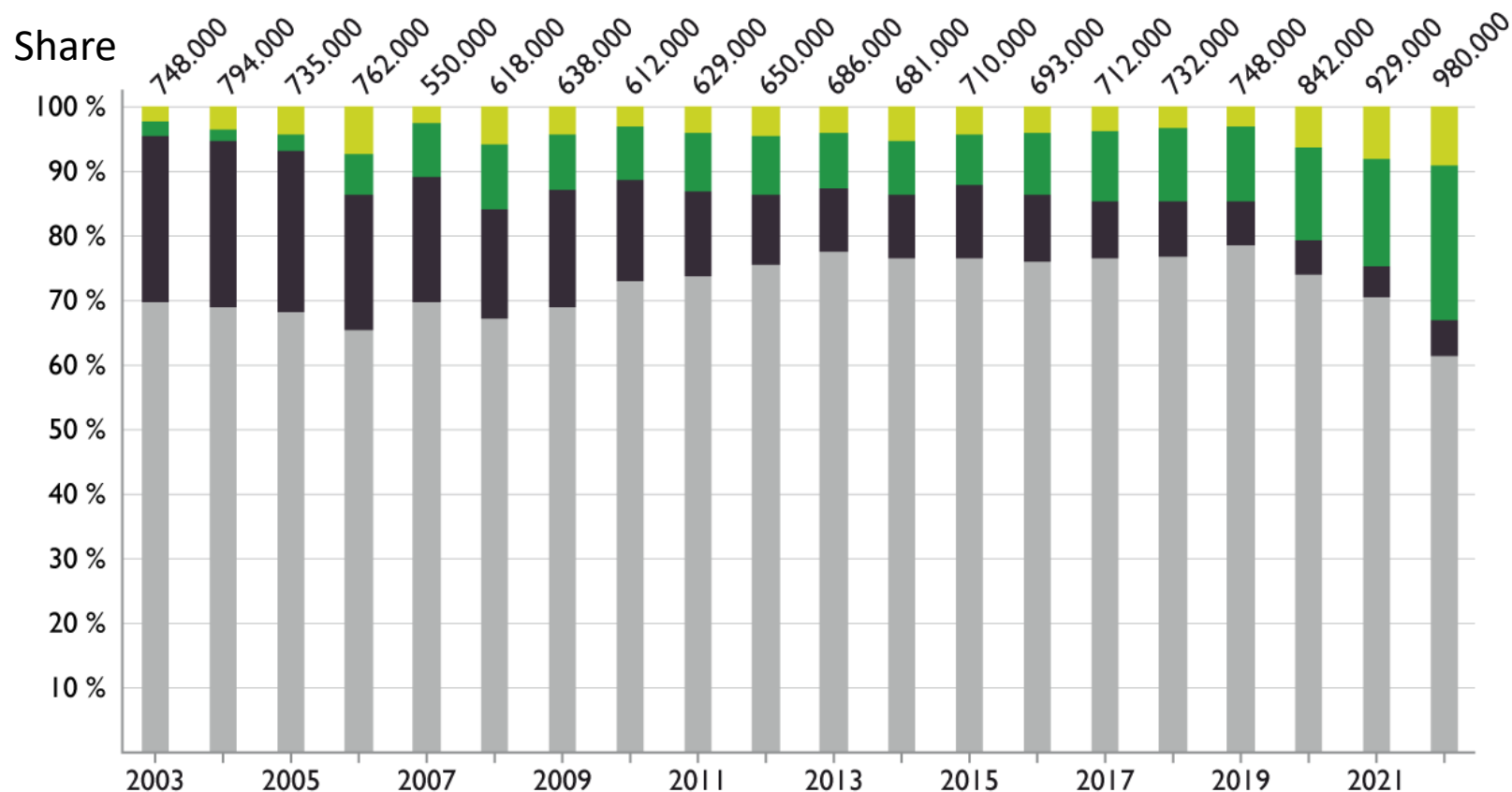


## Heat Pump market in Germany: 德国热泵市场:

- Market growth is driven by Air/Water Heat Pumps
- 空气/水热泵推动了市场增长
- Air/Air HP are not part of this statistics
- 空气/空气源热泵不在数据统计中

# Total market for heating systems 2003-2022

## 2003年至2022供热市场发展



### 2022年销售额

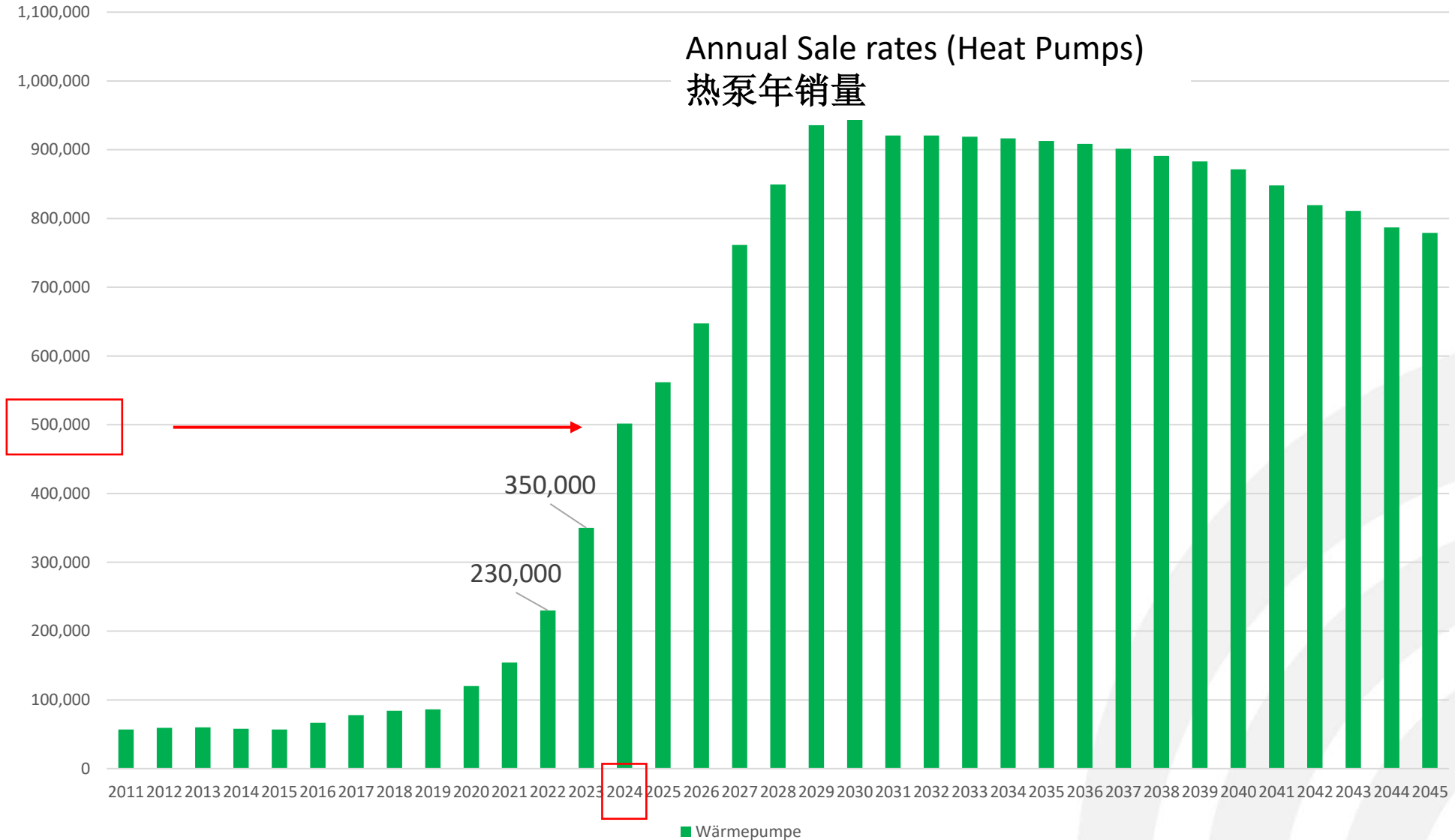
#### Sales 2022

- Heat Pump: 热泵: 236.000
- Biomass: 生物质能 89.000
- Gas (condensing): 天然气 (冷凝) 528.500
- Gas (sonst.): 天然气 (其它) 70.000
- Oil (condensing): 石油 (冷凝) 54.000
- Oil (others): 石油 (其它) 2.500

**Total: 总计**  
**980.000**

# Market Perspective: BWP Market Study (January 2023)

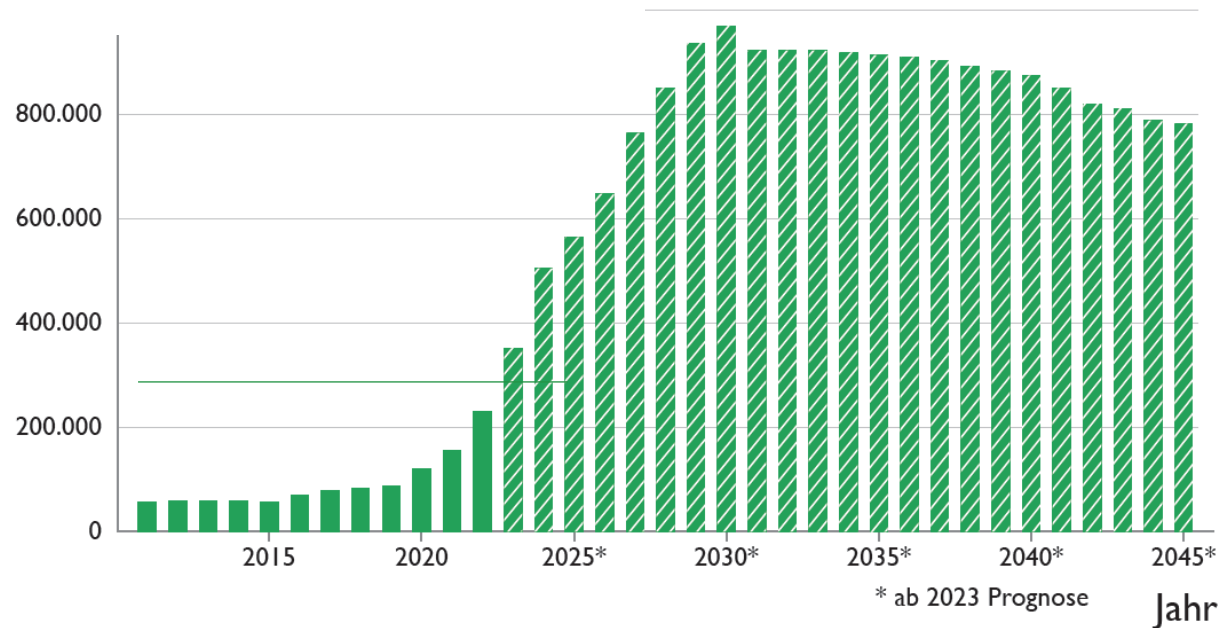
## 市场前景：德国热泵协会市场研究（2023年1月）



# Market Perspective: BWP Market Study (January 2023)

## 市场前景：德国热泵协会市场研究（2023年1月）

Annual Sale rates (Heat Pumps)  
热泵年销量



Necessary political decisions:  
必要的政策决定：

**Energy prices:** Relief for electricity as an energy source, esp. VAT and electricity tax  
**能源价格：**对电力作为能源的减免，特别是增值税和电力税

**Buildings Energy Act:** Consistent implementation of the 65% renewable energy requirement  
**《建筑能源法》：**坚持落实65%的可再生能源要求

**Industrial policy:** Supporting investment (e.g. super depreciation)  
**产业政策：**支持投资（如超额折旧）

**Funding programs:** stable financing and reliable conditions, offers for investors without own funds (loans, contracting)  
**资助计划：**稳定的资助和可靠的条件，为没有自有资金的投资者提供优惠（贷款、合同）

# Current debates concerning Buildings Energy Act and Funding programs

## 当前关于《建筑能源法》和资助计划的讨论

- Among other things, the Building Energy Act states that all heating systems that are replaced should have a “renewable energy share” of at least 65 percent from 2024.
- 除其他法律法规外，《建筑能源法》规定，从2024年起所有被替换的新供热设备的可再生能源占比不得少于65%
- In the current debate about the Building Energy Act, the heat pump plays a decisive role.
- 在目前关于《建筑能源法》的讨论中，热泵起着决定性的作用。
- A revised funding program was presented to enable homeowners to fulfill the obligations of the Buildings Energy Act
- 提出了一项修订的资助计划，使房主可以履行《建筑能源法》的义务
- Many homeowners are unsettled by the debate, which has been going on for weeks.
- 这一讨论已经持续了数周，许多房主对此感到困惑。



## Consequences of the long lasting debate:长期讨论的后果:



Germany  
Q1 2023

Please note:  
hybrid heat  
pumps figures  
are included in  
boilers and  
heat pumps  
figures, hence  
they are also  
included in the  
total market

请注意，热泵复合  
系统的数据包含在  
锅炉和热泵的数据  
中，它们也包含在  
总市场中

• <b>Total Market:</b> 整体市场	<b>+ 37,4 %</b>	<b>306.500 Pieces</b>
➤ <b>Gas condensing:</b> 冷凝天然气	<b>+ 15,7 %</b>	<b>147.000 Pieces</b>
➤ <b>Oil condensing:</b> 冷凝油	<b>+ 95,2 %</b>	<b>20.500 Pieces</b>
➤ <b>Gas non condensing:</b> 非冷凝天然气	<b>+ 5,0 %</b>	<b>21.000 Pieces</b>
➤ <b>Oil non condensing:</b> 非冷凝油	<b>+ 100,0 %</b>	<b>1.000 Pieces</b>
➤ <b>Biomass:</b> 生物质能	<b>+ 7,9 %</b>	<b>20.500 Pieces</b>
➤ <b>Heat pumps:</b> 热泵	<b>+ 109,8 %</b>	<b>96.500 Pieces</b>
• <b>Solar thermal systems:</b> 太阳热能系统	<b>- 15,7 %</b>	<b>115.500 m<sup>2</sup></b>

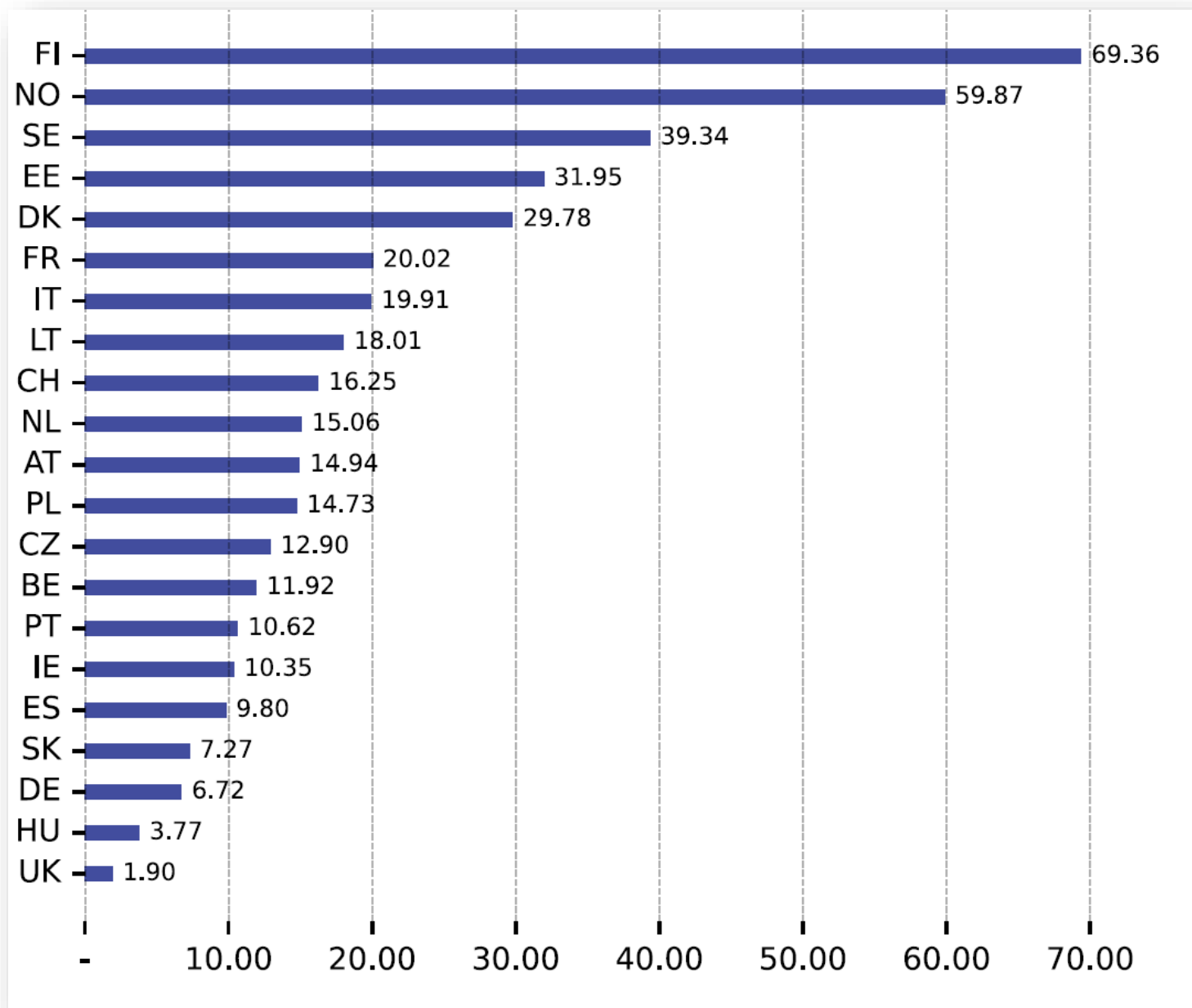
# European Market 欧洲市场

Heat pump sales

2022 per 1 000 households

2022年每1000户家庭平均购置的  
热泵数量

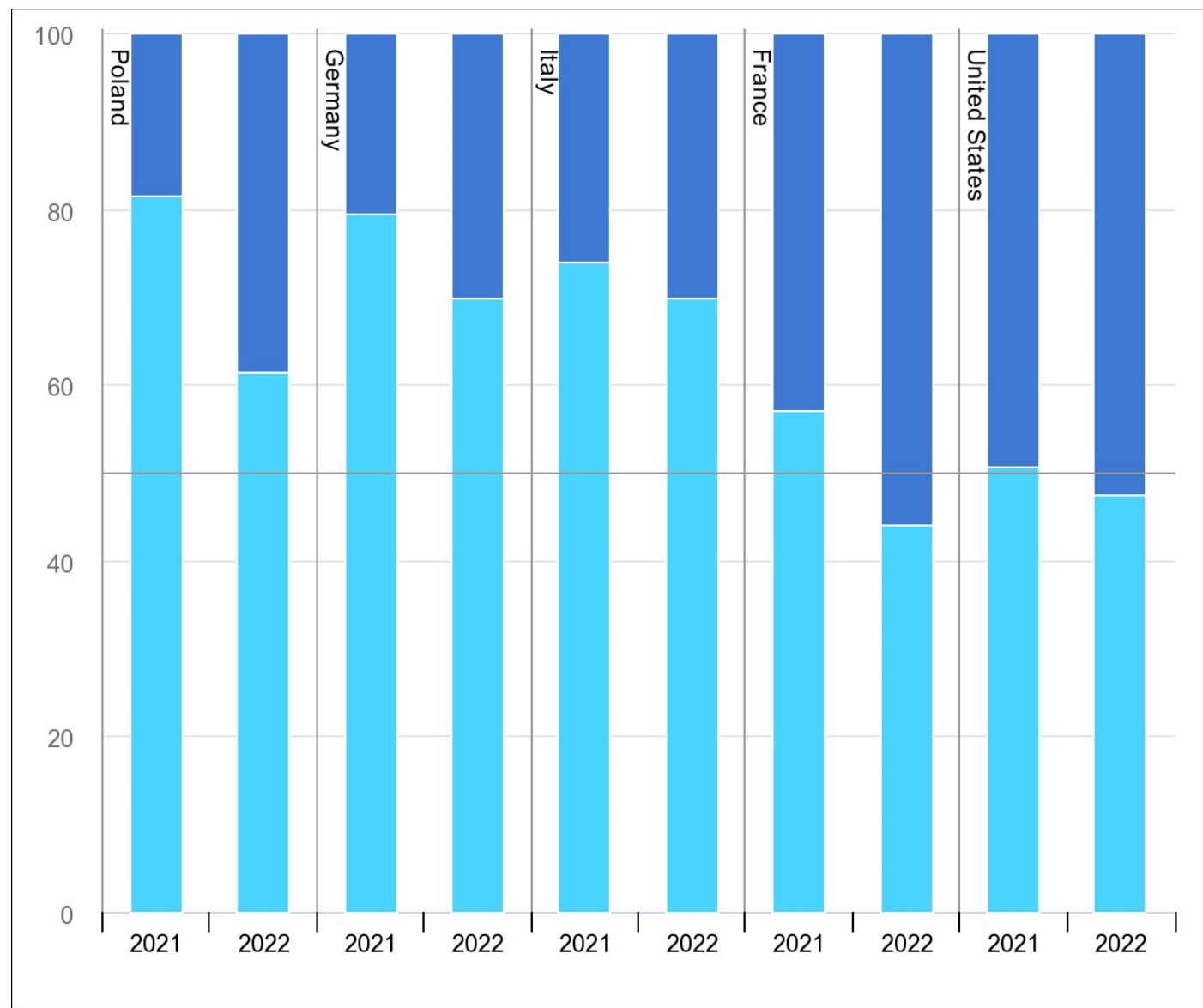
- The total number of connected heating heat pumps (both air-to-air and 'hydronic' or water-based) and hot water heat pumps in Europe is now **around 20 million**.
- 欧洲的供暖热泵（包括空气/空气，水循环，水）和热水热泵的总数目前约为2000万台。



# European Market 欧洲市场

Ratio between sales of heat pumps and fossil fuel-based heating systems for buildings in selected countries, 2021 and 2022

2021年和2022年欧洲一些国家建筑部门热泵和化石燃料供热系统销售比例

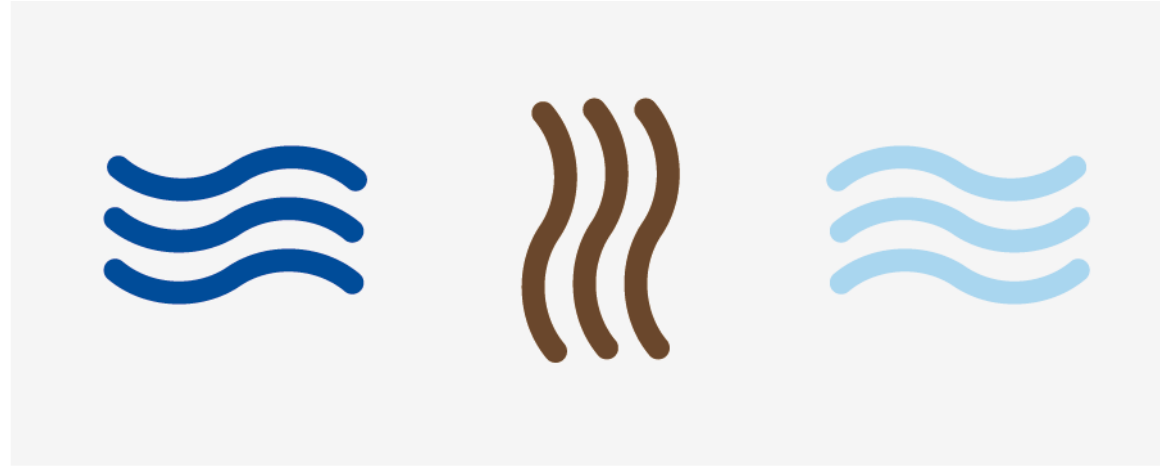


● Fossil fuel-based heating systems

化石燃料供暖系统

● Heat pumps

热泵



**Vielen Dank für Ihre Aufmerksamkeit! 谢谢大家!**

**Dr. Martin Sabel**

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**bwp**