BOSTON CONSULTING GROUP

FEBEG annual event

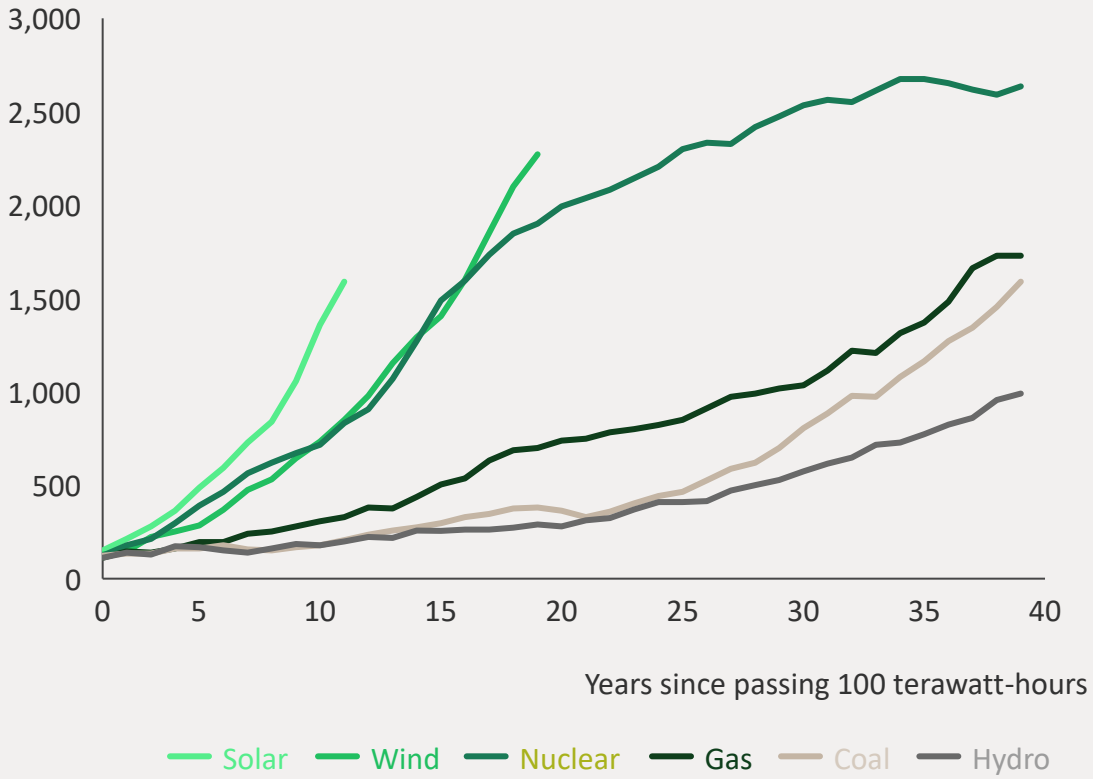
June 2025

01

Context – Why a demand-led transition is required

Wind and solar is growing faster than any other source in absolute terms …

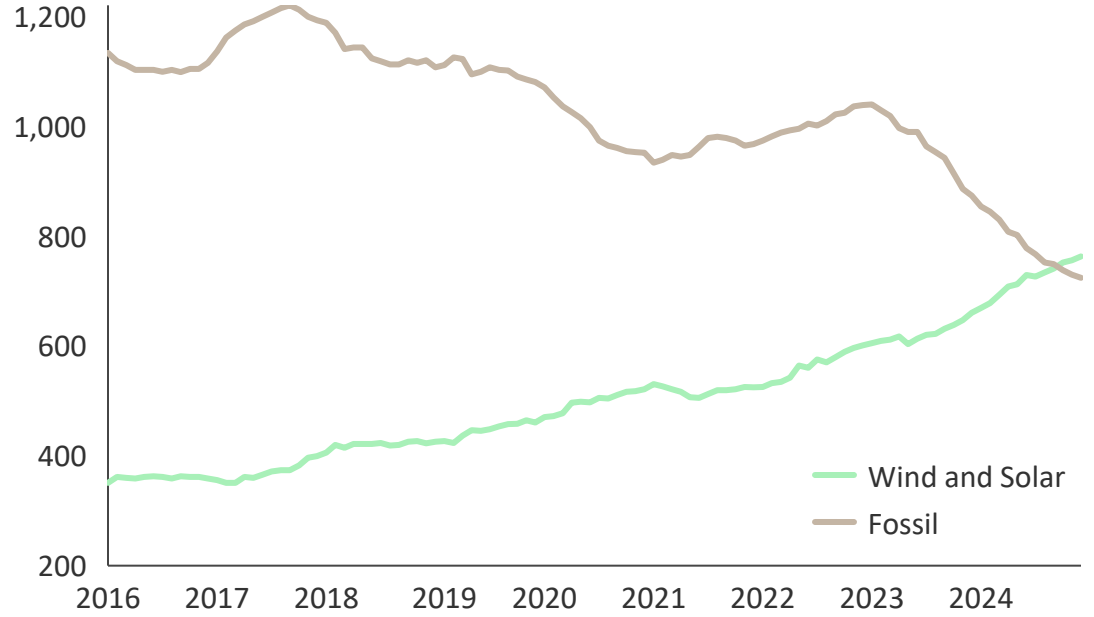
Annual generation, in TWh, worldwide



Note: Data through December 2024
Source: Ember

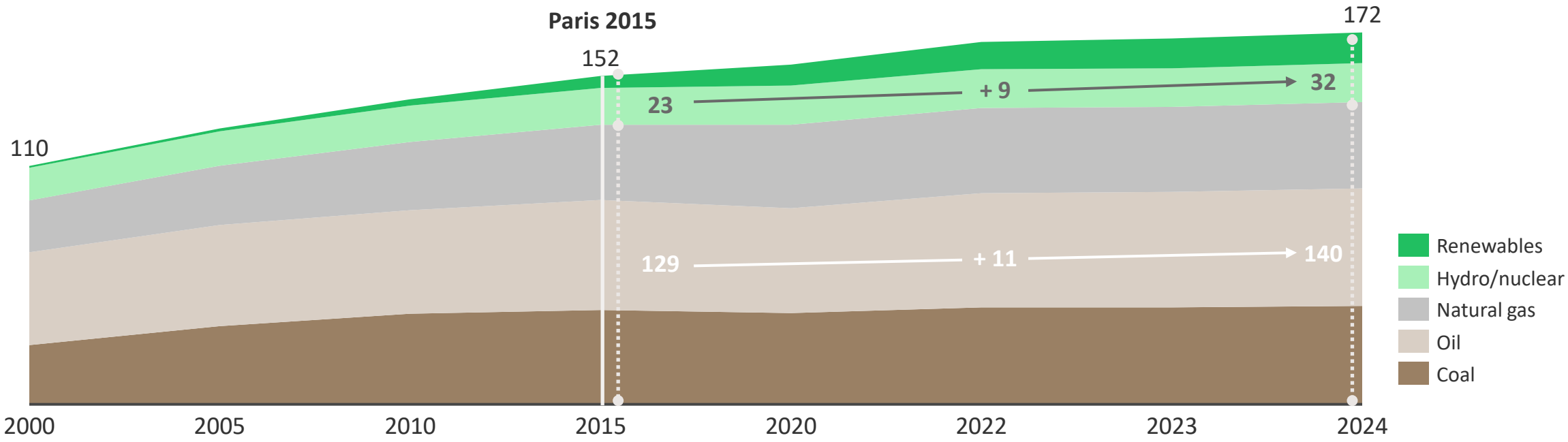
… with EU now generating more power from wind and solar than from fossil fuels

Annual generation, in TWh, in EU



However, we are still in an age of energy additions, not an energy transition, with still no peak coal demand, let alone peak oil demand

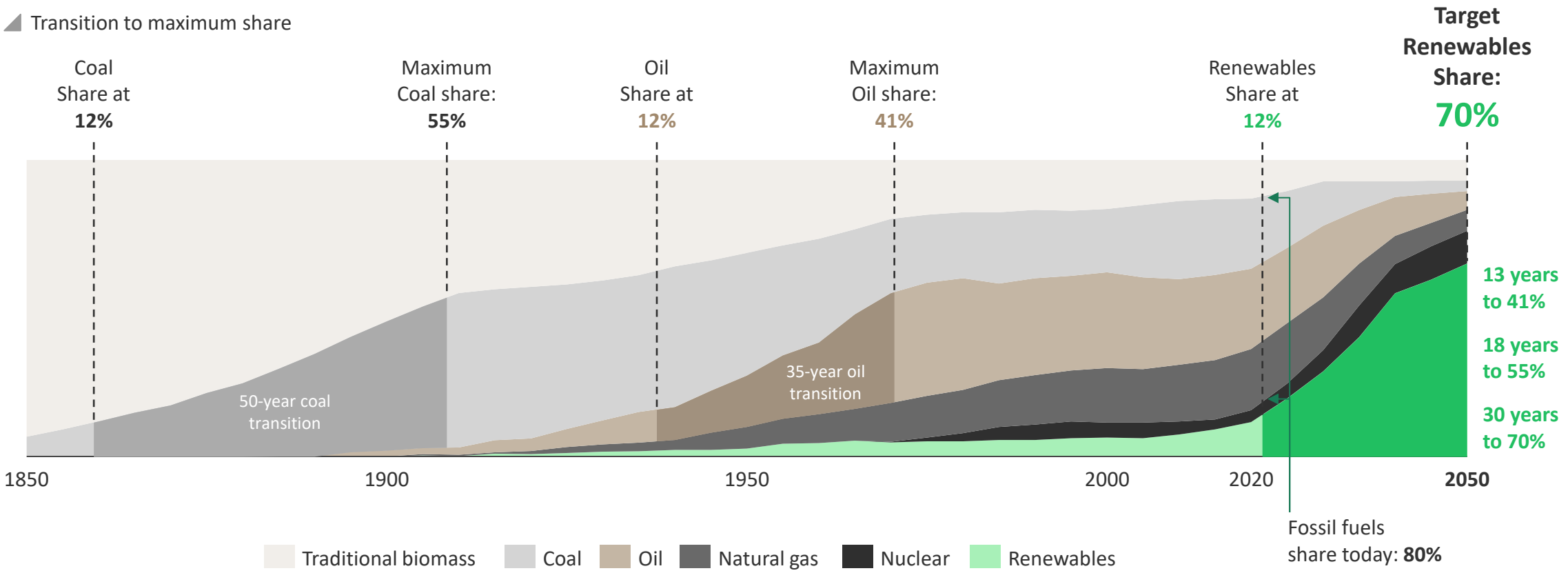
Since Paris (2015), the global economy added 20 PWh of primary energy use, made up of slightly larger share of hydrocarbons than renewables



Note: 1 PWh = 1,000 TWh
Source: 2024 Statistical Review of World Energy; Energy Institute

The Transition to Net Zero Needs to Happen Roughly 3x Faster Than Previous Transitions

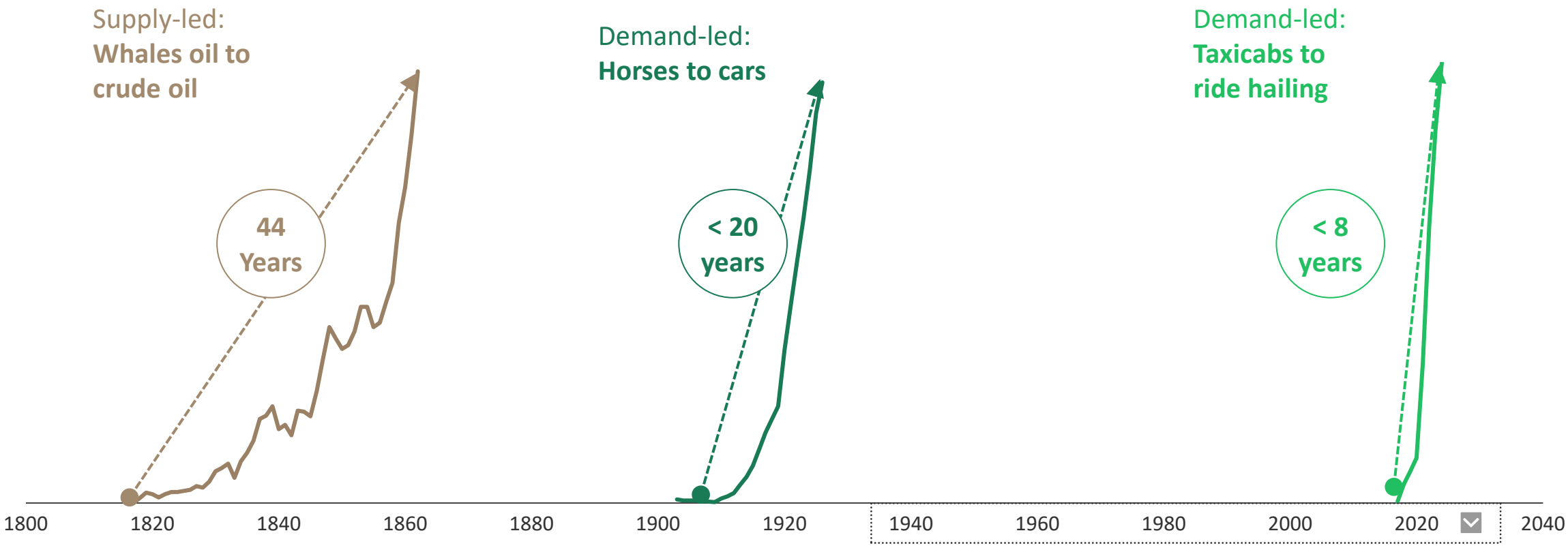
Primary energy supply by energy source[1]



Sources: Vaclav Smil, "Our World in Data" (2017); BP Statistical Review of World Energy; IEA, Net Zero Emissions by 2050; BCG CEI analysis.
Note: Renewables include biofuels, solar, wind, and hydrogen, among others.
[1]2050 estimates based on the Net Zero Emissions by 2050 scenario from IEA.

Demand-led transitions have proven to be faster than Supply-led ones

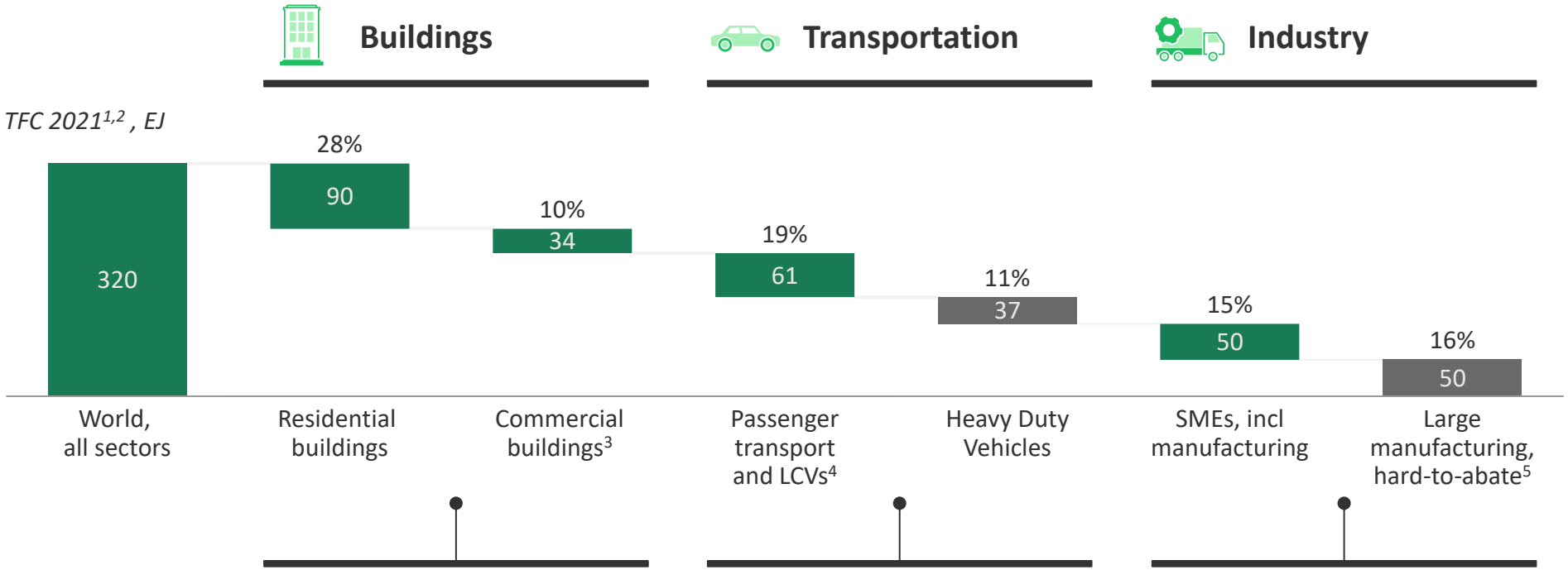
Years until new technology reached peak penetration of previous technology



Sources: The Guardian, GPM, TLC analytics, BCG Center for Energy Impact analysis.
Note: Data on trips for cabs and rid hailing are for New York City only.

Demand-led transitions can address 70%+ of end energy demand

Total final energy consumption *(in EJ, 2021)*



Key technologies available at scale

- **Rooftop solar, Battery storage, Heat pumps, Insulation**
- **Electric Vehicles**
- **Onshore wind, Solar, Battery storage, Heat pumps**

Demand-led transition focus segments

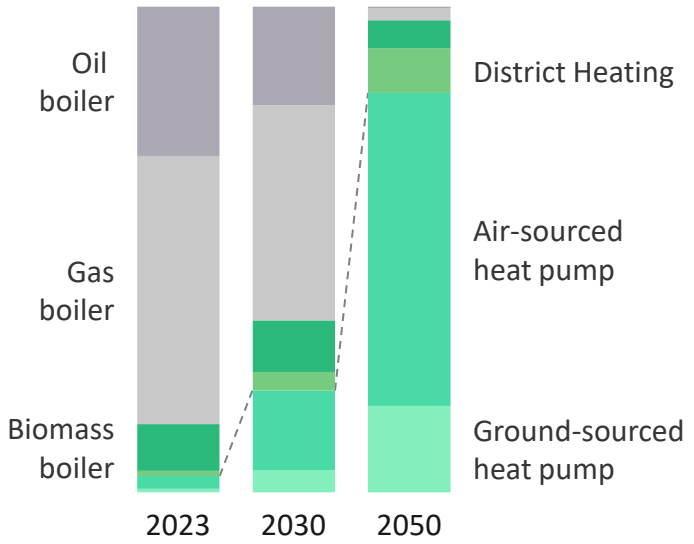
Non-addressable

1.'21 most recent country-level data from WBAL; 2. WBAL TFC in '21 is ~90 EJ lower than WEO '21 due to discrepancies in Buildings, Transport, Industry, and other end-uses (e.g. agriculture and fishing); 3.Includes data centers accounting for ~0.5% of TFC in '22, projected to double by '26; 4.Includes 2- & 3-wheelers; 5.Includes mining, construction & quarrying; 6. Assumes 80% of buses can be electrified immediately, excluding long haul transport; Source: IEA WBAL 2023, IEA WEO 2023, EIA IEO 2023, BCG CEI Analysis

Example for Belgium | Technologies to pursue the transition exist, yet customer adoption will be critical to decarbonize

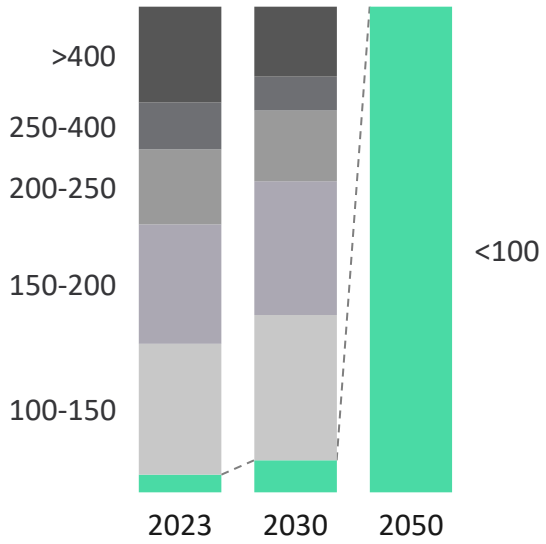
Heat decarbonization

No. of installations, Belgium

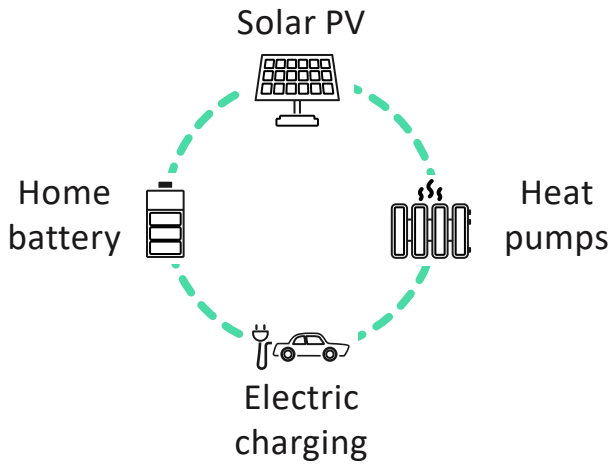


Scaled insulation of buildings

In kWh/m², Flanders



Incentivized flexibility for decentral energy



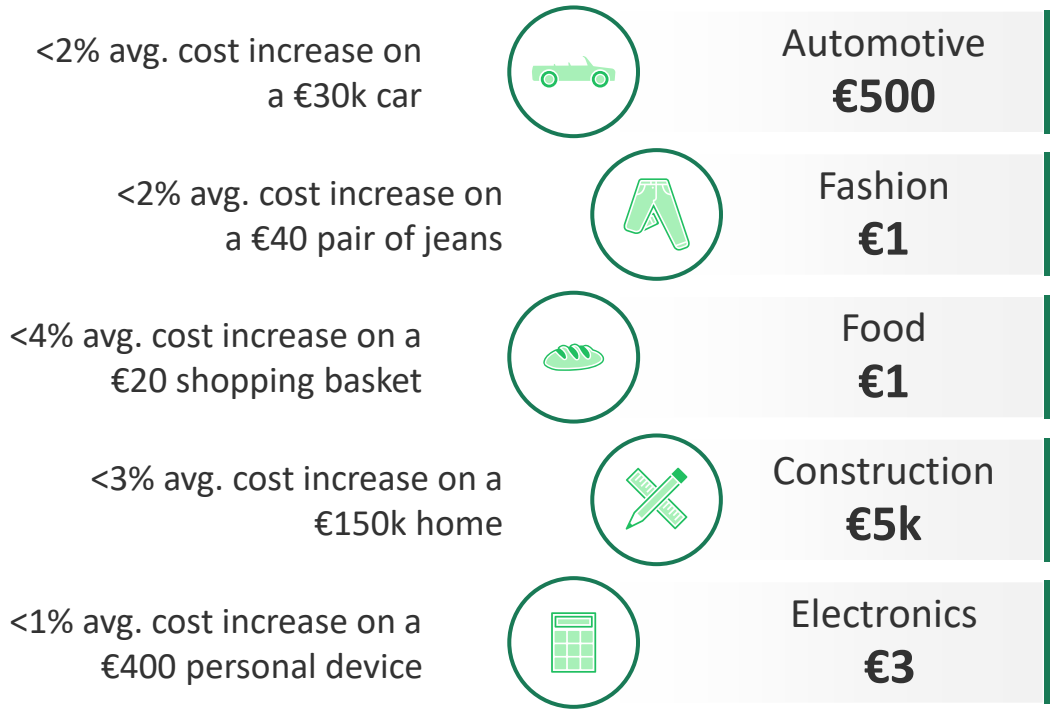
Note: 2030 insulation of buildings is based on Flemish regulation on EPC labels for newly bought buildings
Source: Elia; VEKA; SPW Energie; Brugel; IEA; Statbel; Heat Pump Technologies; National Energy and Climate Plan; BCG analysis

02

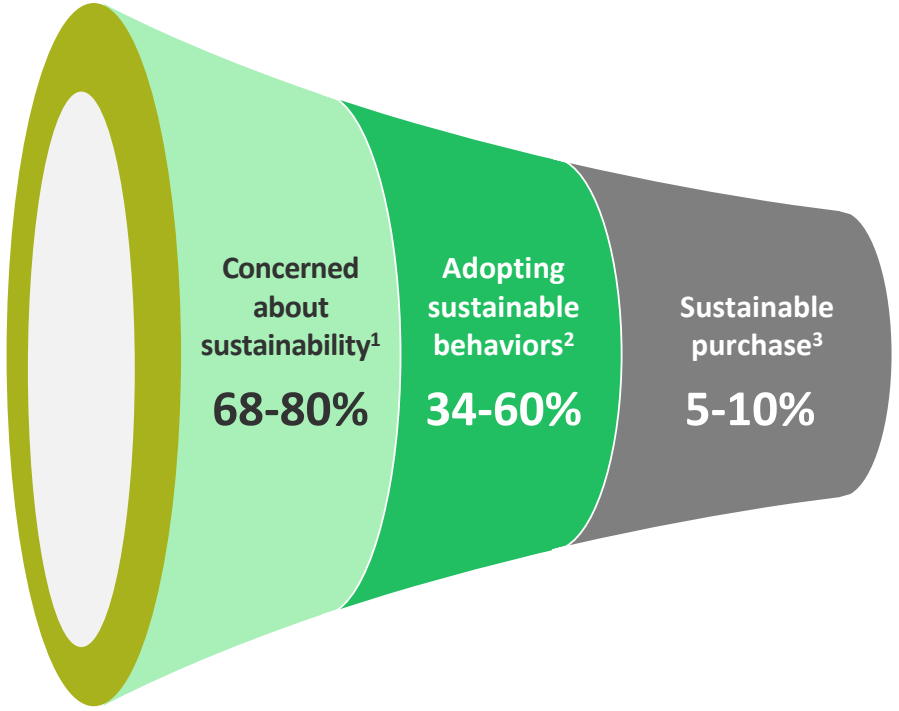
What is required to unlock and accelerate a demand-led transition

Sustainability alone insufficient to change demand – Most consumers will not pay a green premium even if proportionally small to purchase

Average green premium on consumer needed to decarbonise supply chain



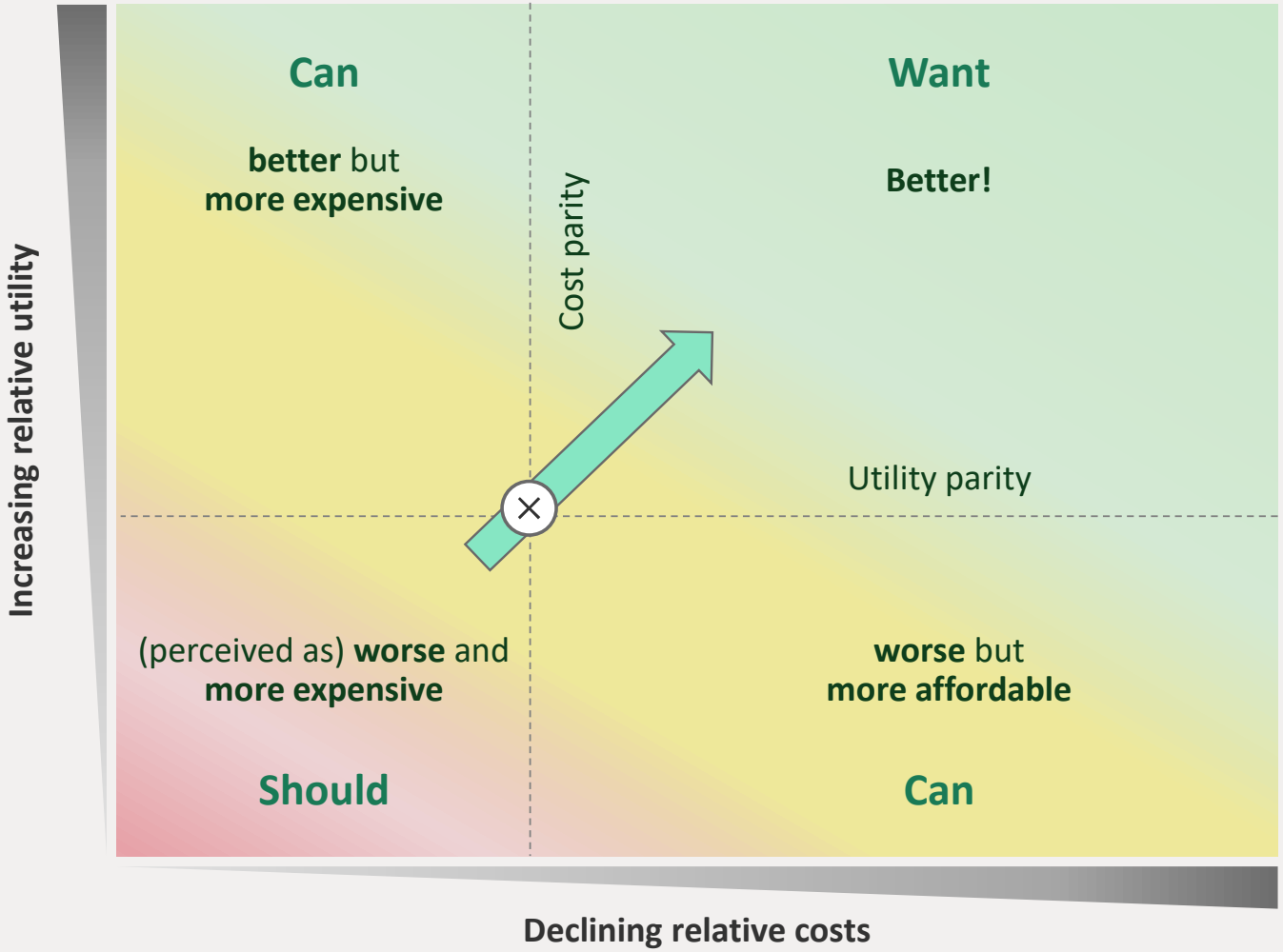
Standard conversion rate from awareness to adoption across industries



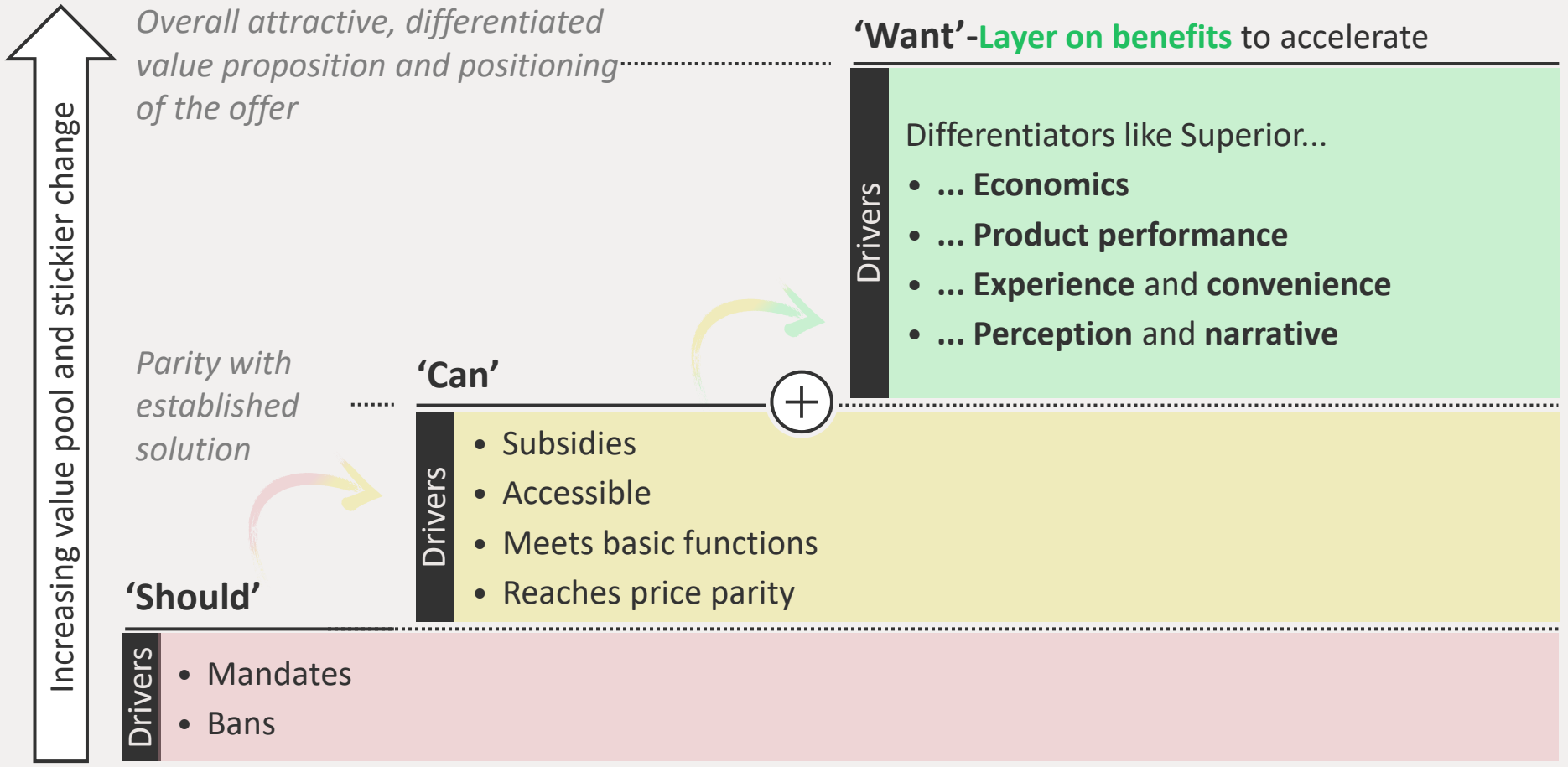
Source: BCG climate and sustainability consumer survey, June 2022. Note: Weighted market representative random sample only, n=11,836; countries include USA, Japan, Germany, France, Italy, China, India and Brazil. Numbers represent simple averages of % of respondents per country [1]Question: B4.2 How likely are you to be thinking about sustainability when you make day-to-day decisions? [2]Question: B5.2 How frequently do you engage in these sustainable behaviors? [3]Question: B5.2 How frequently do you engage in "purchase-related" sustainable behaviors? [4]India, China and Brazil excluded from electricity provider acting stage as not applicable, [5]Building material excluded from India due to low sample size.

Companies must create and design products that customers 'Want'

Sustainable products will need to offer superior economics, performance and customer experience, to move to 'Want'



Increasing value pool and stickier change possible if sustainable product reaches the “Want”-layer



Expected sales **market share**

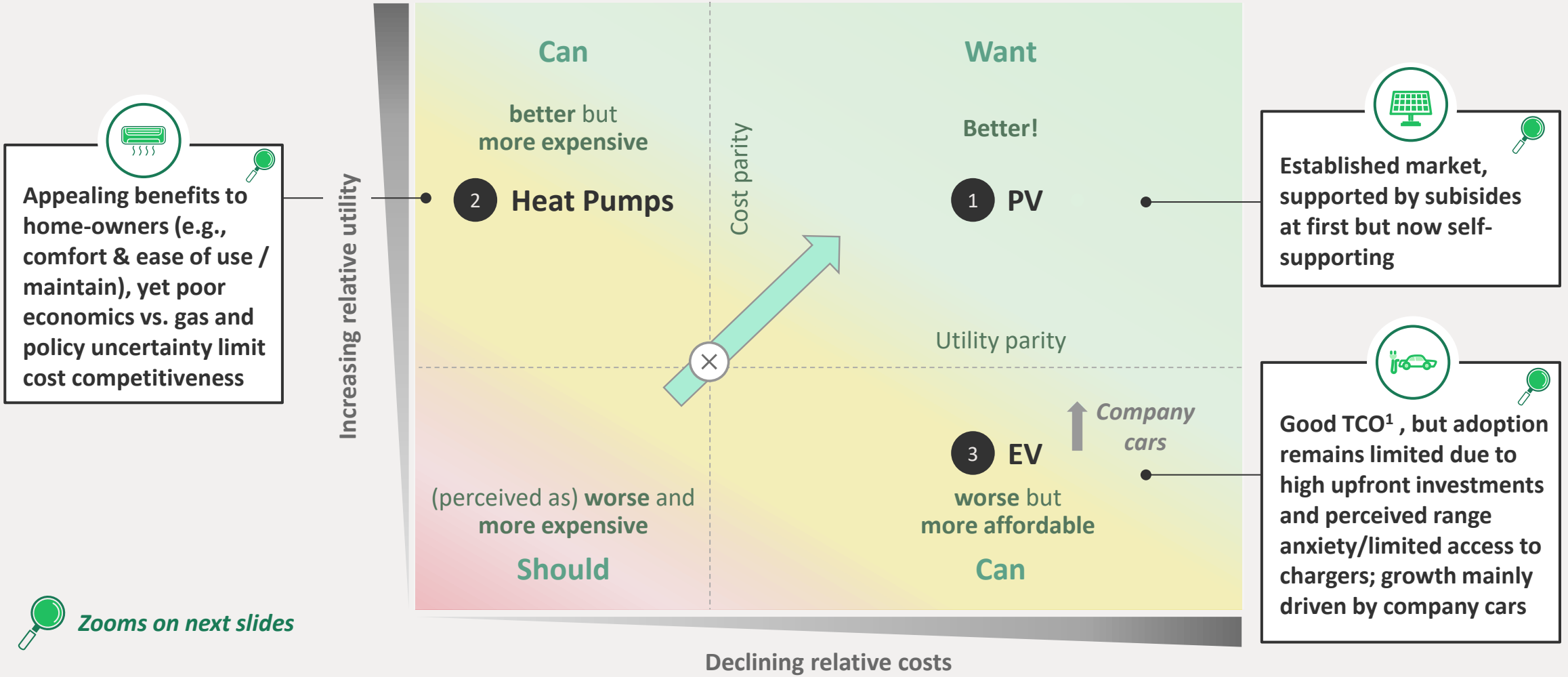
Significantly **above replacement rate**

Below **replacement rate**

Equal to mandated rate, below targeted rates

Source: BCG CEI analysis

Example for Belgium | EV and heat pumps not yet in 'Want' stage



Appealing benefits to home-owners (e.g., comfort & ease of use / maintain), yet poor economics vs. gas and policy uncertainty limit cost competitiveness

Established market, supported by subisides at first but now self-supporting

Good TCO[1] , but adoption remains limited due to high upfront investments and perceived range anxiety/limited access to chargers; growth mainly driven by company cars

Zooms on next slides

1. Total Cost of Ownership

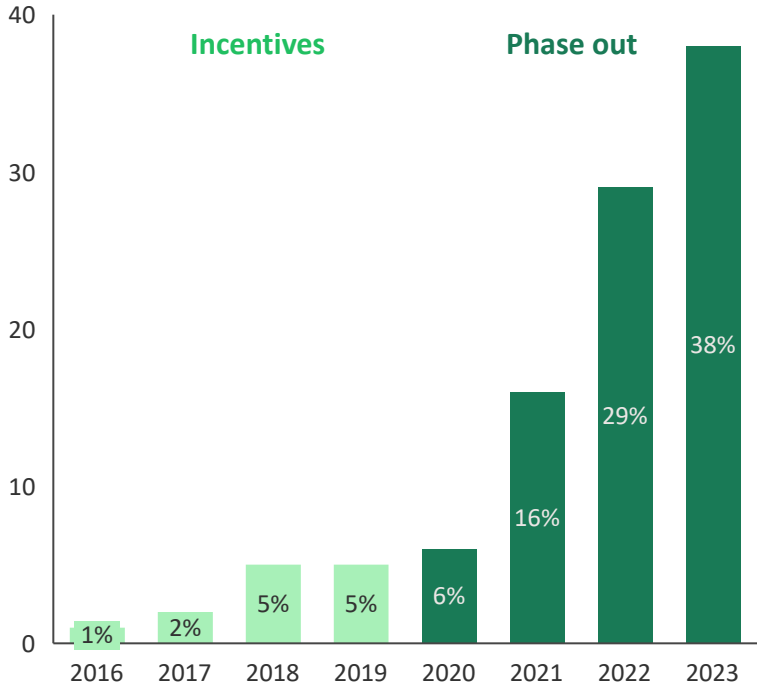
03

The role of energy companies and policy makers to support a demand-led transition

Regulatory support and subsidies need to be designed with ‘Want’ as longer-term end in mind

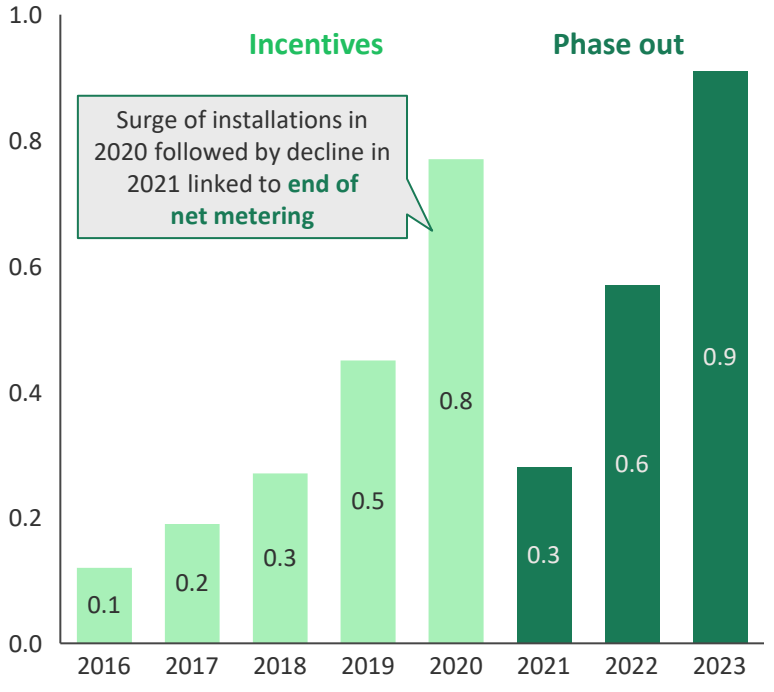
Success: Extended subsidies until industry has made sufficient inroads with consumers

% EVs in China as share of new cars sold



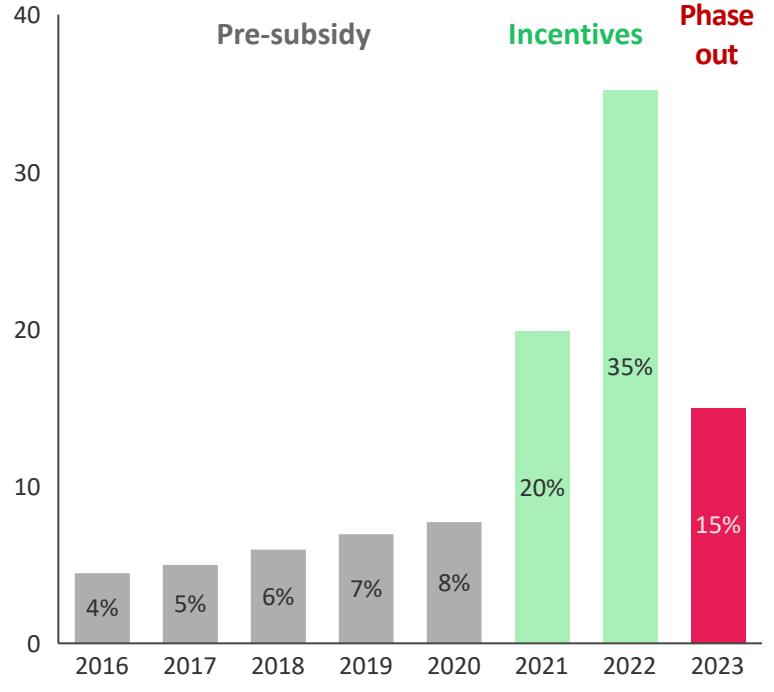
Short-term shock: Disruption after incentives phase out, but back on track on the long term

Annual installed residential solar capacity in Flanders (GW)



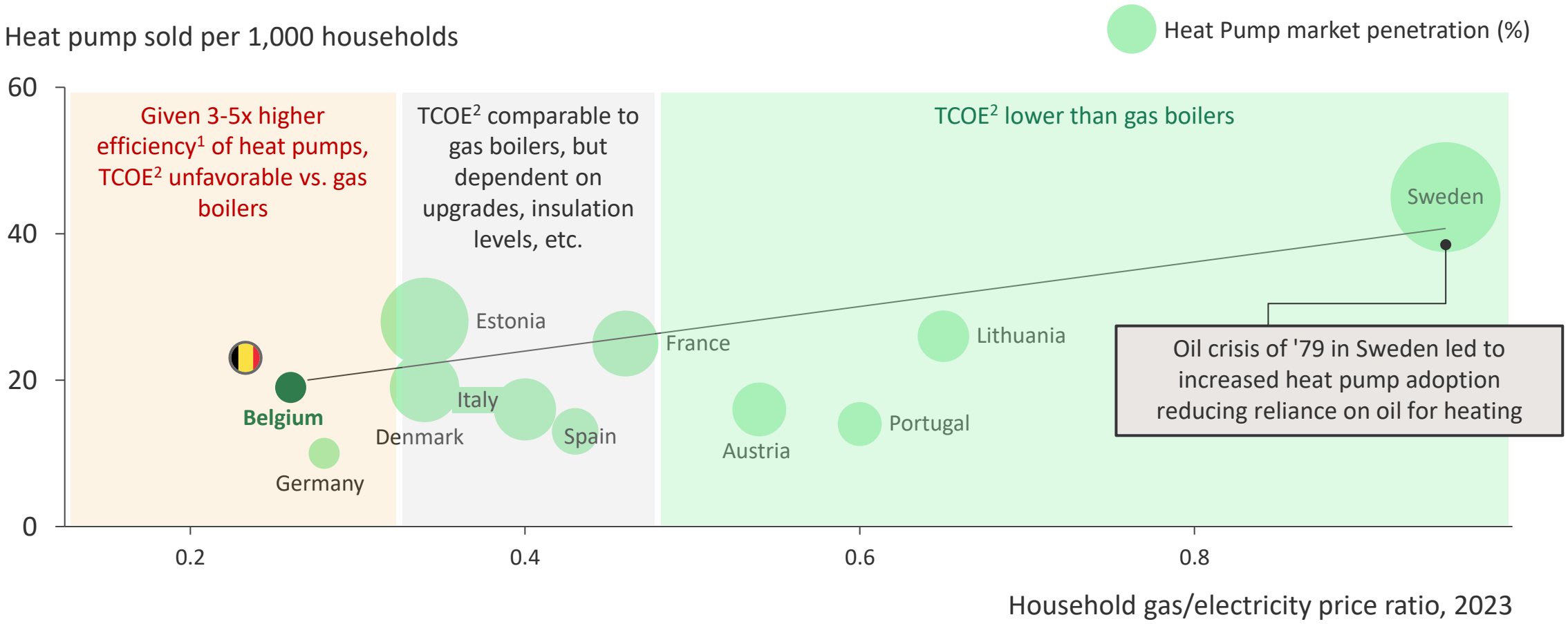
Failure: Aggressive but short-term subsidies foster boom-bust cycle with little long term gain

% Heat Pumps sales in Italy as share of retrofits and newbuilds



Source: Our World in Data, BCG Experts

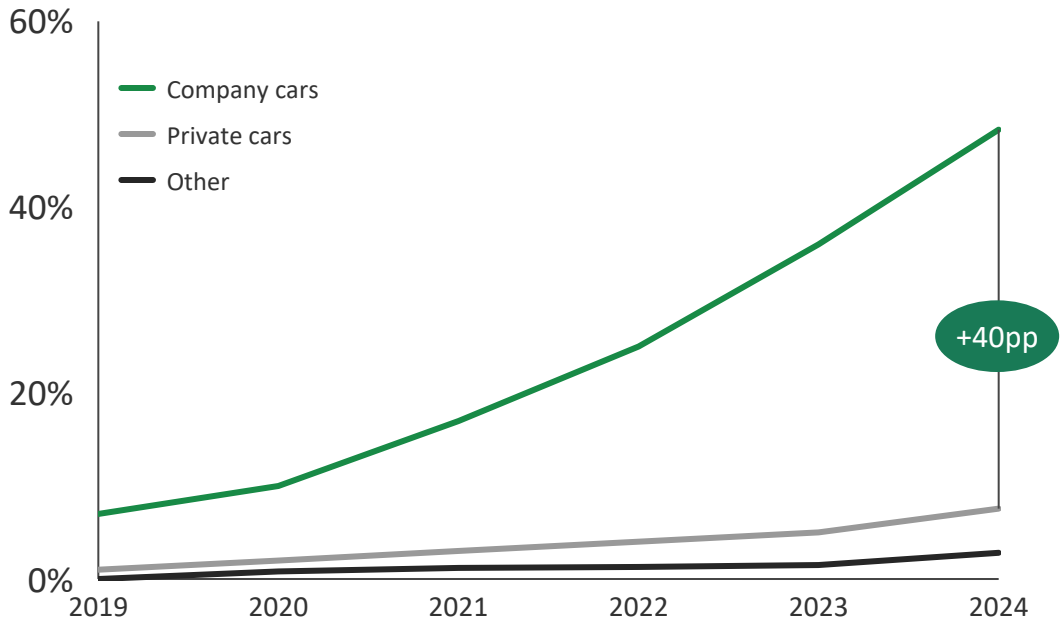
There is a correlation between gas/electricity price ratios and heat pump adoption; BE lagging behind



1. "The Future of Heat Pumps", IEA November 2022; 2. TCOE = Total Cost of Energy. Source: EHPA 2023; Eurostat 2025; Nesta 2023; Ofgem 2025; BCG CEI analysis

Company cars EV incentives have led EV market development, “utility” parity not yet met

Penetration rate of EVs & PHEVs in Belgium (%)



	2020	2022	2024
% of private cars in BE EV/PHEV fleet	27%	24%	18%
% of total cars in BE EV/PHEV fleet	2%	4%	8%

EV range anxiety is biggest concern for customers

~70% Of drivers cite "EV range anxiety" as entry barrier to buy an EV

~50% Of global drivers considers buying a BEV only if charging stations were as common as gas stations

Source: BCG EV charging market model; IEA; UVE; PSPA; Statista mobility market outlook; Expert calls; StatBel (2023); BCG analysis

GOV.UK

octopus energy

What you can get

You can get one grant per property. Current grants are available for:

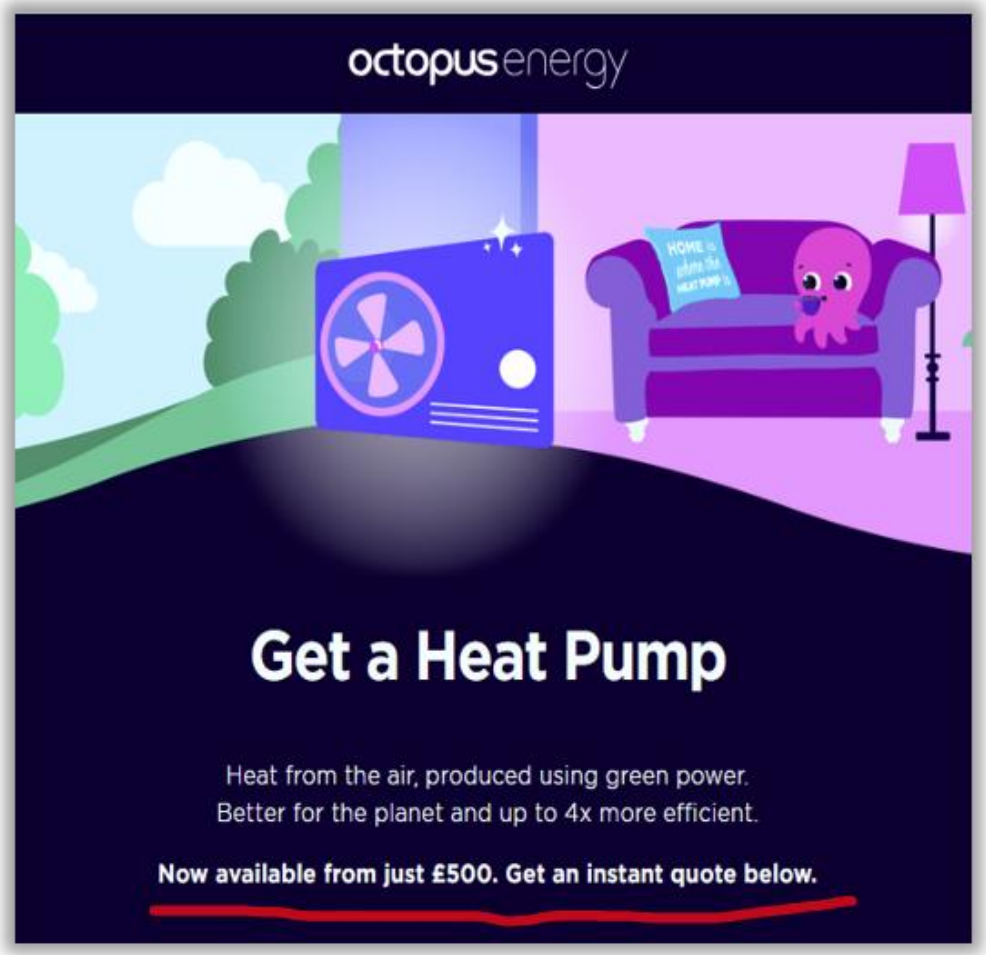
- £7,500 towards an air source heat pump
- £7,500 towards a ground source heat pump (including water source heat pumps and those on shared ground loops)
- £5,000 towards a biomass boiler

You cannot get a grant for a hybrid heat pump system (for example a combination of gas boiler and air source heat pump).

The system you install must meet certain standards, such as minimum efficiency levels (your installer can advise you on these).

The maximum capacity is 45kWth for individual systems and 300kWth for shared ground loops.

Find out more about heat pumps and biomass boilers.



AIRA

Finally. Heating that doesn't cost the earth.

Heat pumps use the fresh air and a small amount of electricity to heat your home and water. And the last time we checked, fresh air was free. That's why heat pumps not only slash CO_2 emissions but also shrink your heating costs.

- £7,500 government grant available
- Save up to £550 a year on your energy bills*
- Slash your home heating CO_2 emissions by 100%*

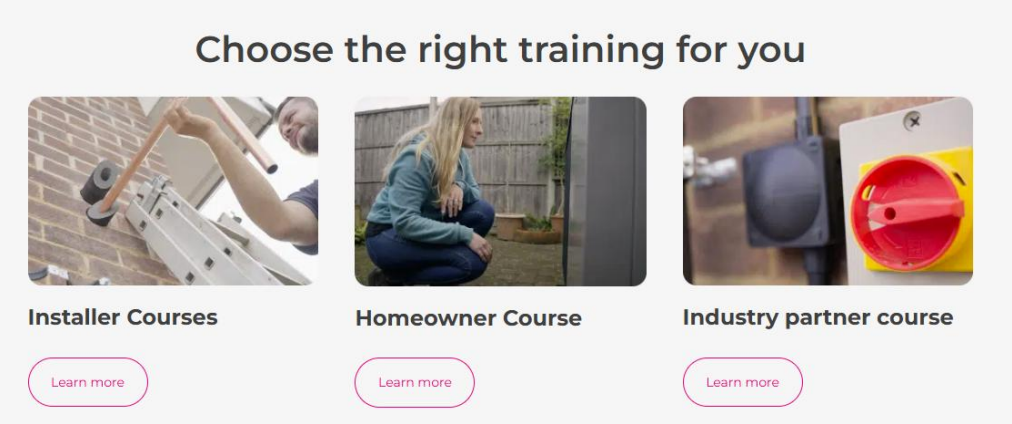
About our heat pump finance

With Aira, your switch to a heat pump is hassle-free from start to finish. And that includes applying for finance. No more upfront costs. No more multiple applications and credit checks. Just affordable monthly payments.

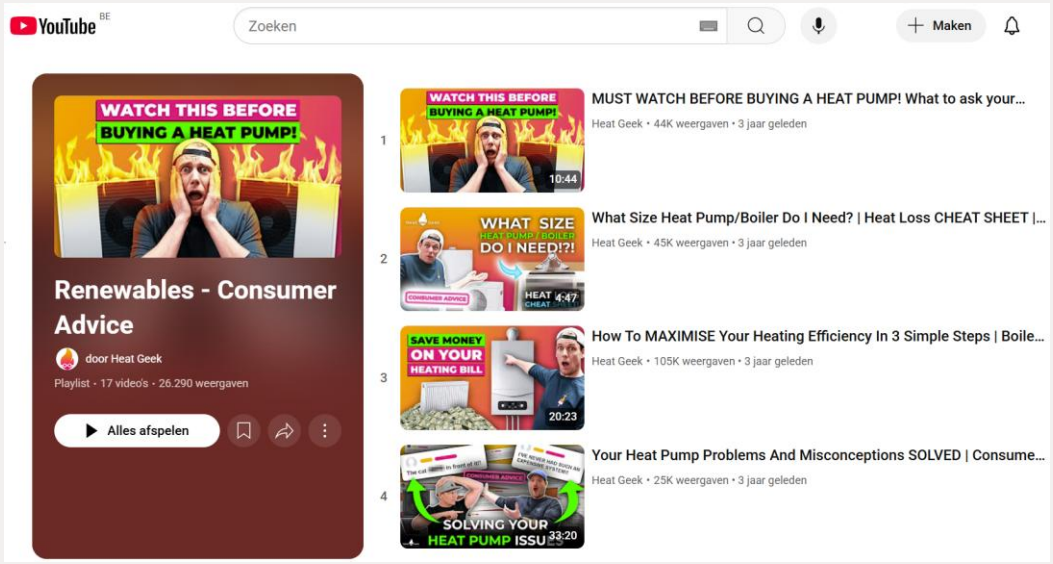
- Flexible payment terms of either 5 or 10 years
- Zero upfront costs
- Monthly payments from £68.55 p/m
- 9.9% fixed interest rate
- Early payment options

Heat Geek

Renew the Heating Industry



Online Training courses for installers, homeowners and Industry partners



Joining the network as a heat pump installer gives **access to digital tools simplifying and streamlining the installation process,** allowing installers to **increase first-time-right and subsequent profitability levels**

Summary - Key lessons learned

For Policy makers / regulators

1. **Design subsidies** in a way that allows the industry **to build scale** and pass the influx point for broader adoption
2. **Remain consistent over time** – avoid regulatory back and forth bringing uncertainty to the industry
3. **Take a holistic approach** – avoid mandates and "bans" if product fundamentals are not in place
4. **Contribute to the sustainability narrative** – e.g., assess market participants not just on price but also on sustainability attributes

For Companies / Industry participants

- Evolve **to customer-centric** product design, launching **superior products** that remove main customer frictions, e.g.,:
  - Drastically **simplifying administrative burden** of requesting grands / subsidies – *Example 1: Octopus*
  - **Alleviating burden of high upfront capital cost** through innovative financing schemes – *Example 2: AIRA*
  - Offering **seamless end-to-end asset installation** journeys – *Example 3: HeatGeek*