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# Making a successful transition to renewable heat - Challenges and key success factors

OFATE / DFBEW

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# Carbone 4 Consulting expertise

With the experience gained with hundreds of customers since its creation, Carbone 4 Consulting supports companies and organizations throughout their value chain.

To advise our clients on their entire climate and business strategy, our approach is organized along two main axis:

## **CLIMATE STRATEGY:** TOWARDS GLOBAL NET ZERO

### **REDUCE YOUR ENVIRONMENTAL IMPACT**

- Measure and understand carbon footprint in your value chain
- Define a realistic 2°C-compatible strategy
- Drive emissions reduction
- Contribute to global carbon neutrality

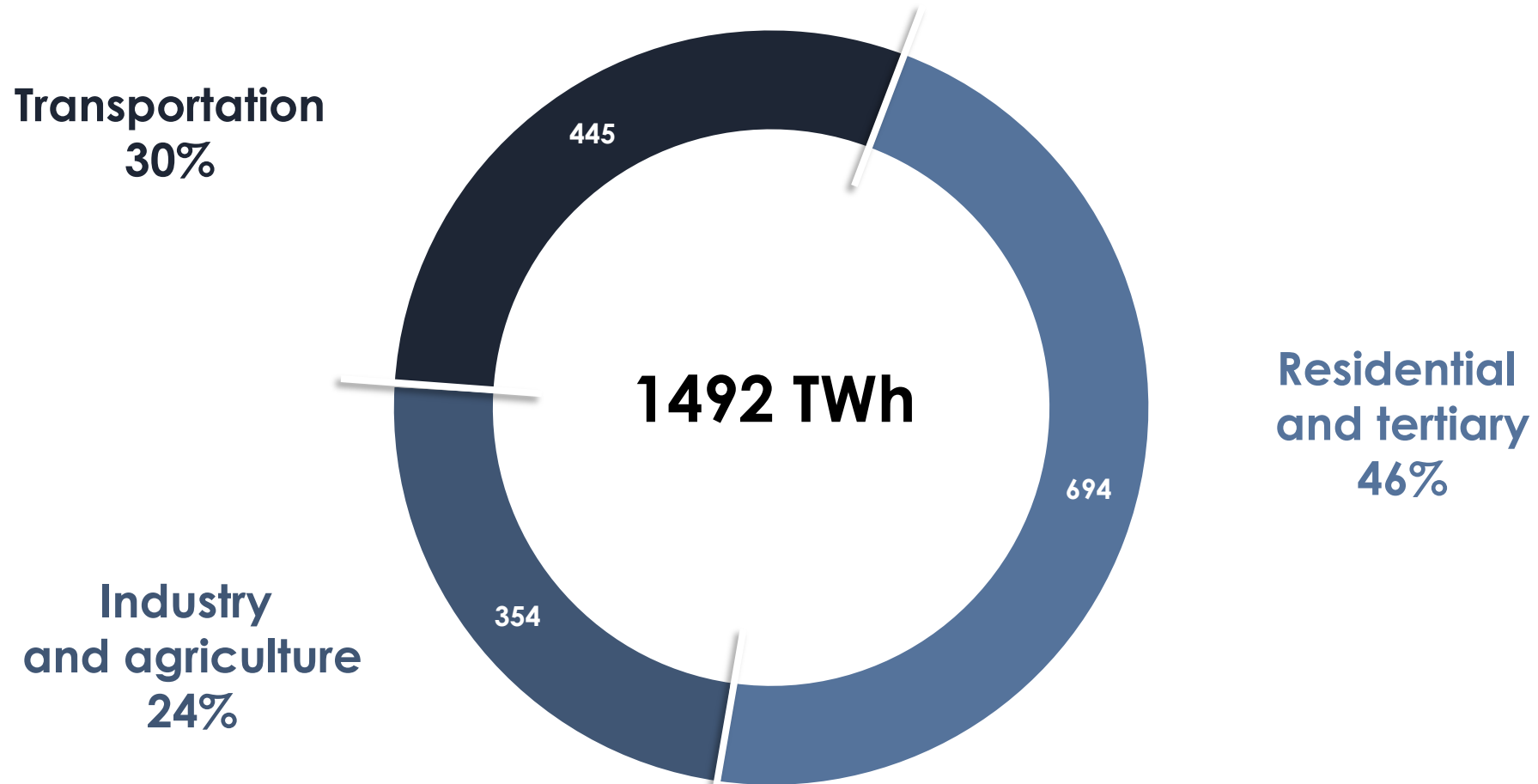
## **BUSINESS STRATEGY:** TOWARDS A RESILIENT ACTIVITY

### **REDUCE CLIMATE IMPACT ON YOUR ACTIVITIES**

- Evaluate the strategic and physical risks
- Identify opportunities
- Make decisions in an uncertain context
- Design and implement an adaptation & resilience plan

# France – 2020 | Final energy needs breaks down between transportation, industry, residential and tertiary

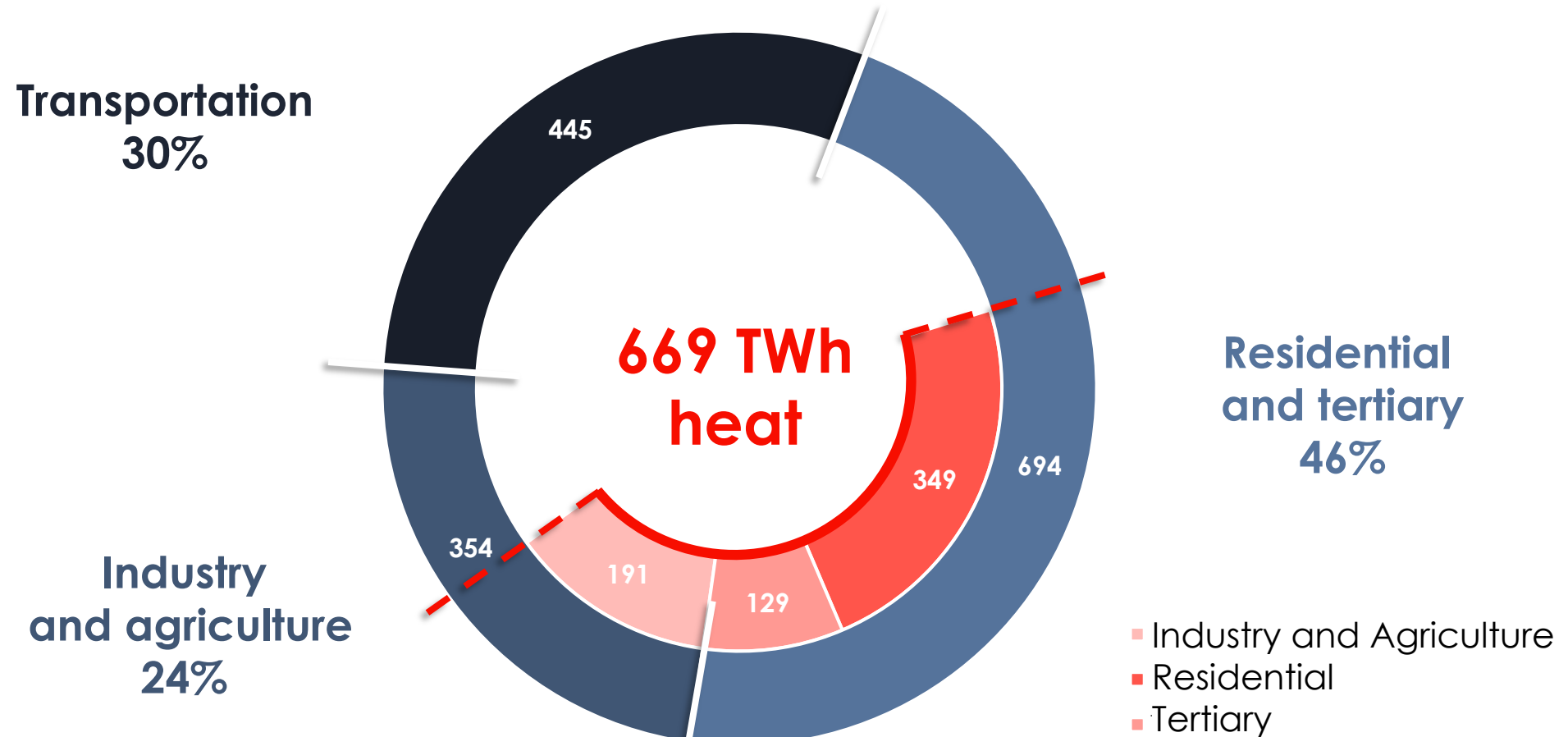
Final energy consumption in France per sector (2020)



Sources : French energy balance for 2020 (January 2022) DataLab MTE, SDES, Carbone 4 analysis

# France – 2020 | 45% of final energy has been used to produce heat

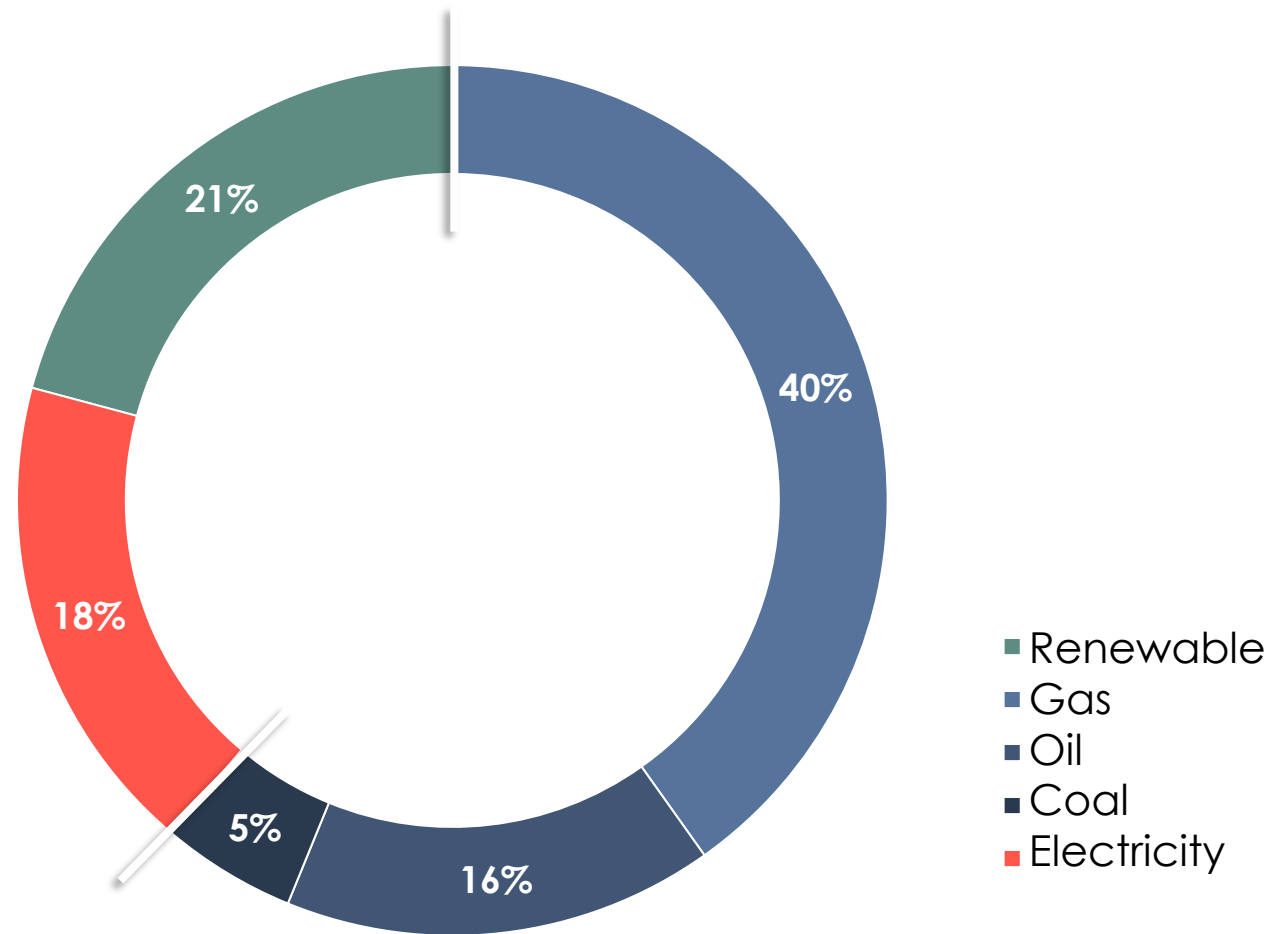
Share of heat use in final energy consumption (2020)



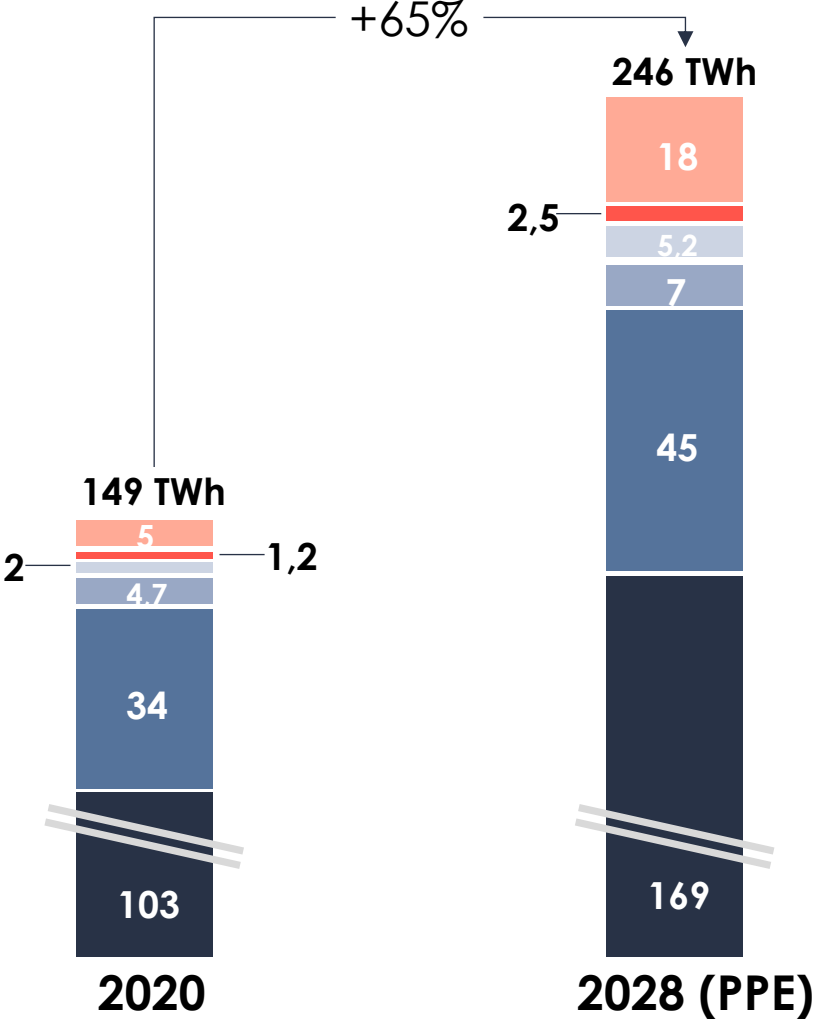
Source : French energy balance for 2020 (January 2022) DataLab MTE, SDES, Transition(s) 50 ADEME, Carbone 4 analysis

# France – 2017 | 61% of heat is produced from fossil fuels (excluding electricity)

Heat production break down (2017)



# France | Current speed of deployment isn't fast enough to reach the goals of the French 10-year energy plan (PPE)

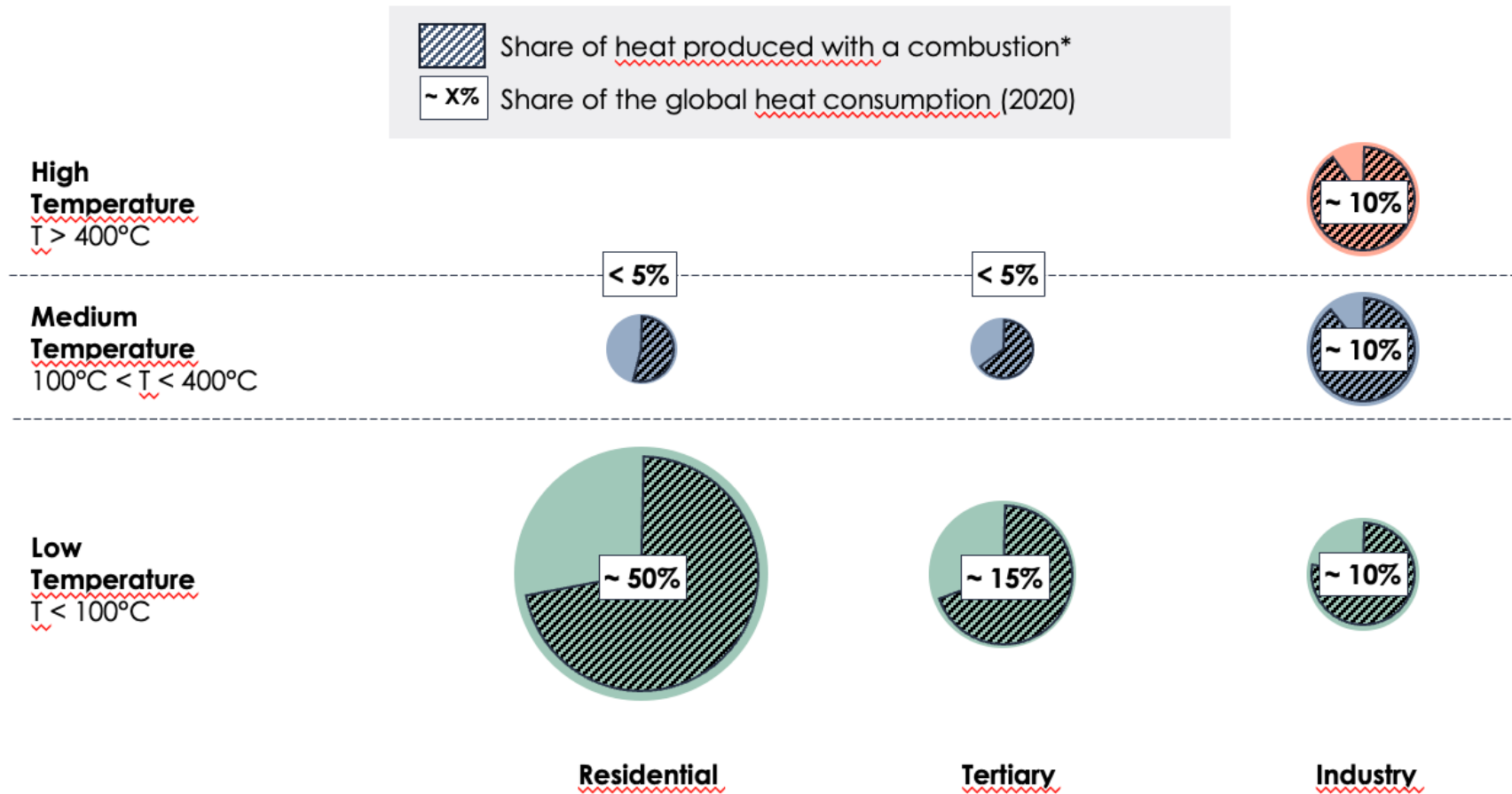


Technology	Compound annual growth rate	
	18-20	20-28
Biogas	-1%	<b>+19%</b>
Solar thermal	+1%	<b>+9%</b>
Deep geothermal energy +5%	+5%	<b>+13%</b>
Ground Heat Pump	+3%	<b>+5%</b>
Air Heat Pump	+10%	<b>+4%</b>
Bioenergy	3%	<b>+6%</b>

Perimeter : Metropolitan France (mainland).  
 Source : Renewable heat overview, ADEME 2019, 2020, 2021, PPE, Carbone 4 analysis

# France | Low-temperature needs represent the bulk of heating needs, particularly in the residential and tertiary sectors

Distribution of heating needs by temperature and by sector in France



\*Including renewables. Sources : Consommations d'énergie par usage du résidentiel (2020, SDES), Consommation énergétique du secteur tertiaire (CEREN, 2020), Données sur l'énergie dans l'industrie (CEREN, 2016), Répartition par secteur de la consommation finale de l'industrie (SDES, 2019), Heating without global warming (IEA), Carbone 4 analysis.

## Synthesis | Existing brakes

- There is still a strong **lack of knowledge** and high confusion between heat and power among stakeholders (cities, firms and citizens).
- **Cost structure** may differ from what customers and buyers are used to: the change of heat production sources **calls for a change** in the way energy is sold, bought and financially sustained by the authorities.
- Most of heat needs are **low temperature needs**. Renewables such as geothermal energy or solar thermal energy are well suited to meet those needs, but **customers infrastructure aren't always ready**.



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- Efforts and targets among economy sectors **aren't always coordinated and can lead to conflicts for resources, space**, etc. To reach our common climate goals, each country in the EU must build a “**National Energy and Climate Plan (NECP)**”, which should **identify and arbitrate those conflicts**.
- **Biomass energy** has a great role to play but shouldn't be considered as a magic card and should be used wisely.
- **Heat production is like precise clockwork**: each project has unique local resources, needs, industrial processes, etc. Those projects **require knowledge and manpower** to be led from start to finish.

## Synthesis | Existing levers (1/2)

- **Heat networks** are not very developed in France but are an **efficient way to decarbonize** heat consumption. Decarbonizing existing networks and building new ones helps:
  - Reach large amounts of heat needs at once
  - Blend multiple heat sources to **take advantage of each's specificities** (temperature, timing of needs, intermittence, etc.)
- Renewable heat production infrastructure are **generally well accepted**, even close to where people live. This is beneficial, as renewables use 10 to 100 times more space than fossil equivalents.

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- European countries have the **skills and industries required** for underground studies, drillings, thermal solar panel manufacturing, sustainable forestry management, etc. We should train more people and scale up production plants to build on this strong position.
- **Building thermal renovations** will lead hundreds of thousands of skilled craftsmen to visit European buildings in the next few decades: changing the heating source will often be on the table: **we shouldn't miss this opportunity.**

## Synthesis | Existing levers (2/2)

- The French 10-year energy plan (PPE) aims at **producing 38% of consumed heat from renewables sources in 2030**: those objectives seem coherent with reaching carbon neutrality in 2050: **let's go for it!**
- **The European “Fit for 55” package**, through the RED, aims at reaching **45% of renewable energy in final consumption in 2030**. Depending on the final negotiations, some sectors, such as heating in buildings, could have binding targets.