# WHY DISTRICT HEATING ?

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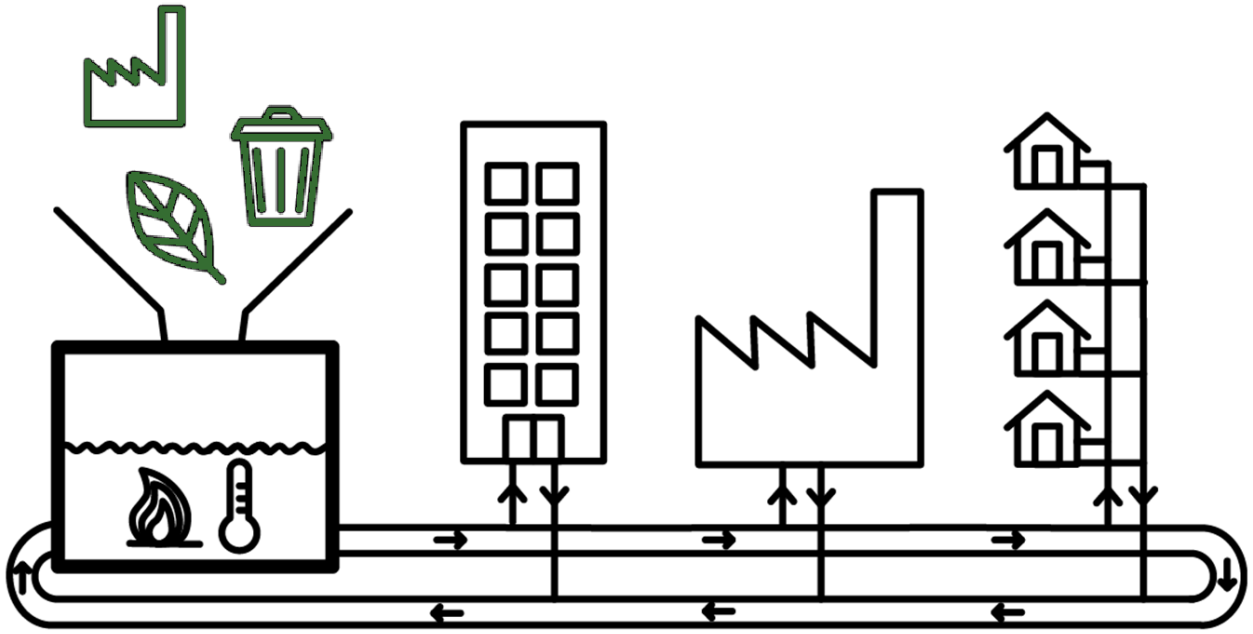
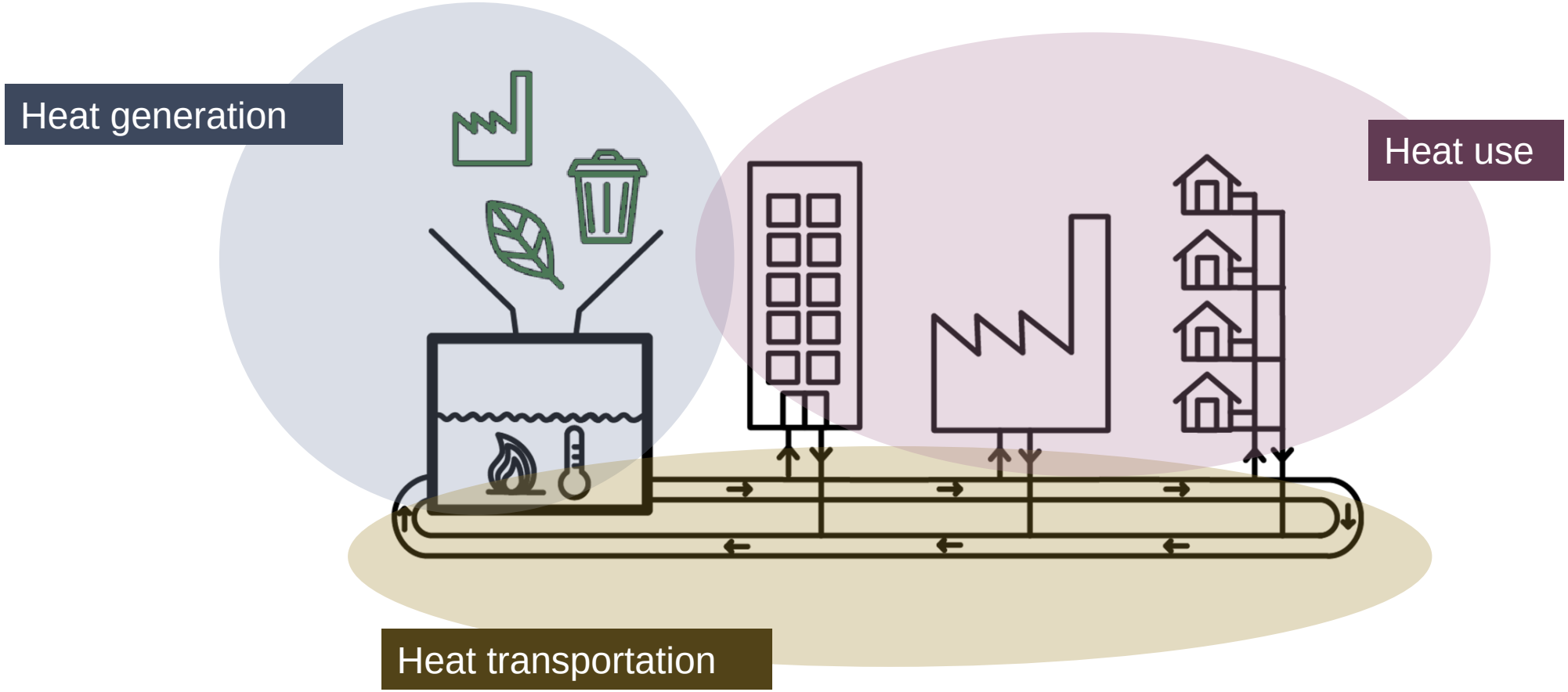
# Introduction: DH system and its components



# Introduction: DH system and its components



# Introduction: DH system and its components

Diverse fuel mix empowers decarbonization

Utilization of fuels that otherwise would be wasted

District heating– comfort, optimal for densely populated areas

Heating network – empowers demand-based system operation

# District heating is optimal for densely populated areas

90% of apartment buildings in Sweden are heated with DH

DH is the main heat source for 253 out of 290 Swedish municipalities

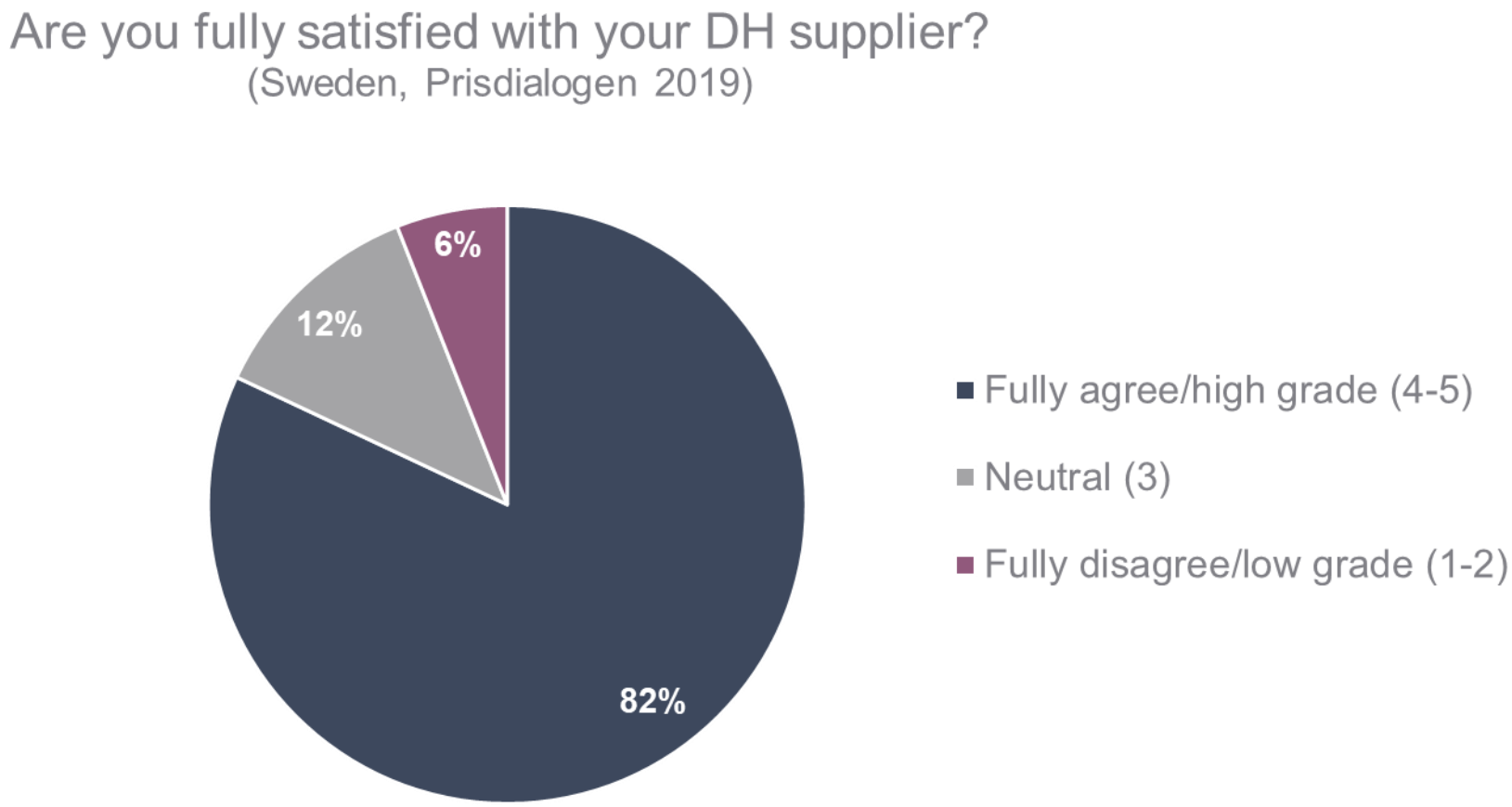
Town in Sweden

# FOCUS:
# DH CUSTOMERS

# Modern DH delivers high-quality heat

- Reliable heat supply
- Stable temperatures for consumers
- Limitless supply
  (a shower is not limited by a water storage capacity)
- Easy to use, requires no engineering background from customers

# Customers in Sweden are happy with DH




Source: Prisdialogen 2019

# FOCUS:
# FUEL DIVERSIFICATION

# DH is a platform for decarbonization of heating

Swedish achievements:

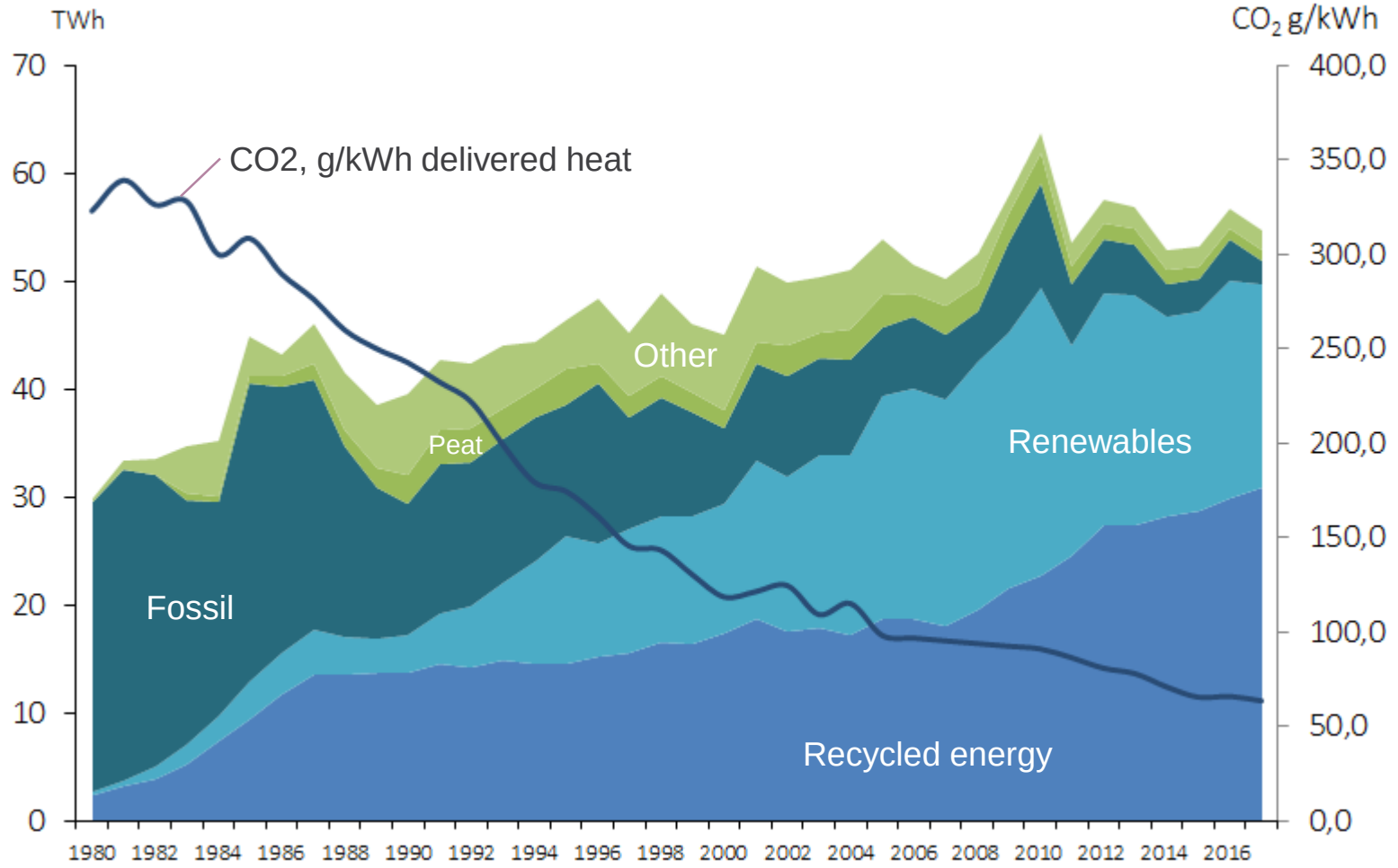
- Phasing-out fossil fuels:

  91% fossil in 1980
  17% fossil in 2000
  5% fossil in 2018

- Reduction in CO2 emissions: -82%
- Recycled energy: 52%

  21% waste incineration
  11% flue gas condensation
  **8% waste heat**
  12% other

Supplied energy for DH production in Sweden



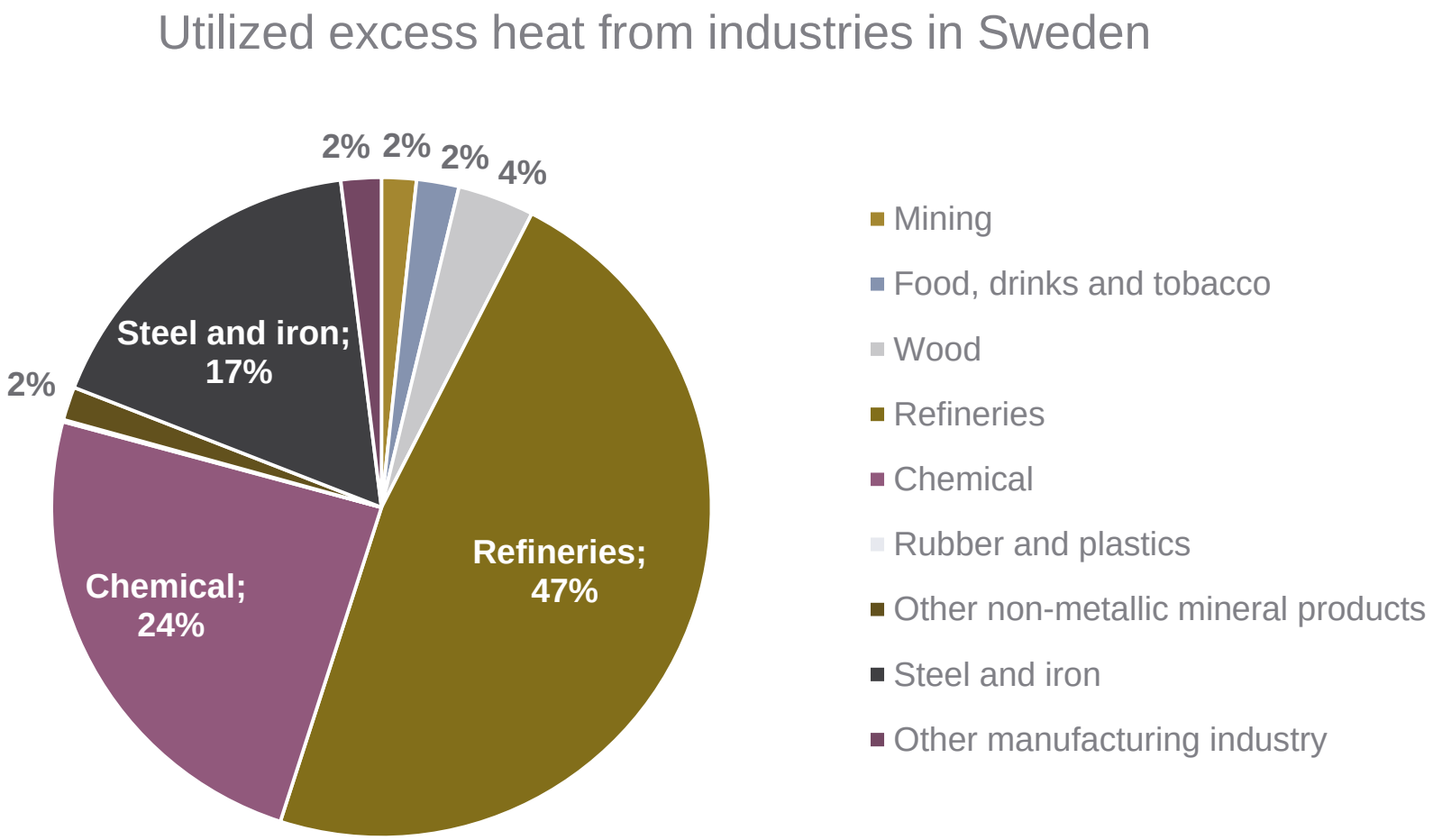

Source: www.energiforetagen.se

# Waste heat

Heat as by-product from industrial processes utilized for DH

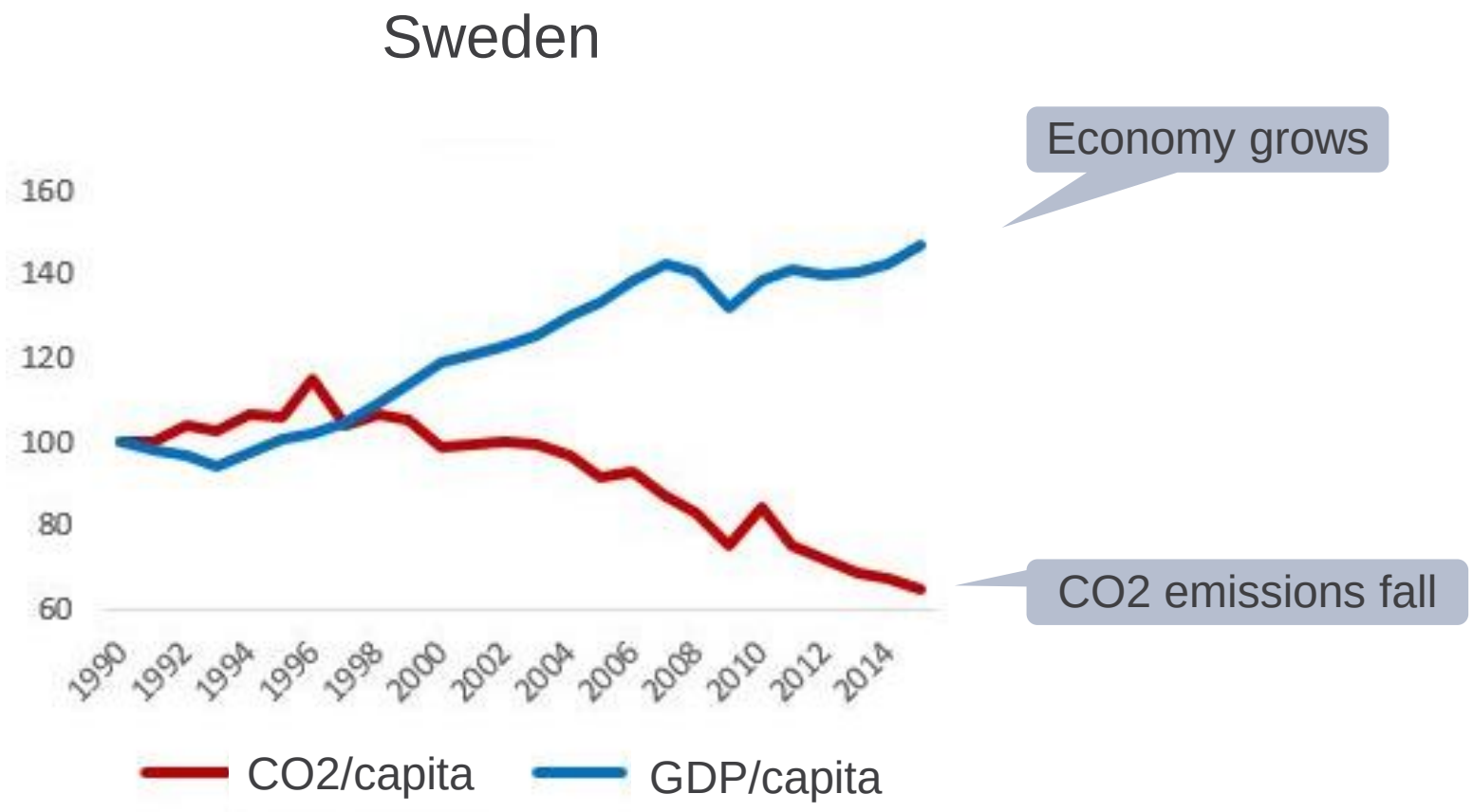
+Additional income for an industry
+Cheaper heat source for a DH company
+A greater value for used fuel

# Waste heat




Source: Swedish district heating association (2009)

# Unbundling of economy from CO2 emissions

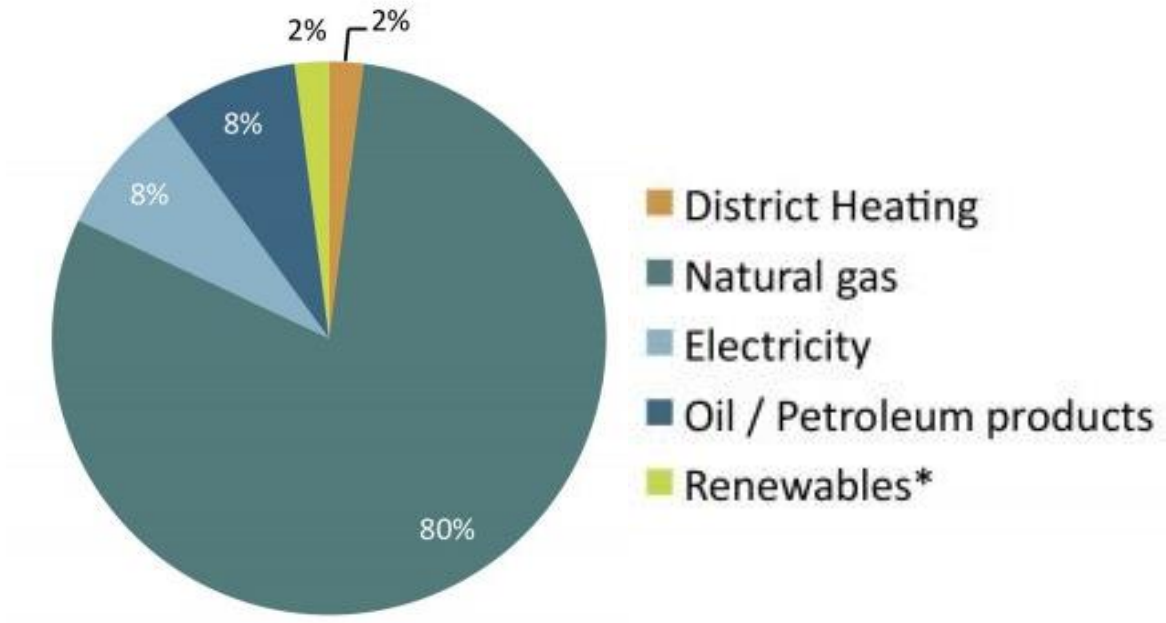



Decarbonization of DH is part of this success

# FOCUS:
# WHAT ABOUT OTHER COUNTRIES?

# The United Kingdom

- DH provides only 2% of heat demand
- The UK recognises that district heating is a key component needed to achieve the UK climate and energy objectives.
- The UK Heat Strategy sets out a vision of up to 50% of buildings connecting to heat networks by 2050. **A lot of investments are needed. Business model is still unclear. Not easy.**
- CO2 intensity of energy mix:
  - UK: 2,00 tonne CO2/toe
  - Ukraine: 1,91 tonne CO2/toe
  - Sweden: 0,76 tonne CO2/toe




Source: www.euroheat.org

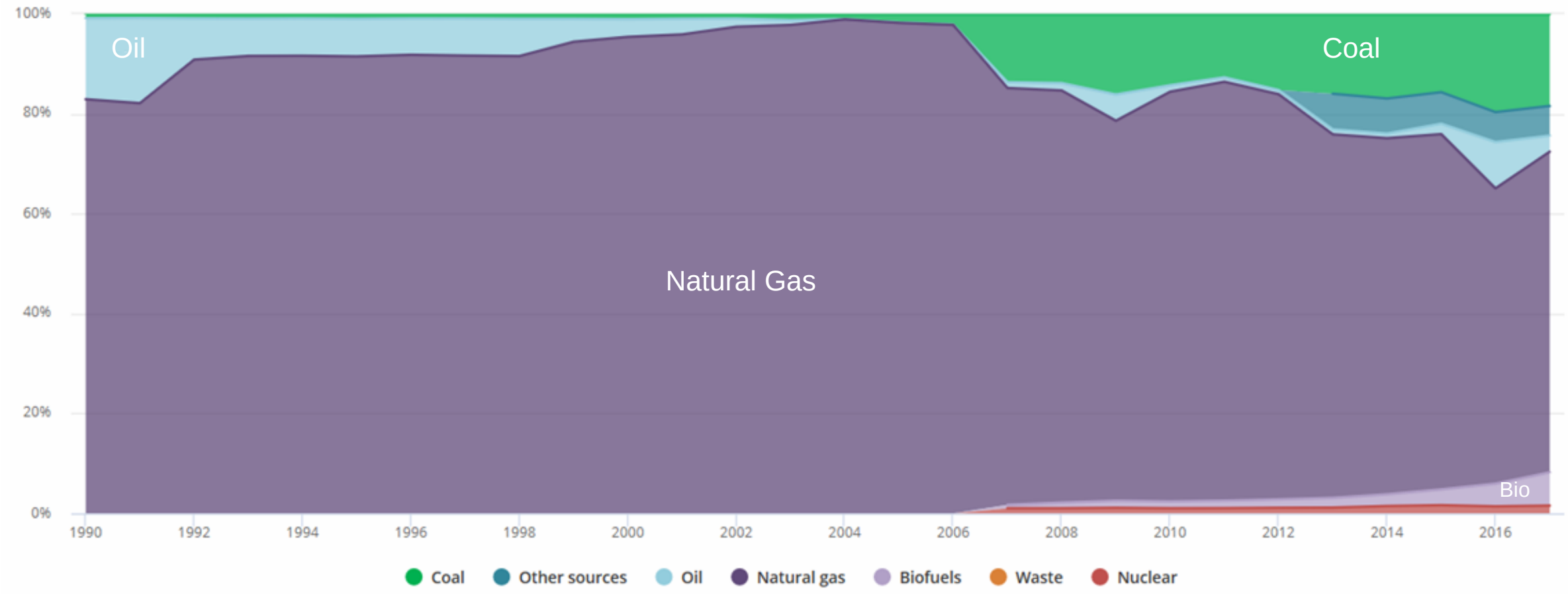
# FOCUS:
# UKRAINE

# Ukraine

- The DH infrastructure is already established in majority of towns and cities.
  Condition of the infrastructure, however, has a large room for improvement

- Ukraine faces major energy challenges:
  - Necessity to increase energy independence, especially reduce use of imported (and rather expensive!) natural gas
  - Requirement to adopt EU energy policies (create highly efficient DH system)
  - Decarbonize its energy mix
  - Lower energy costs

# Fuel mix for heat generation in Ukraine

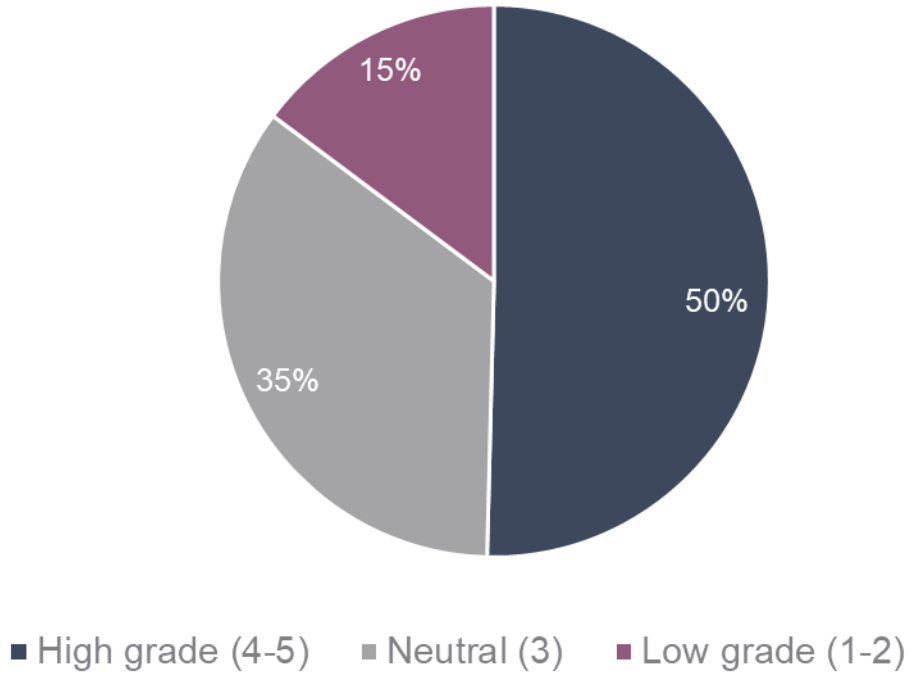



Source: IEA

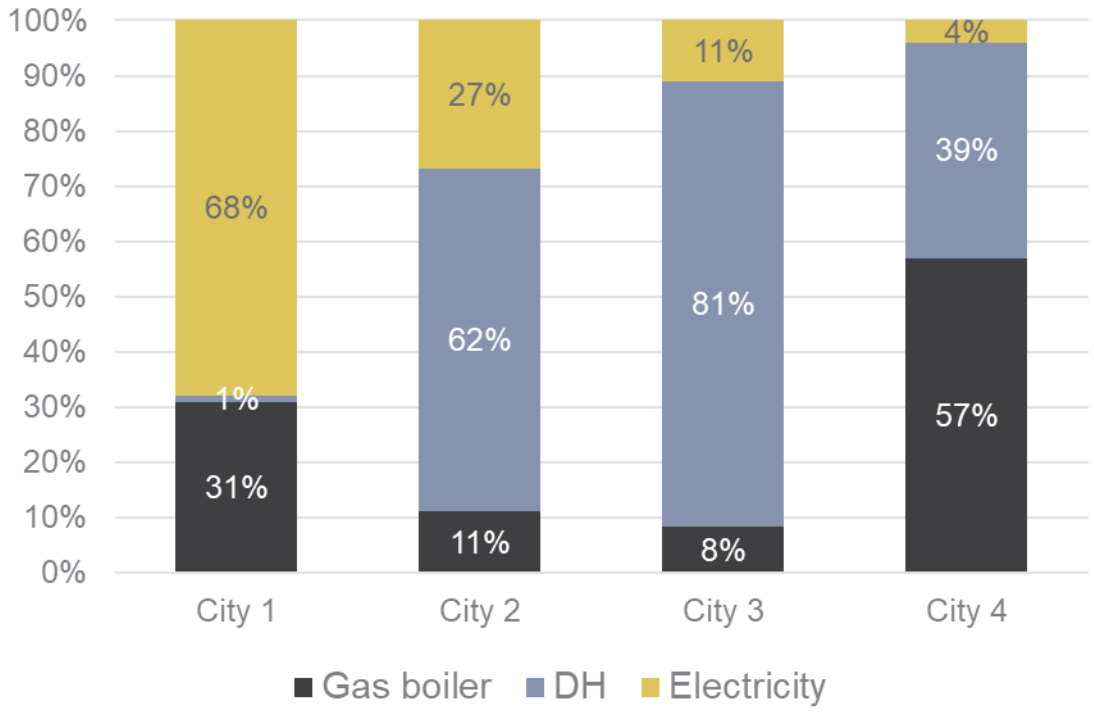
# Opinion of DH customers in Ukraine

## Are you satisfied with DH?

*average for 5 cities

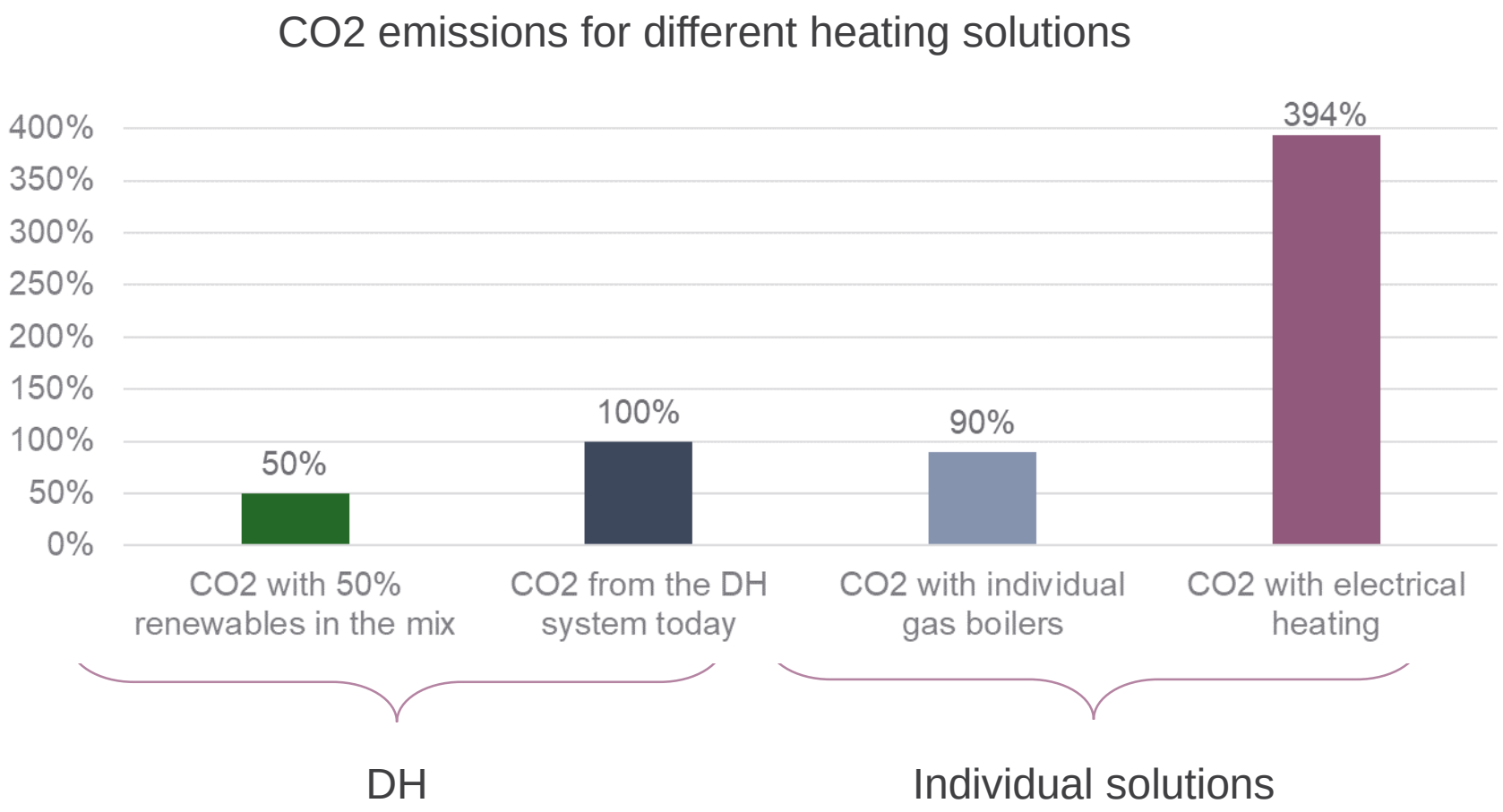



## Source for Domestic hot water




Source: www.minregion.gov.ua/napryamki-diyalnosti/international-cooperation/spilni-zi-svitovim-bankom-proekti/sotsiologichne-doslidzhennya/

# What if DH customers switch to individual solutions?



# WHAT COULD BE DONE?

# Investment into DH can be a solution

Invest, in order to:

- Improve infrastructure to improve quality of DH services
- Improve infrastructure to increase efficiency
- Improve infrastructure to reduce operational costs
- Diversify fuel mix to move away from the imported gas, to reduce CO2 and to bring the costs down. For example, use waste heat.

# Investment into DH can be a solution

Invest to create an energy-efficient district heating in Ukraine,
delivering qualitative services with low environmental impact on its customers.

SWECO