

**CROSS FINAL EVENT**

# **CROSS model result comparison**

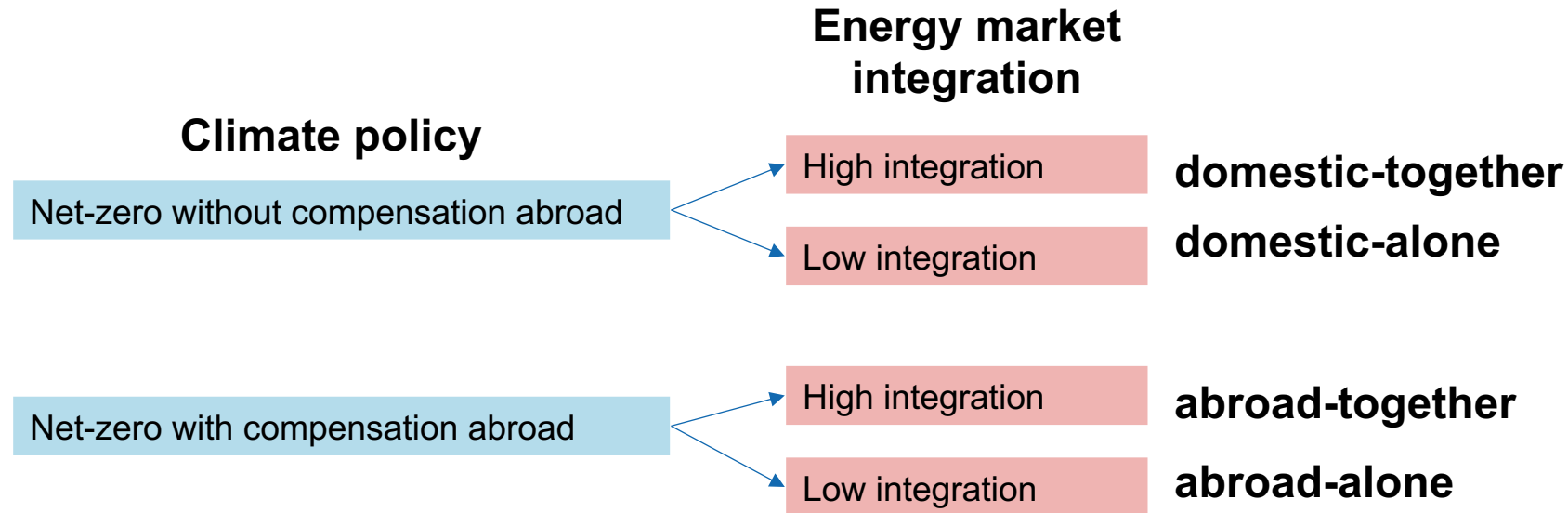
## Overview of modelling results

Version 2: 03.02.2023

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Jared Garrison, Evangelos Panos, Martin Rüdisüli

# CROSS scenarios result comparison

- Scenarios CROSS v2022-09: [Complete scenarios description](#)

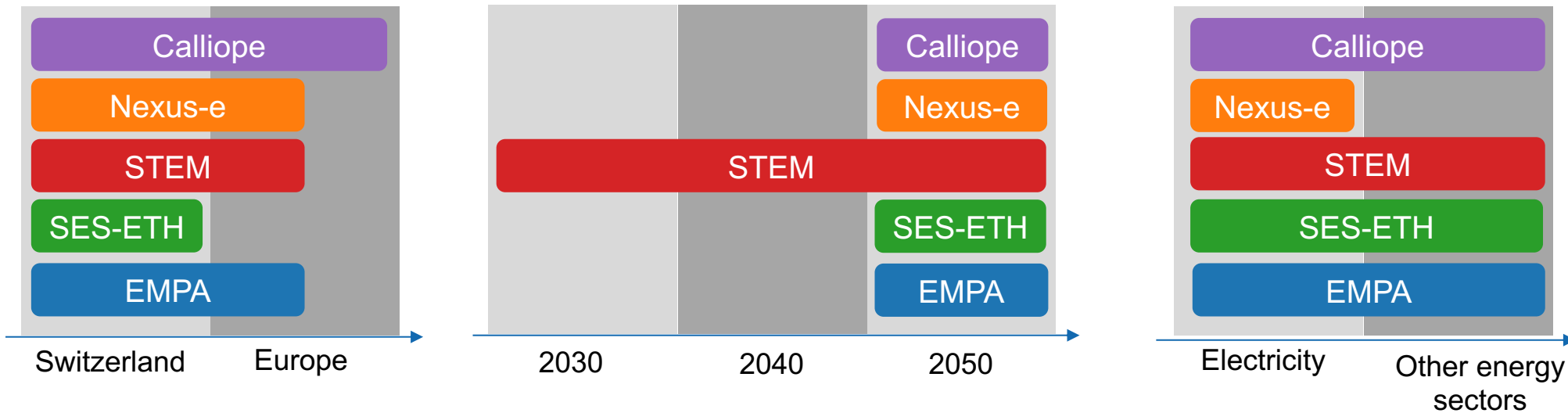


- **Disclaimer: Preliminary results**, the activity will continue during 2023.
- Individual model results: [Detailed presentation with individual model results](#)
- All models in the community are welcome to participate

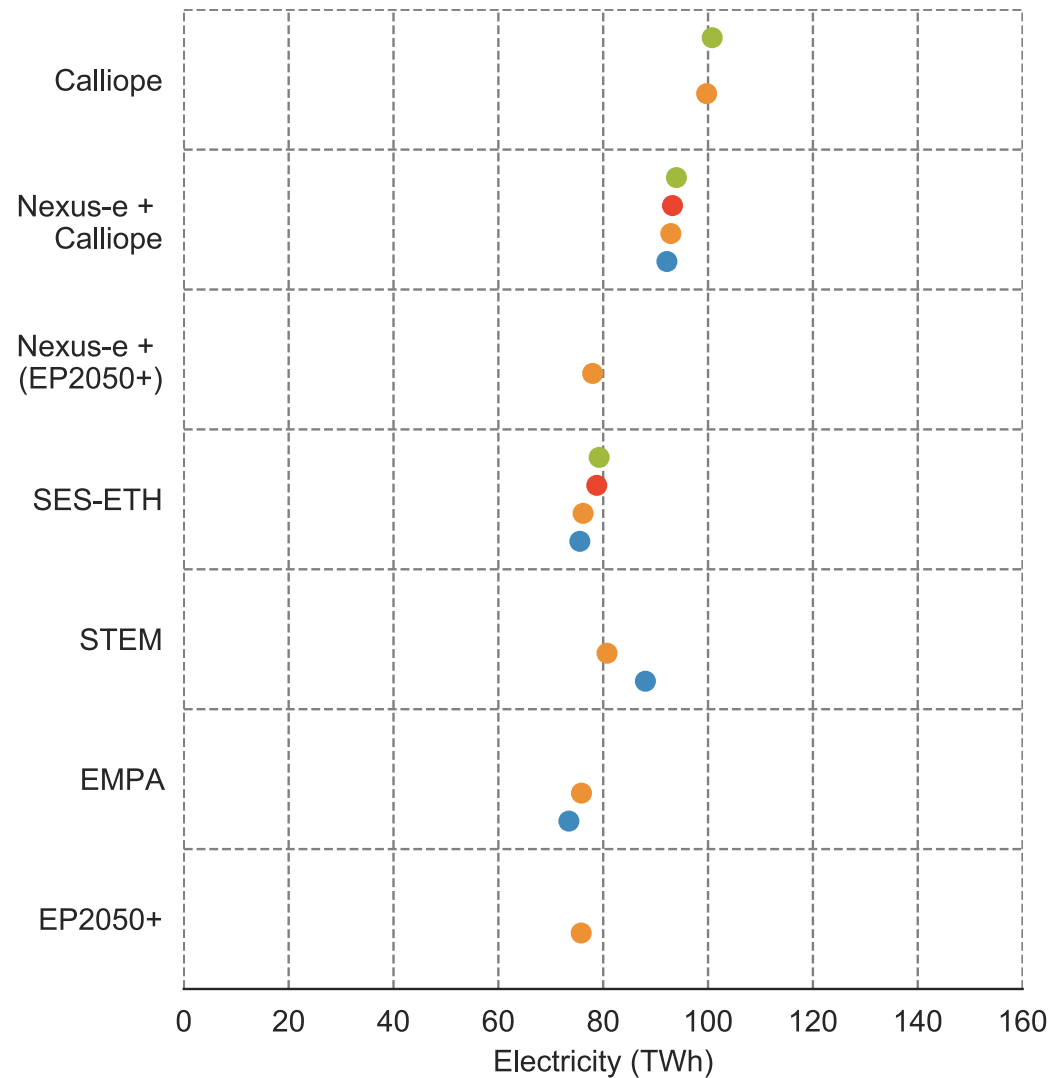
# Models and studies in CROSS model results comparison

	Model / study name	Documentation	Model page
SES-ETH	Swiss Energy Scope, ETH Zurich	<a href="#">Link</a>	
Calliope	Calliope, TU Delft	<a href="#">Link</a>	<a href="#">Link</a>
Nexus-e	Nexus-e, ETH Zurich	<a href="#">Link</a>	<a href="#">Link</a>
STEM	Swiss TIMES Energy Systems Model (STEM), PSI	<a href="#">Link</a>	<a href="#">Link</a>
EMPA - VSE	Energiezukunft 2050, EMPA and VSE	<a href="#">Link</a>	
BFE – EP2050+	Energy Perspectives 2050+ (EP 2050+), Zero Basis scenario Swiss Federal Office of Energy	<a href="#">Link</a>	

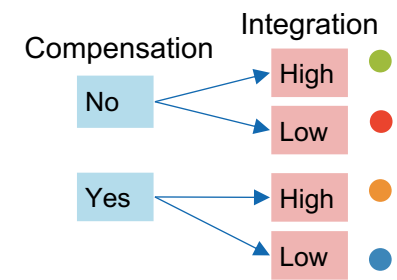
# Models and studies in CROSS model results comparison



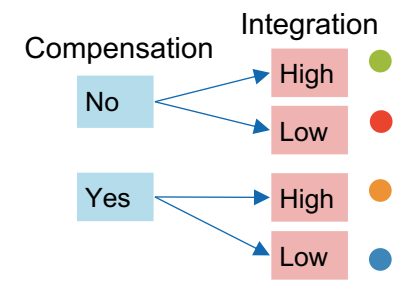
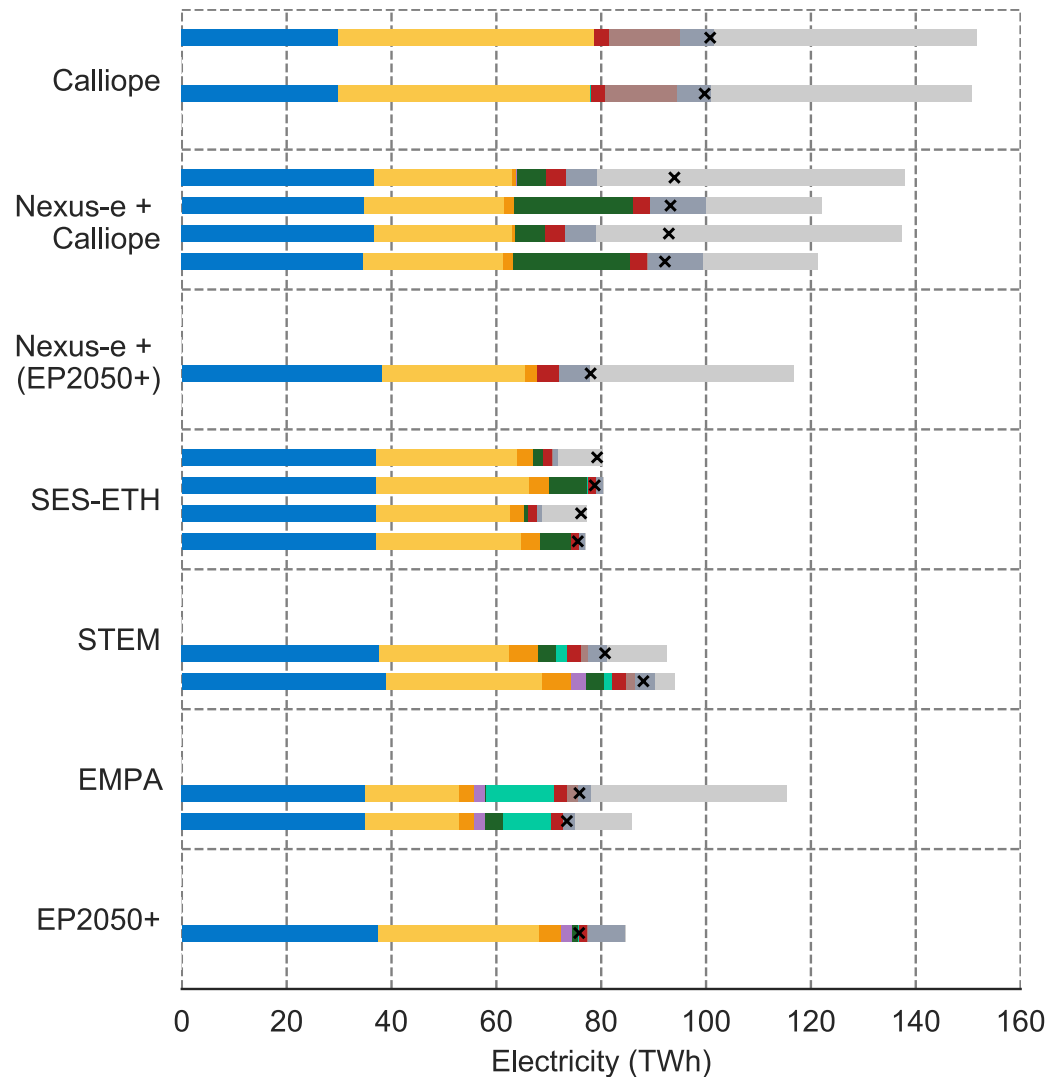
# Electricity supply (2050)



- Good agreement between models
- Electricity net production around 80 TWh (only 20 TWh more than today)

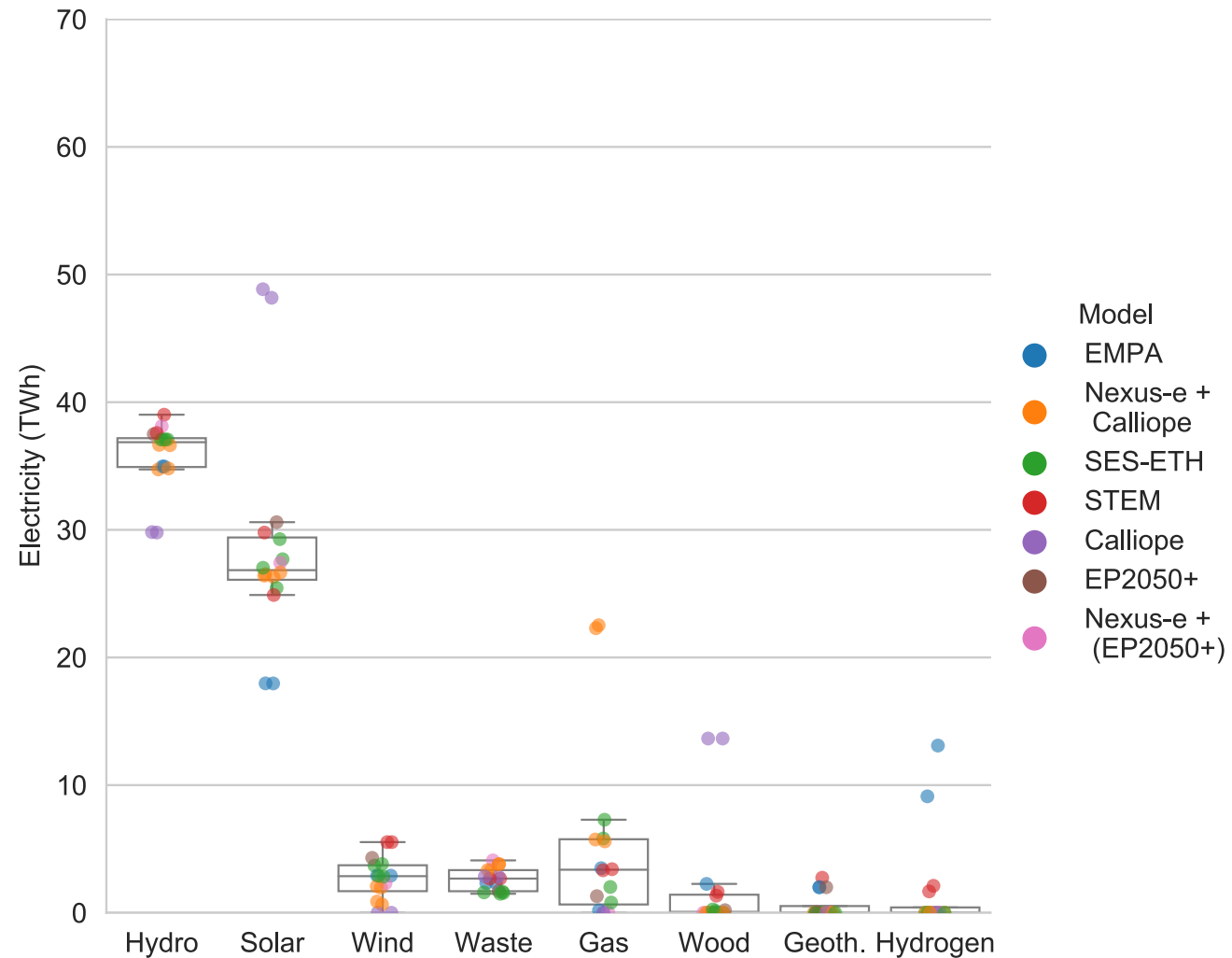


# Electricity supply (2050)



- H2 imports
  - Empa low H2 import price (75 vs. 160 CHF/MWh) → High electricity production from H2
- Without H2 imports
  - Gas (SES-ETH)
  - Electricity imports

# Electricity supply (2050)



## Commons:

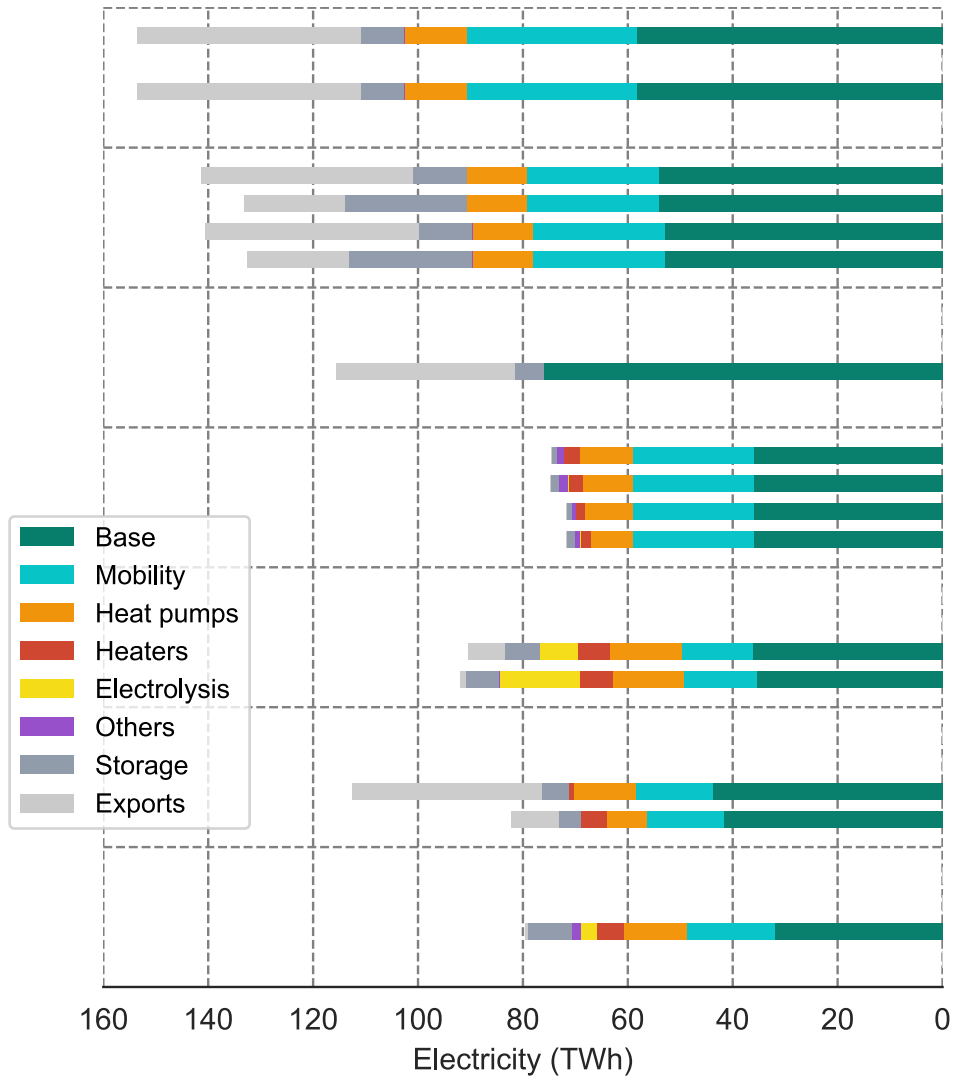
- Hydro (Dams and RoR)
- SPV (not limited by technical potential)
- Minor contribution of
  - Wind
  - Waste

## Less-agreement:

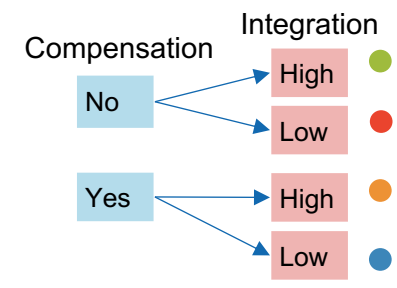
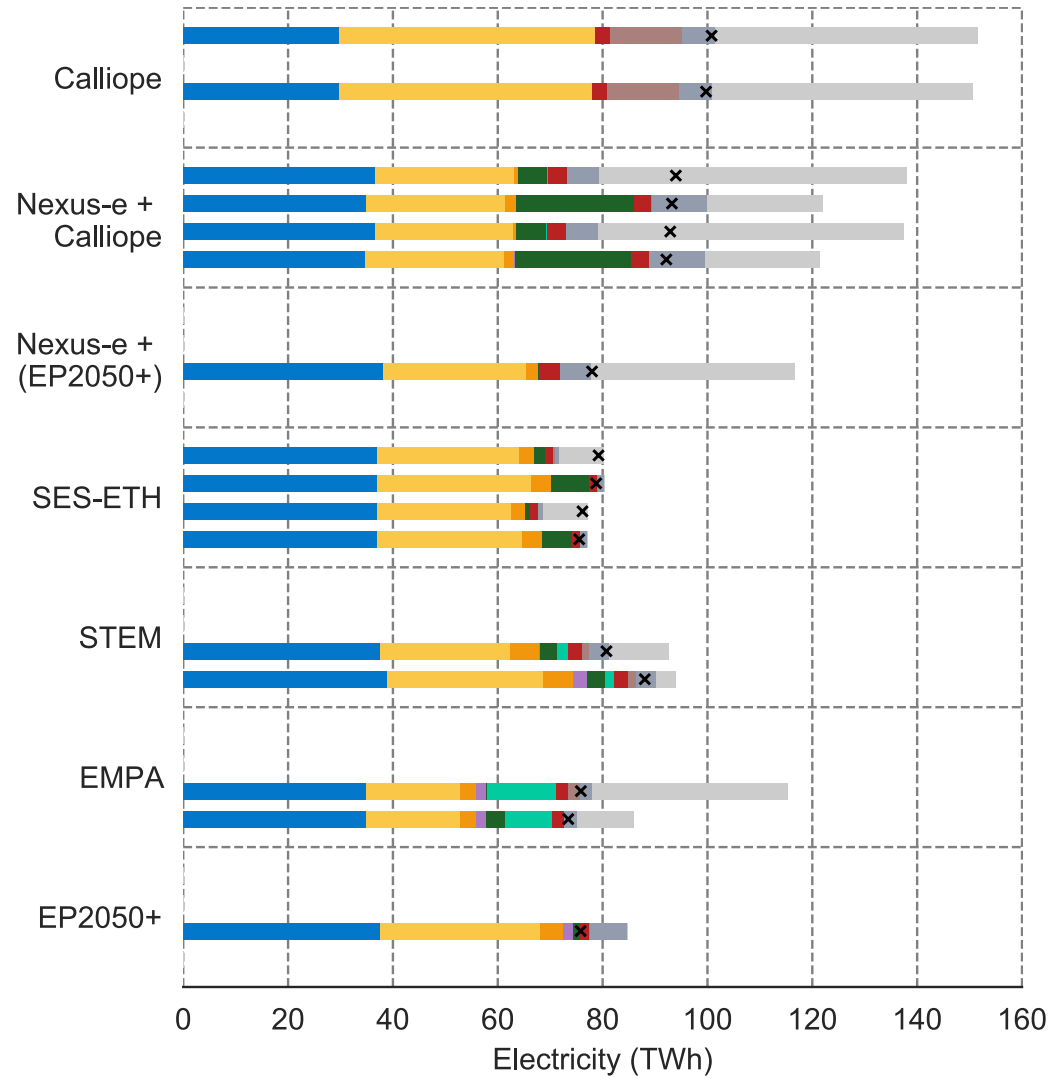
- Gas, wood, geothermal and hydrogen
- Wind: Around 5 TWh potential (vs. 30 TWh BFE)



# Electricity use (2050)

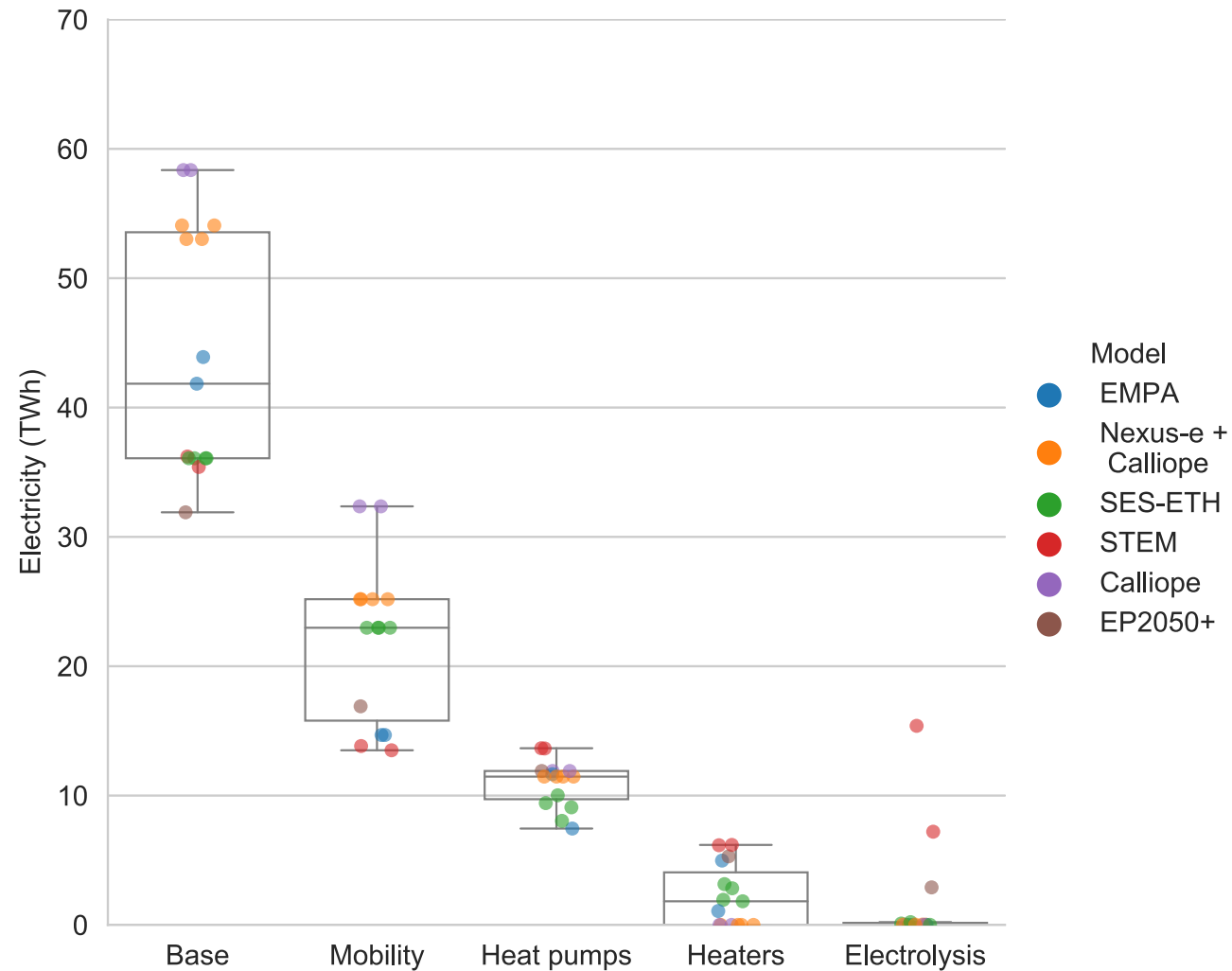


# Electricity supply (2050)





# Electricity use (2050)



## Commons:

- Base (slightly different definition)
- Mobility
  - Assumptions vary on the maximum share of electrifiable passenger and freight
- Heat pumps

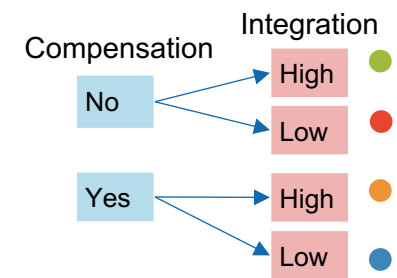
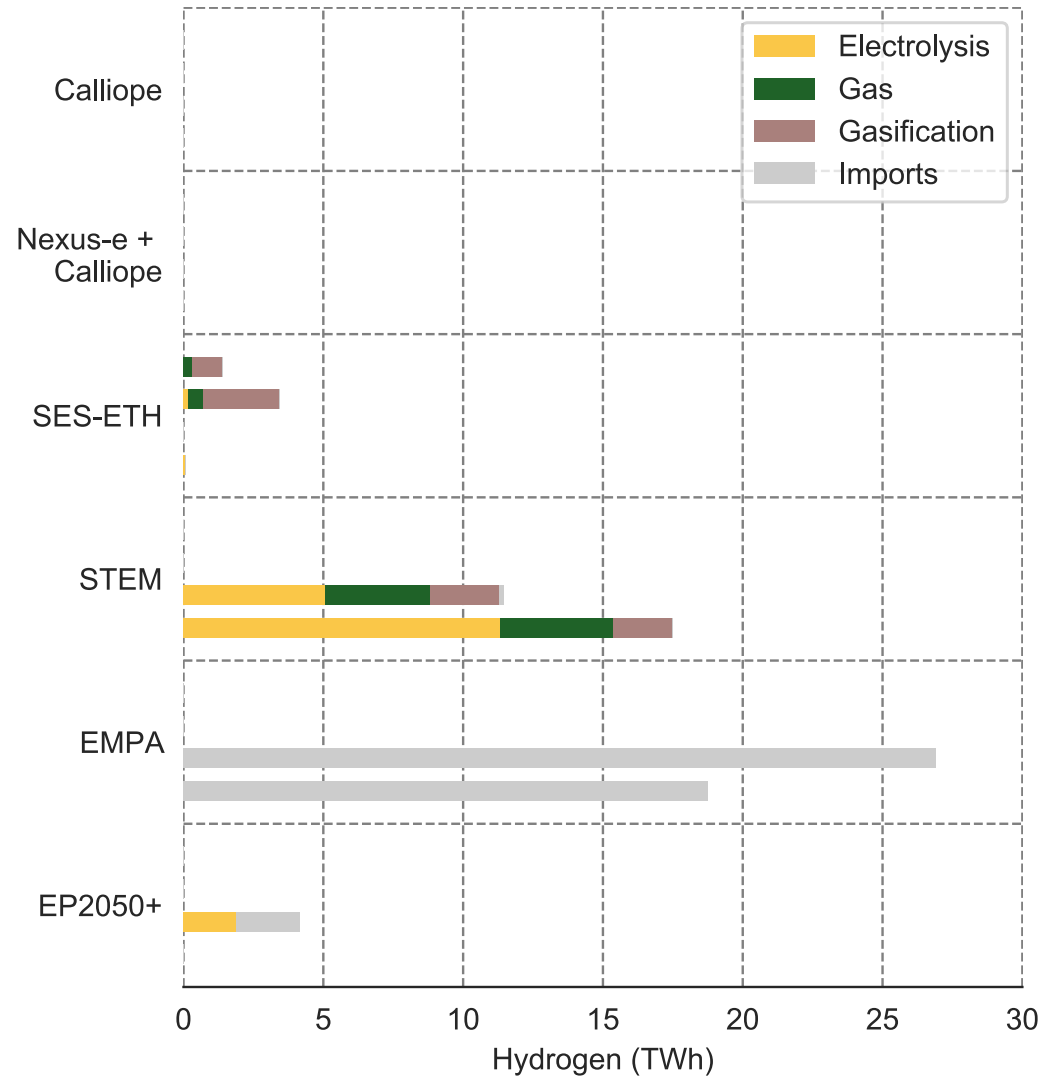
## Less-agreement:

- Electrolysis

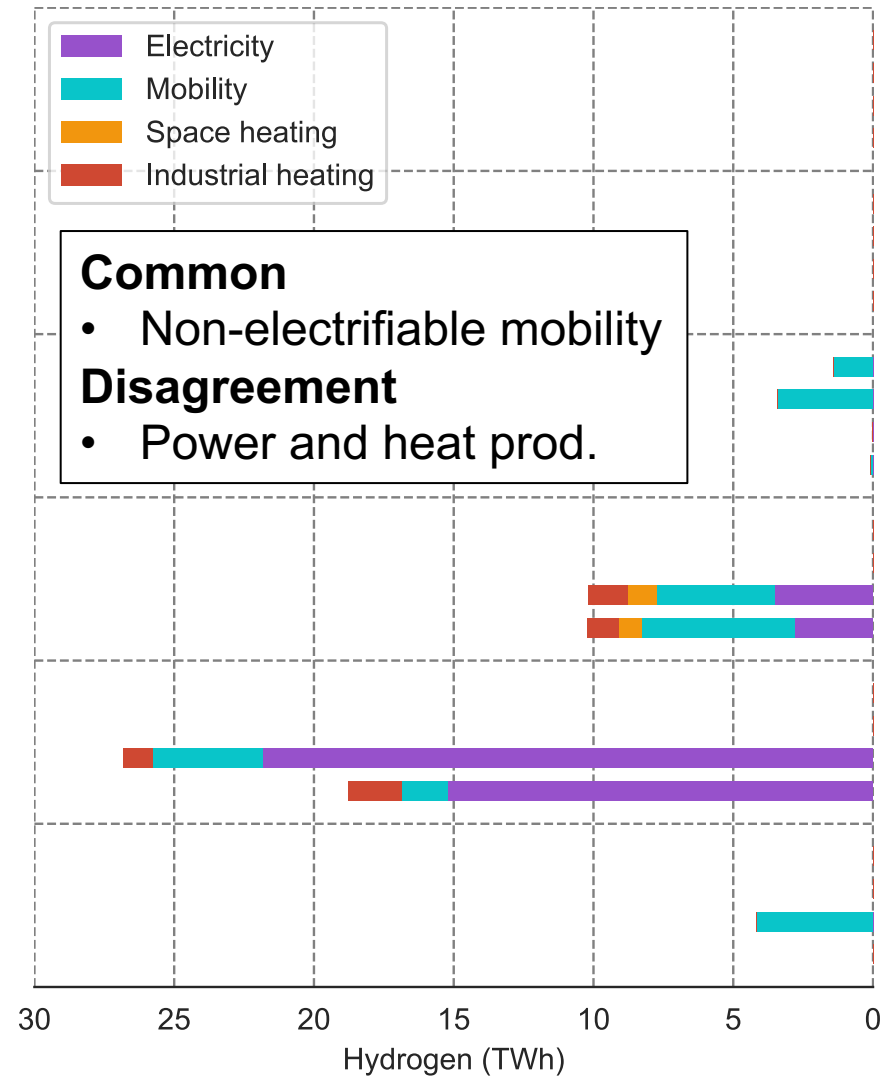
# Hydrogen supply (2050)

## Larger disagreement:

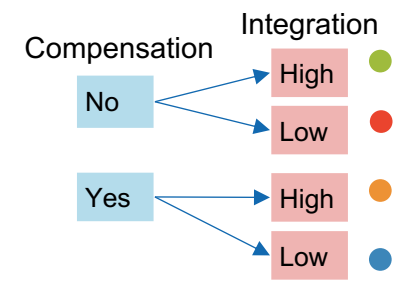
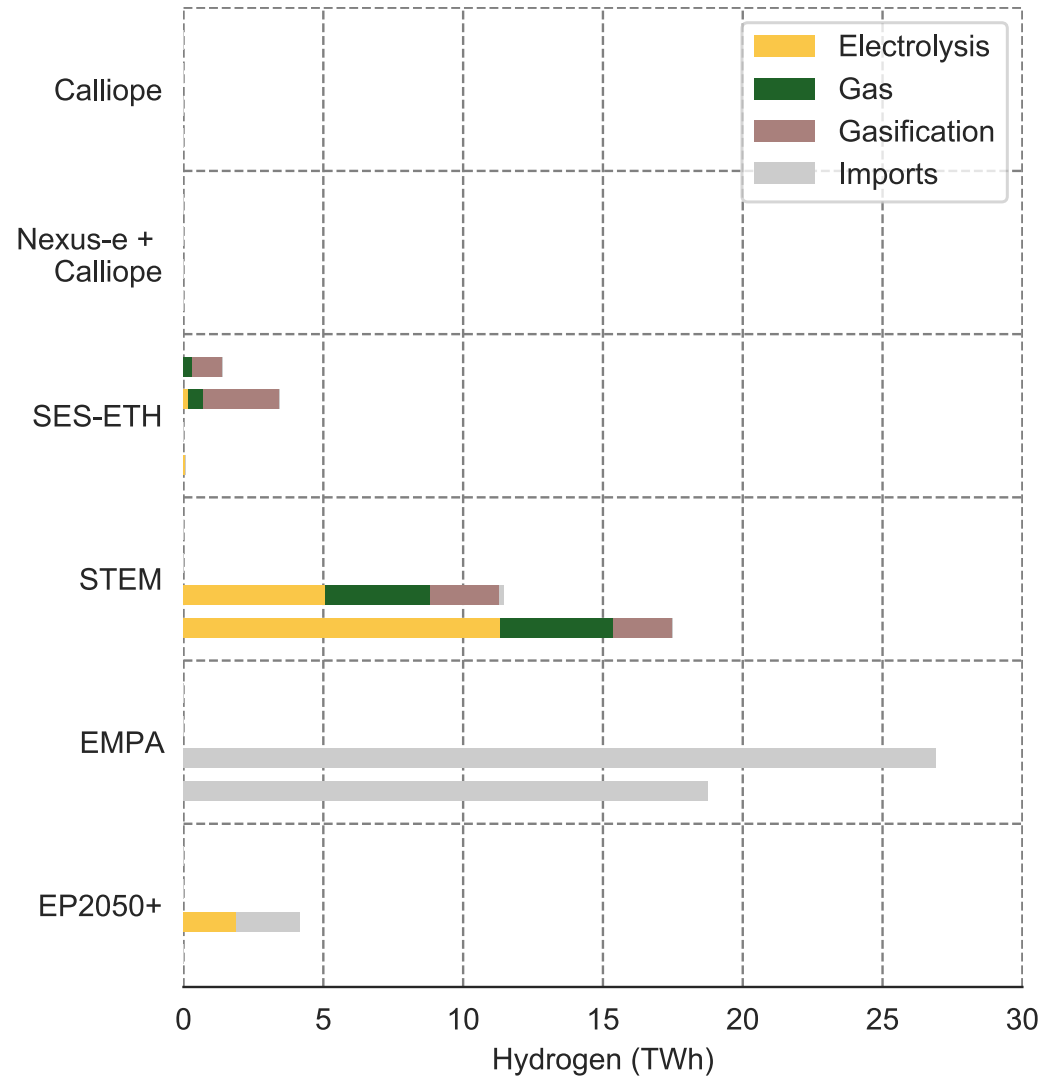
- Wood gasification
- Imports
- Electrolysis
- Methane reforming



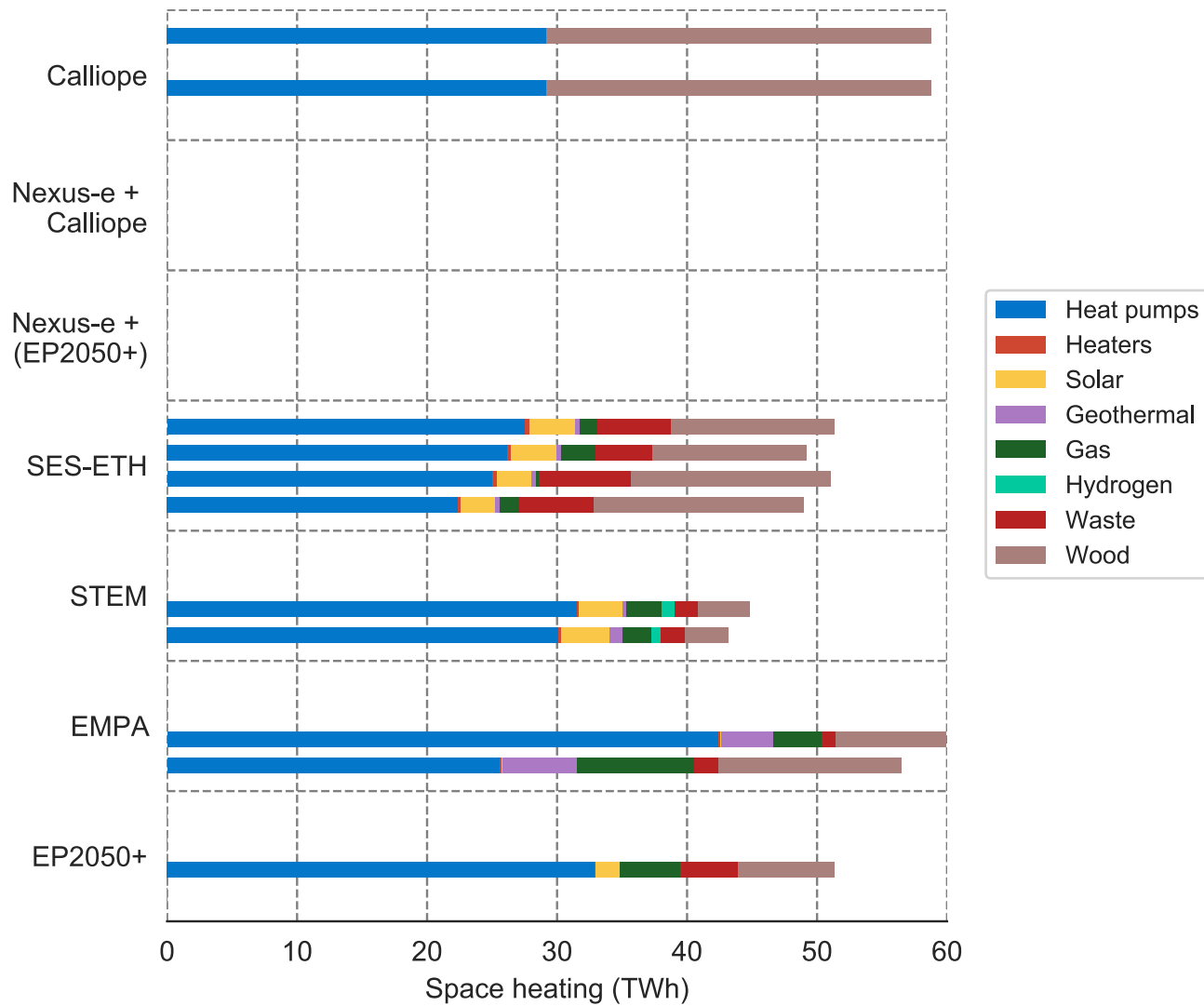
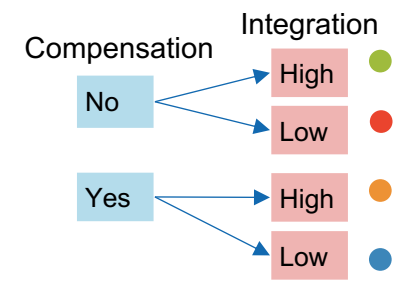
# Hydrogen use (2050)



# Hydrogen supply (2050)



# Space heating and hot water (2050)

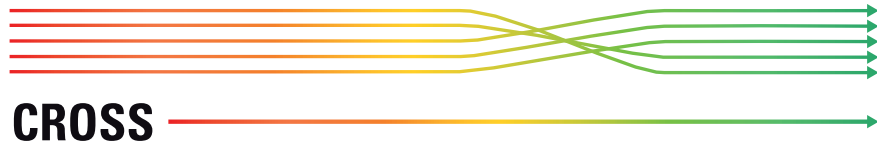


## Commons:

- Importance of building renovation
- Heat pumps
- Wood (CHPs and pellet boilers)
- Waste
- Gas

## Less-agreement:

- Solar thermal



## Contact us

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