
European Commission
EU INDUSTRY WEEK 2021
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CHEAPER THAN ELECTRIFICATION

How solar heat will replace oil and gas in the EU industrial sector

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Solar Heat Europe ESTIF

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SOLAR THERMAL HEAT: WHAT ARE THE COSTS?

MICHAEL TAYLOR

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Evidence-based policy making

- Accurate, timely, verifiable cost & performance data is critical to assessing the role of different technologies in the energy transition
- Data for solar thermal is sparse => probably hindered support
- Joint collaboration by IRENA and Solrico / Solar Payback to improve this situation (www.solar-payback.com)
- Collect data on project-specific costs and performance for SHIP
- Goal is representative data and an understanding of cost differentials across applications, technologies & countries

Collection of data

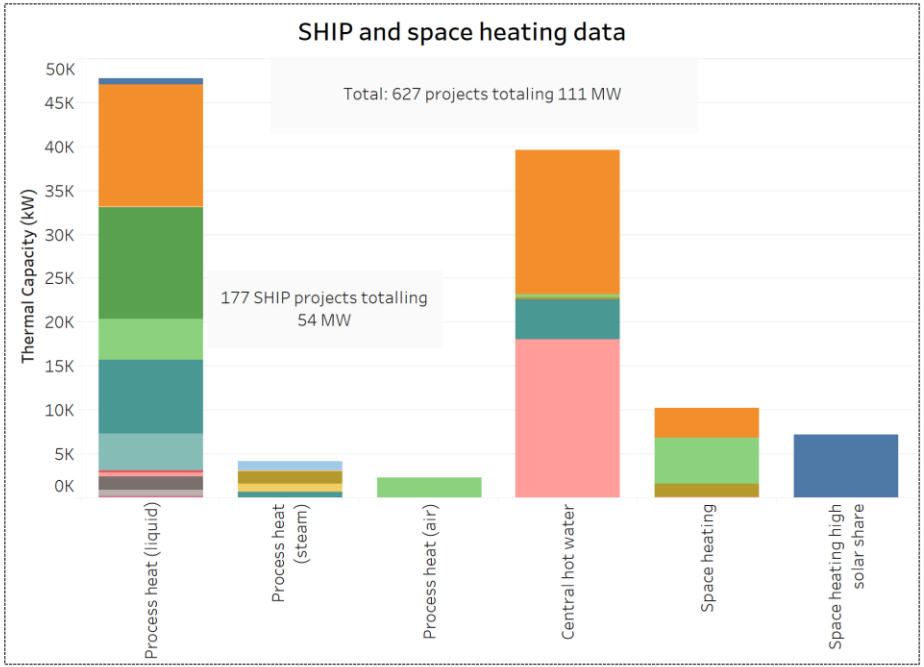
- Balance between depth of data and repsonse rates
- Data is a starting point
- Future efforts could try to collect greater detail

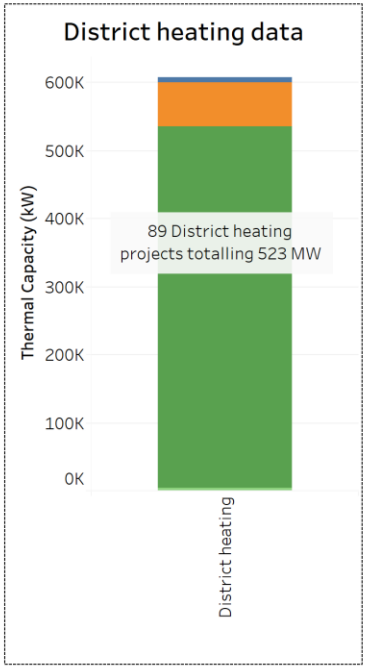
- Results are preliminary and subject to change

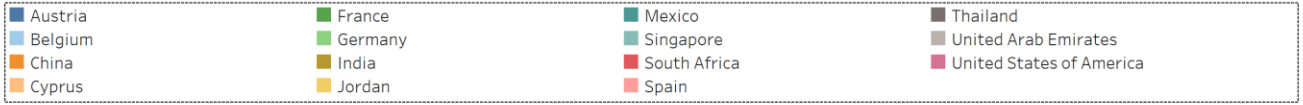
	Data of Project 1
Year of commissioning	
Country of installation	
Collector field technology	
Type of mounting system	
Aperture area (m^2) of concentrating collector field	
Solar thermal capacity (MW) of concentrating collector field	
Type of solar storage tank	
Application	
Average supplied temperature level over the year	
Currency of total costs	
Total costs in local currency including: - Collector field and circuit - Solar storage tank - Planning and installation costs Please exclude equipment for integration into client's network, financing costs, subsidies and VAT.	
Annual useful solar yield (MWh/a) based on simulations during the planning or monitoring. "useful" stands for the thermal energy delivered to the customer.	
Remarks to any special feature of the project (this field is not mandatory)	

Database

- 720 data points
  (including multiple systems)
- 719 MW of capacity
- Flatplate collectors dominate
- District heating largest capacity
- 177 SHIP projects with capacity of 54 MW







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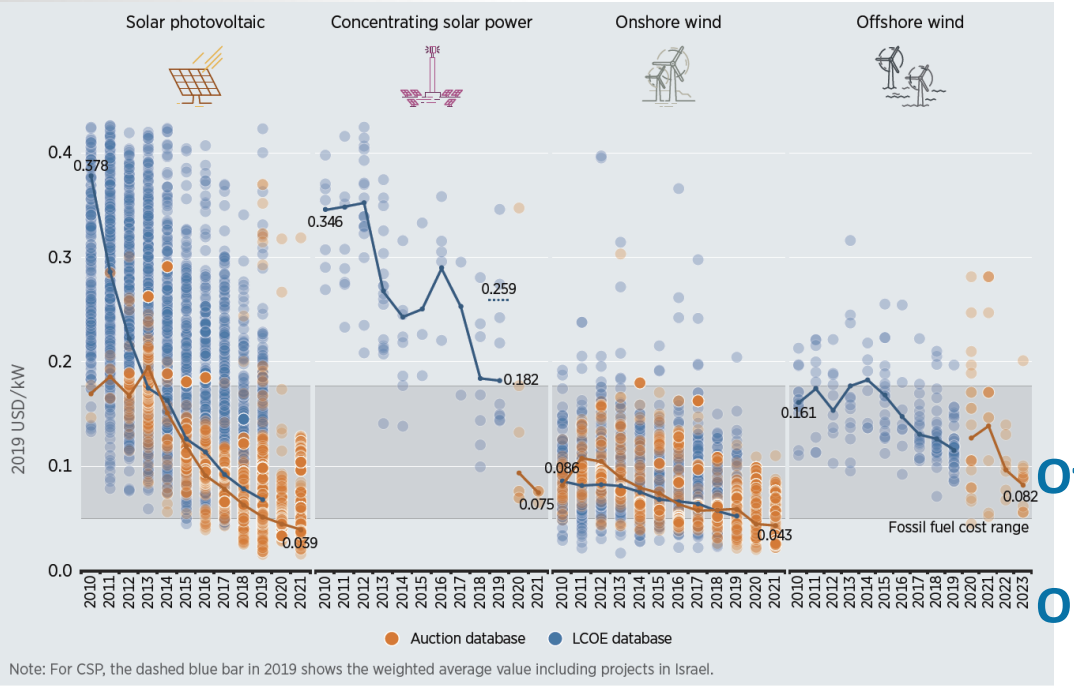
Renewable power generation cost trends



	2010 - 2019	2010 - 2021/23
Solar PV	-82%	-90%
CSP	-47%	-78%
Offshore wind	-29%	-49%
Onshore wind	-39%	-50%

Source: IRENA Renewable Cost Database.

Note: Each circle represents an individual project LCOE (blue dots), or an auction result (orange dots), where there was a single clearing price at auction, for the actual or estimated year of commissioning respectively. The centre of the circle is the value for the cost of each project on the Y axis. The thick lines are the global weighted average LCOE, or auction values, by year. For the LCOE data, the real WACC is 7.5% for OECD countries and China, and 10% for the rest of the world. The band represents the fossil fuel-fired power generation cost range.

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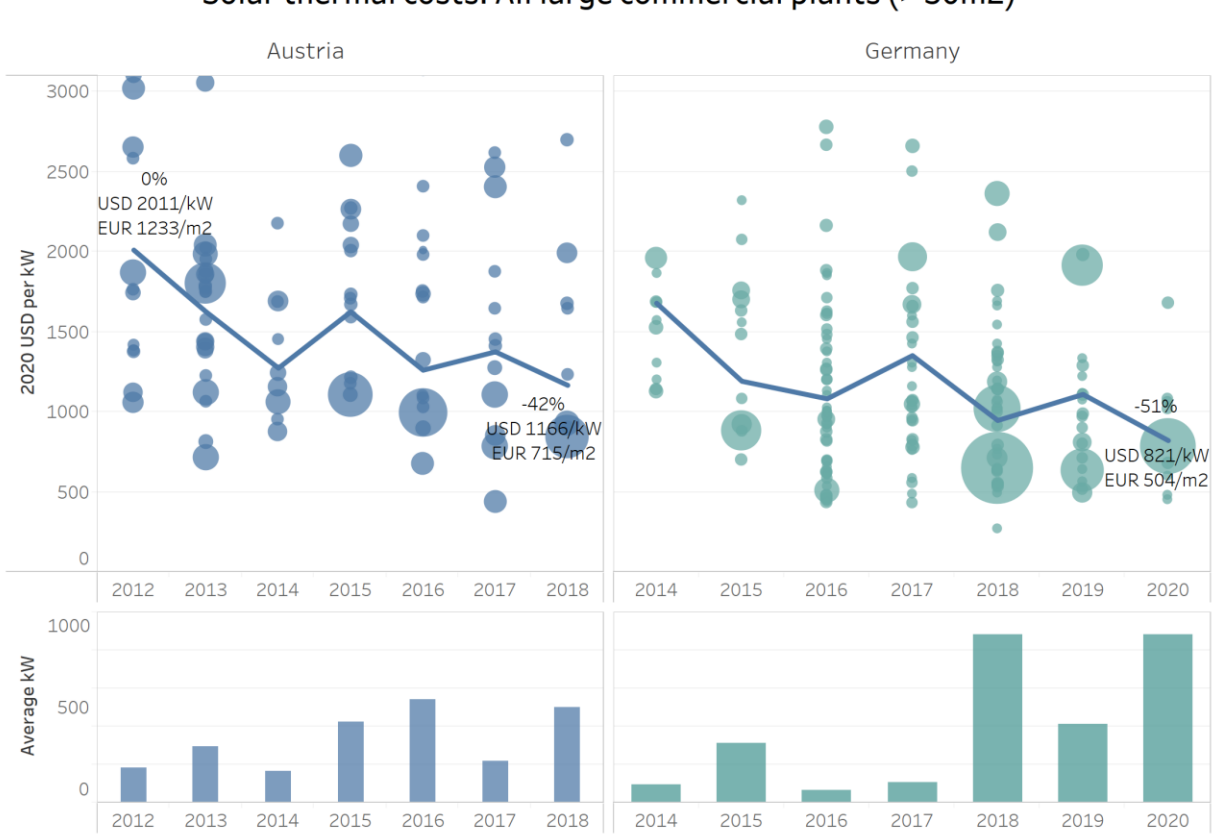
Solar thermal costs: AUT & DEU

- Over 6 years, Austria & Germany saw significant declines
- Increase in scale helped in Germany, & to an extent Austria



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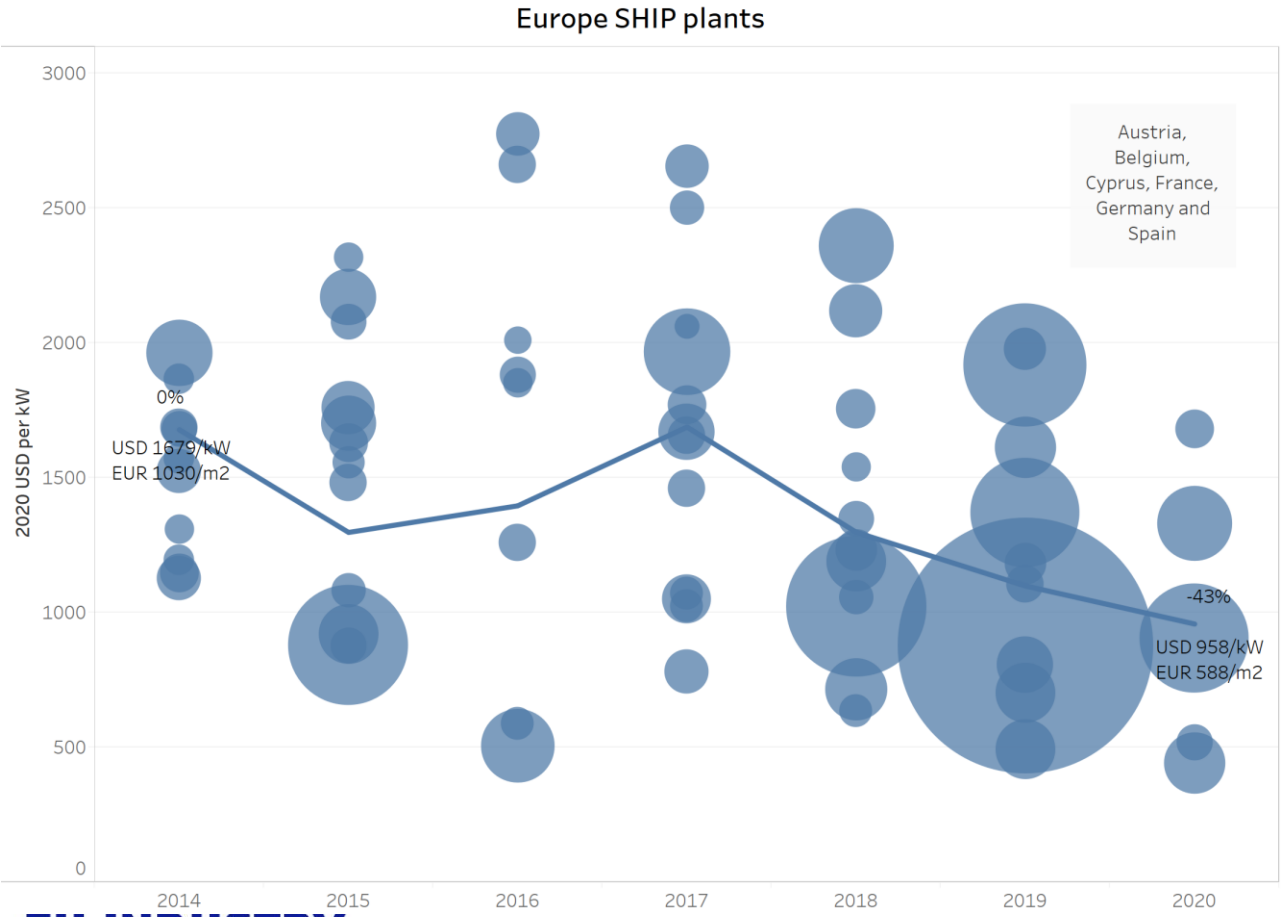
SHIP costs

- Across Europe, SHIP system costs fell by 43%
- Economies of scale evident
- Excludes 10 MW French project (2020/21)



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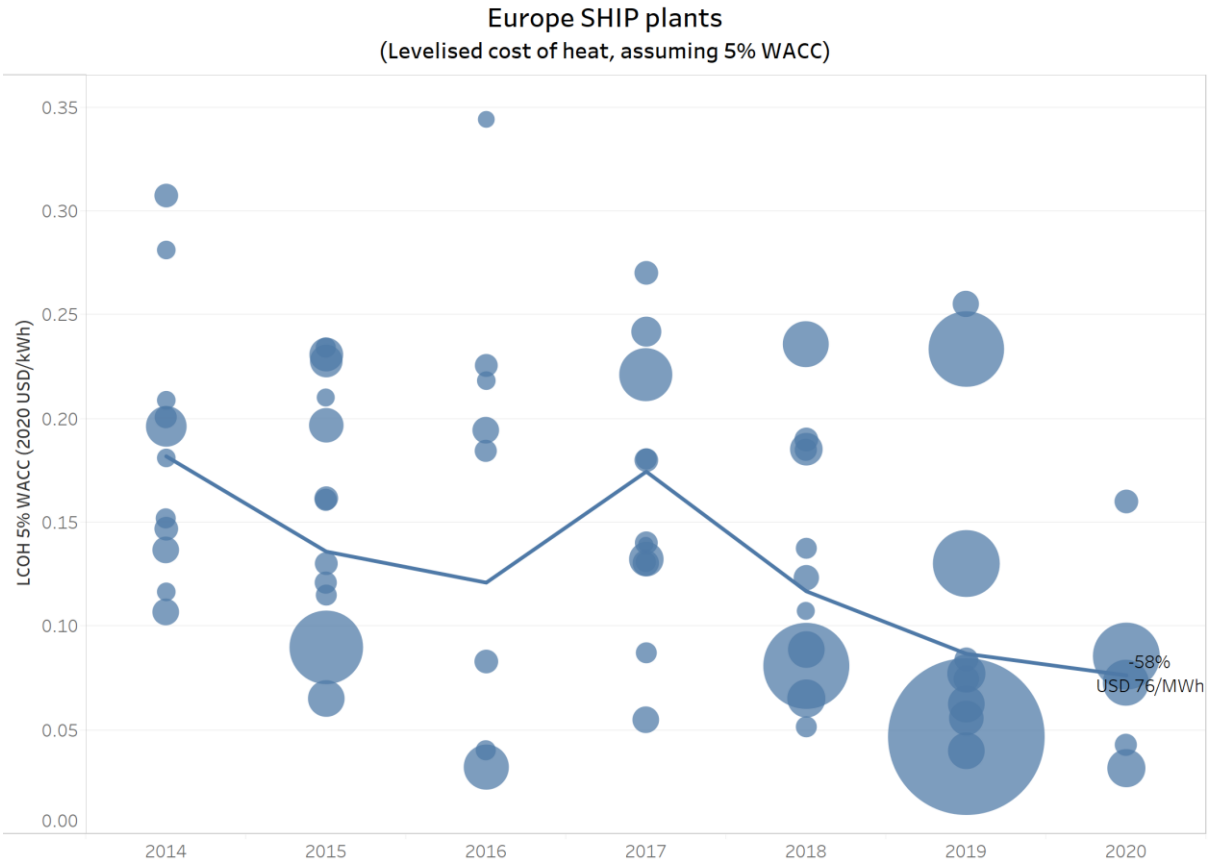
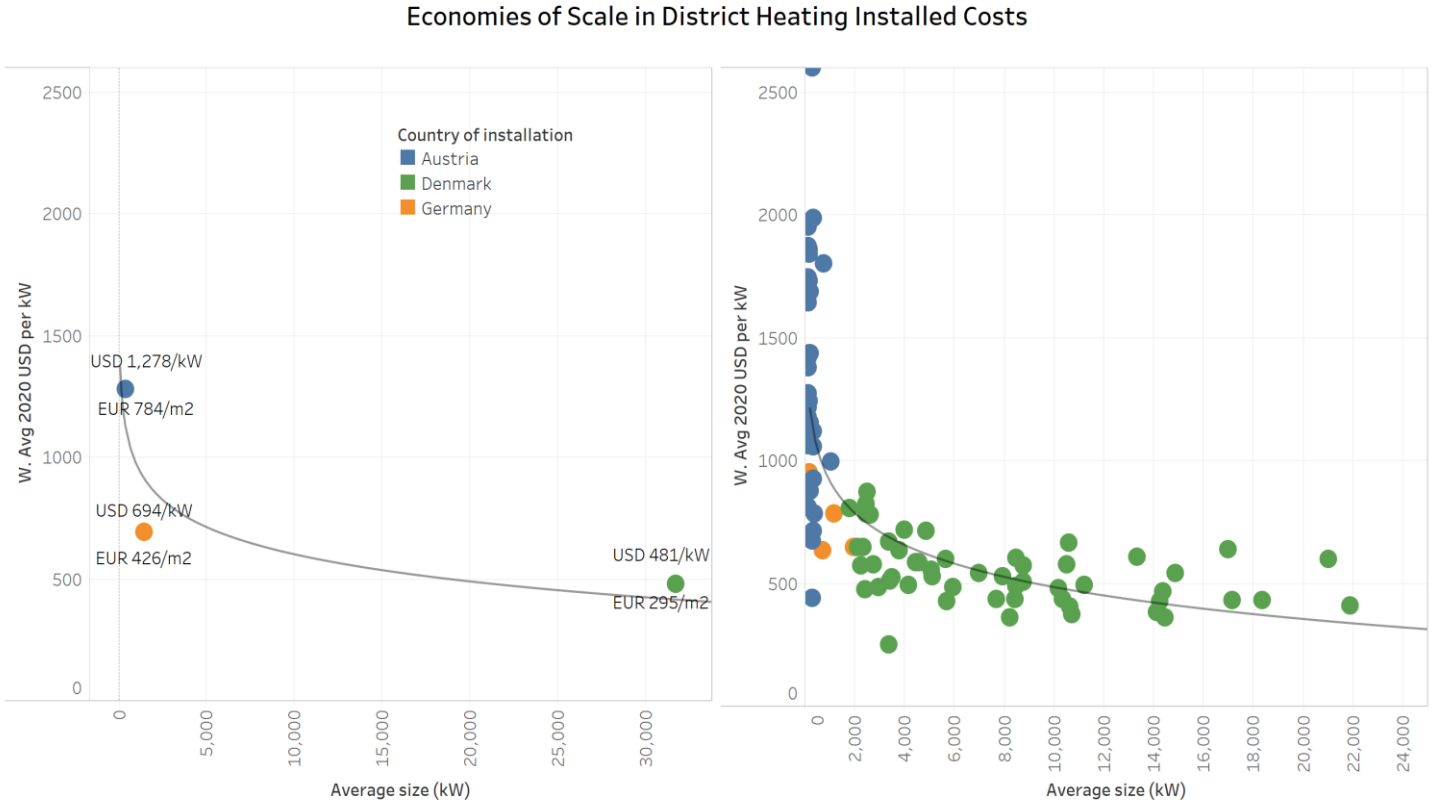
Solar thermal costs

- Greater fall in LCOH than installed costs
- Driven by more capacity in the database for 2019/20 in sunnier areas than 2014



Solar thermal costs: District heating

- Clear evidence of economies of scale in district heating
- Austrian systems smaller & often roof mounted
- Some evidence of economies of scale in other applications



Thank you!

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