



## **Global industrial solar heat market: challenges, trends and outlook**

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## Suppliers of Turnkey Solar Process Heat Systems

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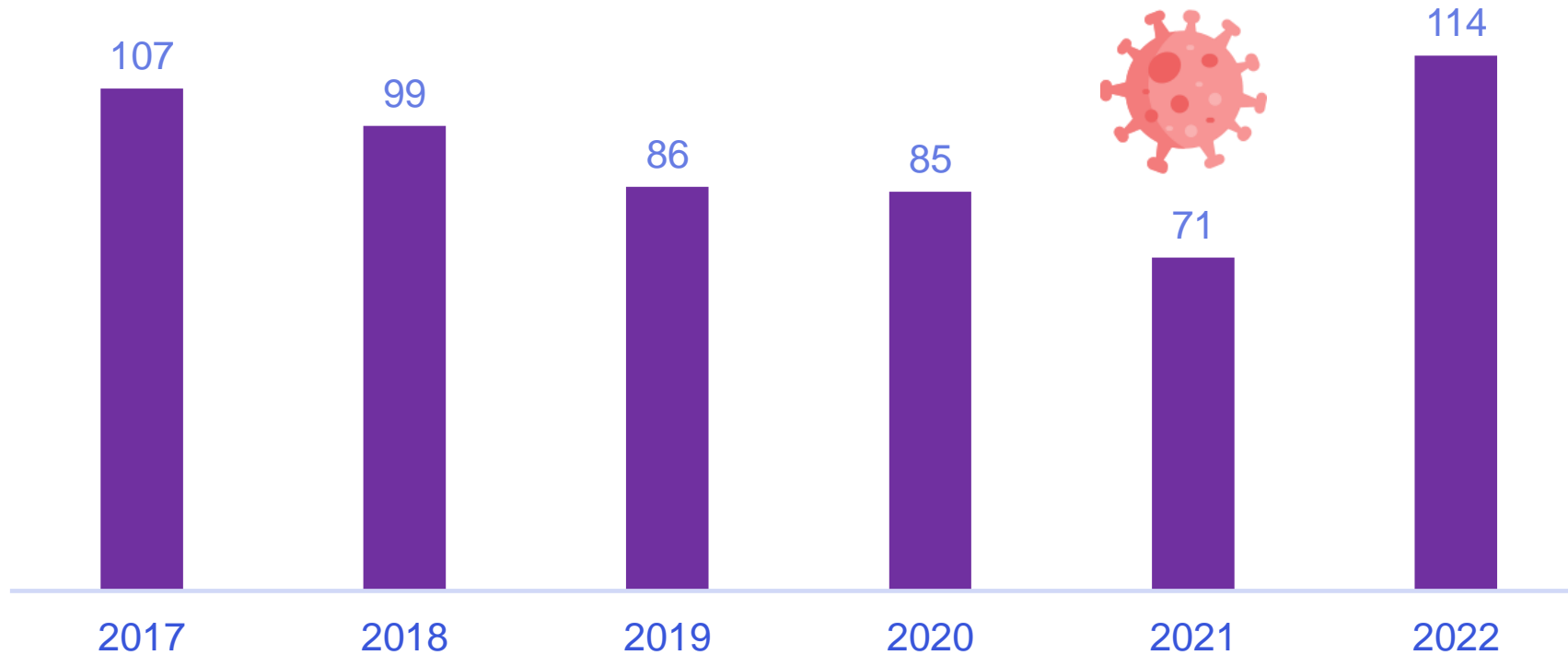


Surveys since 2022 thanks to the German research project Modulus

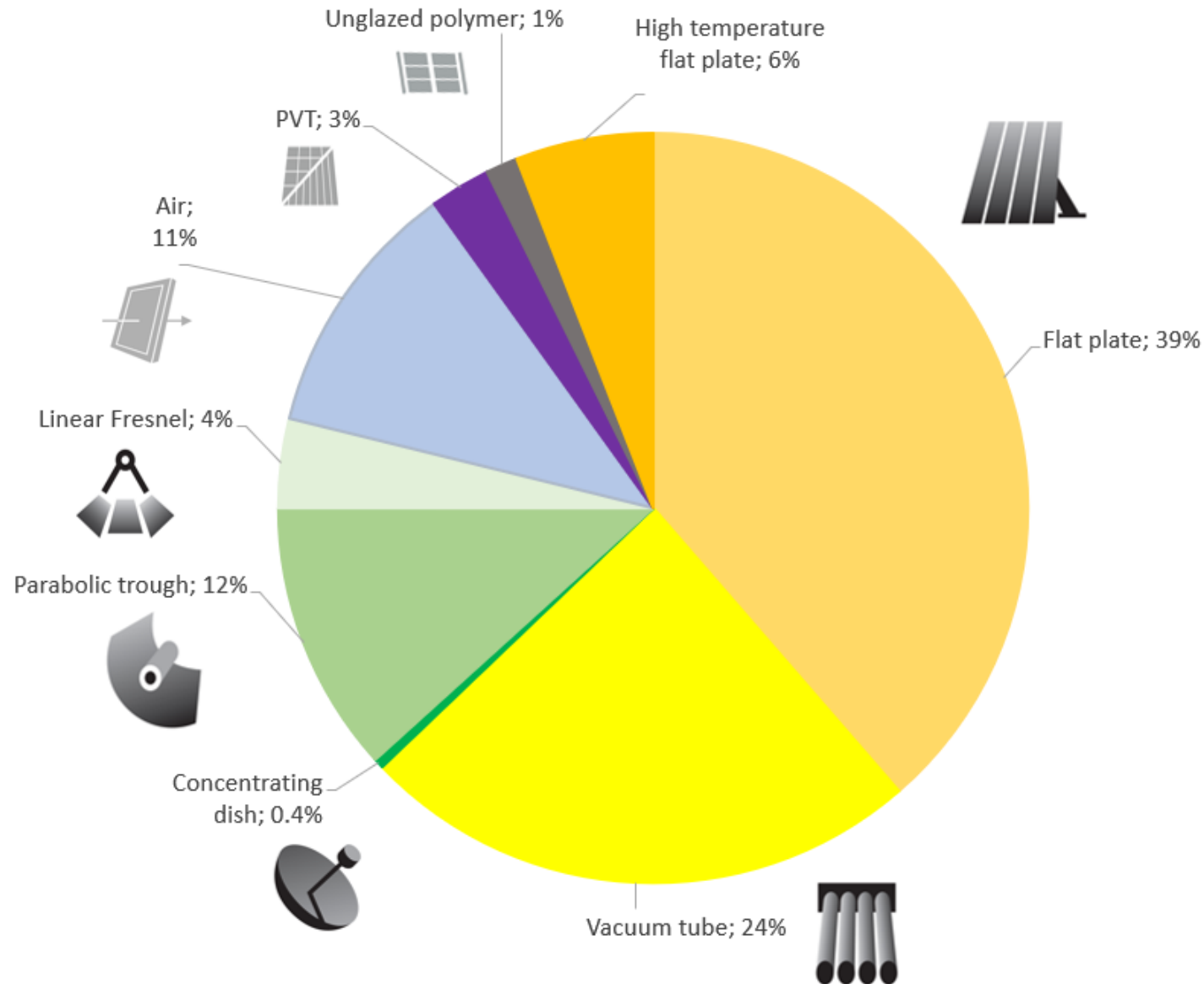
Varvara Lavillat

Find the most recent survey results here:  
<https://solarthermalworld.org/modulus/>

Number of SHIP projects commissioned per year

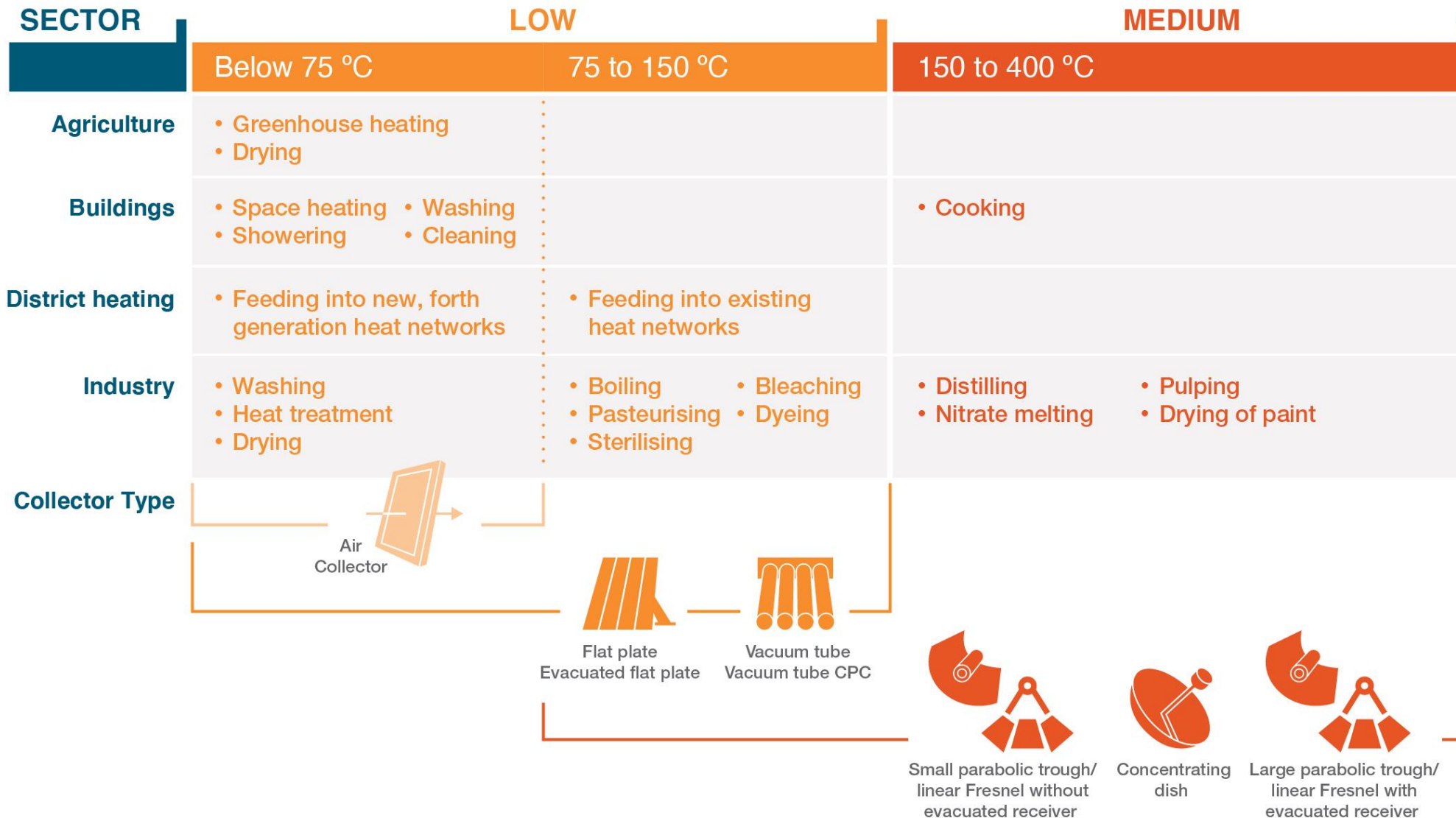


Source: annual SHIP surveys since 2017



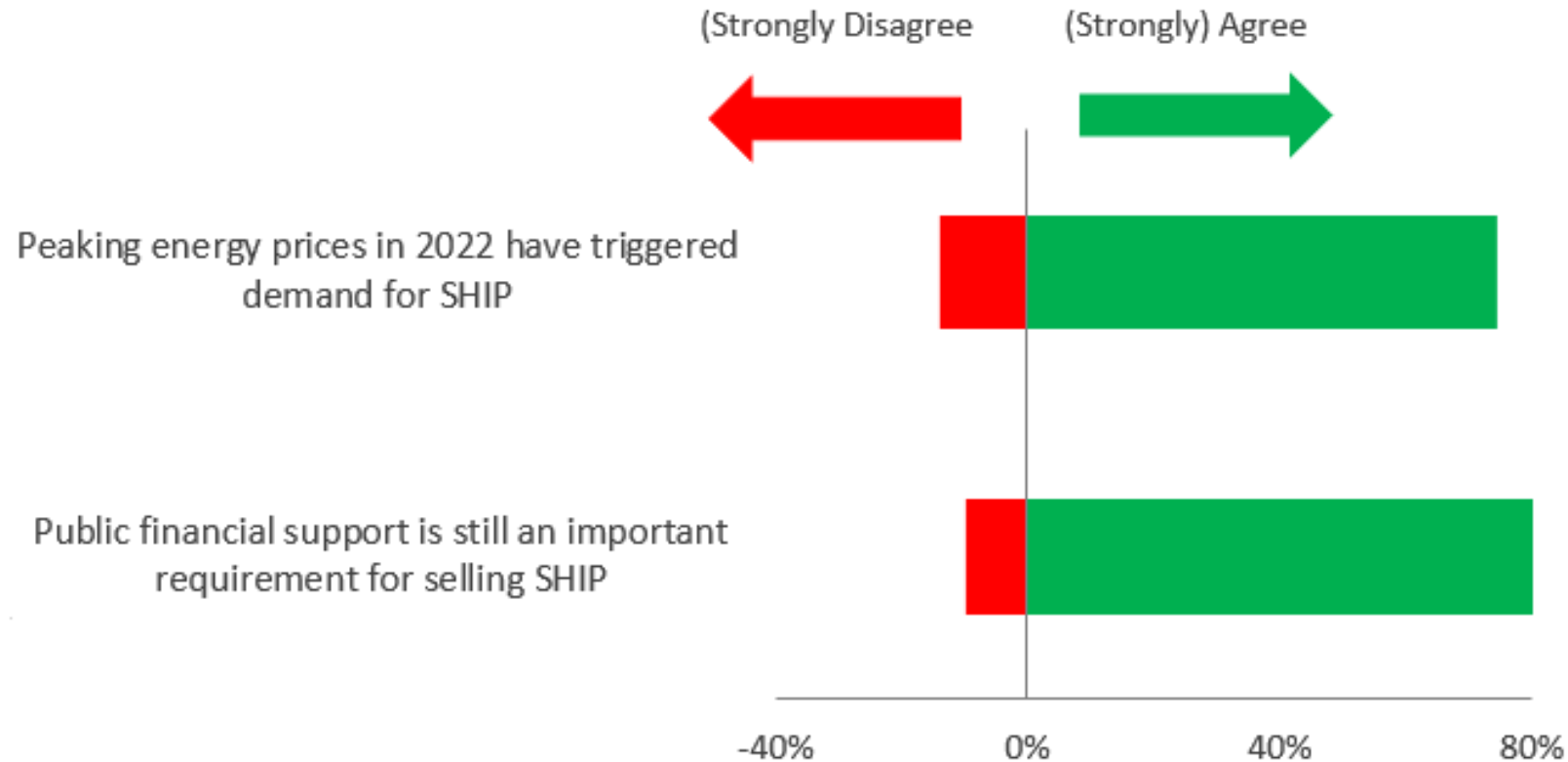
Distribution of collector type area in the SHIP World market 2022 [30 MW in total]

Only seven SHIP plants among 114 with operating temperatures above 100 °C



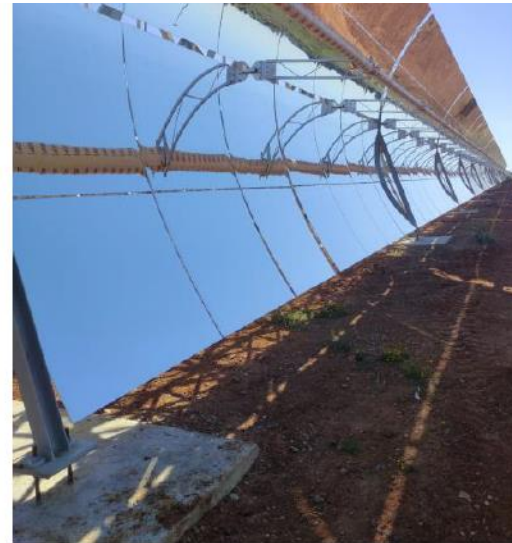
- ▶ Gas shortage in Europe and peaking energy prices in 2022
- ▶ Good funding situation in some European markets (Austria, France, Netherlands, Germany, Spain) and United States
- ▶ Commitment of multinational cooperations to reduce their carbon footprint of production (Heineken, Asahi, Carlsberg, Mayr-Melnhof Graphia, Pepsico, Boortmalt)
- ▶ Emission Trading System within Europe and national carbon pricing mechanisms
- ▶ European supply chain due diligence law (in force since January 2023)

## Do you agree with the following statements regarding trends in the global SHIP market?



High interest but slow decision making

Only 22 % of the listed SHIP Turnkey suppliers were satisfied with the business development in 2022



New Heat's 10.5 MW SHIP plant in France almost finalised ....





Funding from Natural Resources Canada...



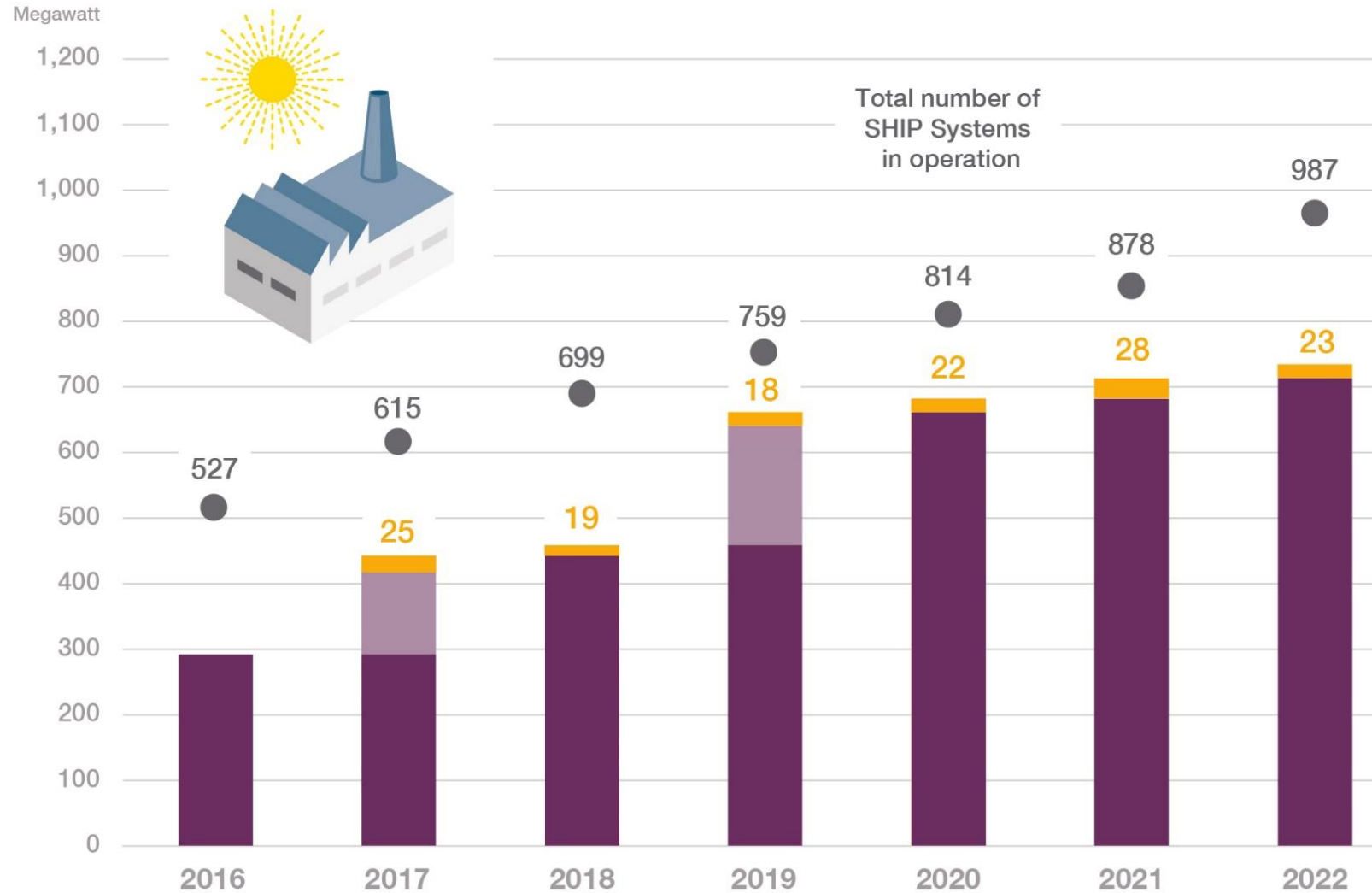
- ▶ 21 project developers contributed contracted projects and projects under planning:
  - Austria: Alexe Simona- greenXcloud, Heliovis, Solid Solar Energy Systems
  - Belgium: Azteq
  - Canada Rackam
  - France: New Heat
  - Germany: Industrial Solar, Protarget
  - India: Quadsun
  - Israel: Tigi
  - Mexico: Flemming Jørgensen, Inventive Power, Modulo Solar
  - Netherlands: G2Energy, Solho
  - Spain: Solatom, Tecnosol
  - Sweden: Absolicon
  - Switzerland: TVP Solar
  - USA: Glasspoint, Solar Dynamics



- ▶ 51 projects were reported with different status of planning

STATUS	Realisation potential
Signed LOI	30%
Signed MOU	30%
Ordered engineering study	60%
Submitted application for subsidies	60%
Approved subsidy / financing	60%
Signed EPC contract for collector field	100%
Signed heat delivery contract	100%
Construction started	100%
First heat to client delivered	100%

# Solar Industrial Heat Outlook 2023-2026



- Cumulated SHIP capacity in MW
- Forecast for cumulated SHIP capacity in MW
- Capacity additions to SHIP plant in Oman in MW
- Annual SHIP capacity additions in MW

Source: annual industry surveys between 2016 and 2023

SHIP = Solar Heat for Industrial Processes

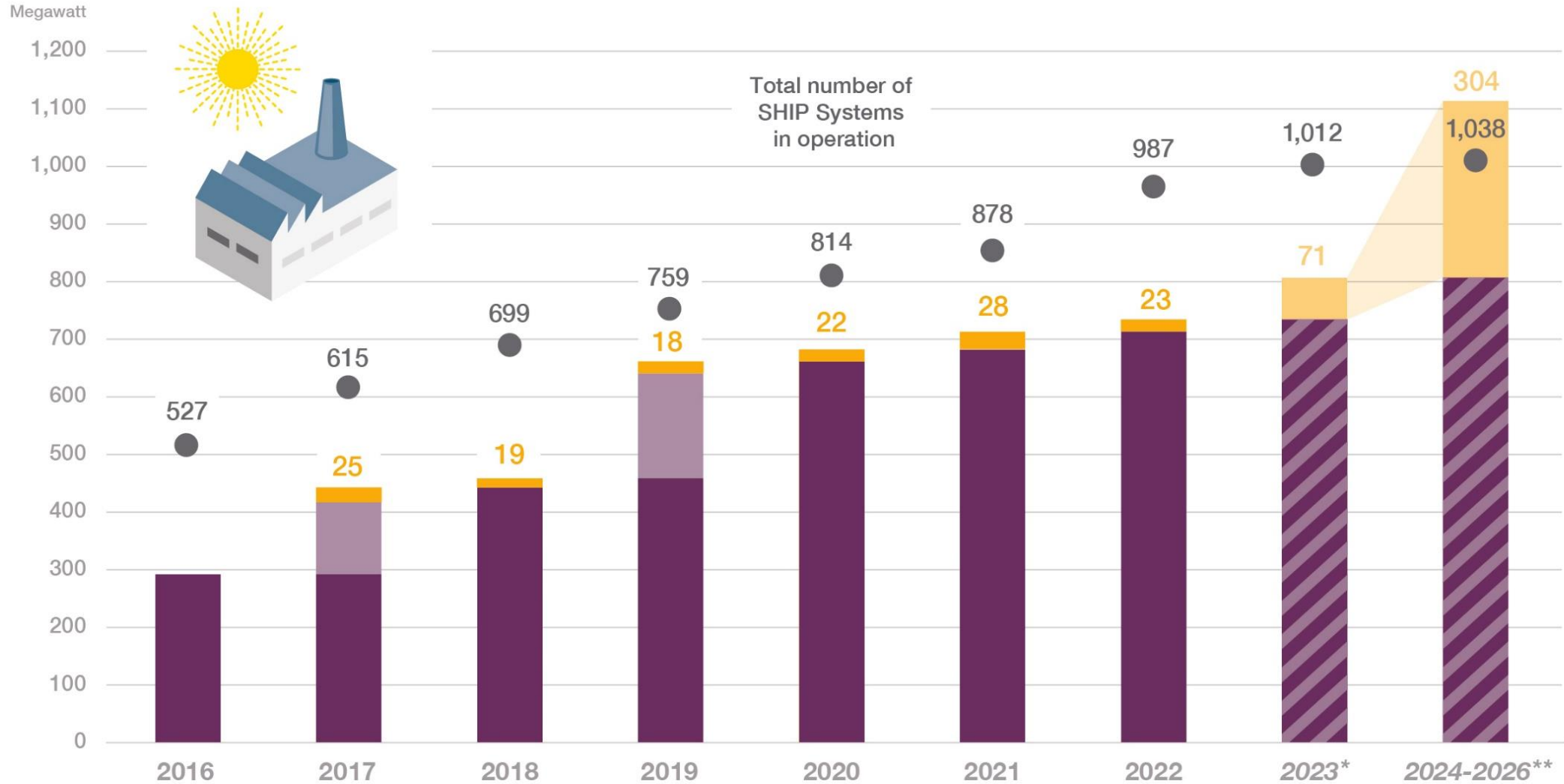
\*2023: Contractually secured projects where the first heat is to be delivered in 2023

\*\*2024-2026: Project capacities are weighted according to their probability of realisation

The conversion factor of 0.7 kW/m<sup>2</sup> aperture area is used for most projects.

Projects in China are not considered in this chart

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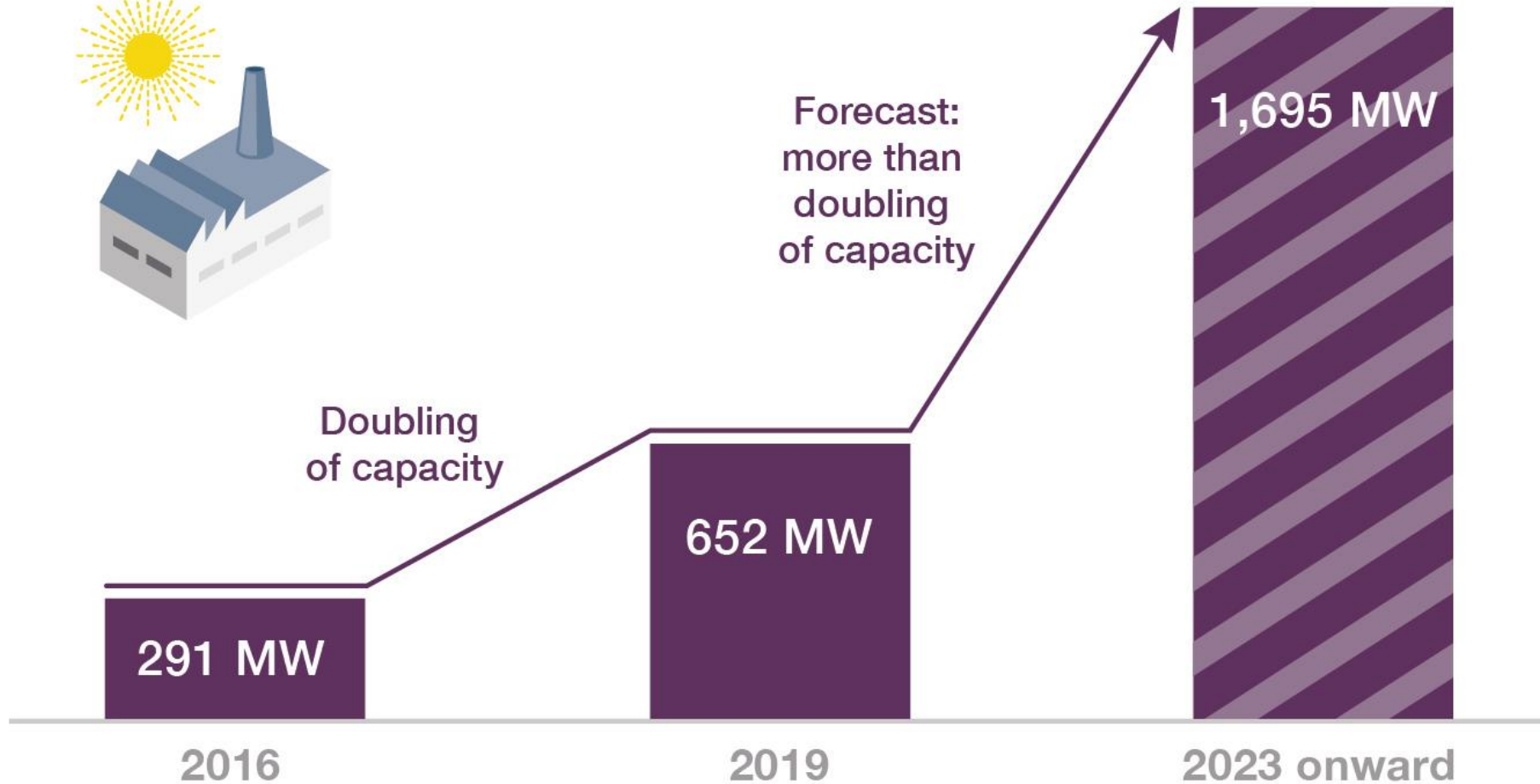
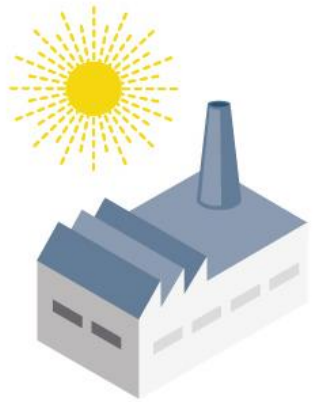
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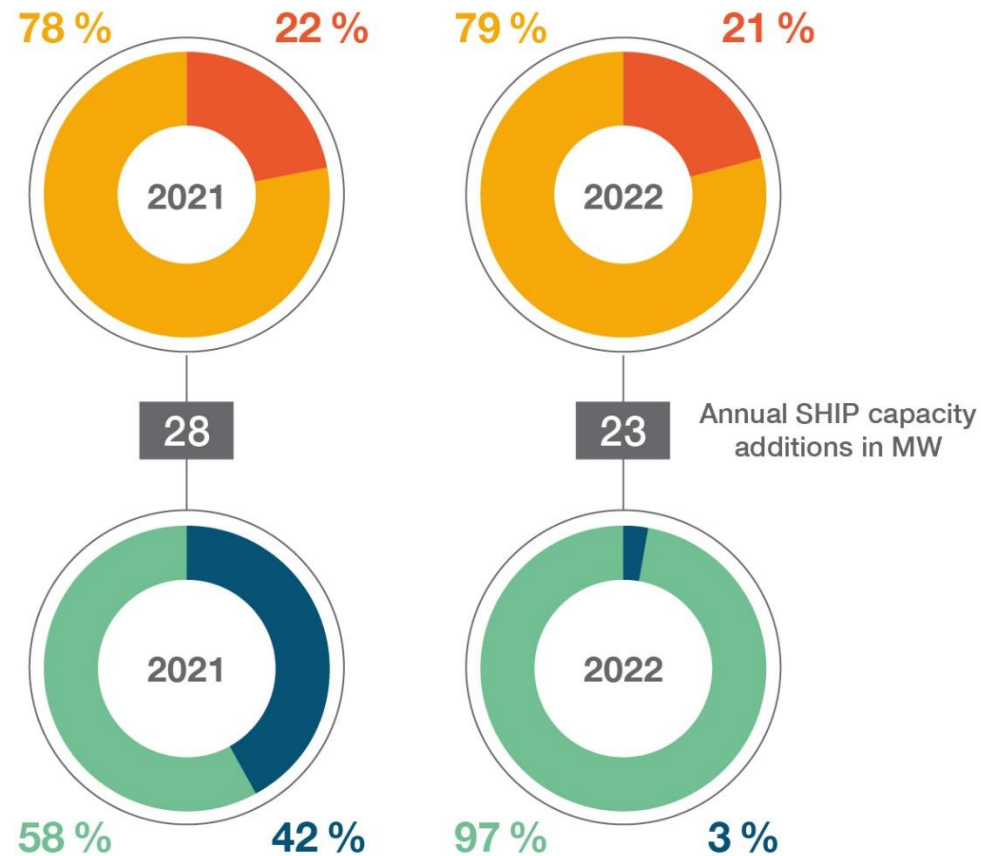
# Solar Industrial Heat Outlook



# Concentrating collectors are on the rise

Share of stationary collectors

Share of concentrating collectors



## Heat delivery contracts dominate the future SHIP market

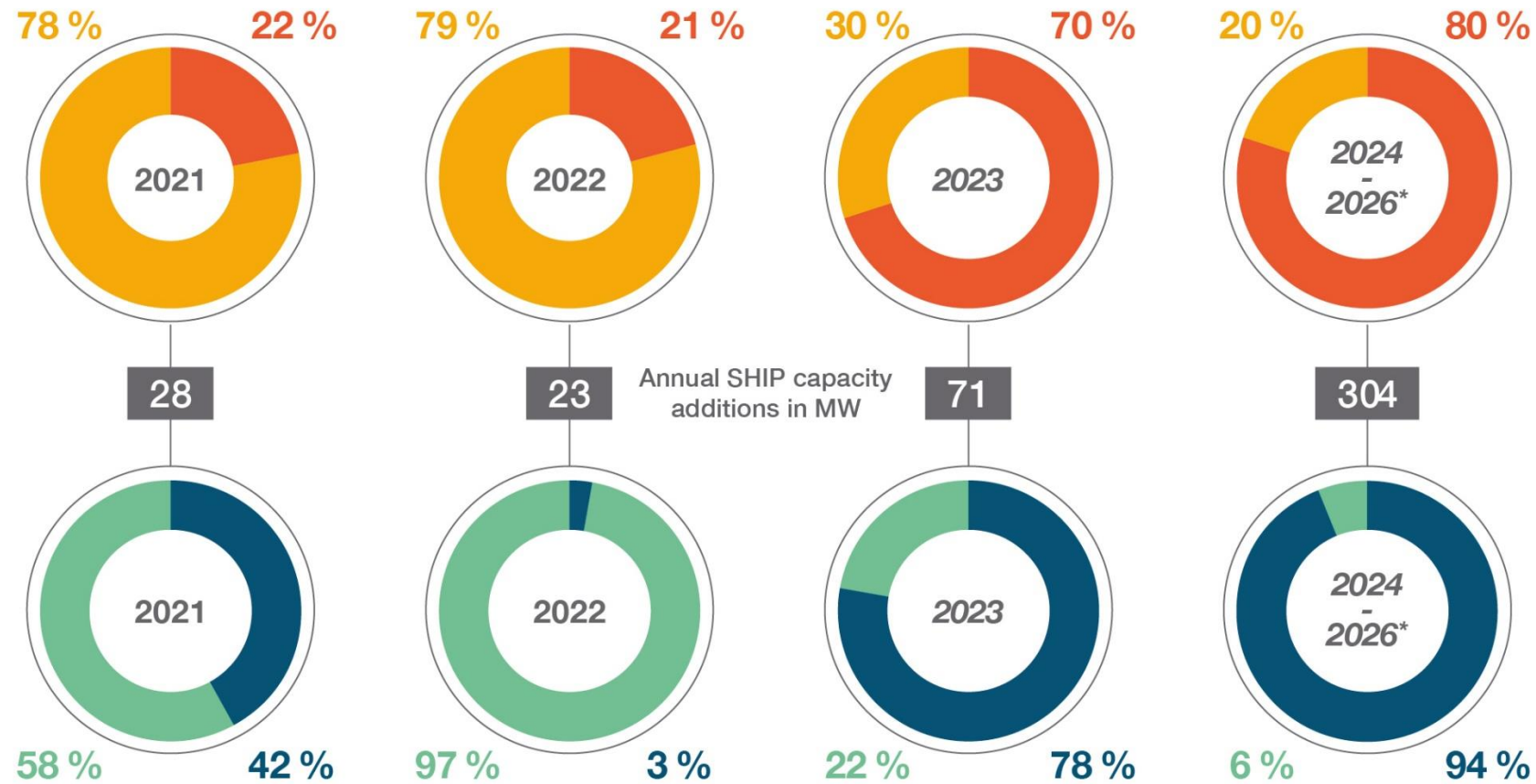
Share of EPC system contracts    Share of heat delivery contracts

*Source: annual industry surveys between 2016 and 2023 without projects in China  
\*2024-2026: project capacities are weighted according to their probability of realisation*

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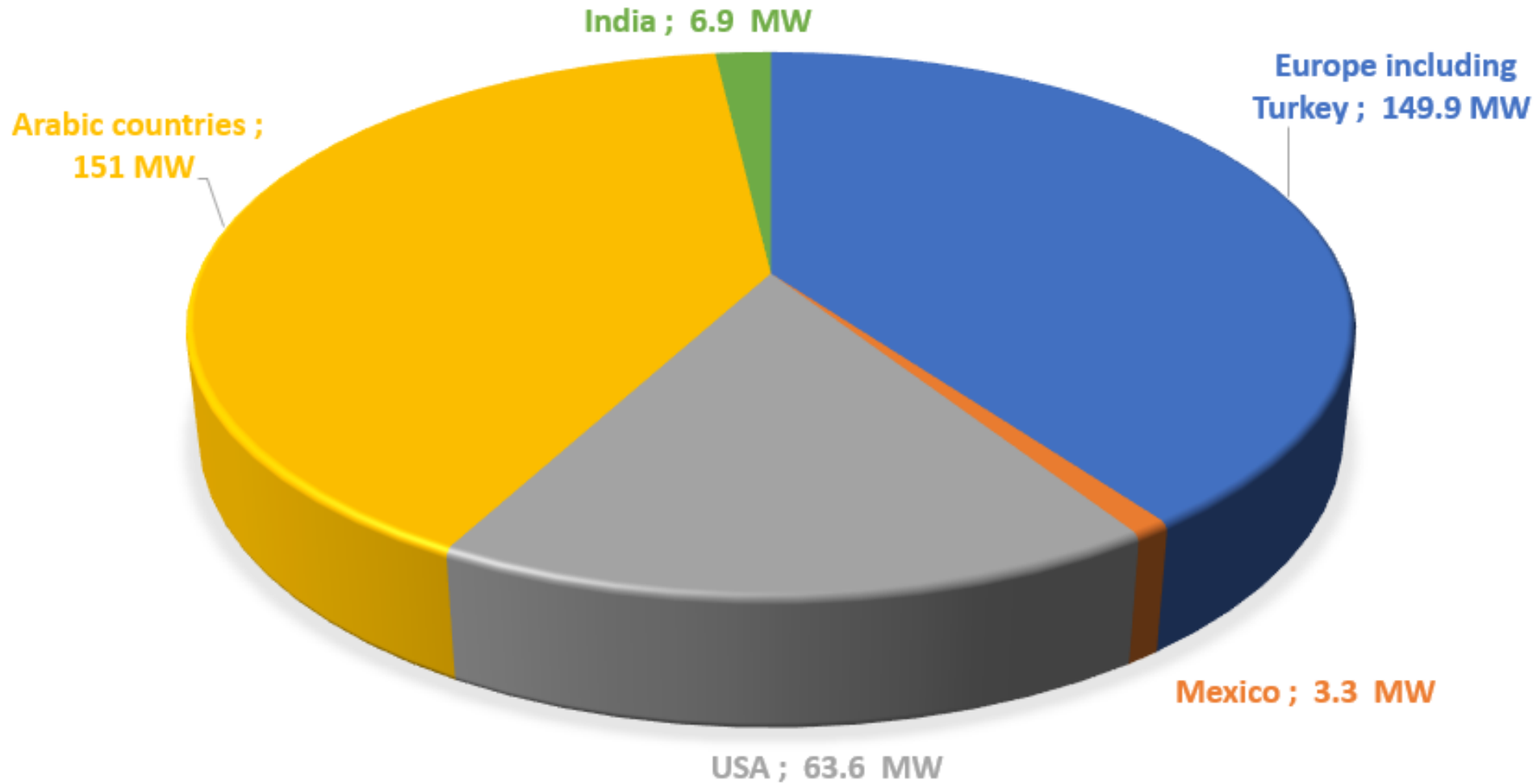
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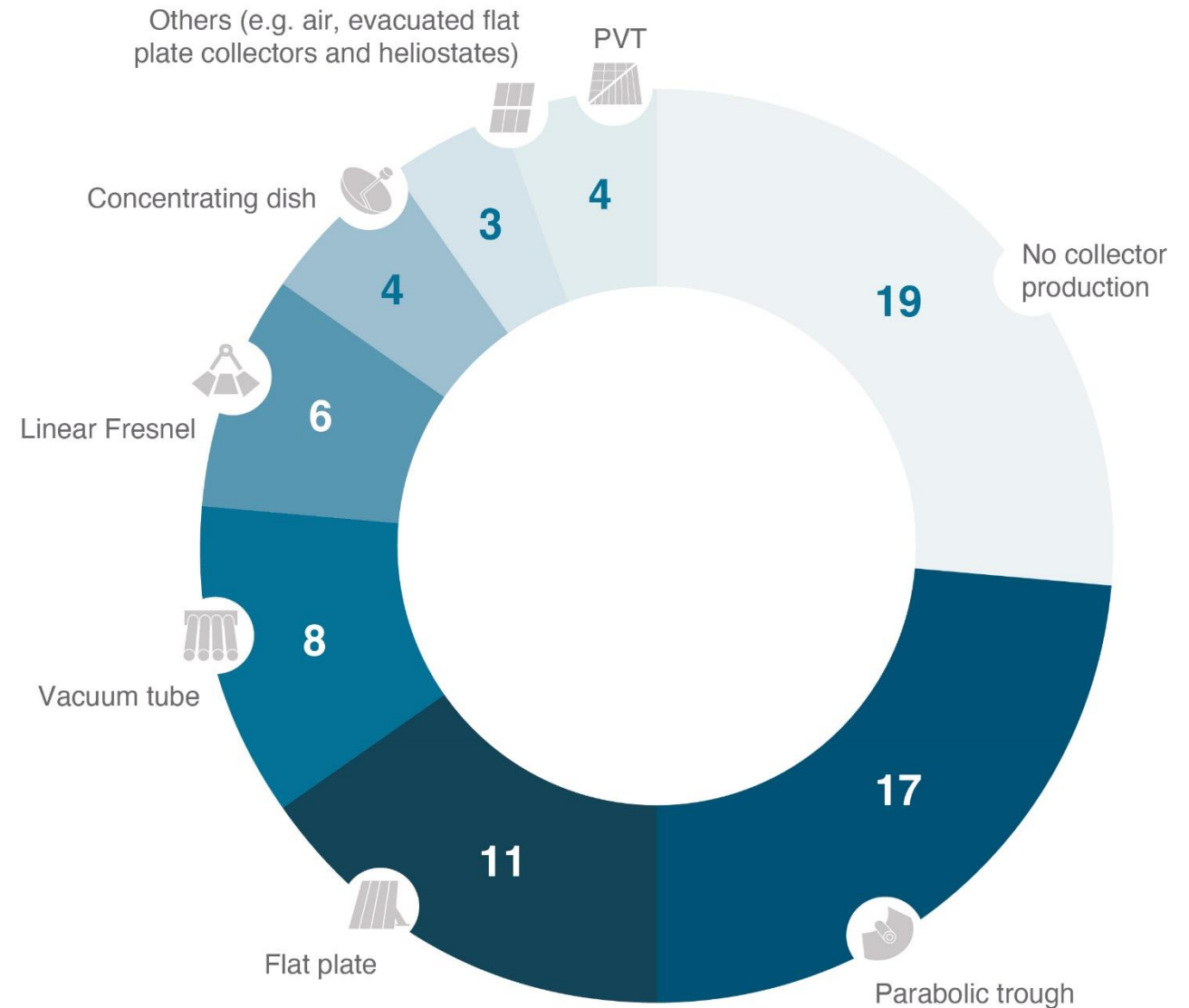
Location of announced weighted SHIP capacity for 2023 onward  
[Total 374.7 MW]



**72 turnkey SHIP suppliers are currently depicted on the world map**

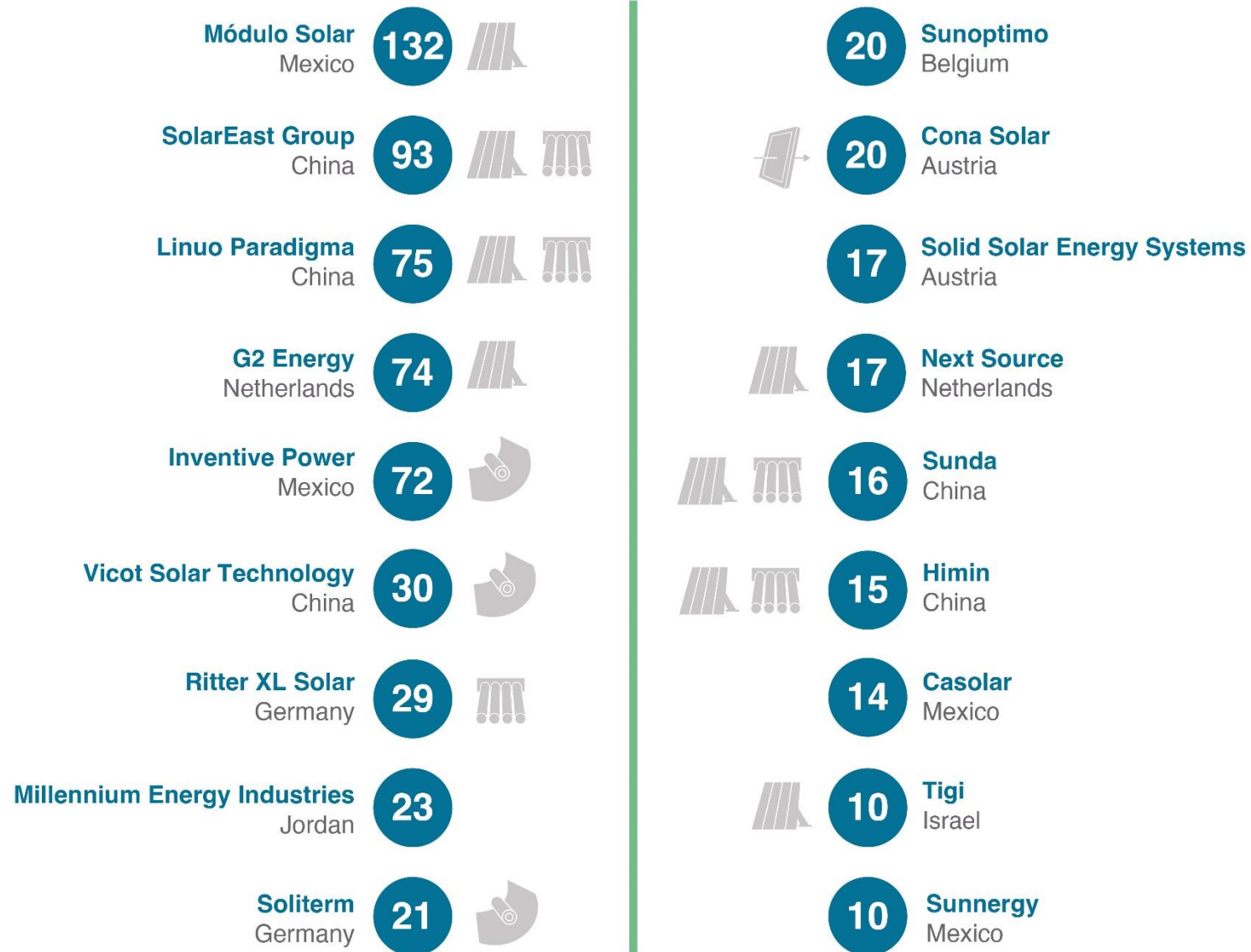
74 % of the listed companies produce collectors in-house or on-site

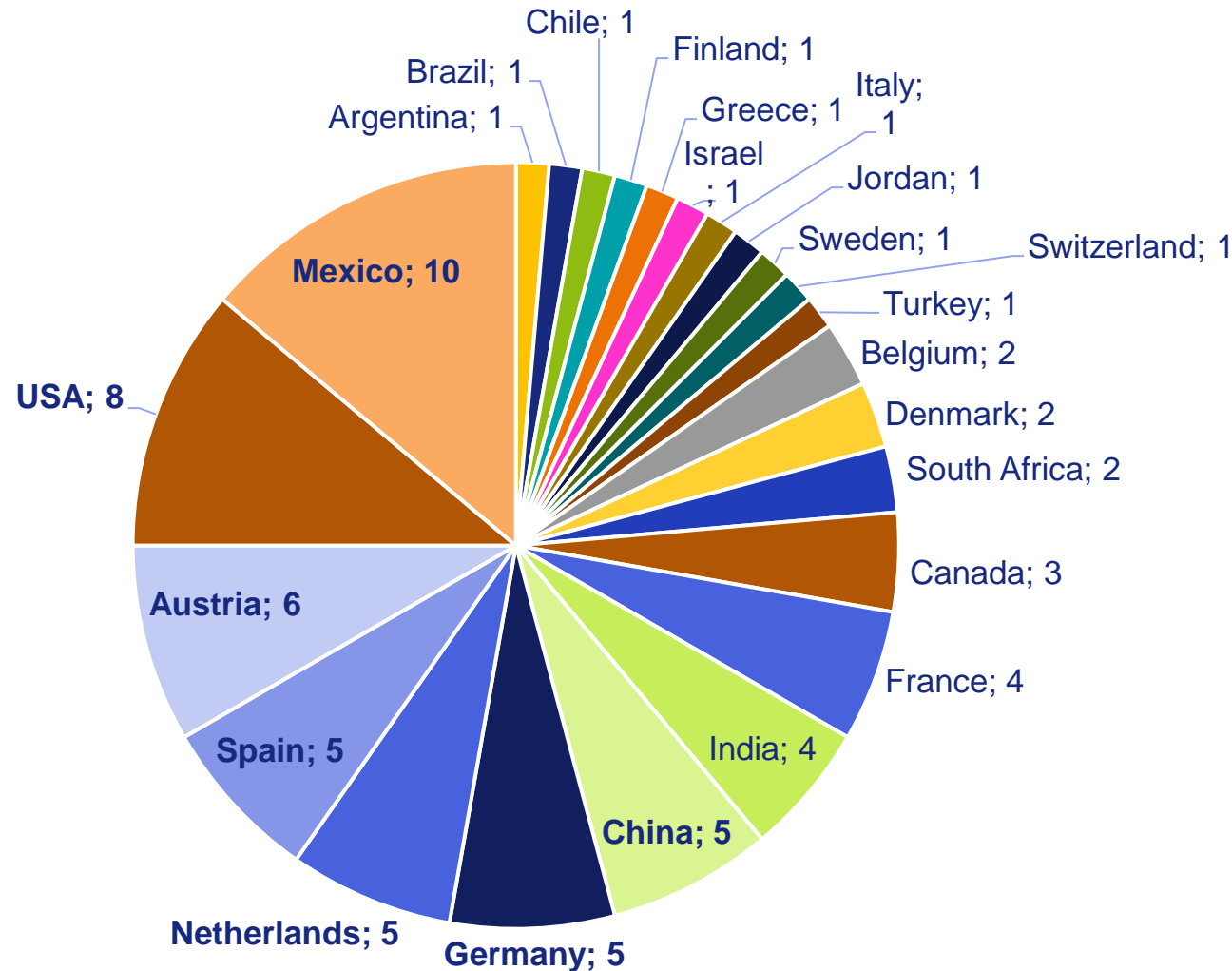
Status: April 2023; Source: Modulus / solrico



# Turnkey suppliers with more than 10 reference projects at the end of 2022

Status: April 2023; Source: Modulus / solrico





A wide-spread industry: location of the 72 SHIP suppliers listed on the world map in 2023

- ▶ News articles about the most recent SHIP Supplier Surveys: <https://solarthermalworld.org/modulus/>
- ▶ Check out the SHIP Supplier World map: <http://www.solar-payback.com/suppliers/>
- ▶ Use photos of SHIP plants for your presentations: [https://www.solar-payback.com/gallery/gallone\\_en.php](https://www.solar-payback.com/gallery/gallone_en.php)
- ▶ Keep updated on trends in the solar thermal industry by subscribe the monthly newsletter of solarthermalworld.org: <https://solarthermalworld.org/newsletter/>
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- ▶ Follow us on Linkedin: <https://www.linkedin.com/groups/2423599/>
  
- ▶ And further questions and comments to: Bärbel Epp: [epp@solrico.com](mailto:epp@solrico.com)