Global Solar Heat Industry: A Close Look into Business and Technology Trends

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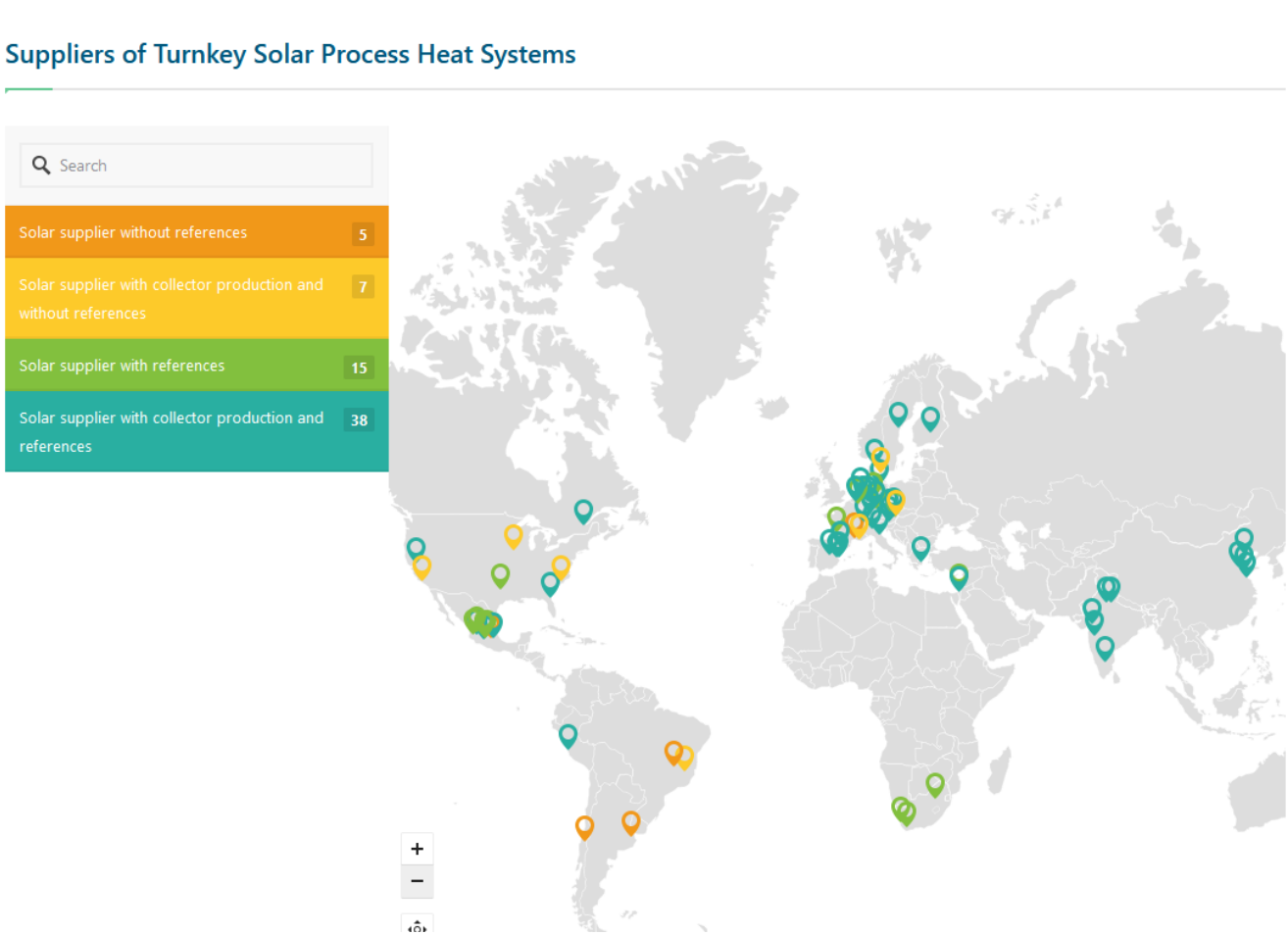
IEA SHC Solar Academy webinar June 2022

Data gathering for two channels

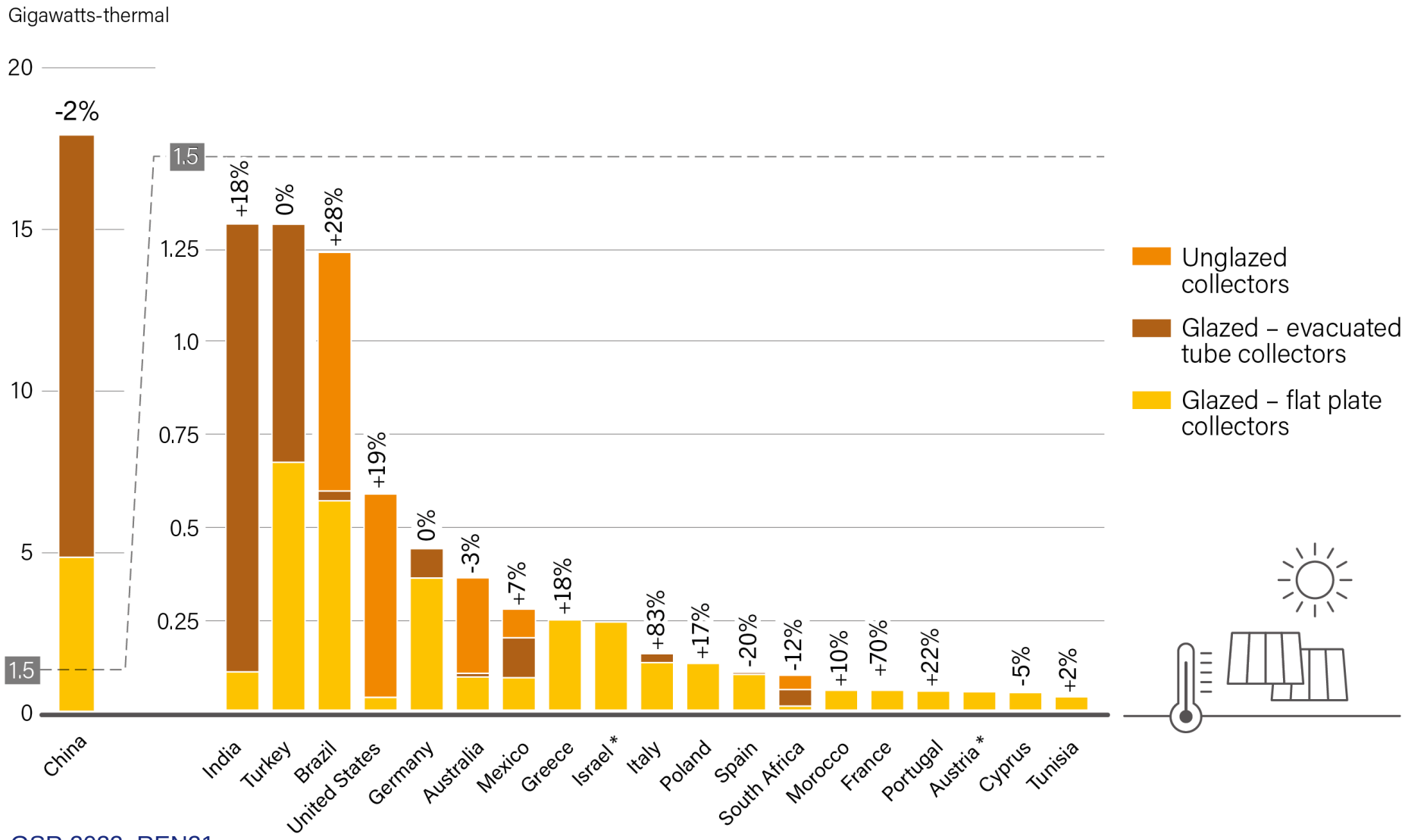
https://www.ren21.net/gsr-2022/



https://www.solar-payback.com/suppliers/

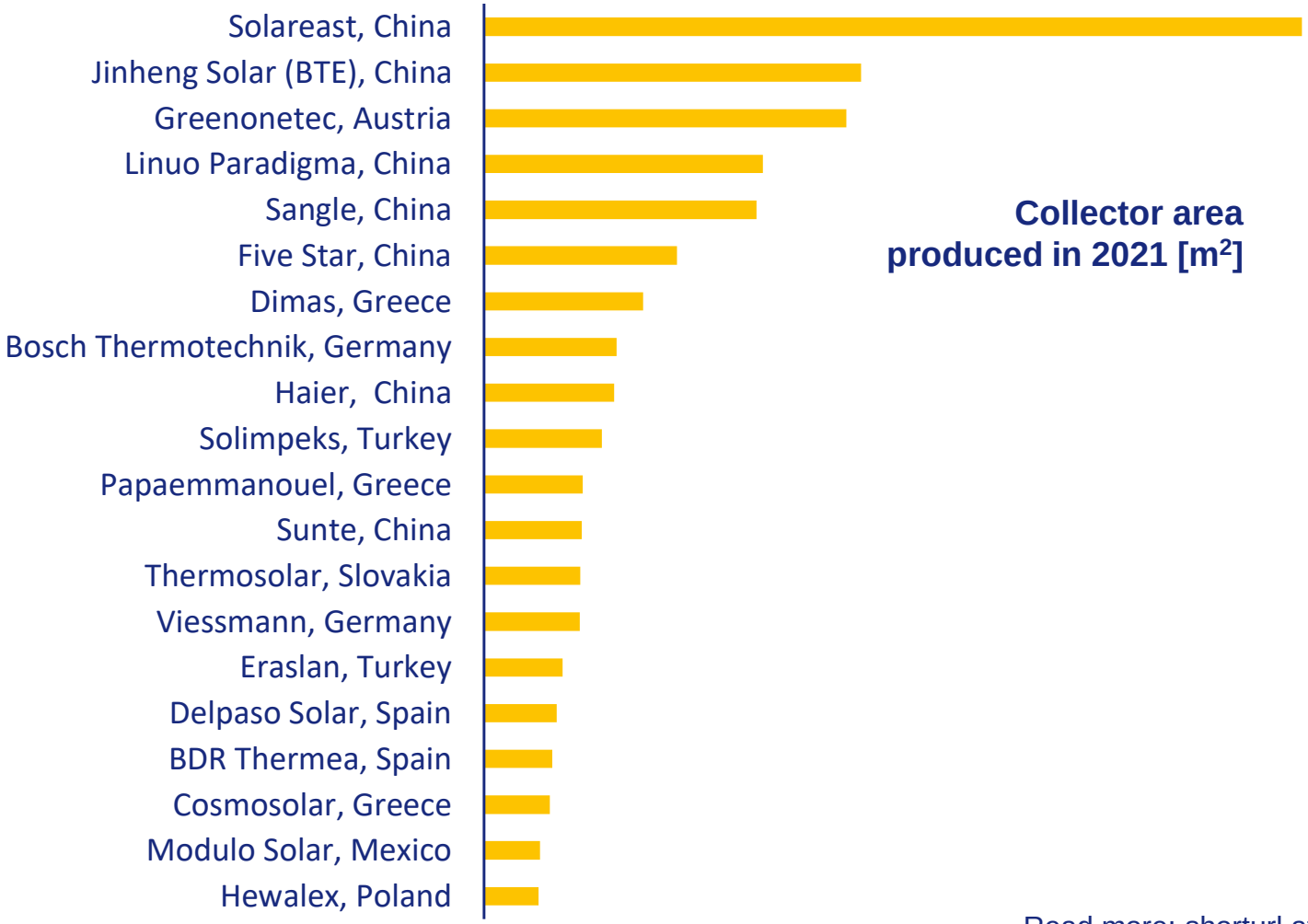
Development in 2021 on the 20 largest markets worldwide

Solar Water Heating Collector Additions, Top 20 Countries for Capacity Added, 2021



Source: GSR 2022, REN21

Ranking of the largest flat plate collector manufacturers worldwide



Consolidation in the industry: large manufacturers growing faster than the market

+7 % for the seven Chinese companies

Reversing trend for manufacturers in Europe from –12 % to +21%.

Read more: shorturl.at/iqQX7

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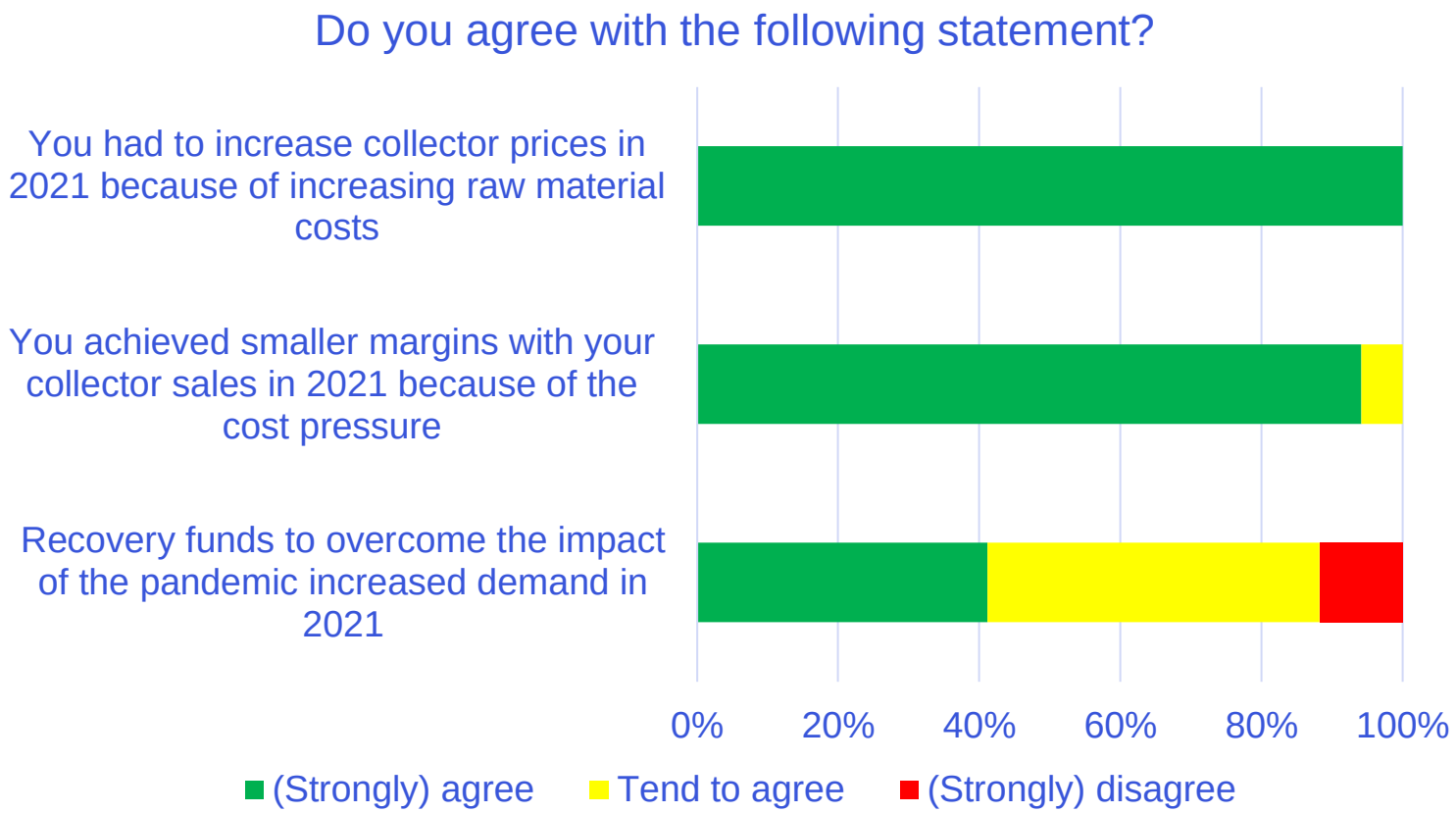

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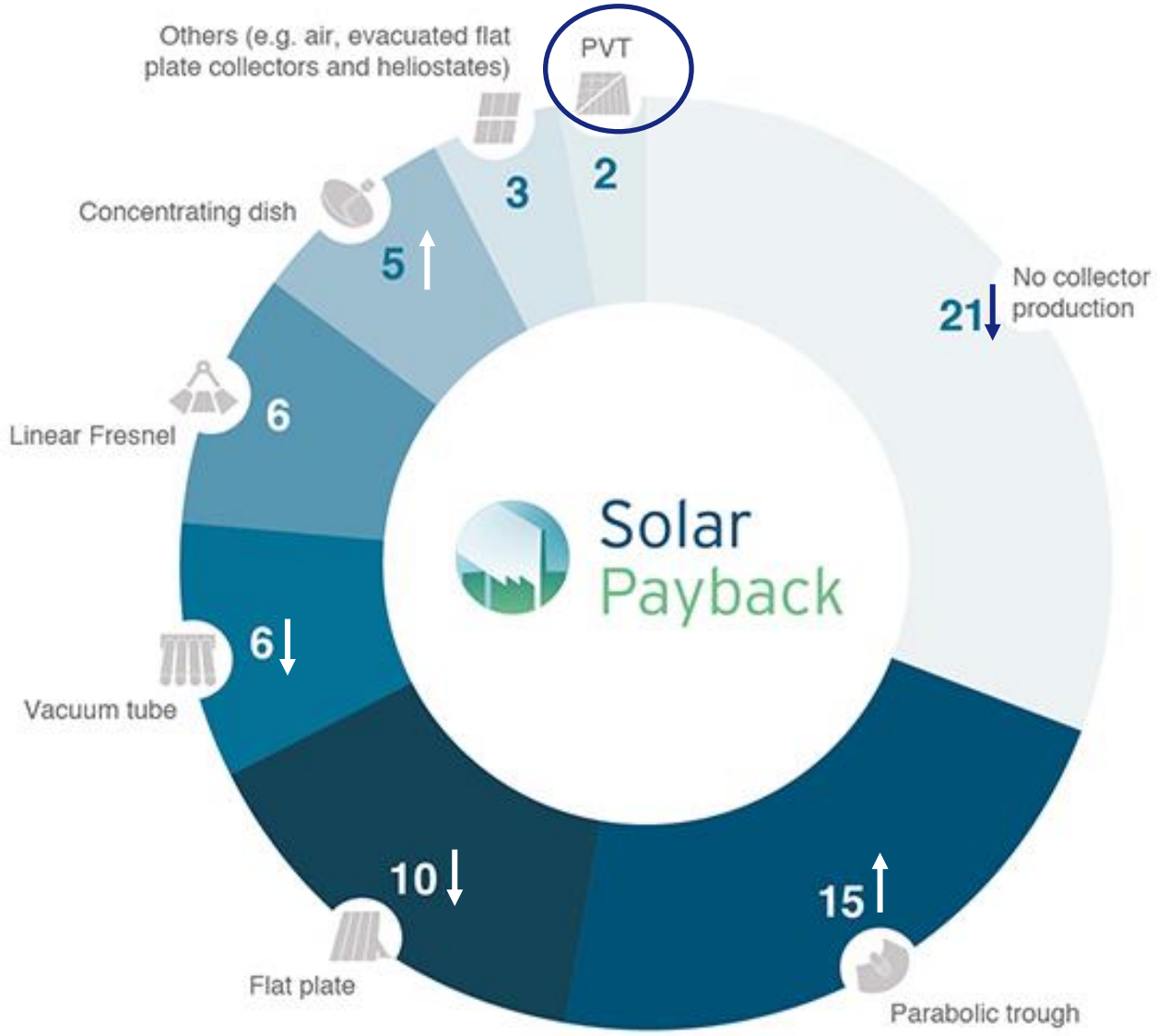
Turnkey SHIP Supplier World Map

68 turnkey SHIP suppliers are currently depicted on the world map

69 % of the listed companies produce collectors in-house or on-site



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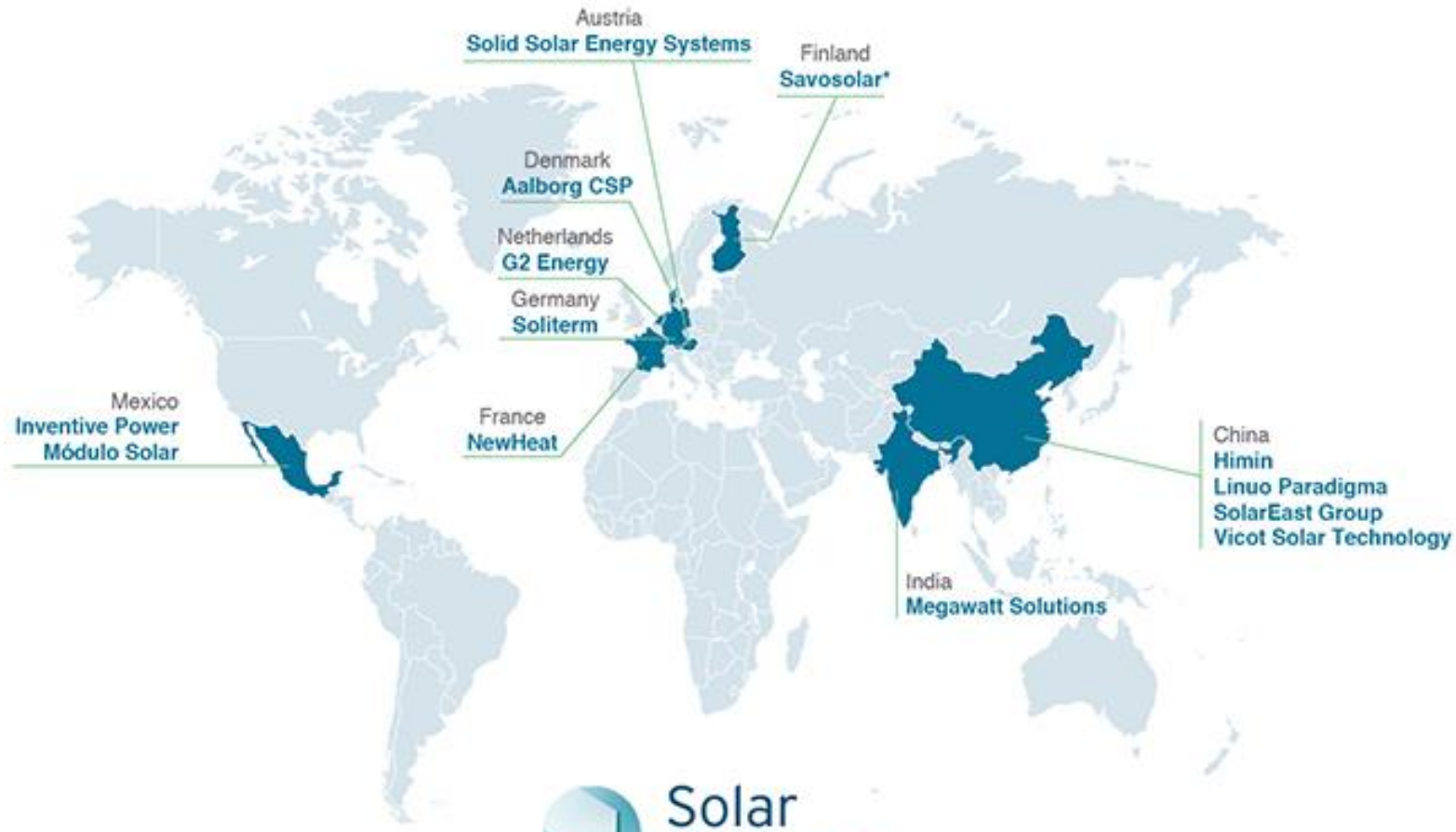
Turnkey SHIP Supplier World Map

Turnkey suppliers that sold SHIP systems with a total of more than 10,000 m² by the end of 2021



* Two projects realised jointly with NewHeat

Solar industrial heat: It´s a tough business

2017
107 SHIP systems with 153 MW_{th}

- 120 MW Miraah in Oman
- Mexico (39), India (22), China (19)

2018
99 SHIP systems with 39 MW_{th}

- 51 SHIP plants in Mexico
- China (15), Germany (9), India (5)

2019
86 SHIP systems with 251 MW_{th}

- 180 MW Miraah
- China (26), Mexico (26), Germany (11), India (7)

2020
87 SHIP systems with 93 MW_{th}

China (30), Mexico (16), Germany (10), Austria (10)

2021
71 SHIP systems with 36 MW_{th}

Mexico (18)
Netherlands (15)
Austria (11)
China (7)
Germany/Spain (4)

Source: Annual solrico surveys

2021 was a very weak year for SHIP

Only 7 out of 48 technology suppliers were satisfied with the business development (15 %)

Among the around 80 SHIP technology suppliers from the world map that we have sent the questionnaire to only 16 have commissioned on single SHIP project (20 %).

Reason for the dissatisfaction / for the small number of commissioned systems:

- “Too long development times” (France)
- “Very less acceptance as all available areas is allocated to PV” (India)
- “Too little demand, projects need a lot of lead time, mostly years and then will never be implemented” (Austria)
- “We have projects that were put on hold due to government not supporting and incentivizing SHIP Projects” (Mexico)
- “Low awareness and back wind for heat pumps results in low sales” (Israel)

Outstanding SHIP systems commissioned in 2021

332 kW for food processor in Mexico by **Inventive Power** as ESCO

3.5 MW solar air PVT system drying animal food by **Solarwall Spain**

10 MW for air drying for malting plant in France by **NewHeat/Kyotherm** (ESCO)

280 kW field evacuated flat plate collectors by **TVP Solar** in Brazil

3.8 MW field for cigarette packaging company in Turkey by **Soliterm**

Concentrating solar heat: a lot in the pipeline

Project developer	Country of installation	Parabolic trough collector [m2]	Linear Fresnel [m2]	Application	Planned commissionng
Azteq	Belgium	5,539		Chemical, ESCO project	2nd / 3rd quarter 2022
Sanvapor	USA / California	4,000		Almond processor	February 2022
Skyven	USA / California	12,000		Dairy	Sep 22
Skyven	USA / California	17,000		Dairy	Sep 22
Inventive power	Mexico	1,300		Dissolution of ammonium nitrate	May 2022
Solatom	Spain		890	Food & Beverage	July 2022
Solatom	Spain		1,636	Food & Beverage	Nov 22
Absolicon	Greece	660		Beverage	Sep 22
Absolicon	Kenya	396		Tank washing	Apr 22
Ecotherm	Spain		800	Chemical industry	May 2022
Ecotherm	Spain		360	Food industry	May 2022
Total		40,895	3,686		

Funded by Food Production Investment Program in California

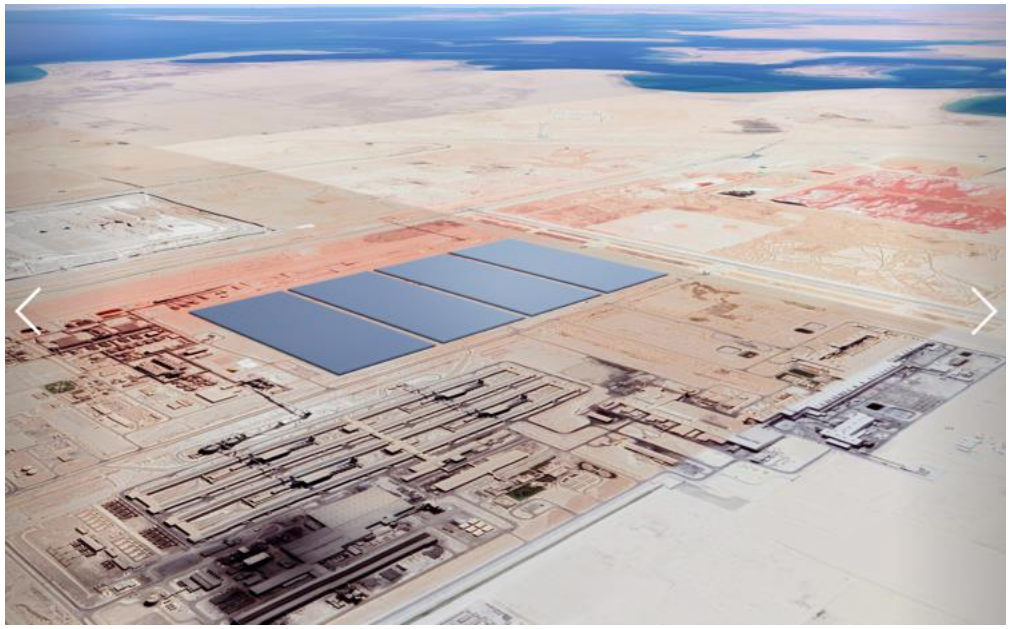
Funded by IDAE's Thermal Energy Production Program in Spain

Funded by EU Project Hycool

Two big announcements

77 MW parabolic trough collector field supplies hot water and snow to this leisure park in Handan, China. Construction should be finalised till the end of the year. Technology supplier: Inner Mongolia XuCheng Energy

Read more: https://solarthermalworld.org/news/construction-imminent-on-77-mw-solar-heat-plant-for-leisure-resort/



MoU with Ma'aden, Aluminium producer in Saudi Arabia to built a **1.5 GW** parabolic trough collector field in greenhouses. Technology supplier: New Glasspoint

Read more: https://solarthermalworld.org/news/new-glasspoint-announces-first-1-5-gw-parabolic-trough-field/

Figures: Photo: weixin.qq.com / Glasspoint

Announced Multi-MW systems

Heiniken and Engie reached an agreement that Engie will build and operate (BOOT) a **30 MW** plant in the premises of Heineken's beer factory in Seville, Spain. Grants are secured from IDAE.

Construction started for a **15 MW** whey powder factory in France supported by Ademe by Ademe

New Heat secured EUR 4.5 million subsidies from EU innovation fund to built **25 MW** for a malting plant in Croatia

Prishtina's municipal district heating firm Termokos aims at purchasing a **48 MW** district heating plant (announcement March 2022). Decision has been made by the Kosovo Government and the City to proceed with financing provided by German Government, KfW and EBRD.

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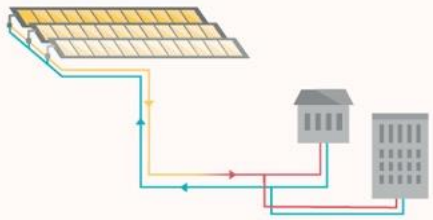
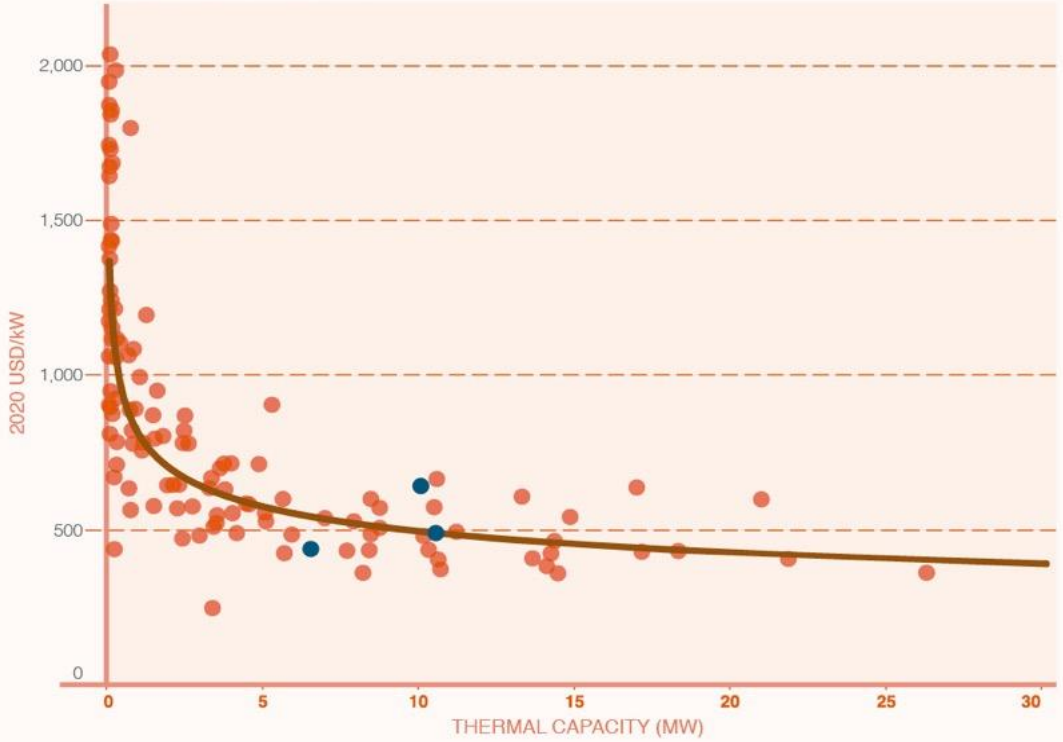
195 MW large-scale in the contracting period or with secured subsidies

Economies of scale

Denmark's SDH market: a role model for economies of scale





How to read this chart:

Each orange circle shows one SDH project and each blue circle shows one of the large multi-MW SHIP plants commissioned between 2010 and 2021 in Europe. 97 % of the SDH projects have been installed in three countries Austria, Germany and Denmark.

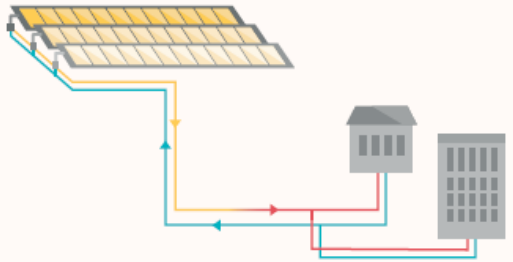
The fitted, trend line shows the cost degression for increased plant sizes in MW.

"Solar thermal isn't expensive, but lack of market scale is"

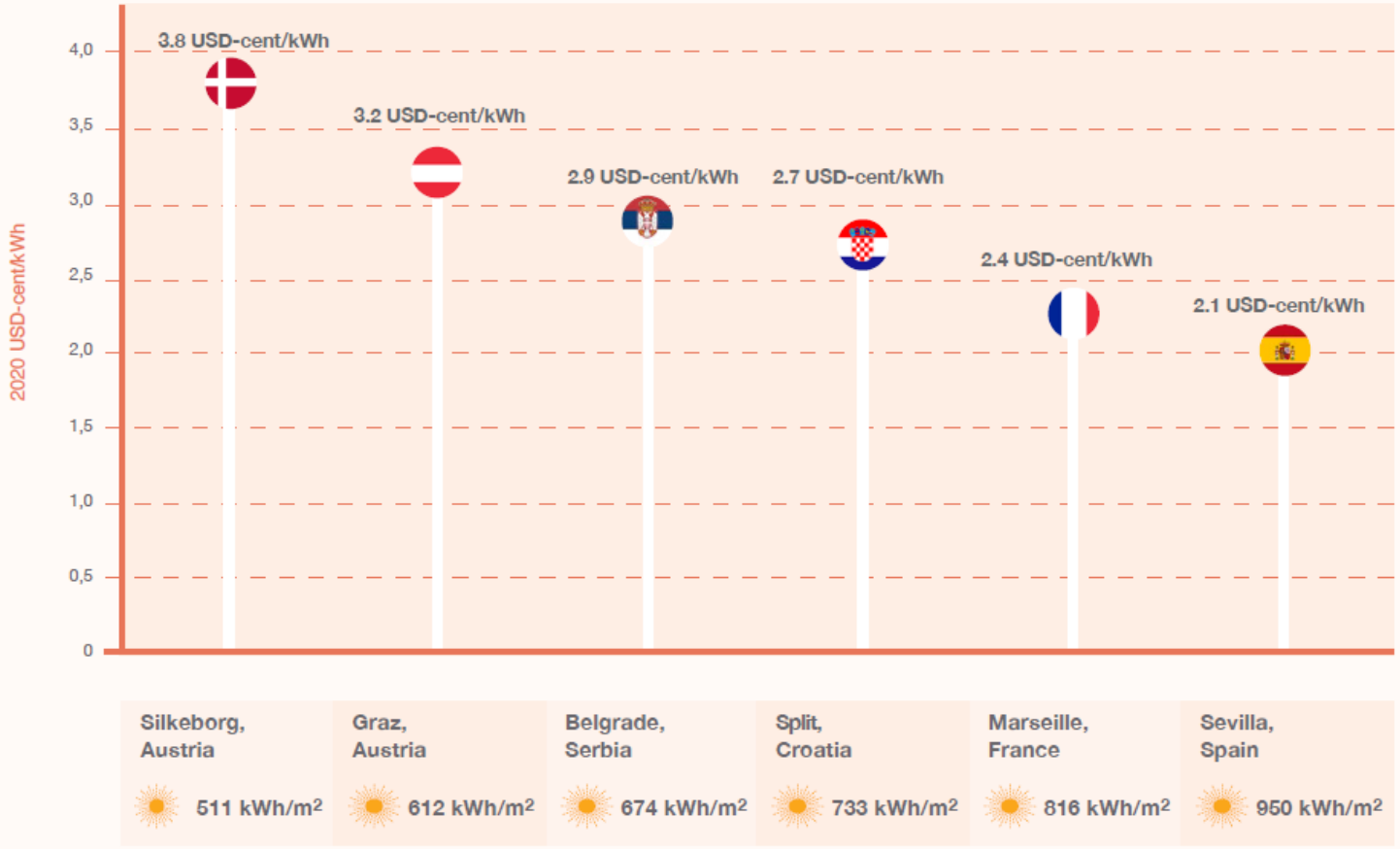
Michael Taylor

https://www.solrico.com/index.php?id=23

Lowest heat costs of utility-scale solar heat in Southern Europe



Weighted-average LCOH when placing the 110 MW SDH plant of Silkeborg at different sites in Southern Europe



How to read this chart:

The 110 MW SDH plant in Silkeborg, Denmark, reaches 511 kWh/m² per year at a site with global annual horizontal irradiation of 1,006 kWh/m². The LCOH were calculated with the same total installed costs but for the higher specific solar yield at sunnier regions (linear extrapolation).

Average annual solar yield

COST ANALYSIS: IRENA

Thanks for your attention!

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https://solarthermalworld.org/

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