



Solar Heat Worldwide Edition 2019



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Solar Heat Worldwide

Global Market Development and Trends in 2018

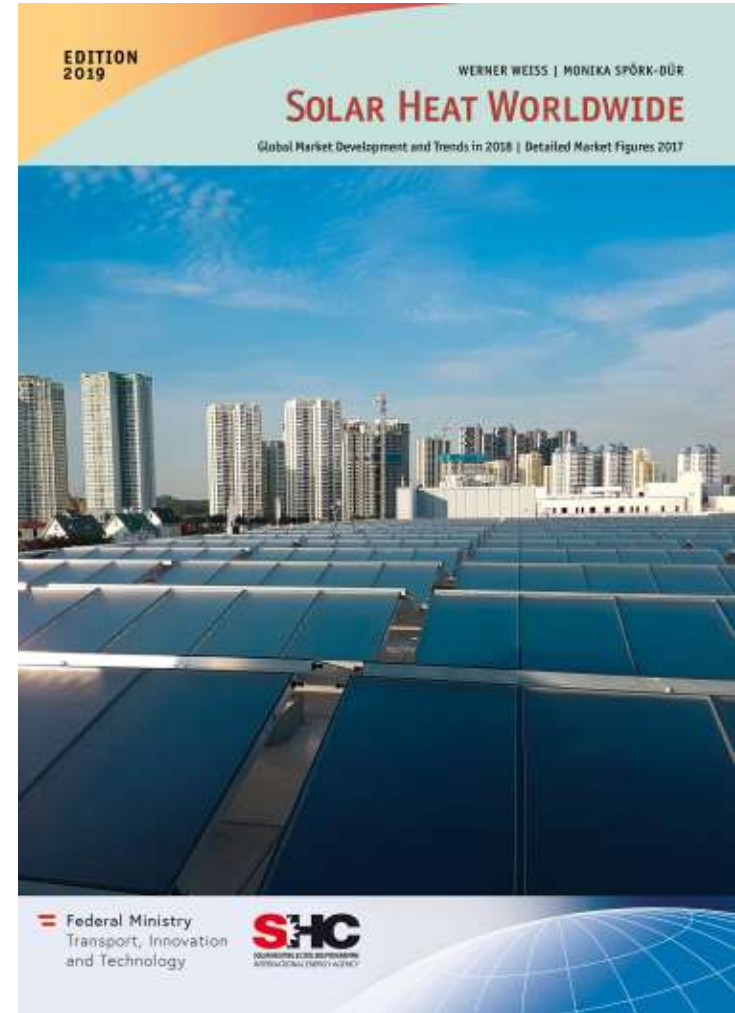
Detailed Market Figures 2017



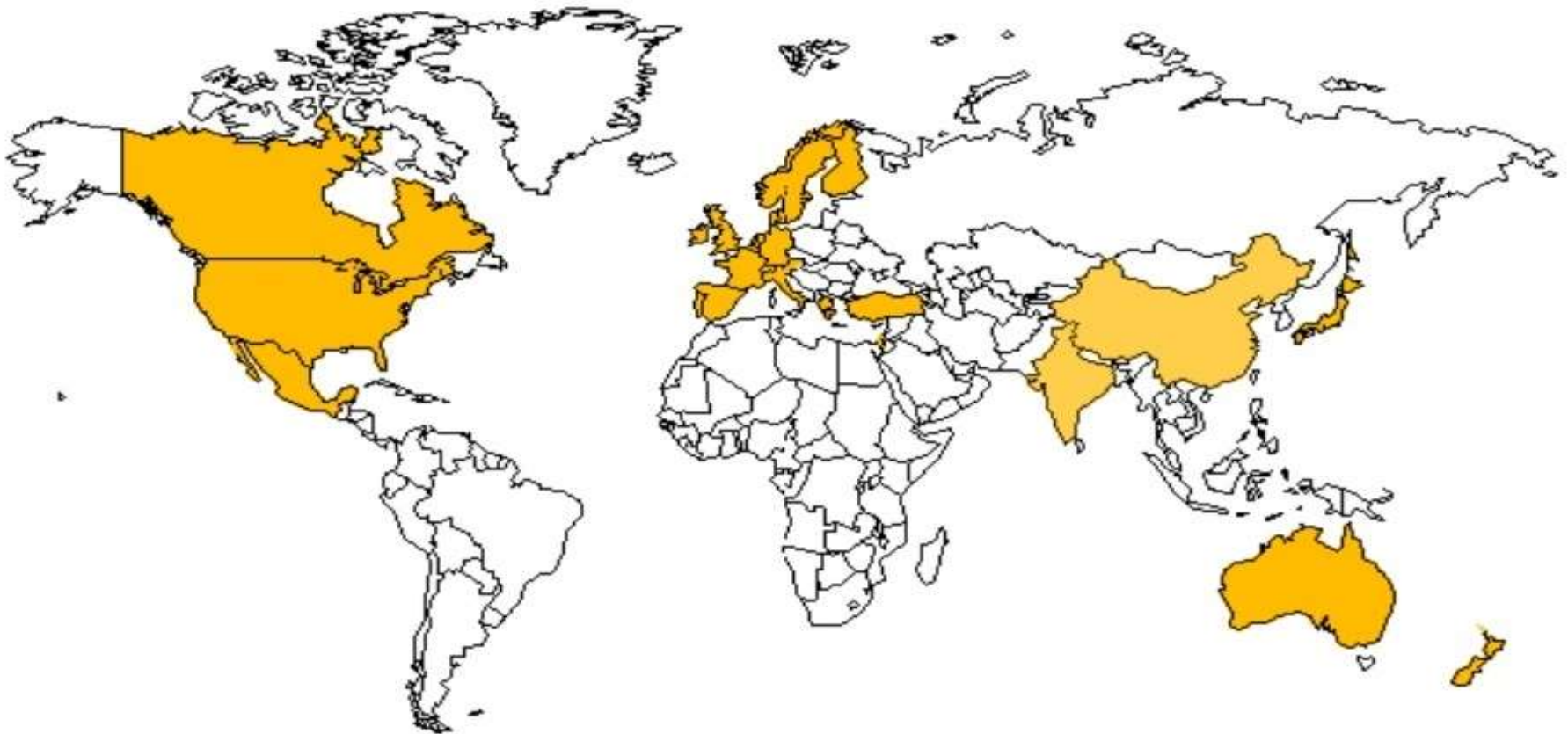
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The first edition of the report included data from **35 countries**.
The data base has been extended to **68 countries** over the past **15 years**.

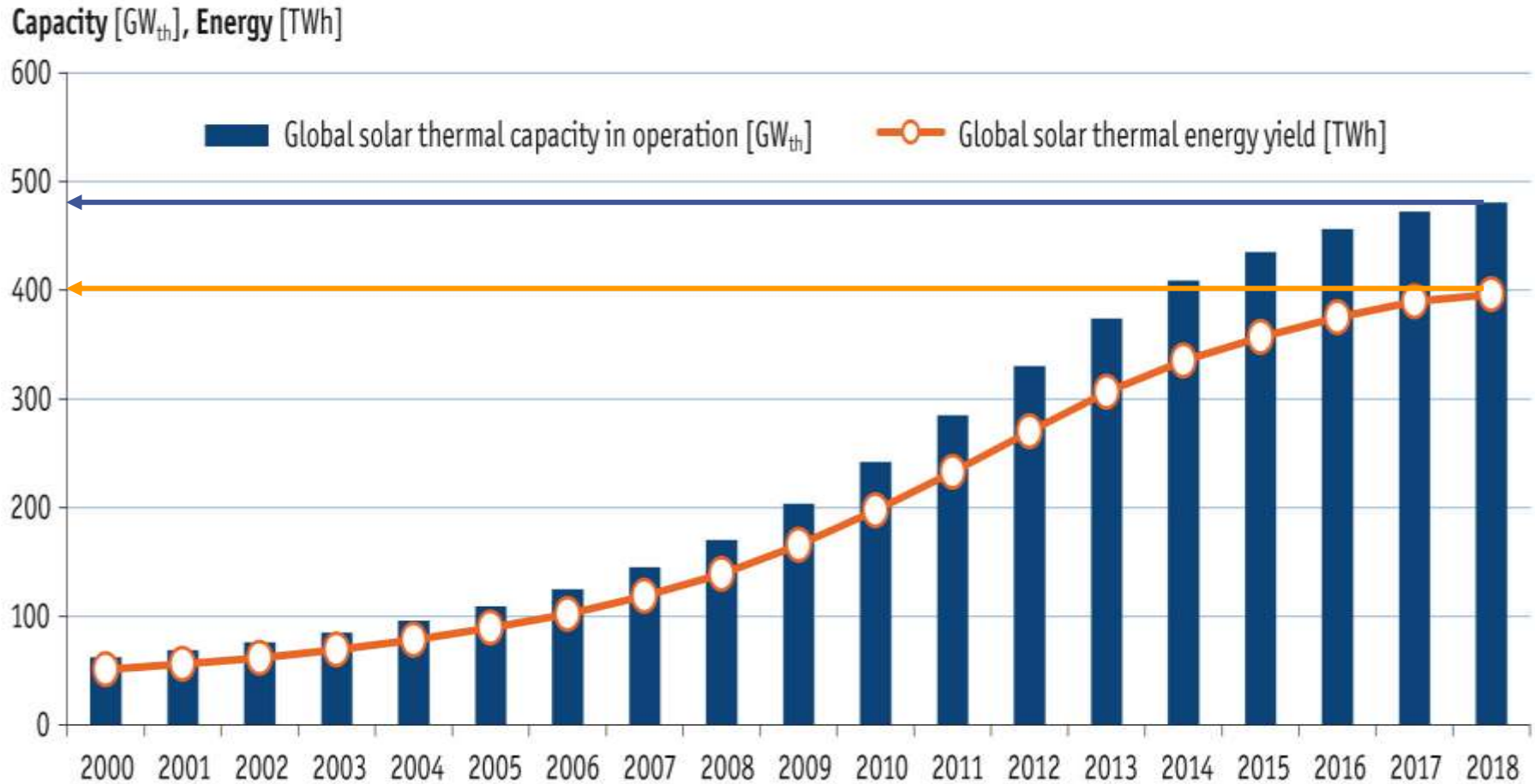


Global Solar Thermal Market Developments and status 2018



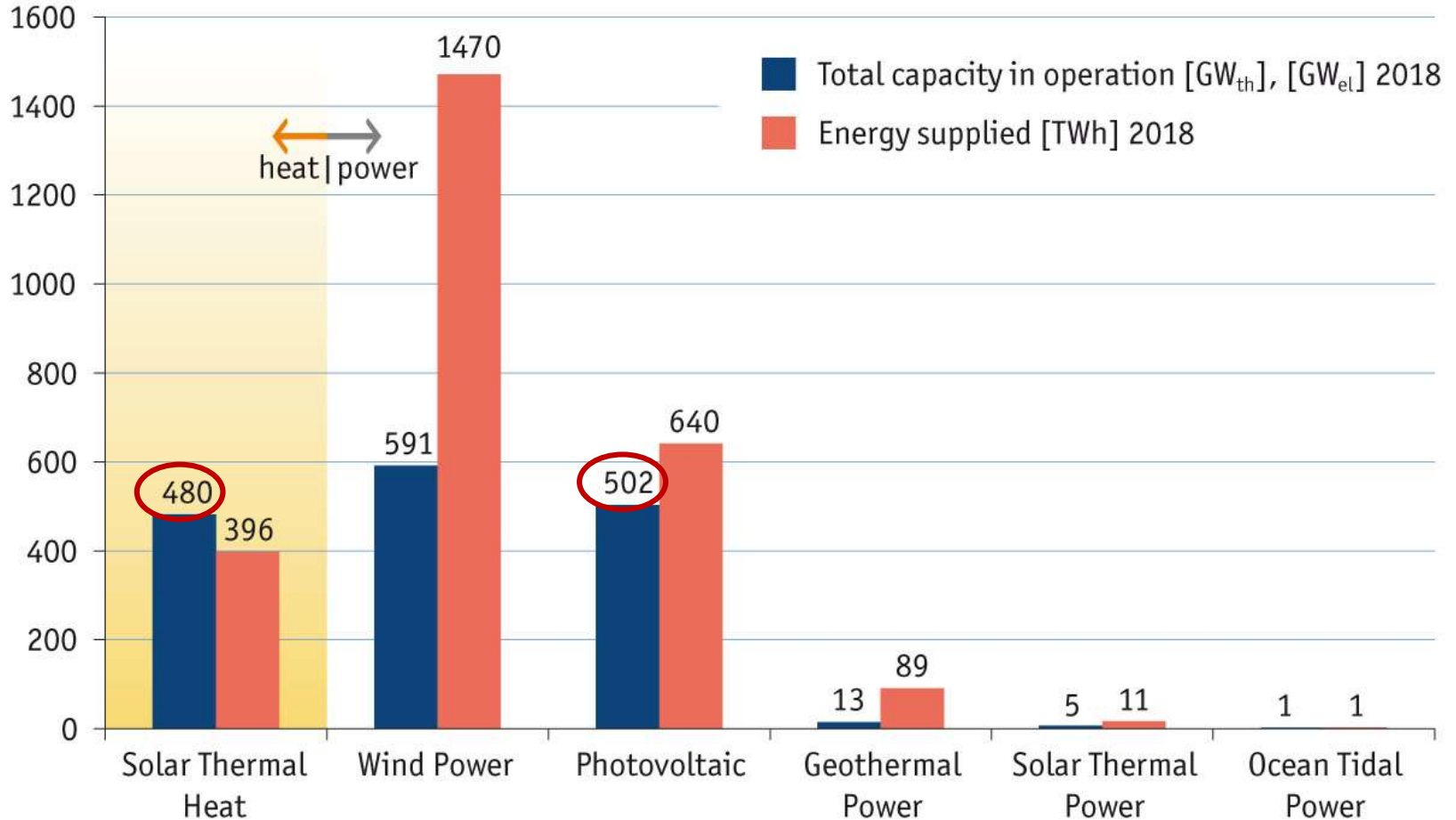
Photo: Arcon-Sunmark AS

Global solar thermal capacity in operation and annual energy yields 2000 - 2018



Installed capacities and energy supply

Global capacity in operation [GW_{el}], [GW_{th}], and energy supplied [TWh_{el}], [TWh_{th}], 2018



Sources: AEE INTEC, Global Wind Energy Council (GWEC), European PV Industry Association (EPIA), REN21 - Global Status Report 2019)

Environmental Effects and Contribution to the Climate Goals

Solar thermal energy yields amounted 396 TWh in 2018

137.5 million tons of CO₂ avoided



Oil equivalent in 2018



42.6 million tons of oil

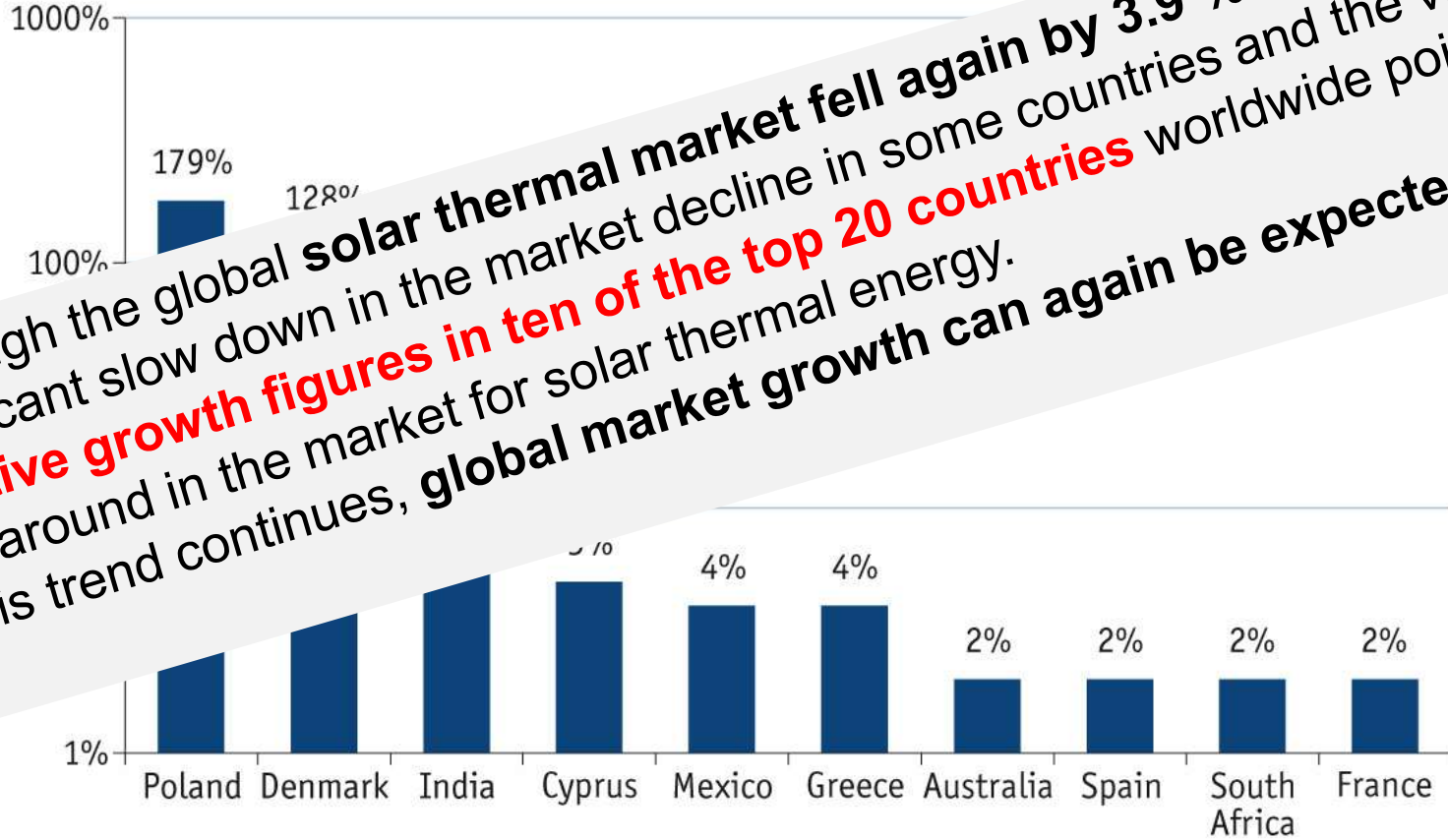
Employment and Turnover

672,000 jobs worldwide



Positive growth figures in ten of the top 20 countries

Growth rate 2018



Although the global solar thermal market fell again by 3.9 % in 2018, the significant slow down in the market decline in some countries and the very **positive growth figures in ten of the top 20 countries** worldwide point to a turn around in the market for solar thermal energy. If this trend continues, **global market growth can again be expected in 2019.**

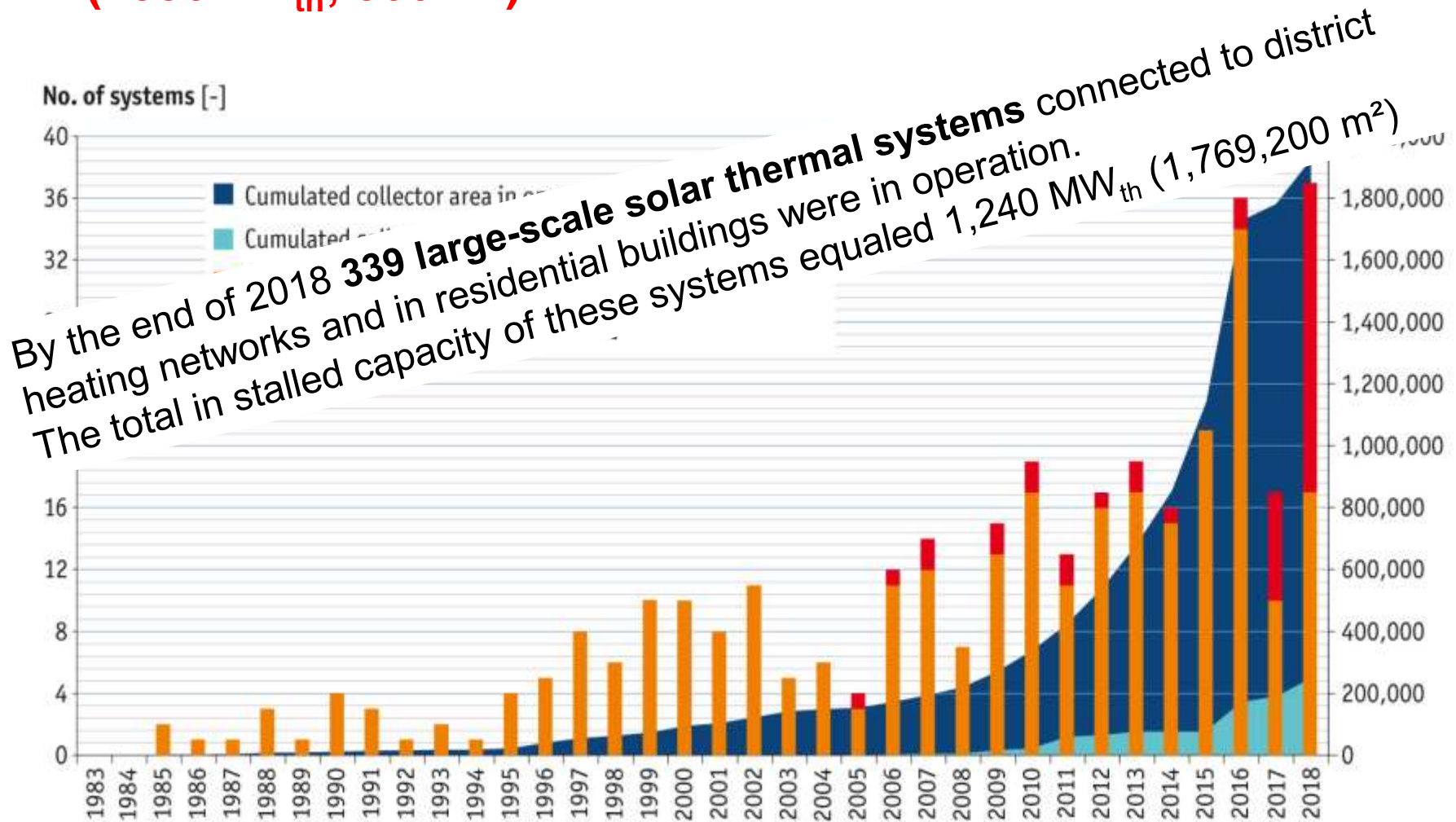
Solar thermal heating systems in the building sector

Small-scale solar water heating systems for detached single-family houses and apartment buildings represent approximately **90 % of the worldwide annual installations**.

These applications are still under market pressure from heat pumps and photovoltaic systems.



Large-scale Solar Thermal Systems ($>350 \text{ kW}_{\text{th}}$; 500 m^2)



In 2018, seventeen large-scale solar thermal systems with 85,100 m² (60 MW_{th}) were installed in Europe.



Outside Europe, 27 MW_{th} (38,260 m²) were installed.

In China most of the installed systems for district heating have been installed in Tibet.

Langkazi Tibet

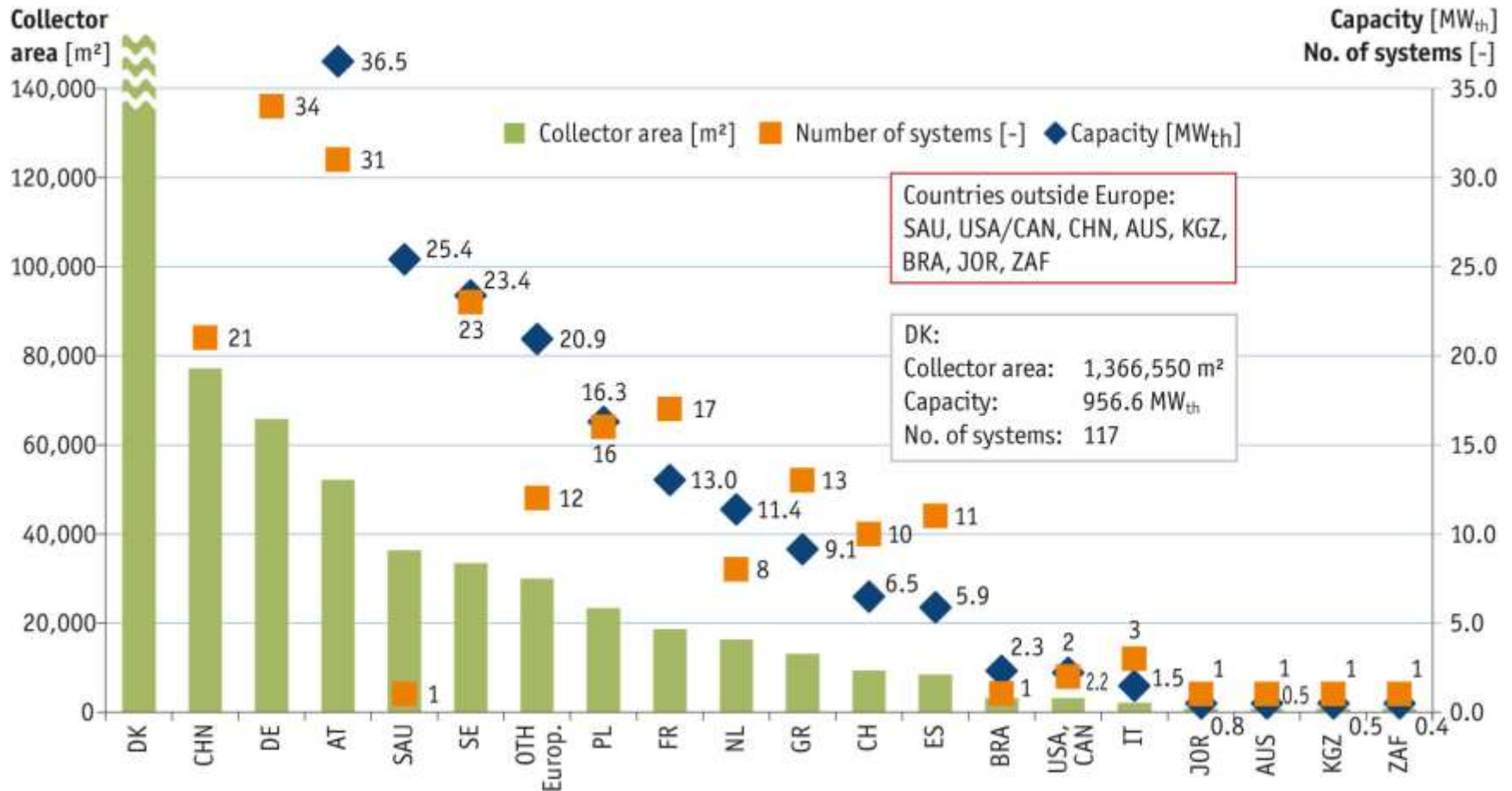
15.6 MW_{th} (22,275 m²) solar collector field covers more than 90 % of Langkazi's heating needs.

The system also includes a 15,000 m³ seasonal storage

In South Africa, the first solar district heating network was installed in 2018 with a collector area of 557 m²



Large-scale systems for solar district heating and residential buildings

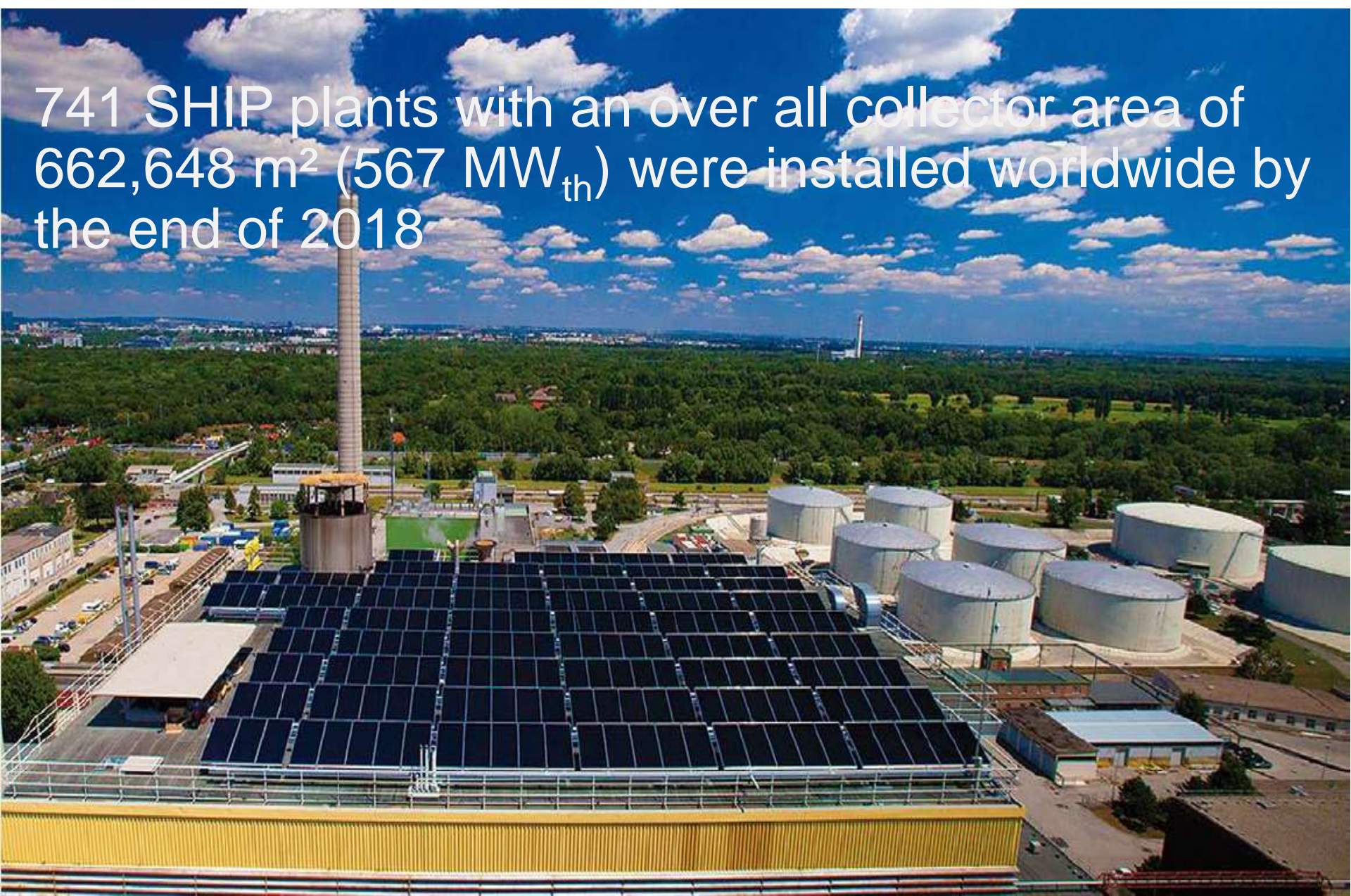


Data sources: Daniel Trier - PlanEnergi, DK, Jan-Olof Dalenbäck - Chalmers University of Technology, SE, Sabine Putz - IEA SHC Task 45, AT, Bärbel Epp - solarthermalworld.org, DE)



Solar heat for industrial processes - SHIP

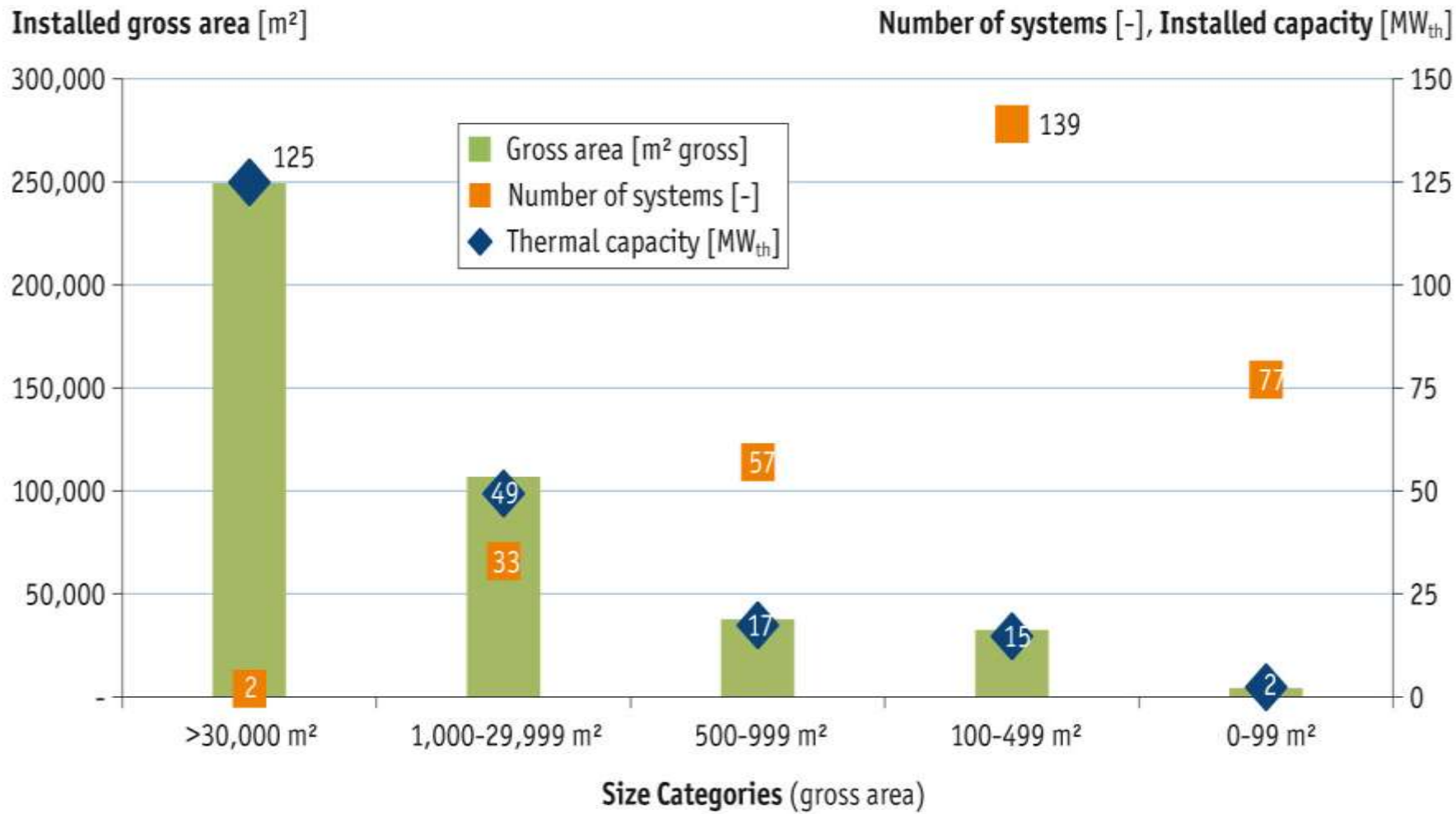
741 SHIP plants with an over all collector area of 662,648 m² (567 MW_{th}) were installed worldwide by the end of 2018



In 2018, suppliers of industrial solar heat technology commissioned 108 new systems.

	No. of systems put up in 2018	Collector area added in 2018 [m ²]	Average system size [m ²]
China	15	28,813	1,921
Mexico	51	6,898	135
France	2	5,543	2,772
India	10	3,964	396
Germany	9	1,589	177
Spain	3	1,218	406
Austria	3	435	145
Other countries	15	5,194	346
TOTAL	108		53,654

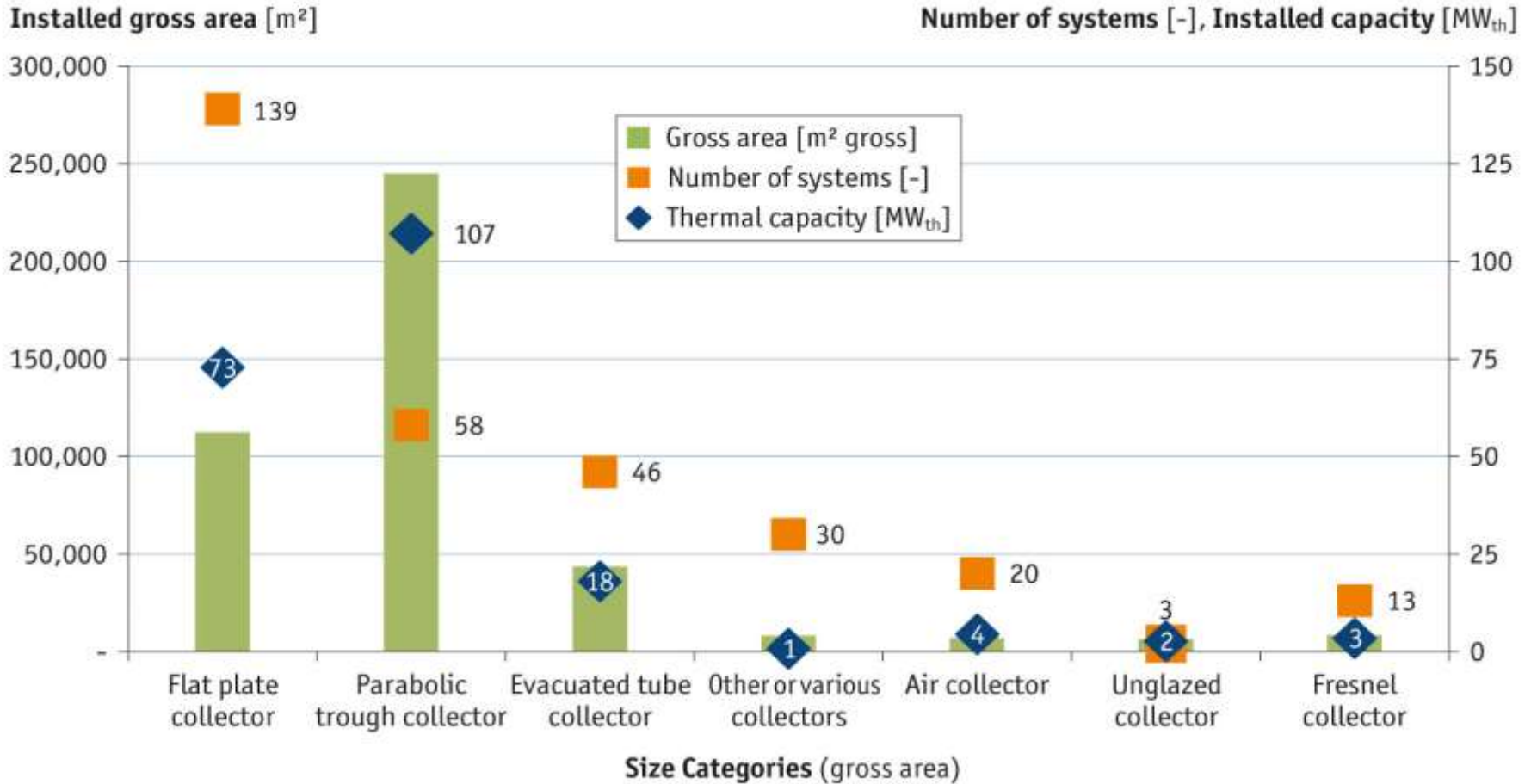
Global solar process heat plants in operation by capacity and collector area by March 2019



Source: IEA SHC Task49 / IV SHIP data base



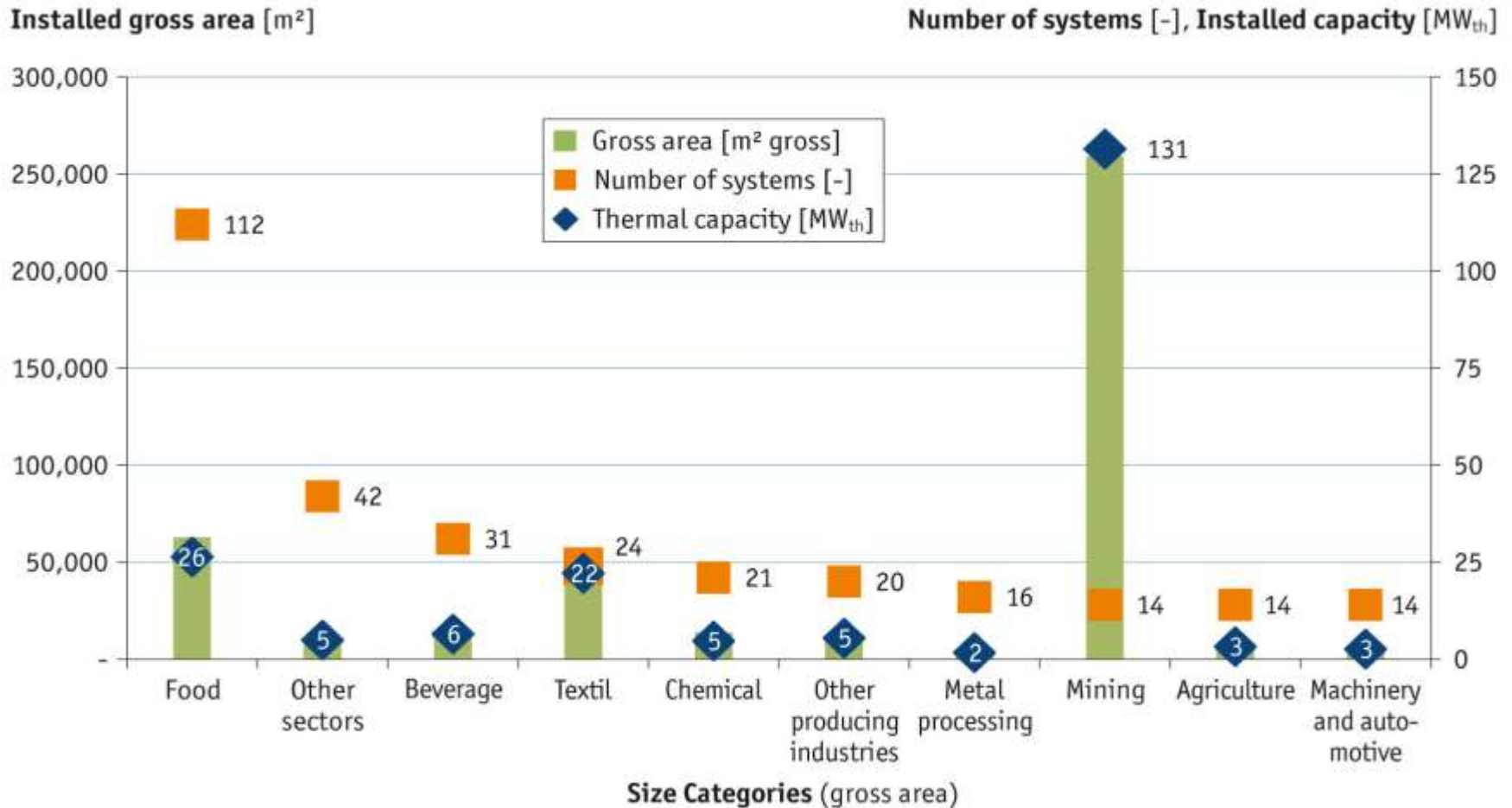
Global solar process heat applications in operation by type of collector



Source: IEA SHC Task49 / IV SHIP data base

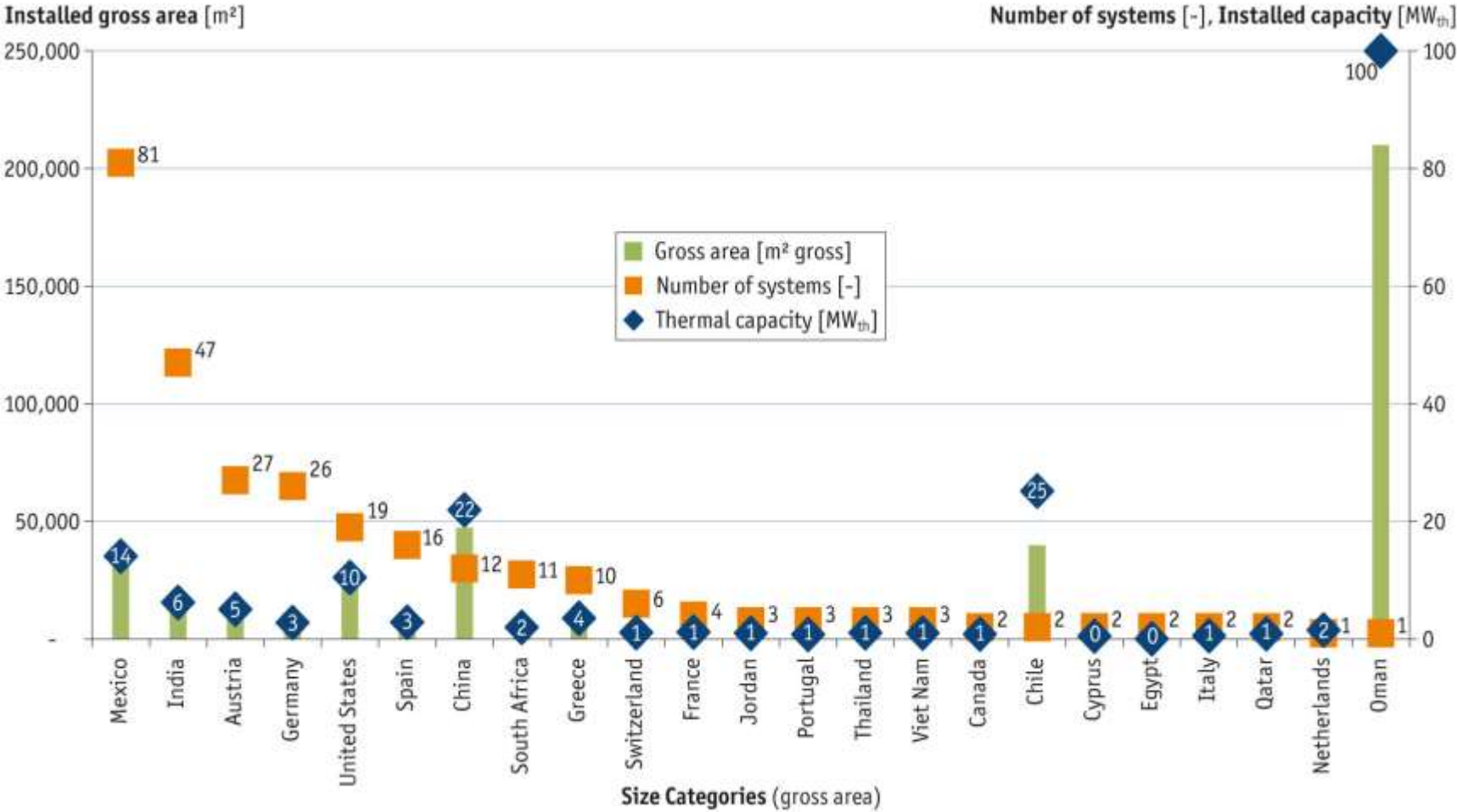


Global solar process heat installations in operation by industry sector



Source: IEA SHC Task49 / IV SHIP data base

Global solar process heat installations in operation by country



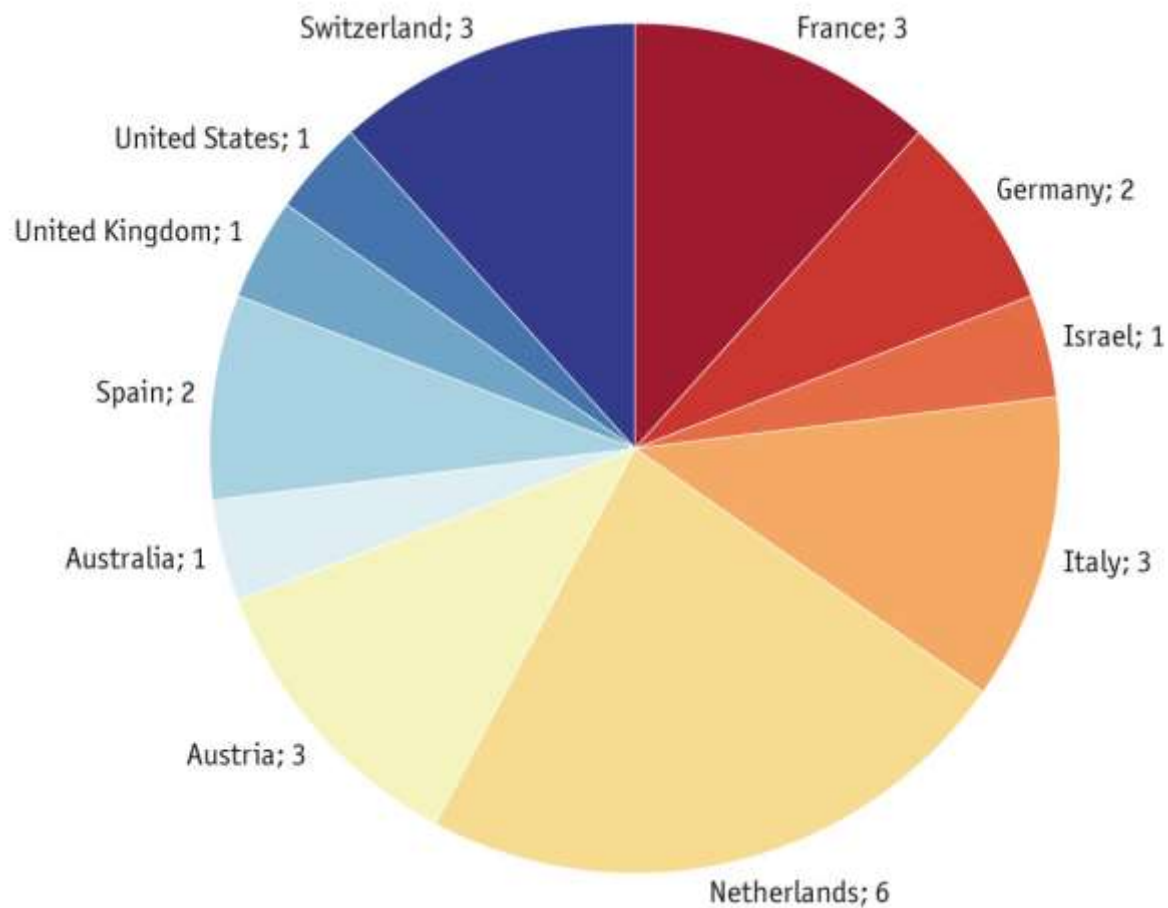
Source: IEA SHC Task49 / IV SHIP data base



PVT

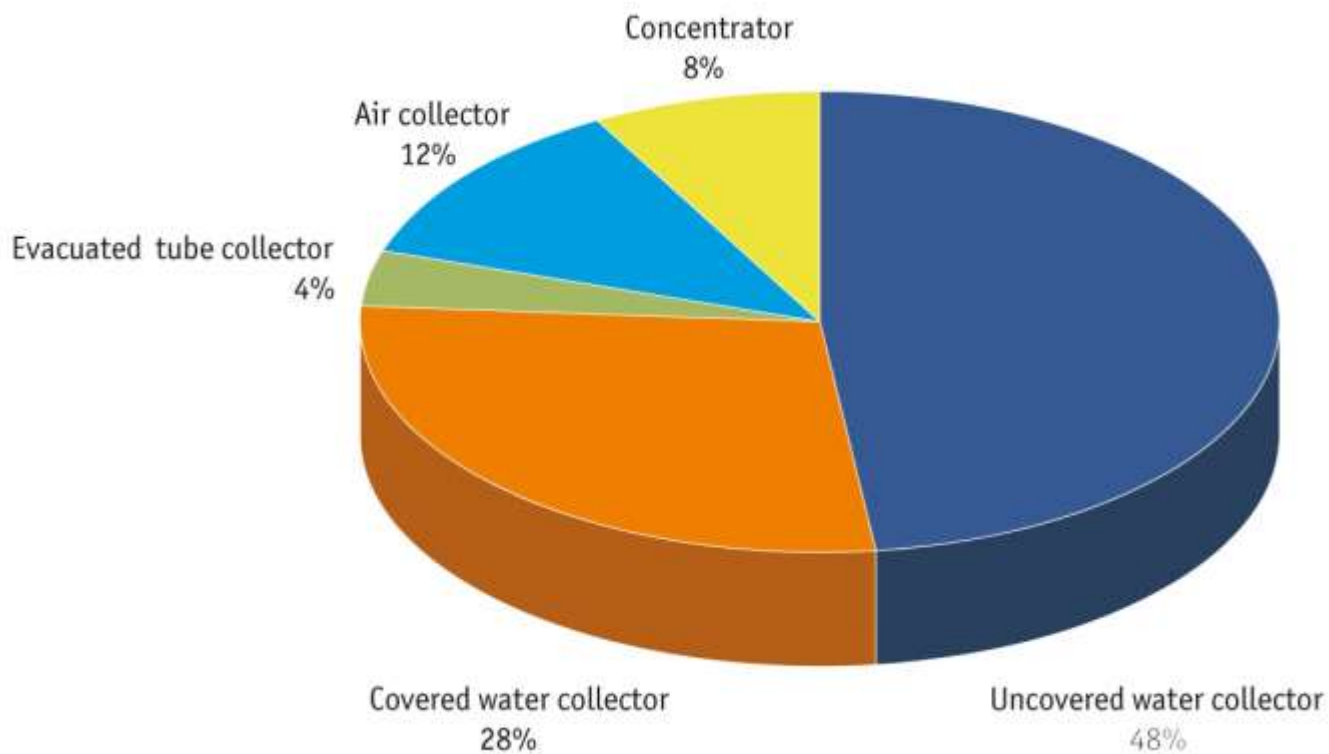


PVT – manufacturers by Country



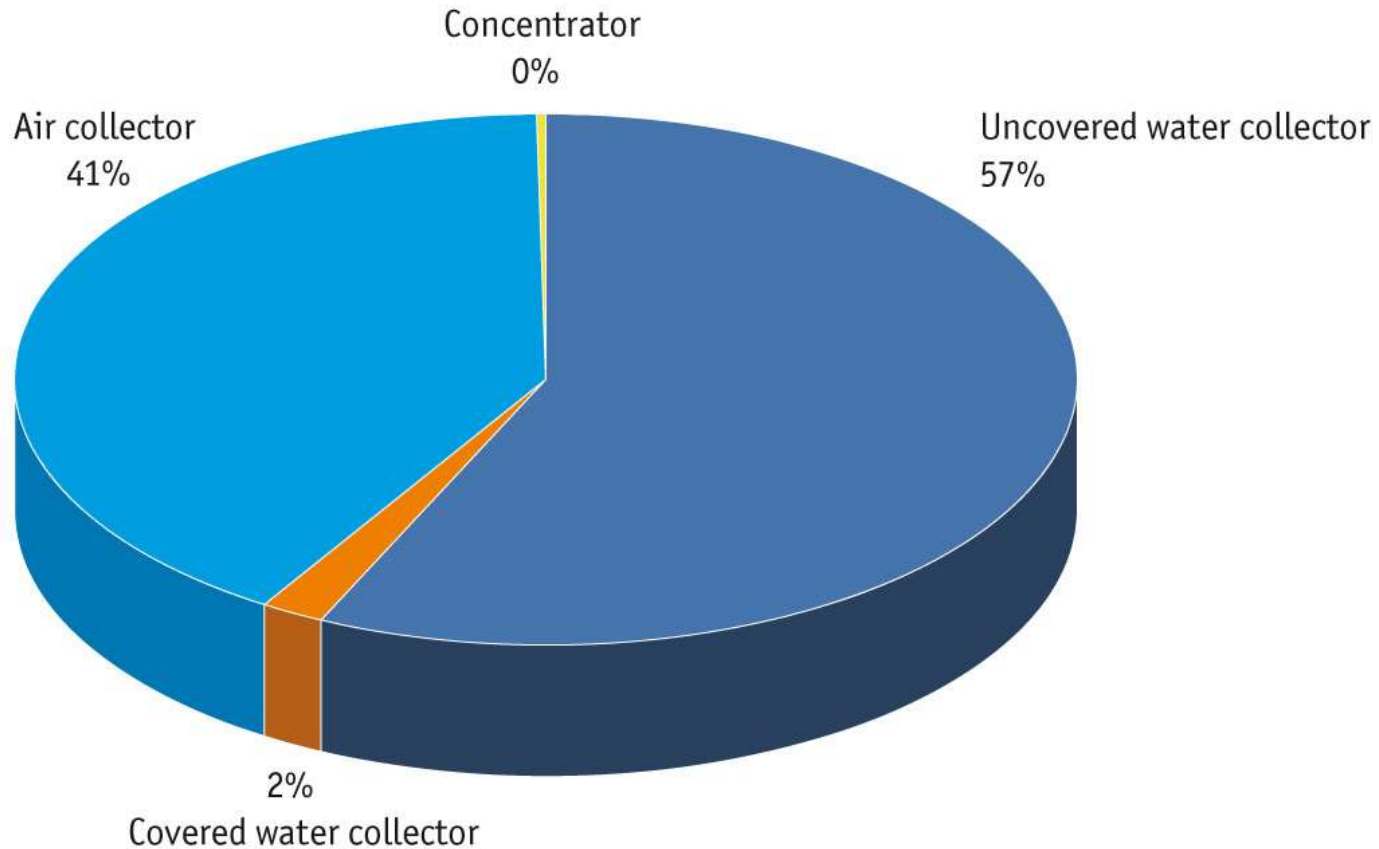
Source: IEA SHC Task 60 survey, AEE INTEC

Distribution of PVT-manufacturer by collector type



Source: IEA SHC Task 60 survey, AEE INTEC

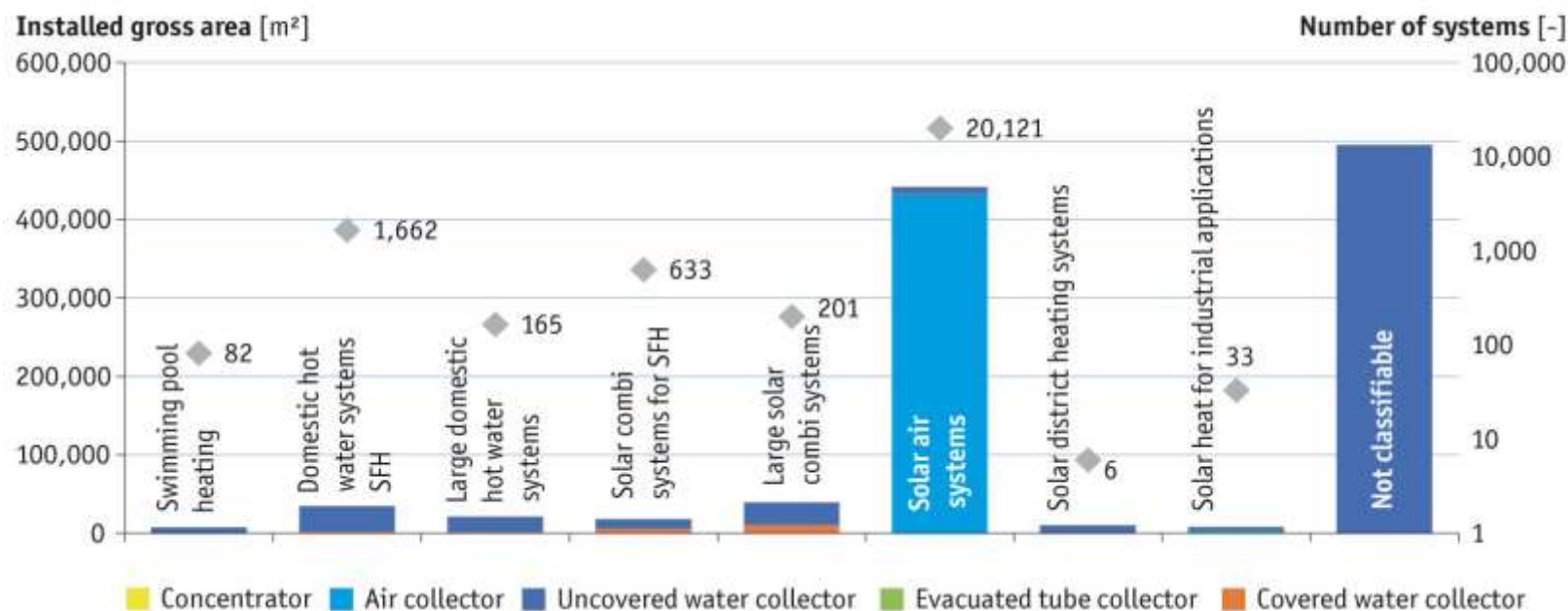
Distribution of total installed thermal capacity in operation by collector type in 2018



Source: IEA SHC Task 60 survey, AEE INTEC

PVT – Systems by Application

PVT-Applications	Number of installations [#]	Total collector area [m ²]
Swimming pool heating	82	8,360
Domestic hot water systems SFH	1,662	34,561
Large domestic hot water systems	165	20,851
Solar combi systems for SFH	633	17,758
Large solar combi systems	201	39,684
Solar air systems	20,121	441,674
Solar district heating systems	6	10,081
Solar heat for industrial applications	33	8,049
Not specified	17	494,229
TOTAL	22,920	1,075,247



PVT – Applications



PVT – Applications

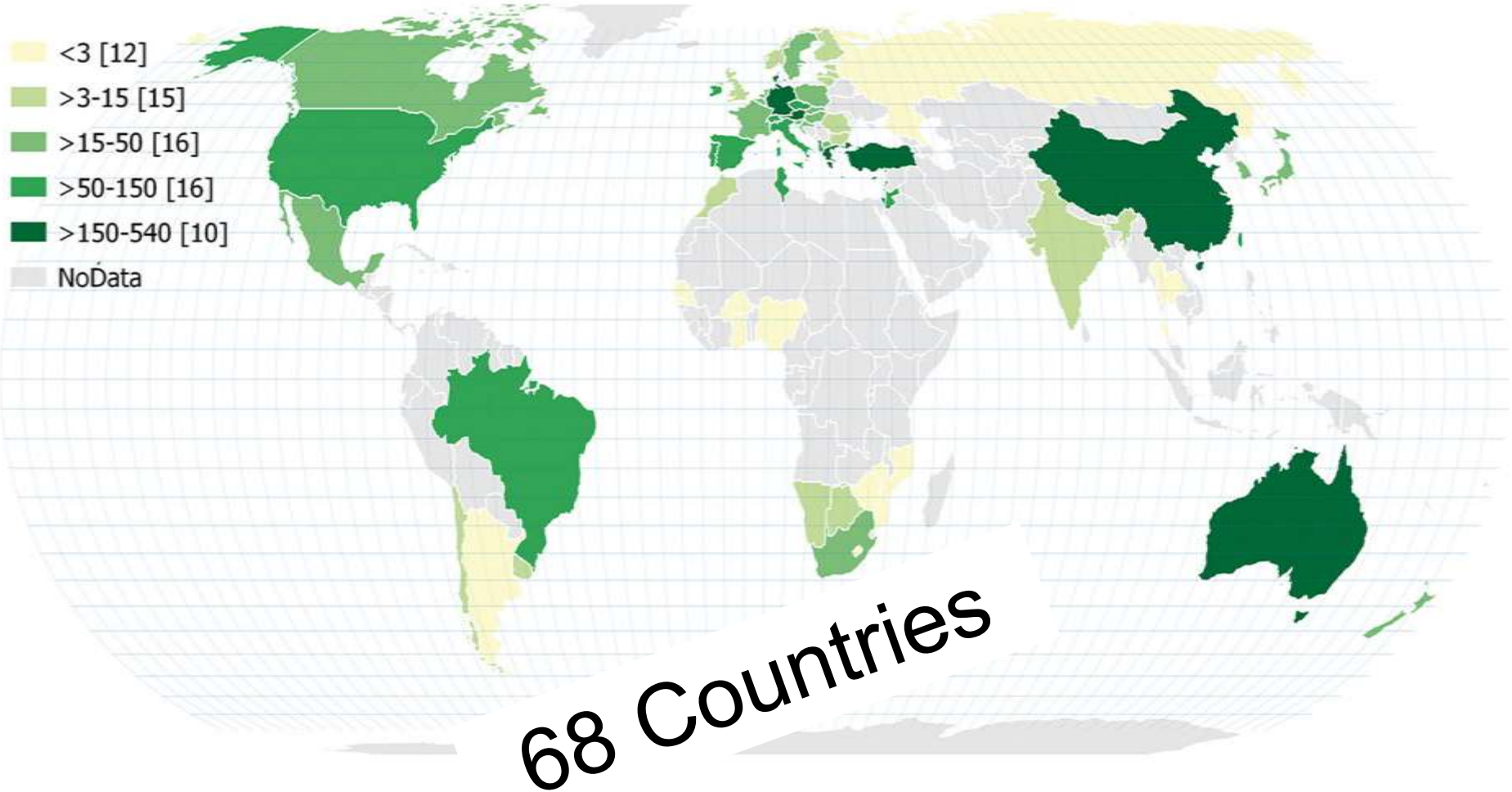


Solar cooling

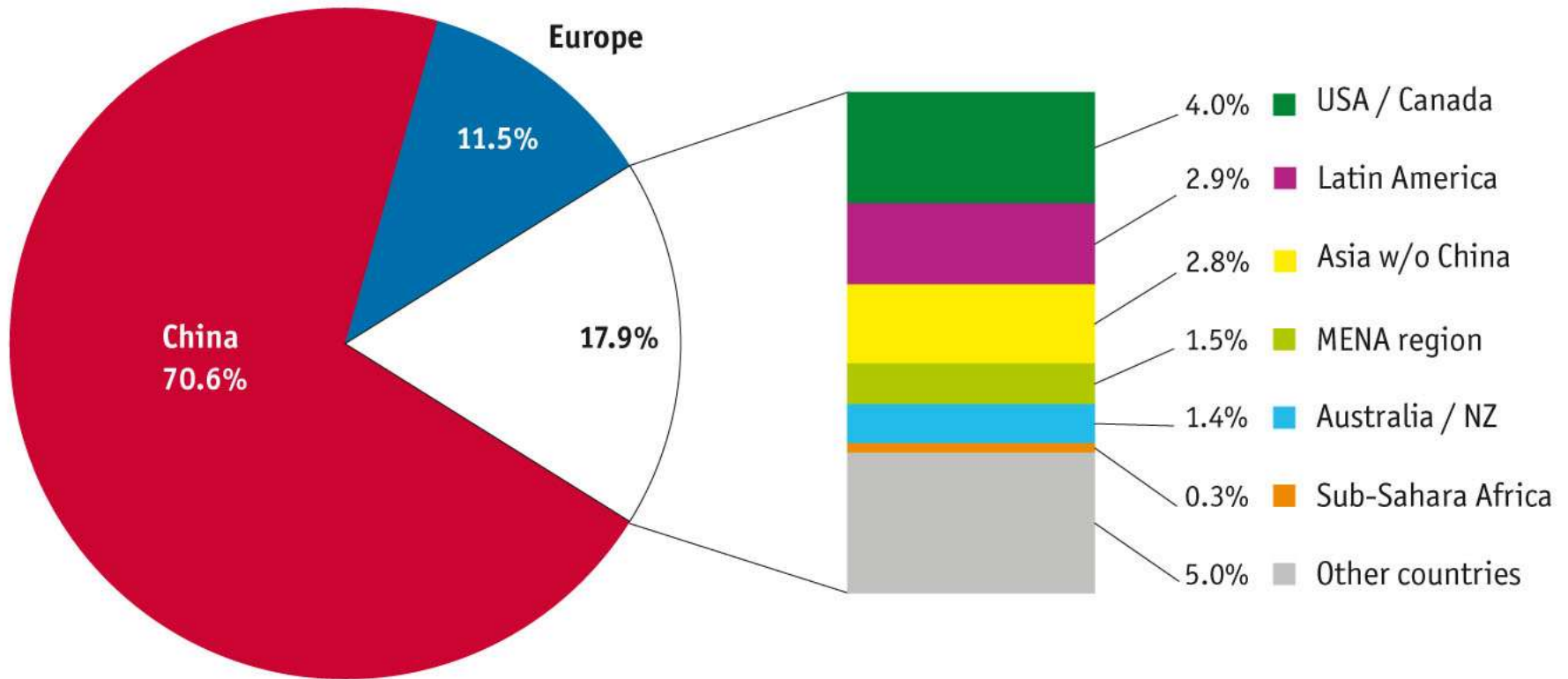
Country	Site	Commissioned	Installed capacity [kW _{th}]	Collector size [m ²]	Collector type	Cooling capacity [kW _{cold}]
Italy	Borgoricco	2018	1,046	1,494	Evac. tube	700
Italy	Laives	2018	n.a.	n.a.	Evac. tube	176
Jordan	Japan Tobacco International factory	2018	700	1,254	Fresnel	n.a.
Singapore	IKEA Alexandra	2017	1,730	2,472	Flat plate	880
Nicaragua	Hospital Militar Escuela, Dr. Alejandro Dávila Bolaños	2017	3,115	4,450	Flat plate	1,023
India	Office, Gujarat State Electricity Corporation	2017	1,102	1,575	Evac. tube	528
India	Swiss Embassy, New Delhi	2017	630	441	Parabolic trough	210
China	Tianjin Zhongbei	2015	n.a.	n.a.	Evac. tubes	698
Arizona, USA	Desert Mountain High School Scottsdale	2014	3,407	4,865	Flat plate	1,750
Johannesburg, S.A.	MTN Headquarter	2014	272	484	Fresnel	330
China	Dezhou Institute	2014	n.a.	720	Parabolic trough	n.a.
United Arab Emirates	Sheikh Zayed Desert Learning Center	2012	794	1,134	Flat plate	352
Jamaica	Digicel, Kingston		687	982	Flat plate	600
Singapore	United World College	2011	2,710	3,872	Flat plate	1,500
Qatar, Doha	Showcase football stadium	2010	700	1,408	Fresnel	n.a.
Istanbul, Turkey	Metro shopping center	2009	840	1,200	Evac. tube	n.a.
Spain, Sevilla	Sevilla University, Escuela Superior de Ingenieros	2009		352	Fresnel	n.a.
Lisbon, Portugal	CGD Lisbon	2008	1,105	1,579	Flat plate	585
Rome, Italy	Metro Cash&Carry	2008	2,100	3,000	Flat plate	700

Detailed Market Figures 2017

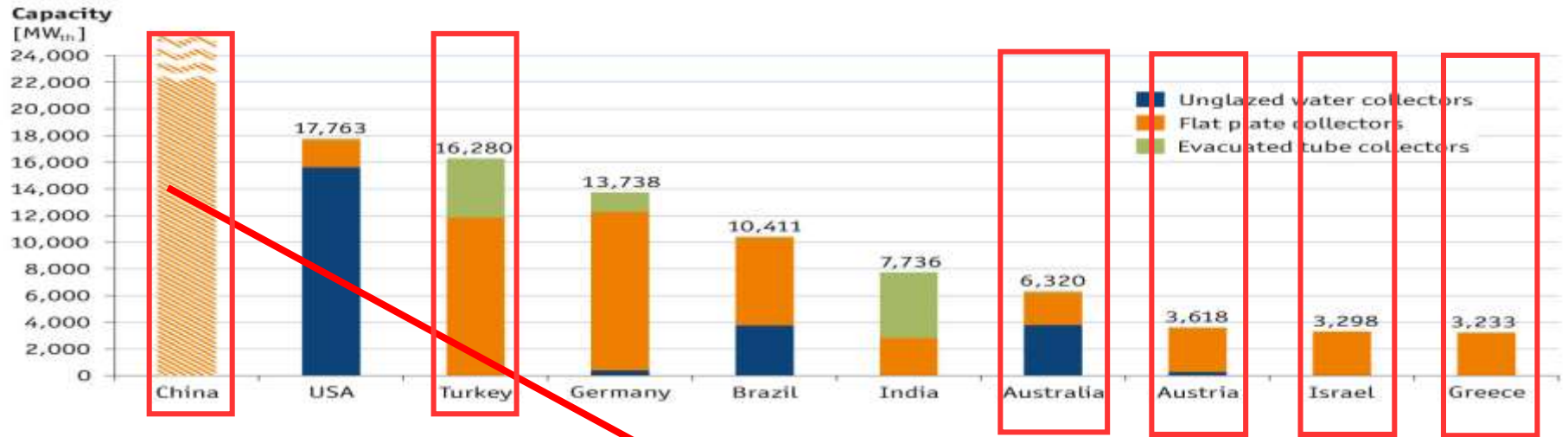
Cumulated installed capacity in kW per 1,000 inhabitants (2017)



Total installed capacity in operation 2017



Top 10 countries of cumulated water collector installations (absolute and per 1000 capita) 2017





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