

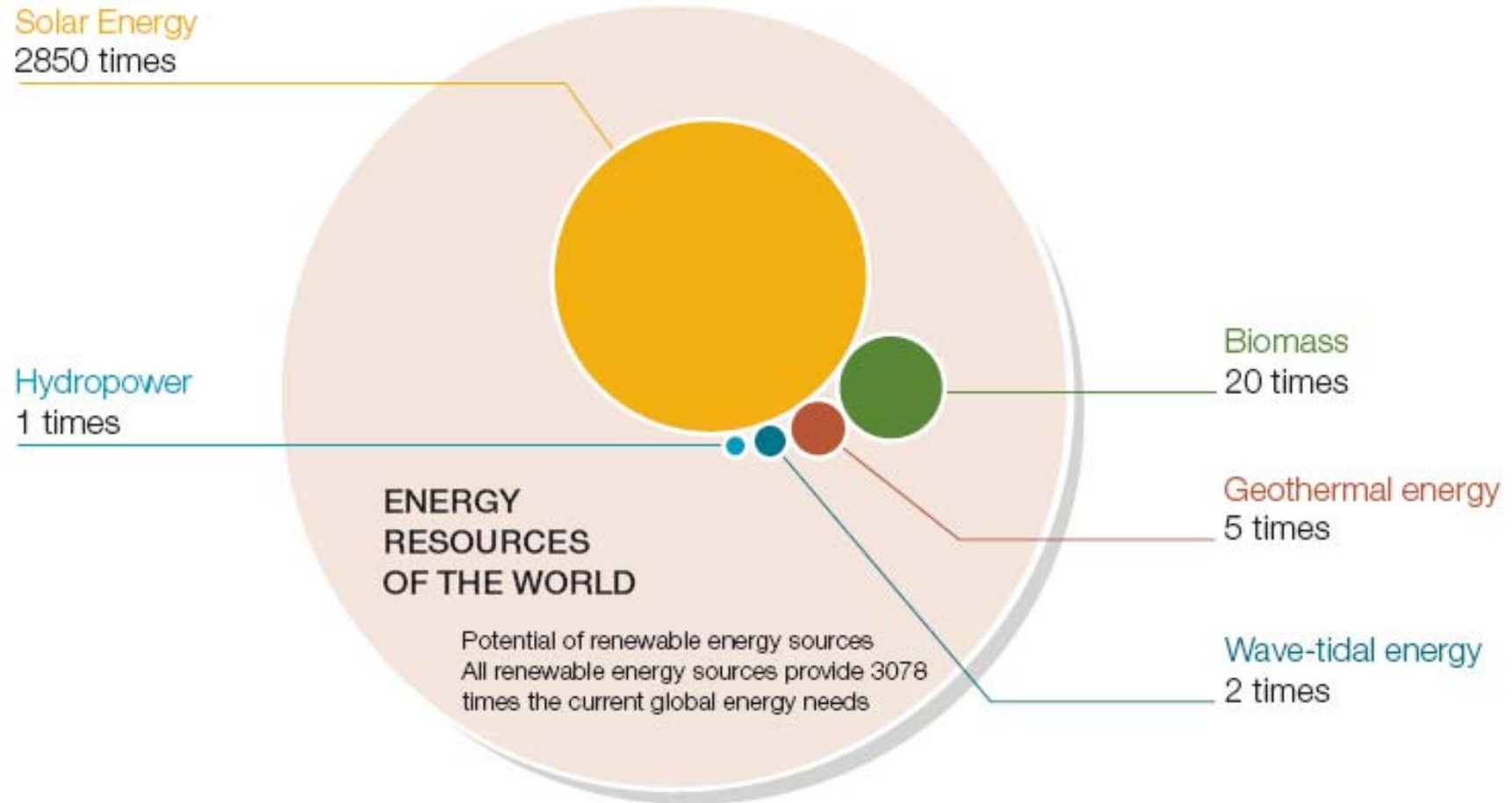


Solar Heating and Cooling Trends

Werner Weiss

AEE - Institute for Sustainable Technologies
A-8200 Gleisdorf, Feldgasse 2
AUSTRIA

Energy Resources of the World



Source: WBG U 2008 (Greenpeace/EREC 2008)

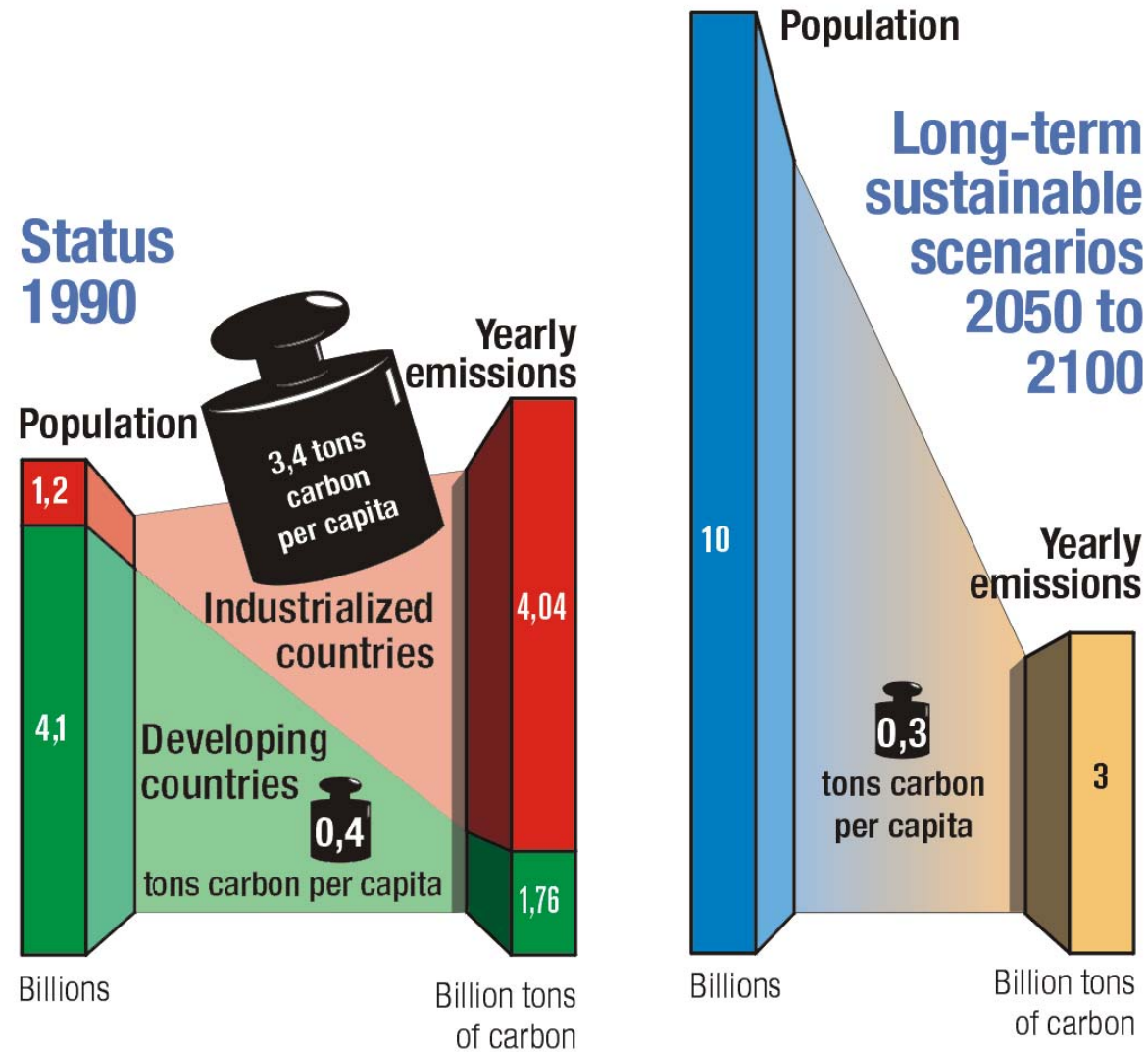


A sustainable energy future



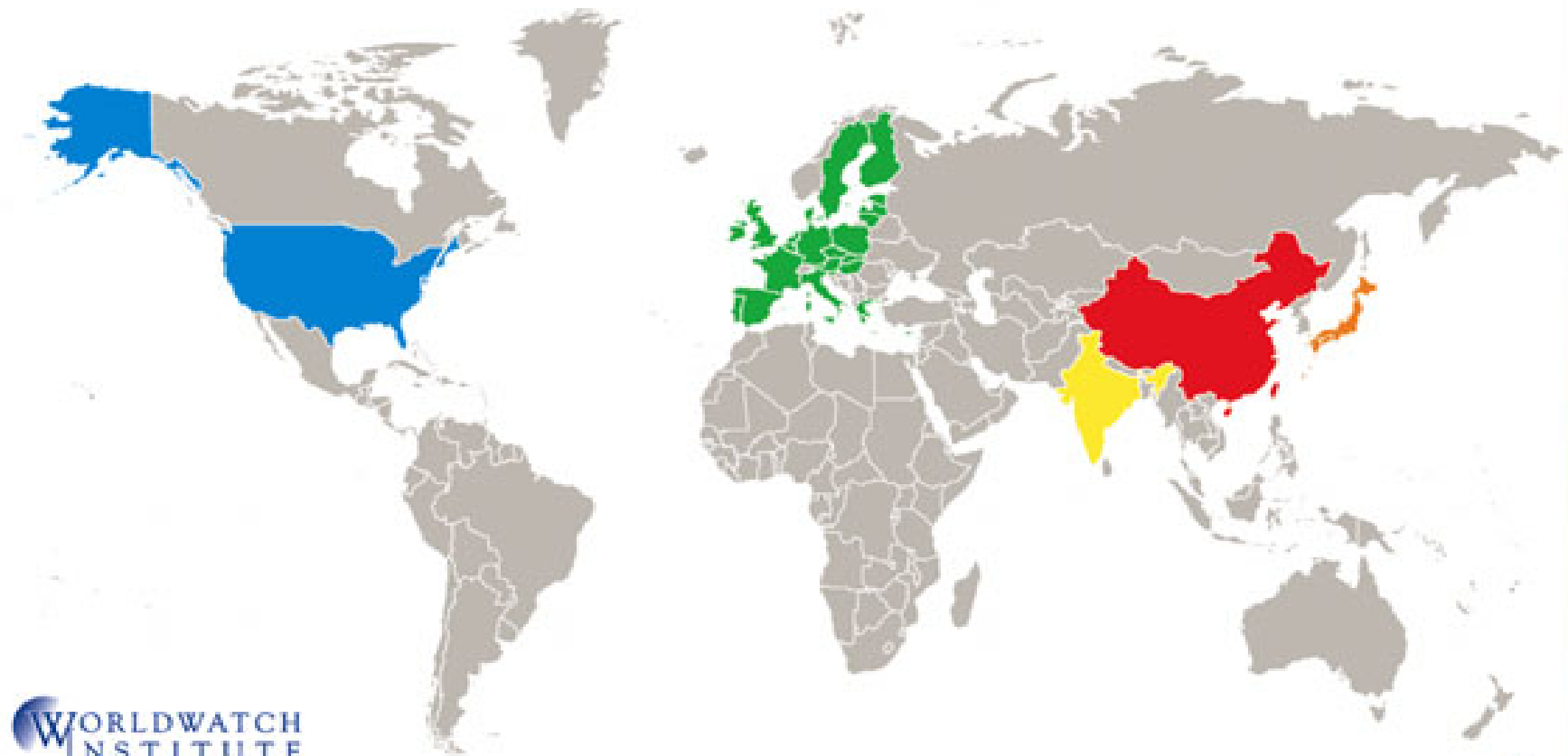
Source: NASA / NOAA

A sustainable energy future



World by Geography

>> Size indicates land mass



 WORLDWATCH
INSTITUTE

© Worldwatch Institute, 2006

Map created by Mapping Worlds 

World by Population

>> Size equals inhabitants in millions



WORLDWATCH
INSTITUTE

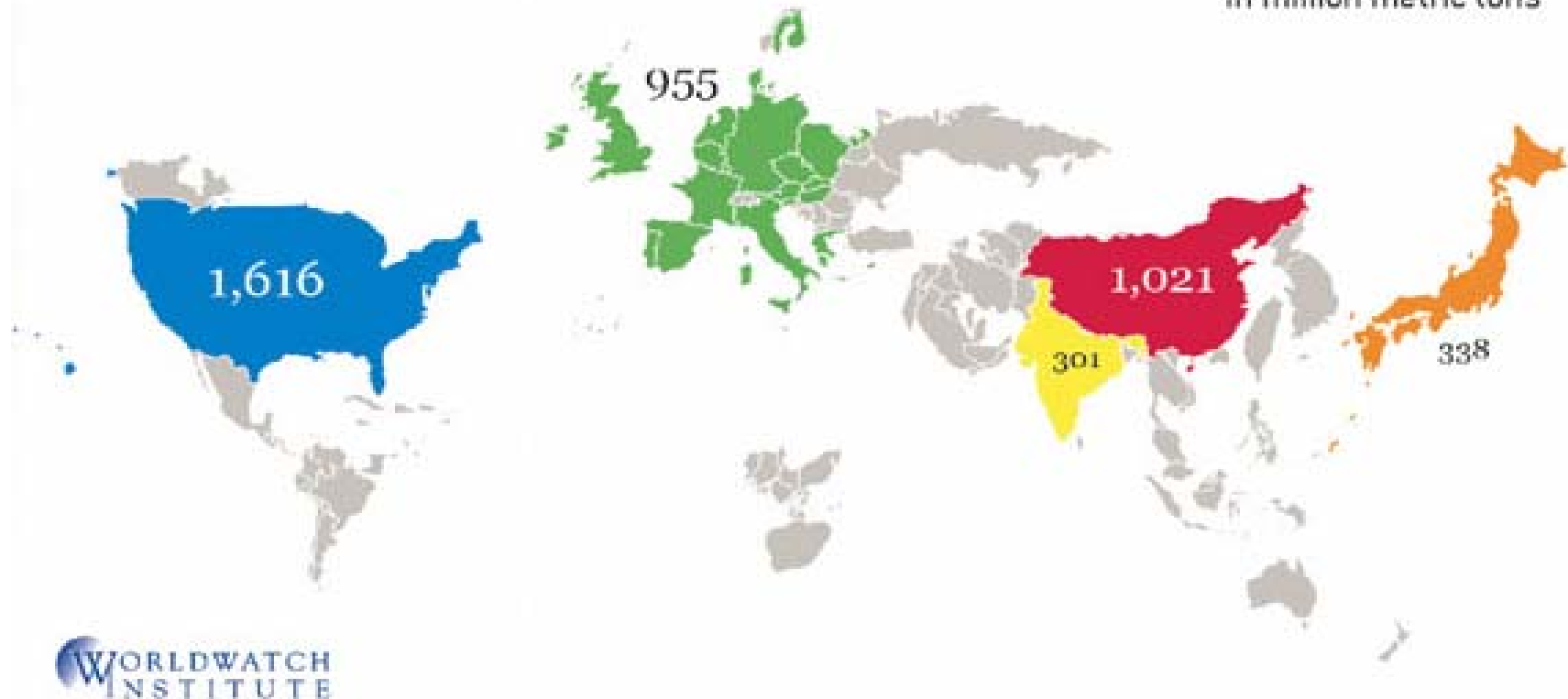
© Worldwatch Institute, 2006

Displayed data: US Bureau of the Census, 2005

Map created by Mapping Worlds 

World by Carbon Emissions

>> Size of a country equals emissions in million metric tons

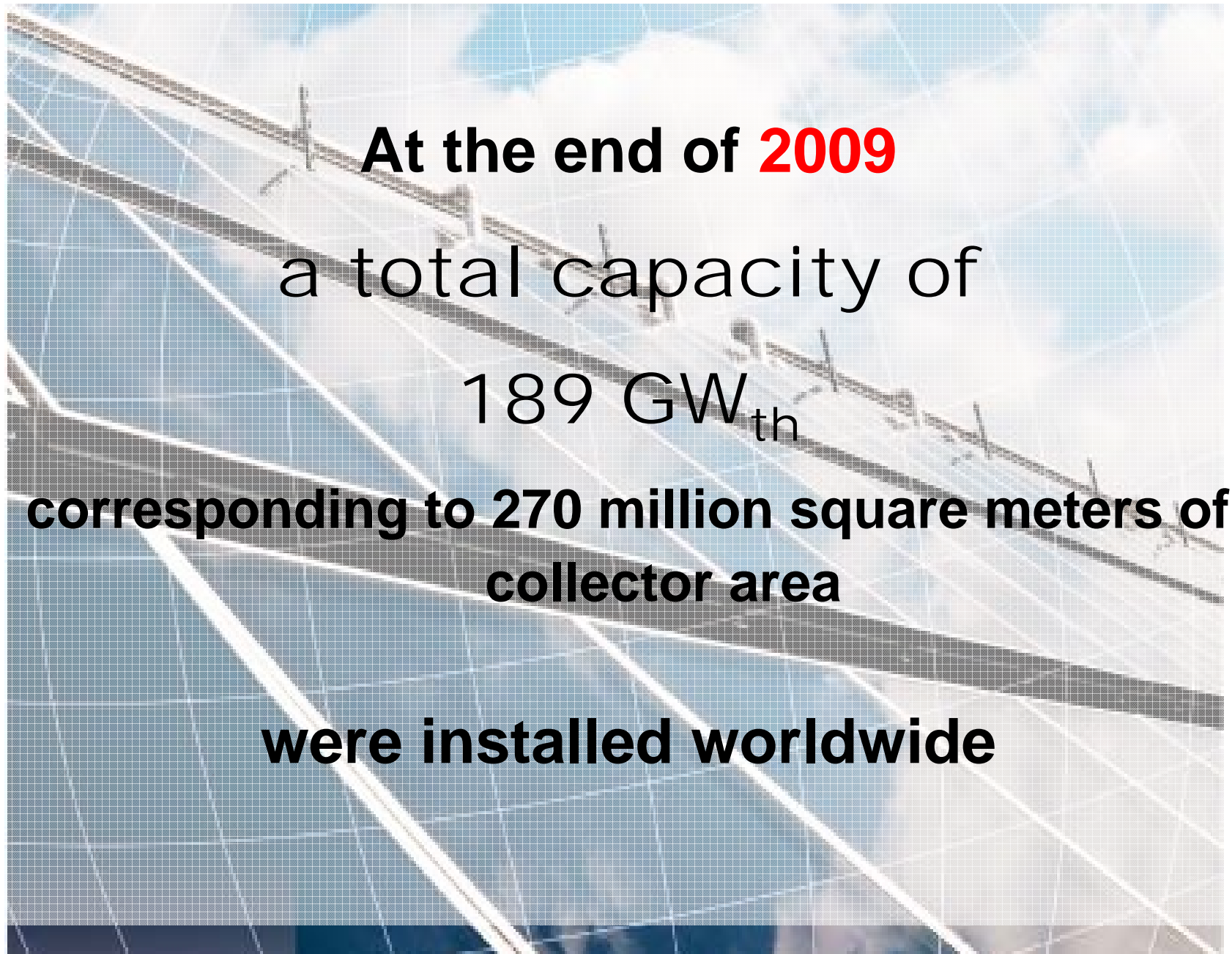


WORLDWATCH
INSTITUTE

© Worldwatch Institute, 2006

Displayed data: US Department of Energy

Map created by Mapping Worlds



At the end of 2009

a total capacity of

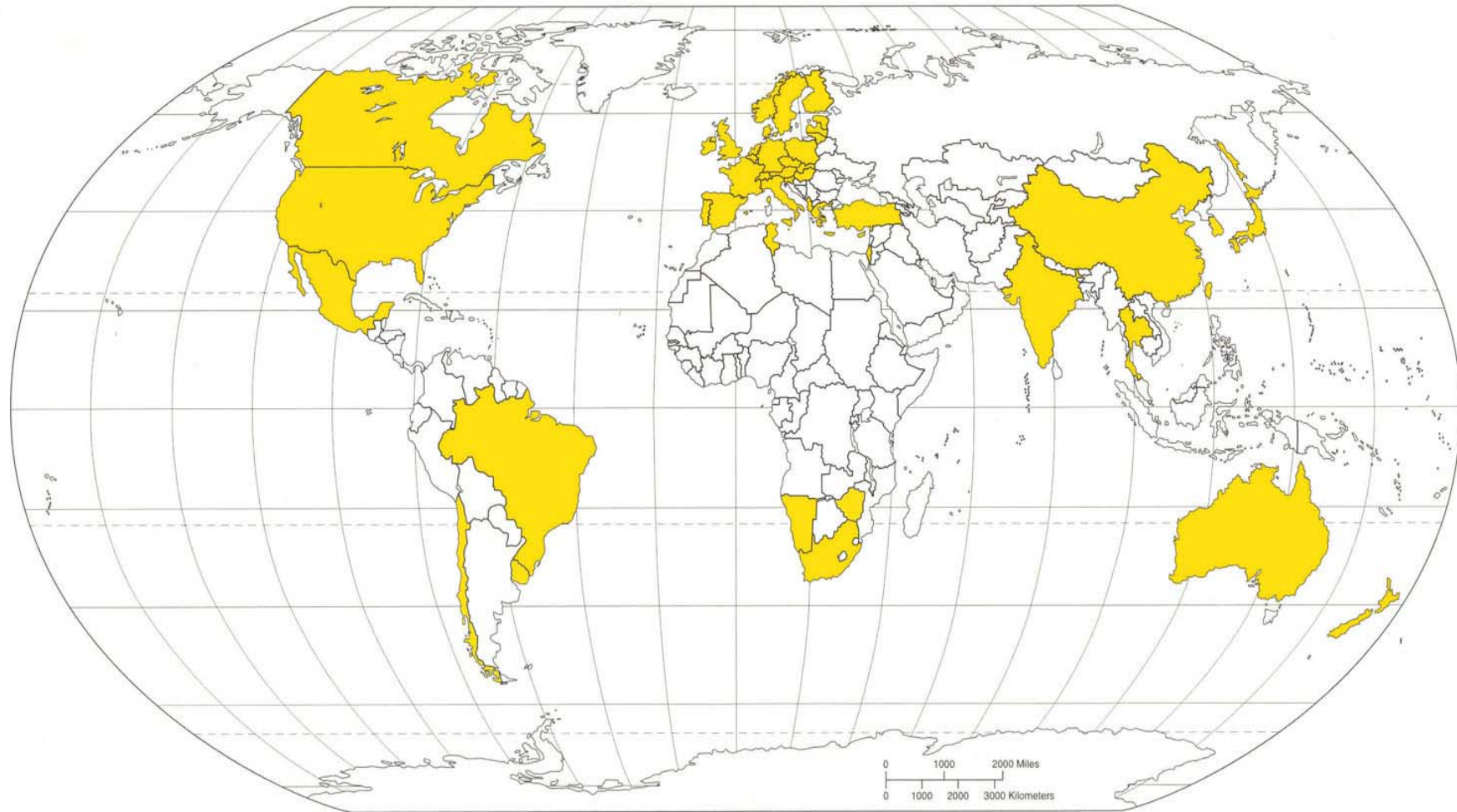
189 GW_{th}

corresponding to 270 million square meters of
collector area

were installed worldwide

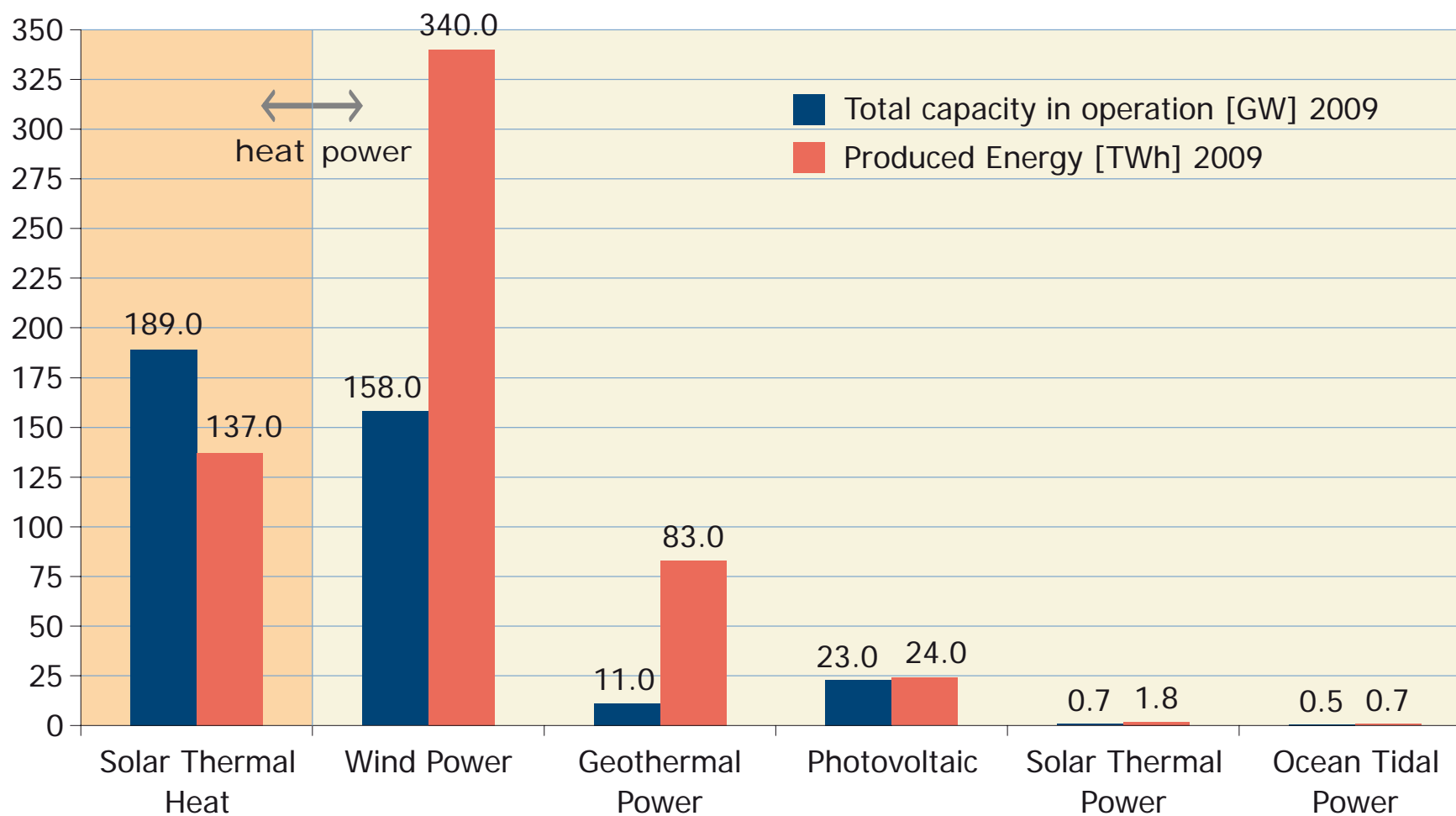


Solar Heat Worldwide



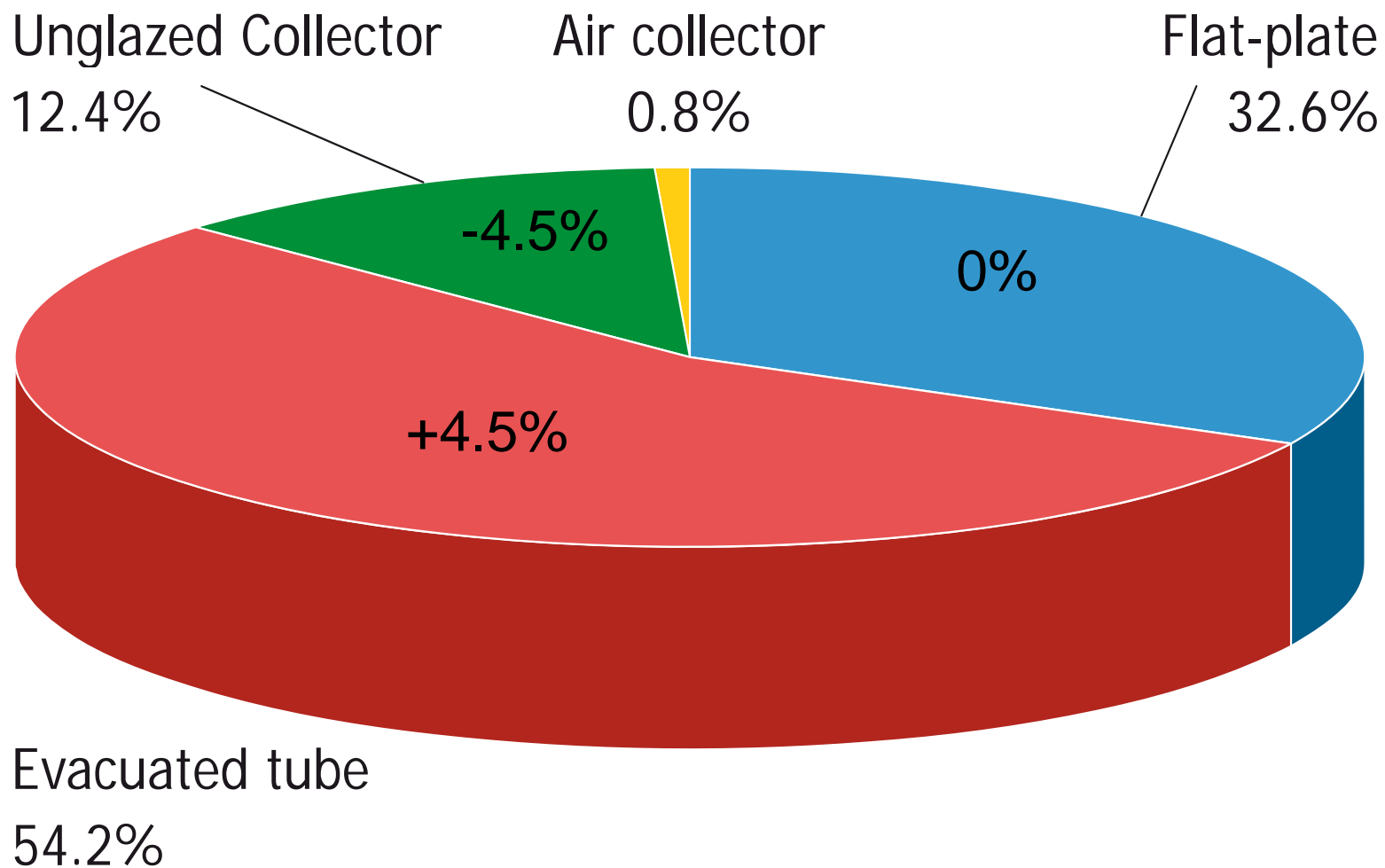
Achievements - 2009

Total Capacity in Operation [GW_{el}], [GW_{th}] and Produced Energy [TWh_{el}], [TWh_{th}],





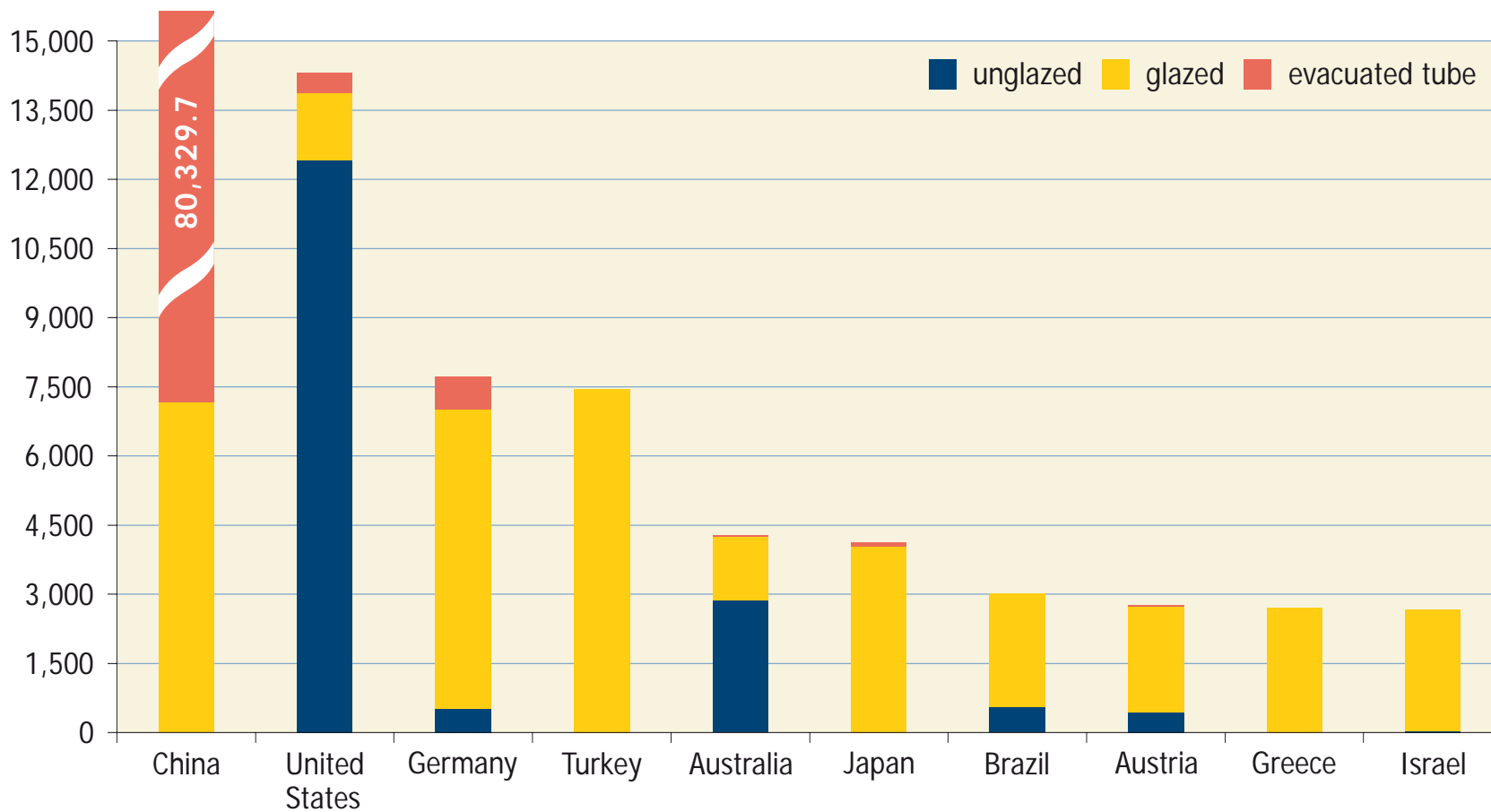
Distribution of Collectors



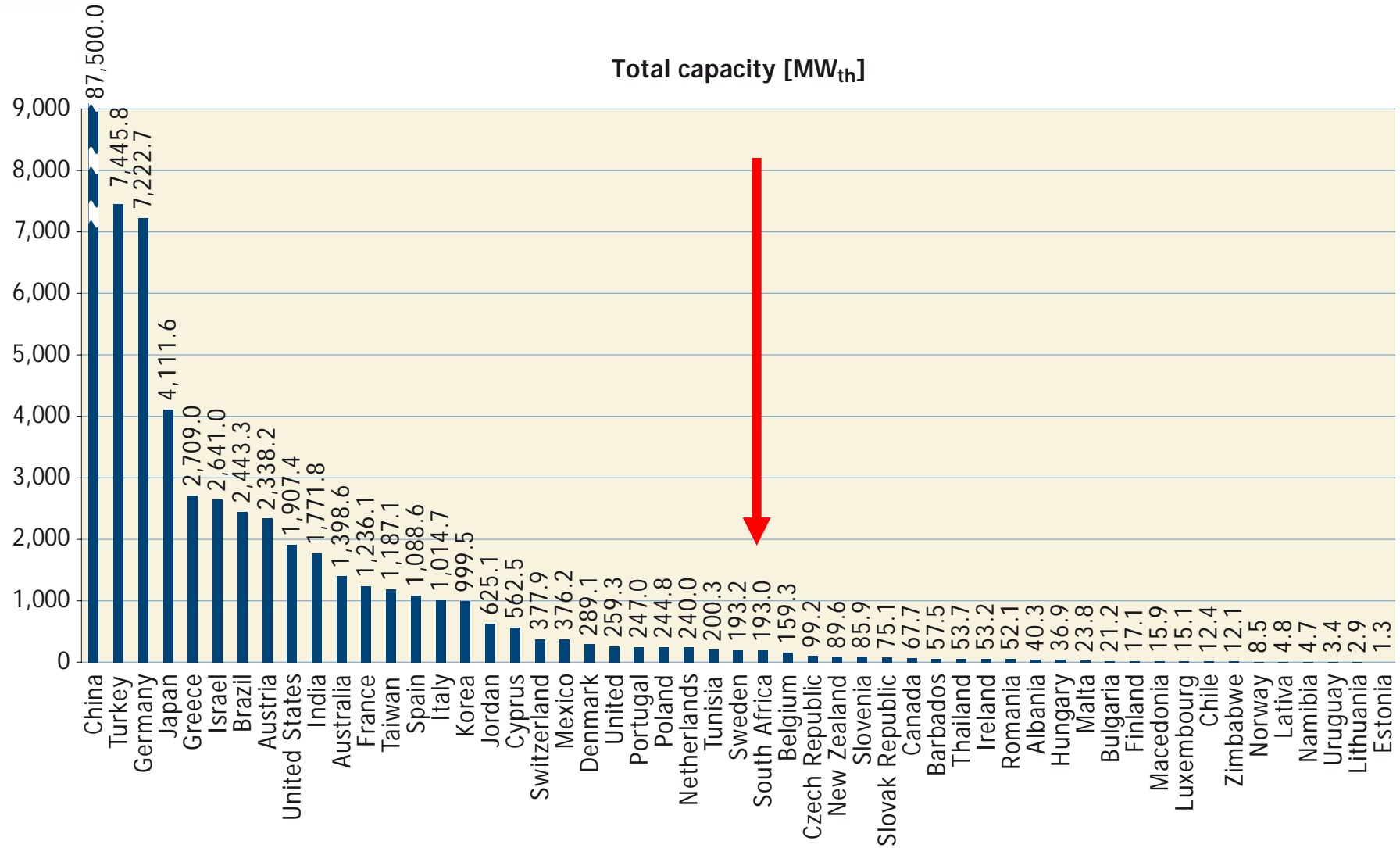


Solar Heat Worldwide - 2008

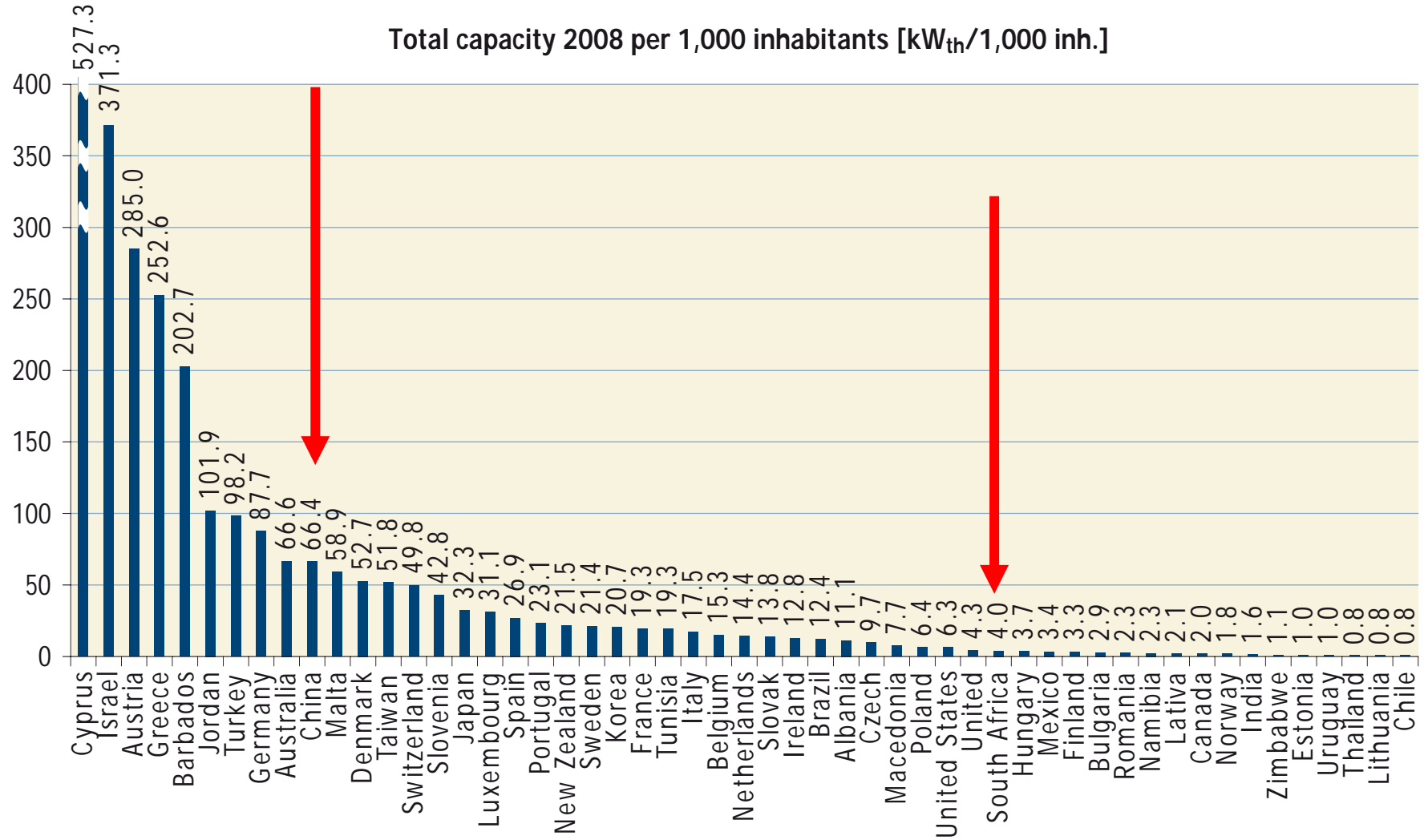
Installed Capacity [MW_{th}]



Solar Heat Worldwide - 2008



Solar Heat Worldwide





Economic Regions

Middle East:

Israel, Jordan

Africa:

Namibia, South Africa, Tunisia,
Zimbabwe

Central & South America: Barbados, Brazil, Chile, Mexico,
Uruguay

Asia:

India, South Korea, Taiwan,
Thailand

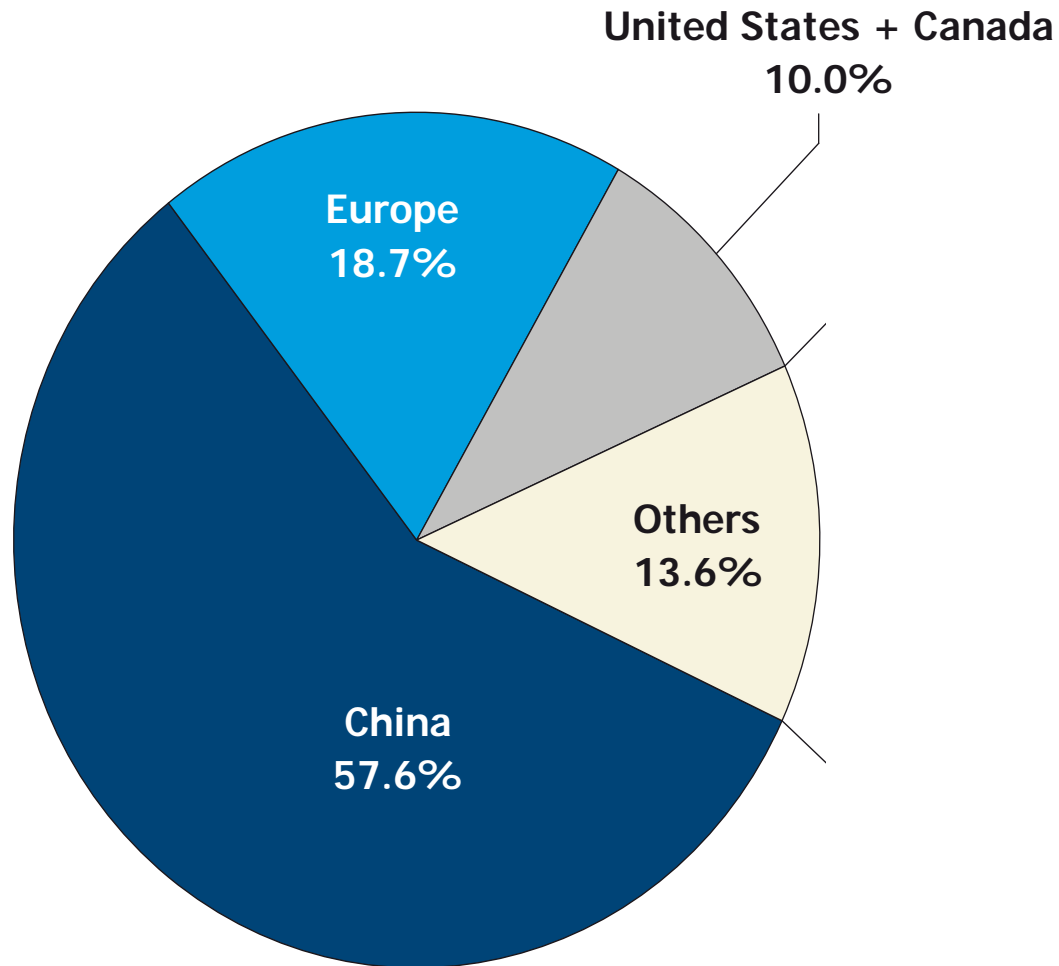
Europe:

EU 27, Albania, Macedonia,
Norway, Overseas Dep. of
France, Switzerland, **Turkey**



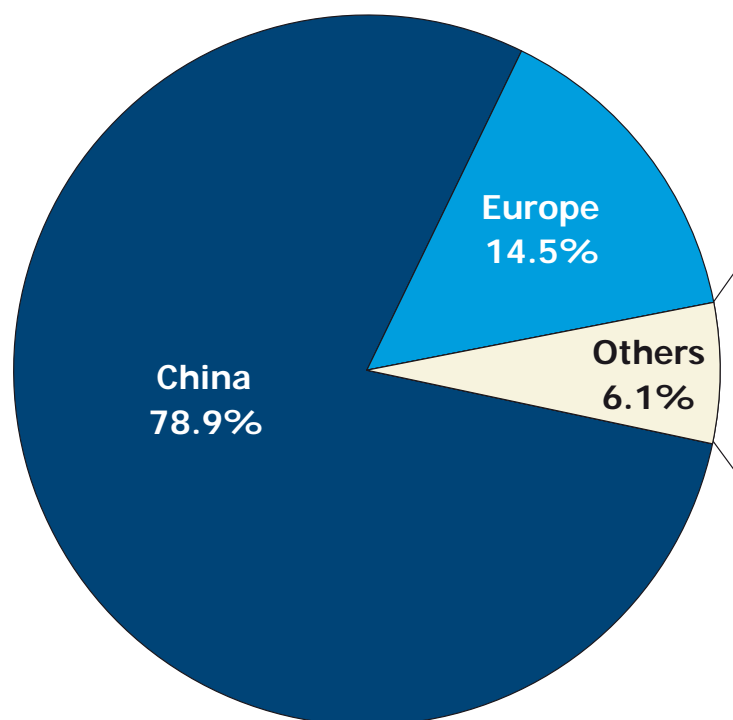
Installations by Economic Region 2008

All collector types



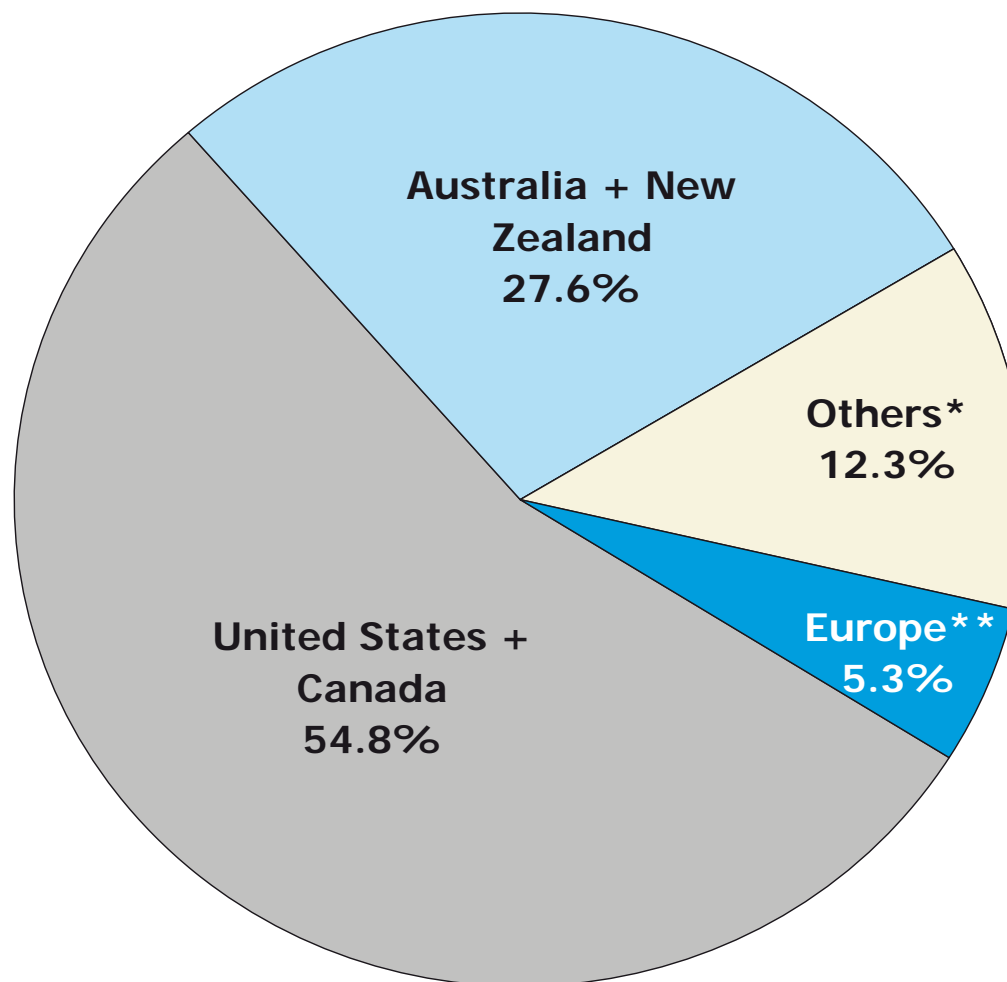


Installations by Economic Region 2008 Flat-plate and Evacuated Collectors



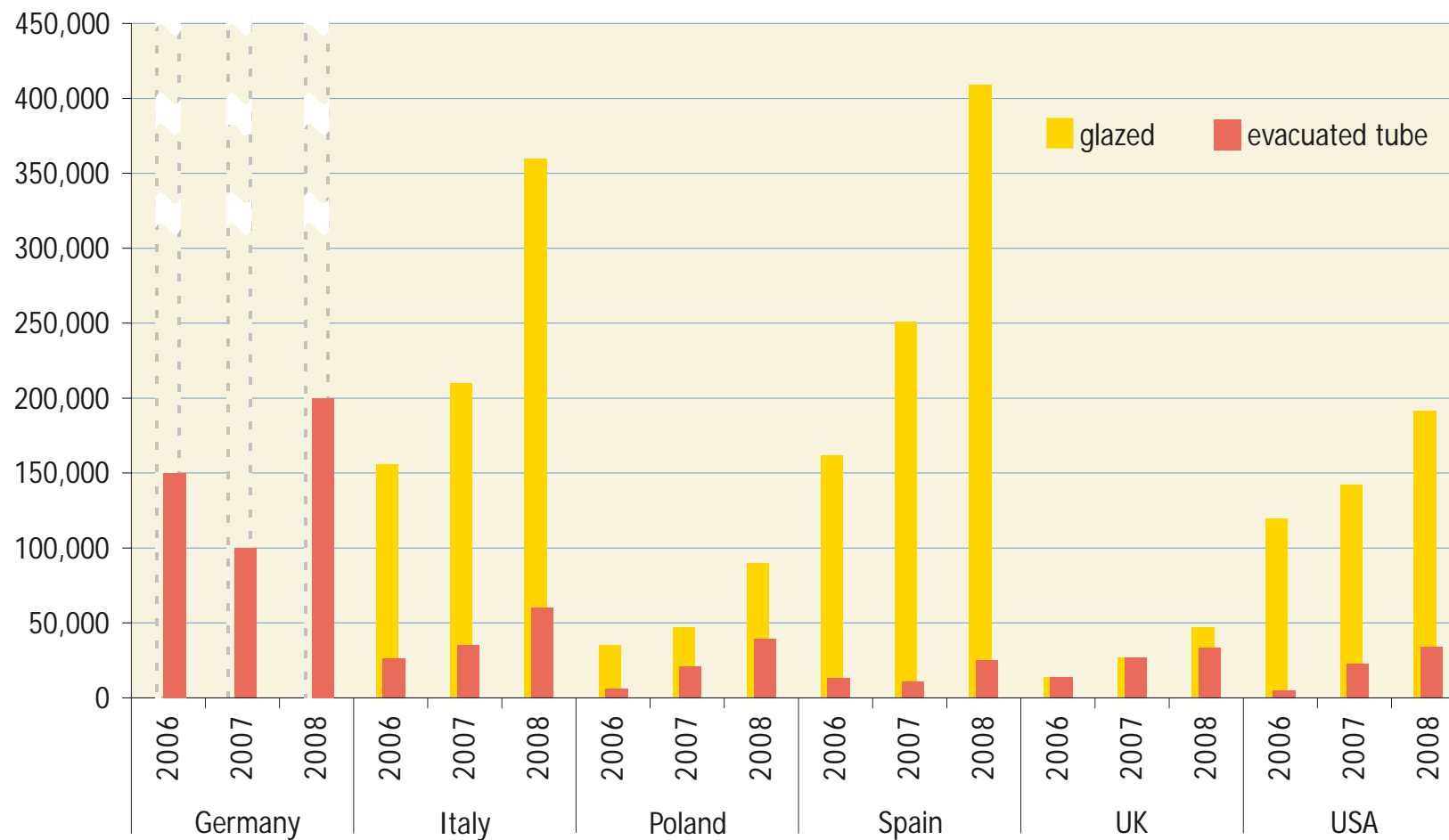
Installations by Economic Region 2008

Unglazed Collectors



Flat plate and evacuated tube collector Installations 2006–2008

Newly installed collector area 2006 - 2008 [m²]

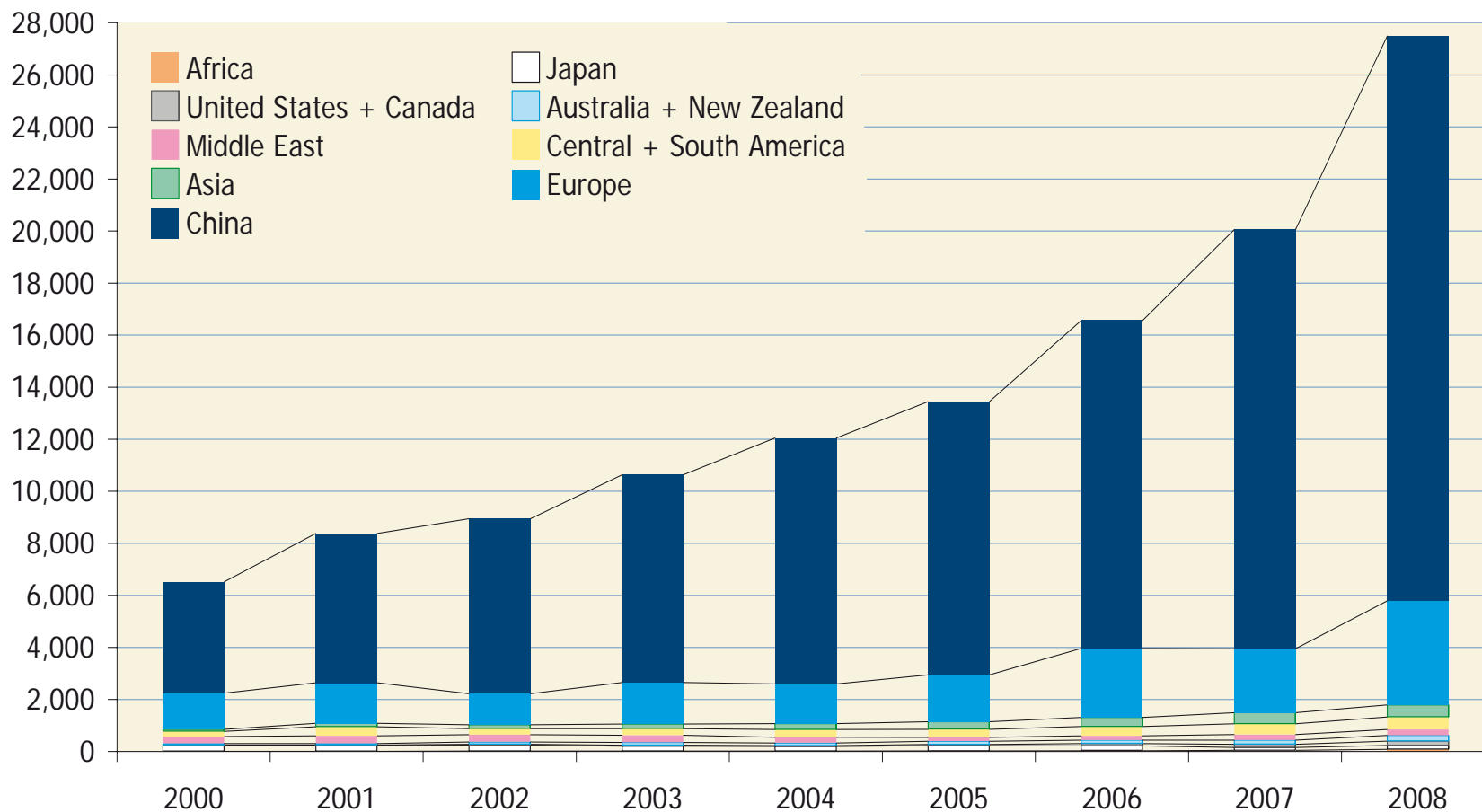




Market Development 2000 – 2008

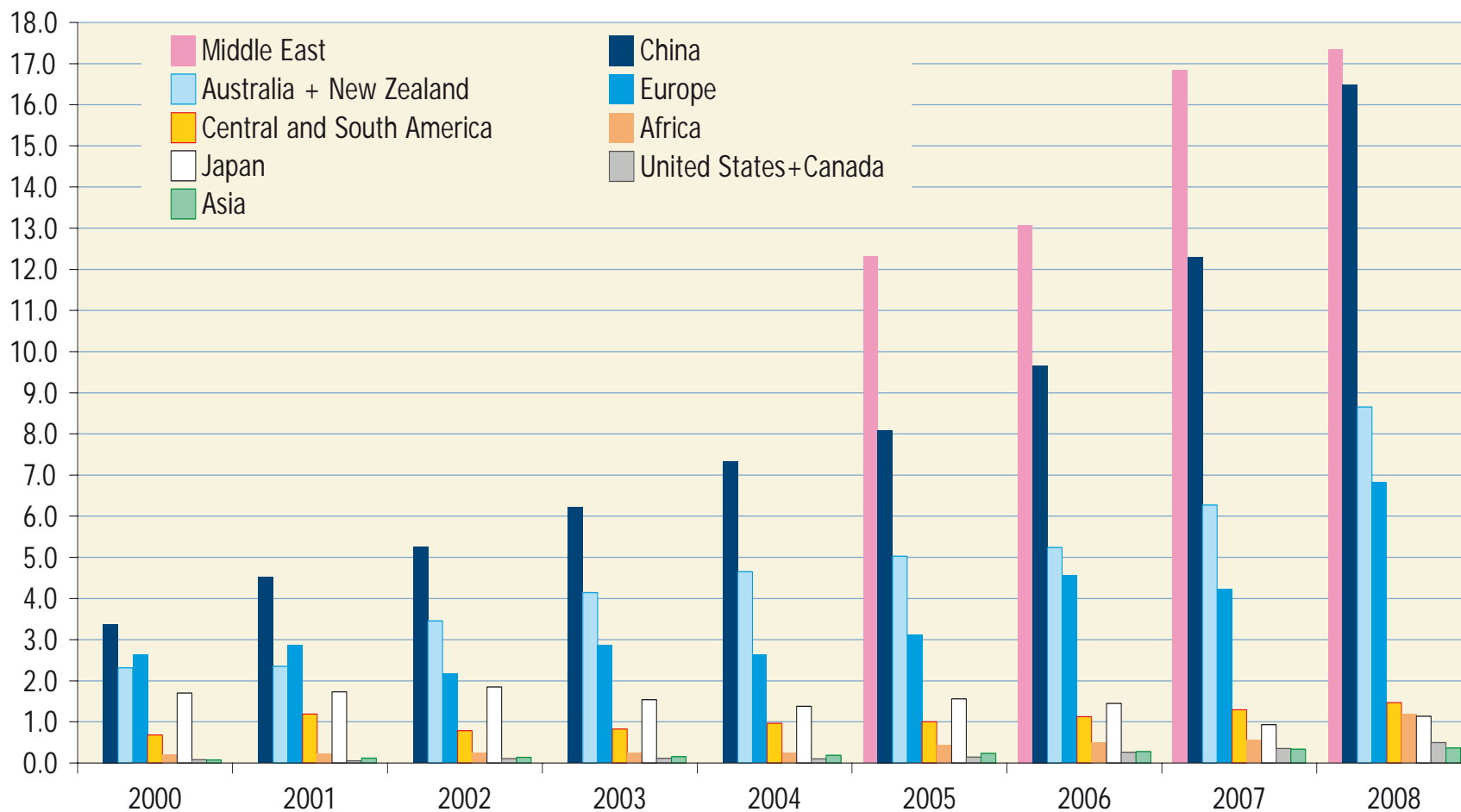
Flat-plate and Evacuated Tube Collectors

Annually Installed Capacity [MW_{th}/a]



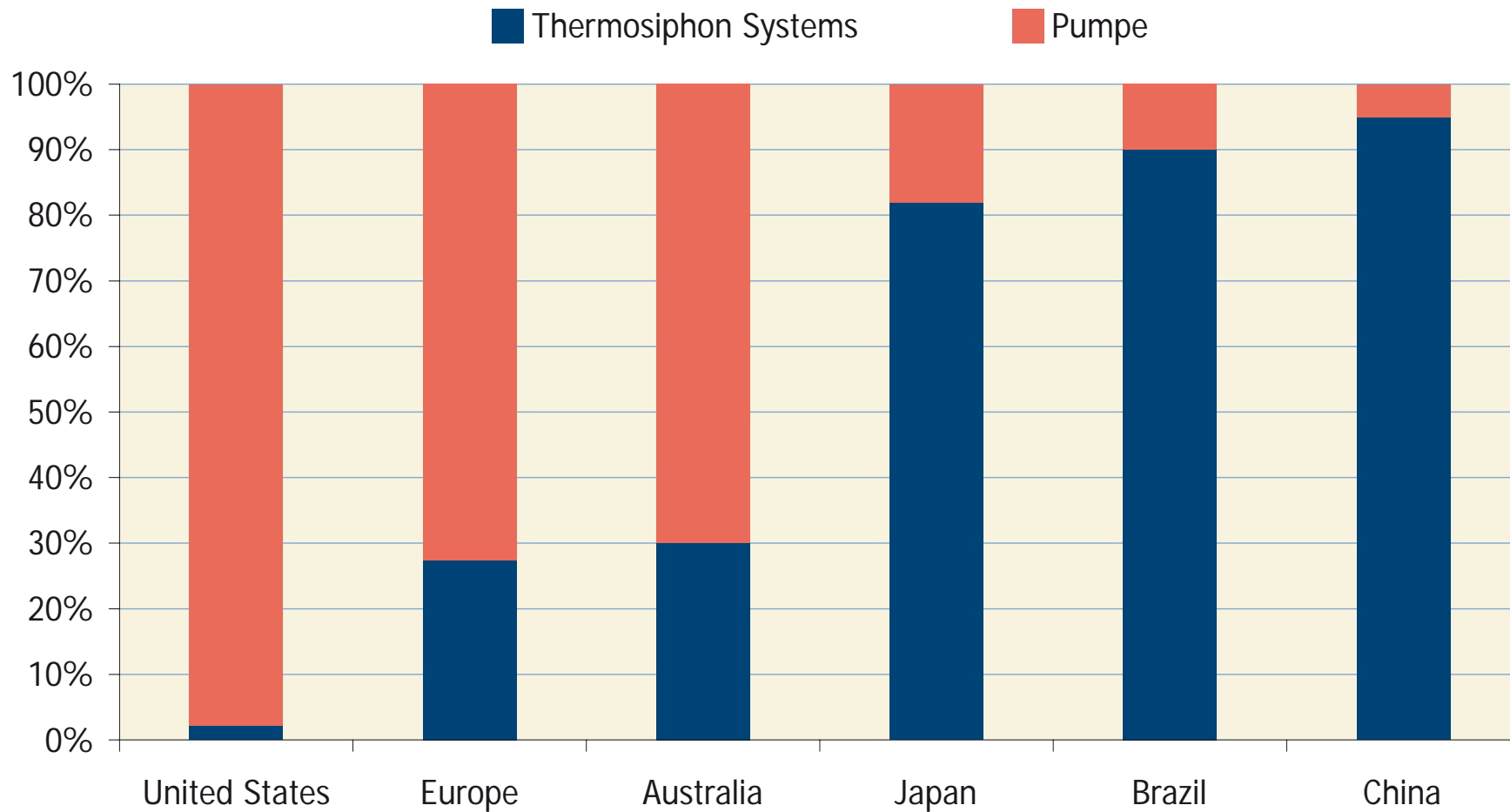
Annually installed capacity of flat-plate and evacuated tube collectors

Installed capacity [$\text{kW}_{\text{th}}/\text{a}/1,000 \text{ inh.}$]



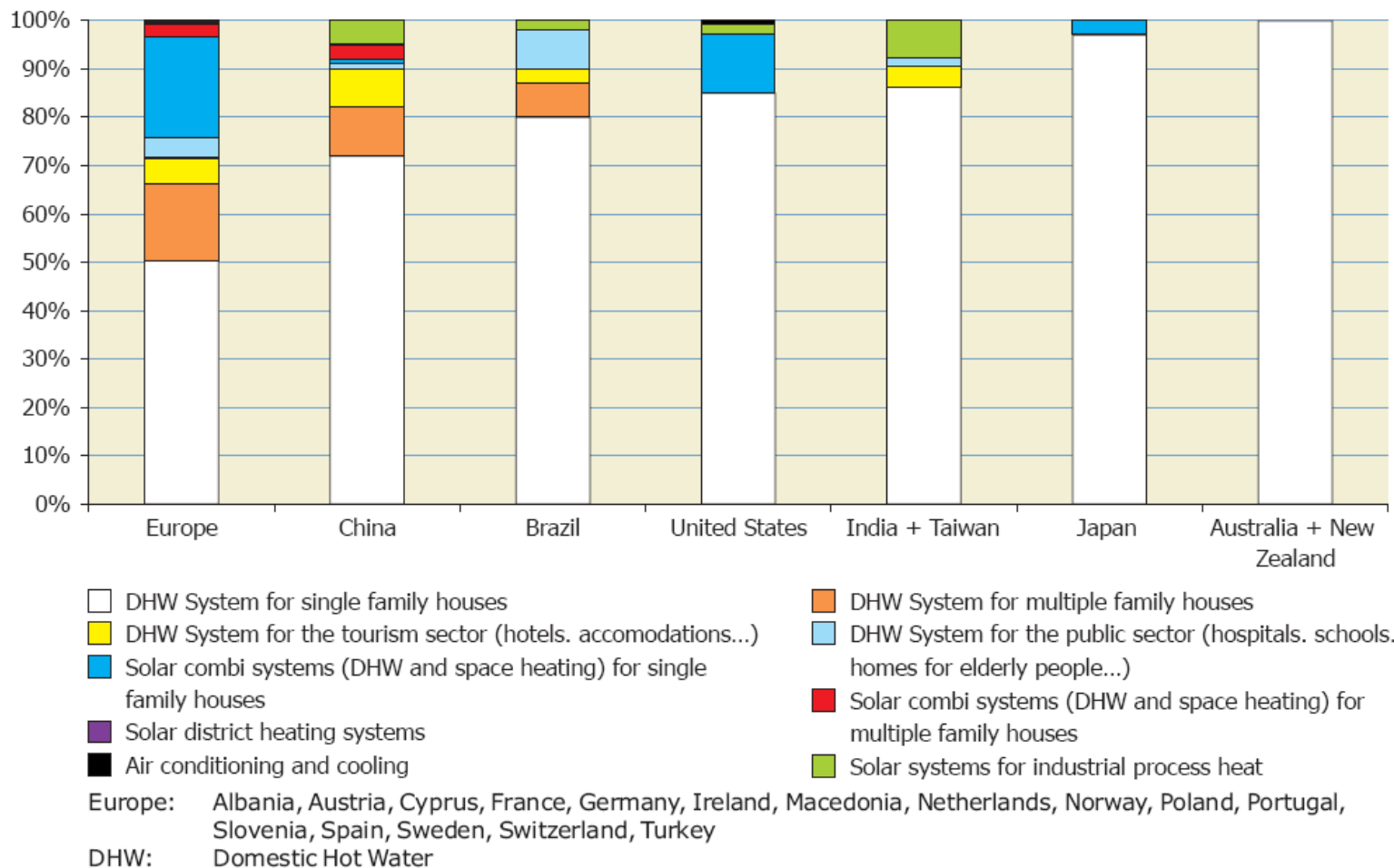


Distribution of different solar thermal systems by economic region



Distribution by Application

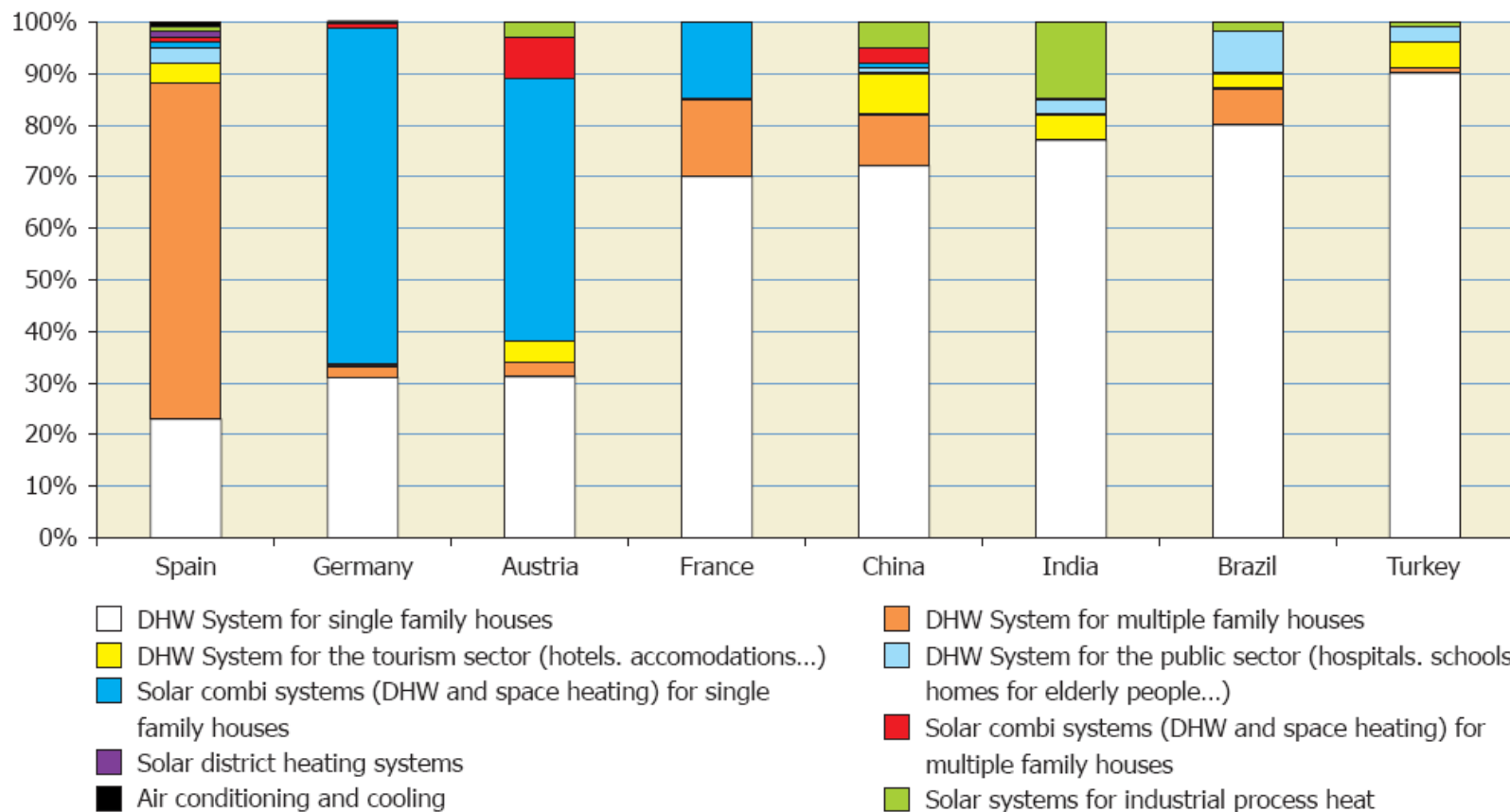
By Economic Region / Related to newly installed capacity in 2008



Source: Weiss, W., Mauthner, F.: Solar Heat Worldwide, IEA SHC 2010

Distribution by Application

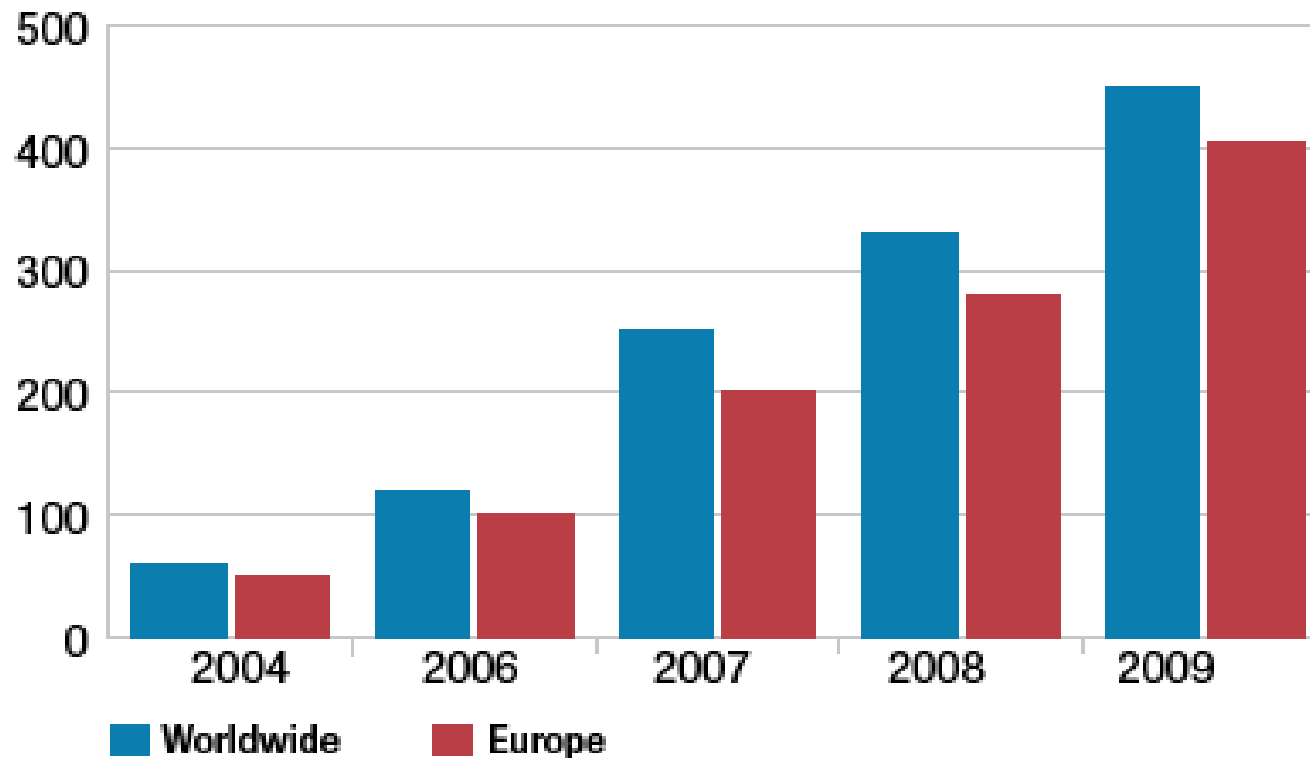
World's Top 8 Countries / Related to newly installed capacity in 2008



Source: Weiss, W., Mauthner, F.: Solar Heat Worldwide, IEA SHC 2010

Cooling Systems 2009

Total Amount of Installed Solar Cooling Systems in Europe and the World



Source: www.greenchiller.eu.

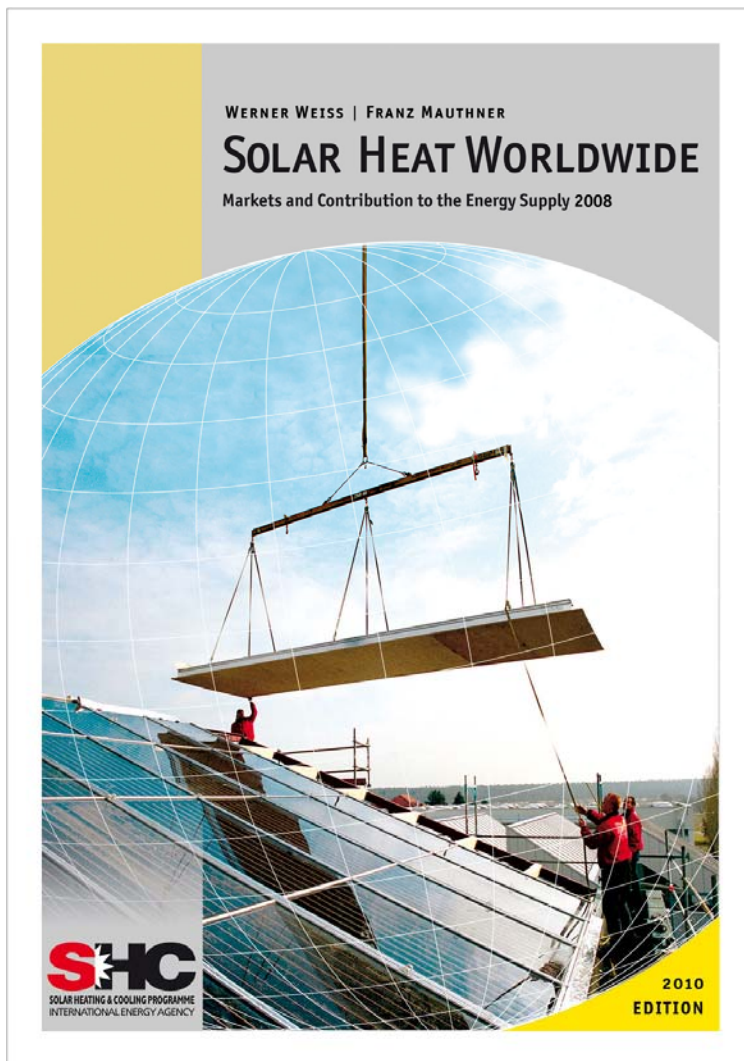
Employment



Based on data collected from detailed country reports, the jobs created by the production, installation and maintenance of solar thermal plants is estimated to be 260,000 worldwide



Solar Heat Worldwide



www.aee-intec.at



**Thank you for
your attention**