Using the Potential of Solar Thermal Systems to save Electricity

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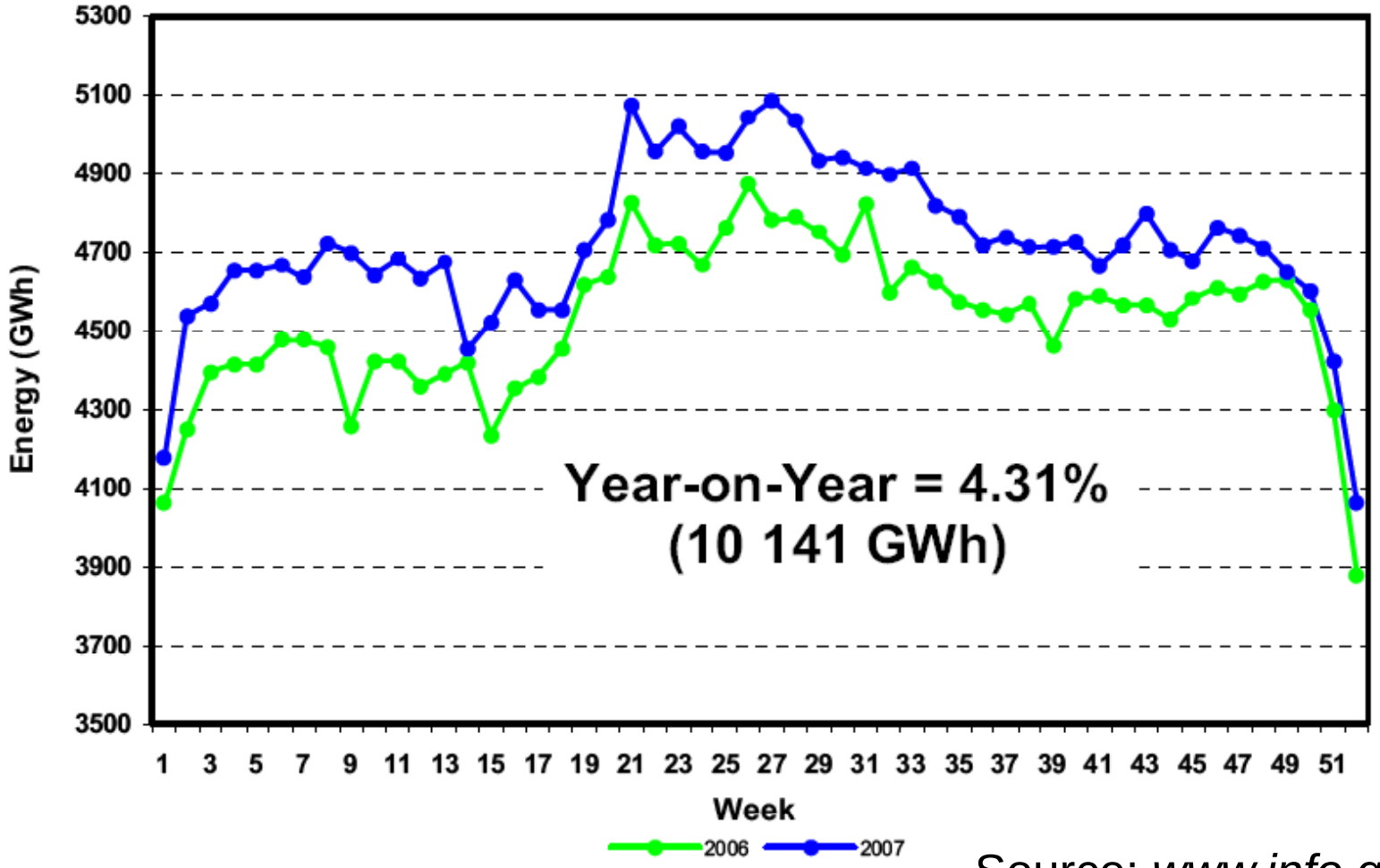
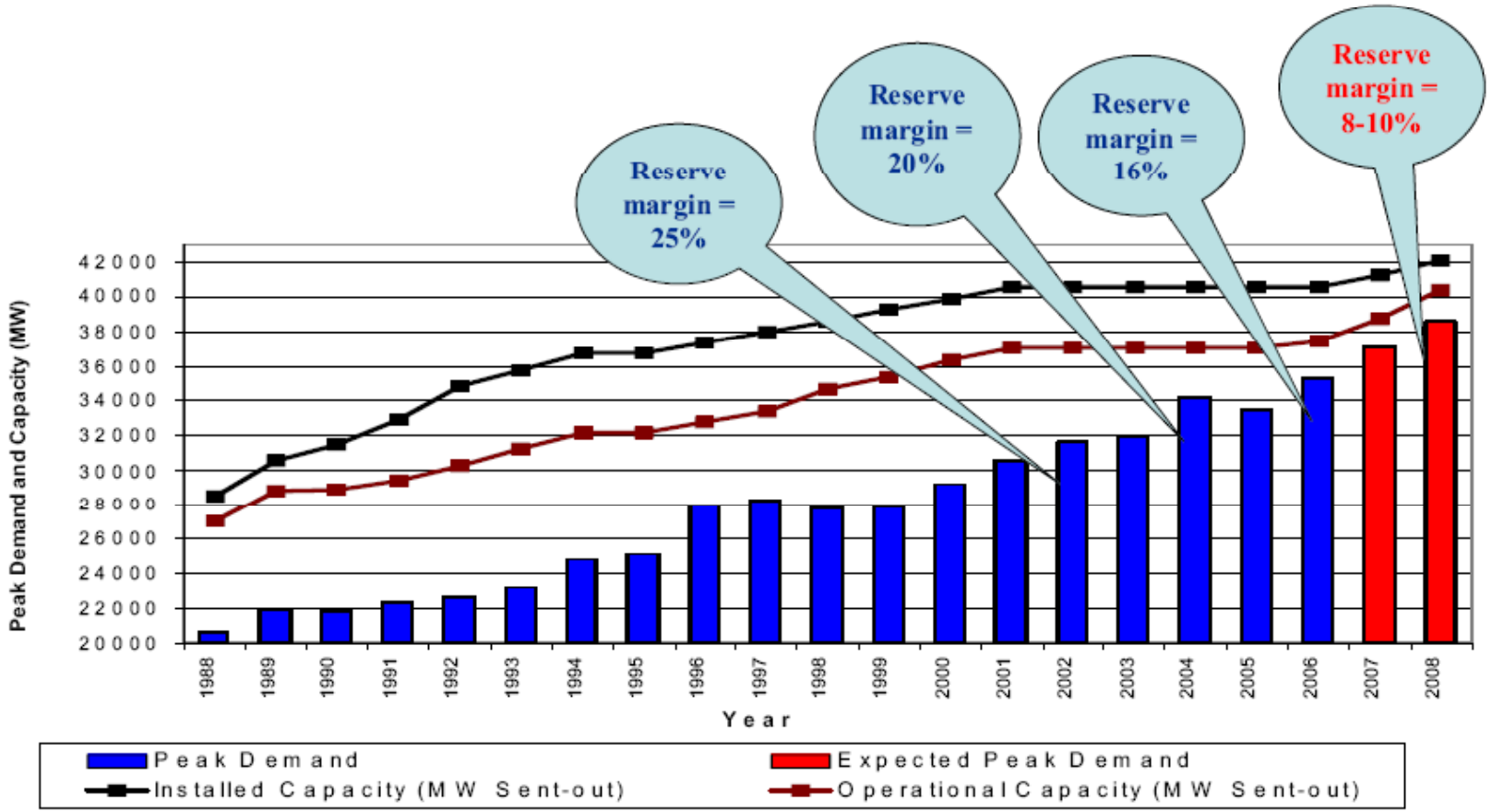
South Africas Electricity Production

2006 vs 2007 week-on-week Net Energy Sent Out



Source: *www.info.gov.za*

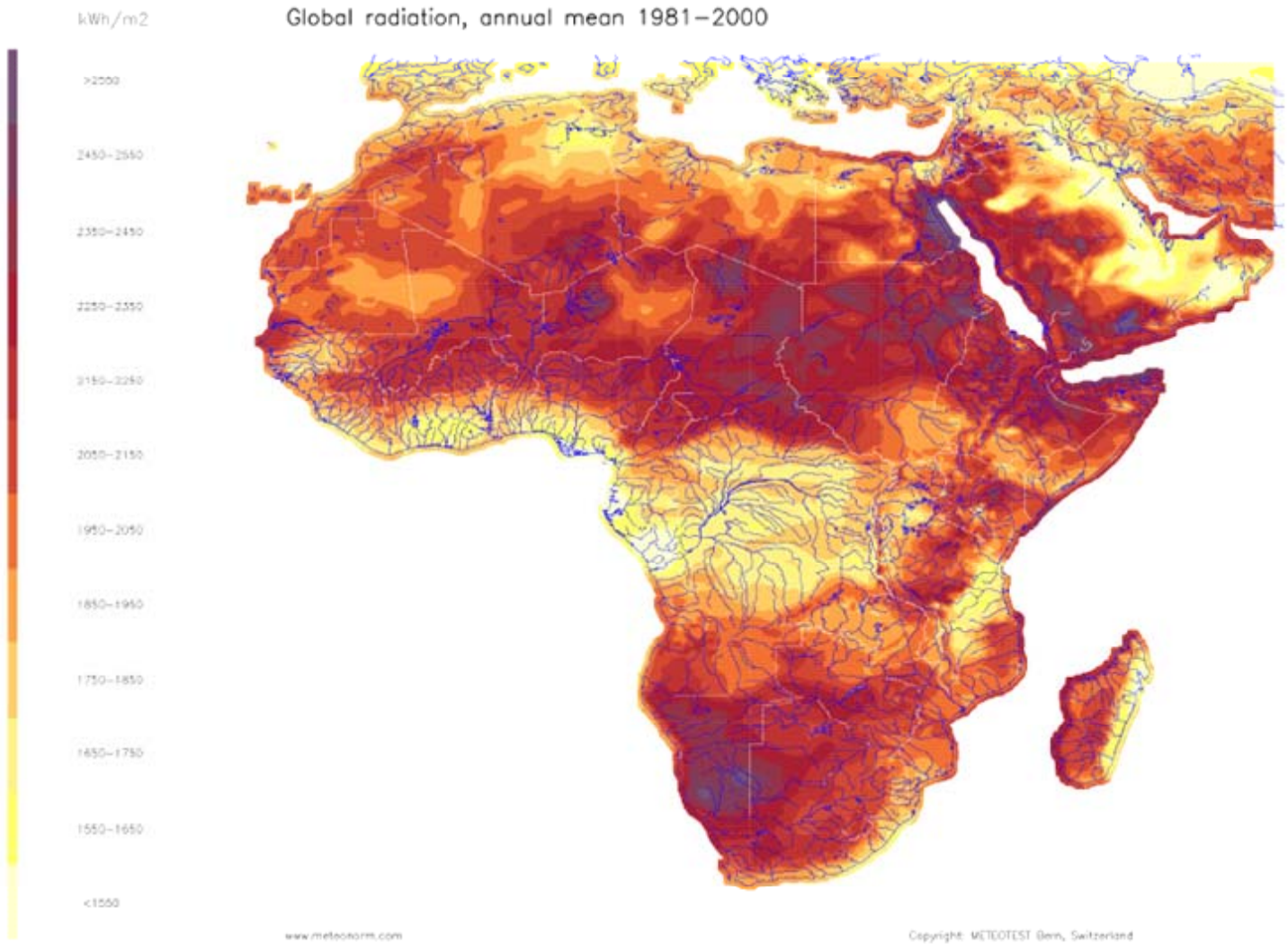
Reserve Margin – Electricity Production



Source: *www.info.gov.za*

What about Using the Solar Resource?

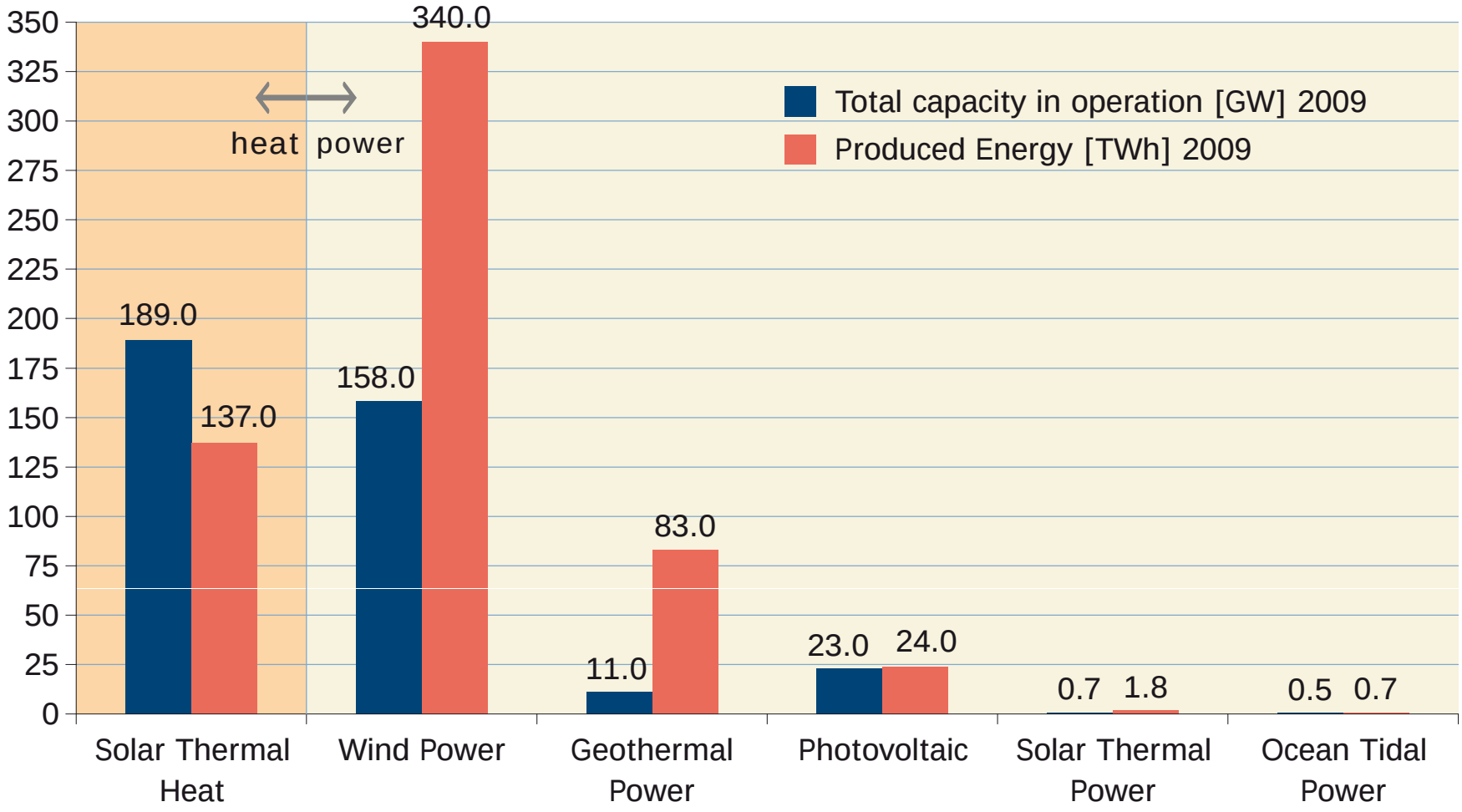
Annual global irradiation [kWh/m²]



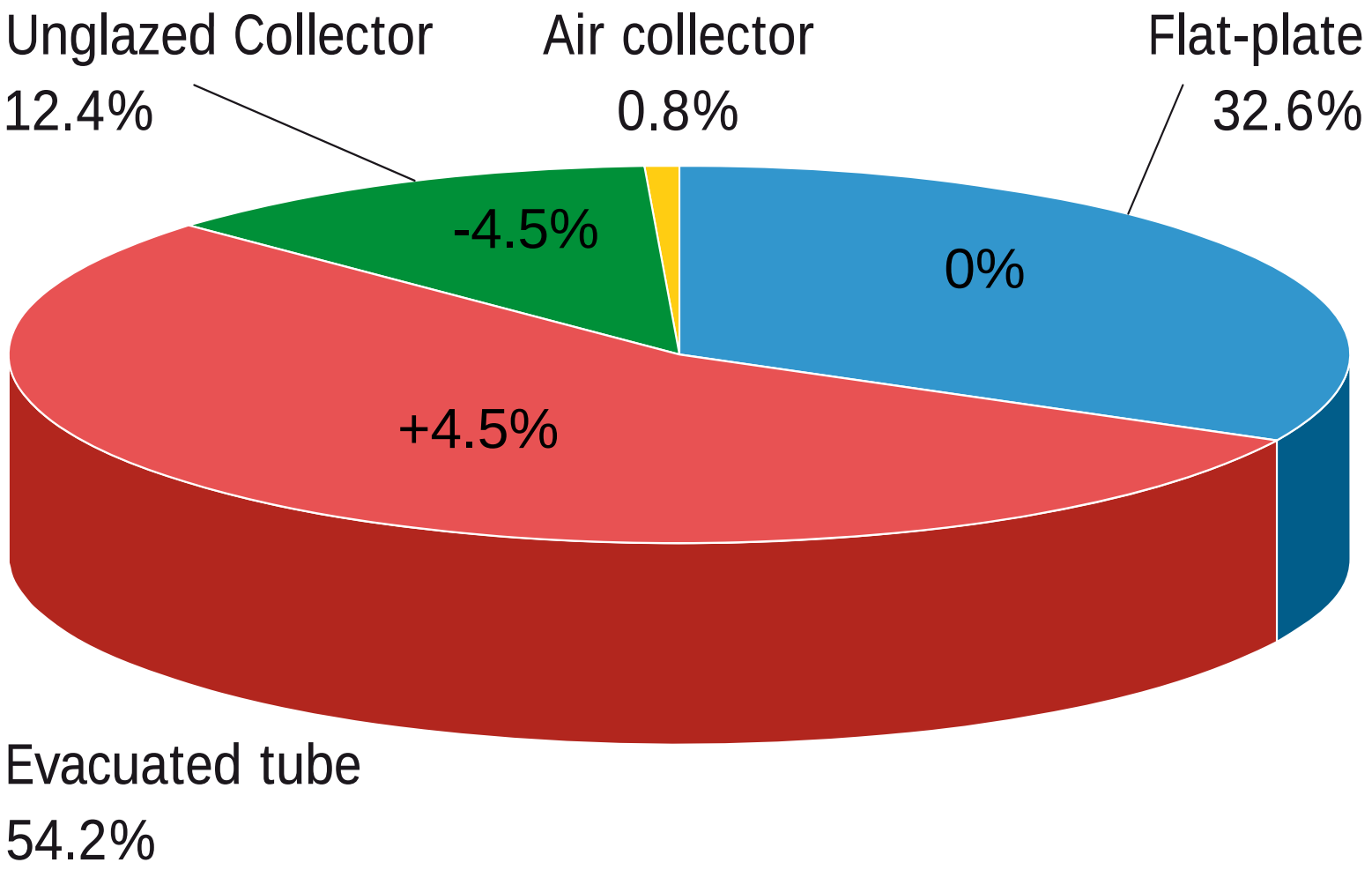
Source: Meteonorm

Achievements - 2009

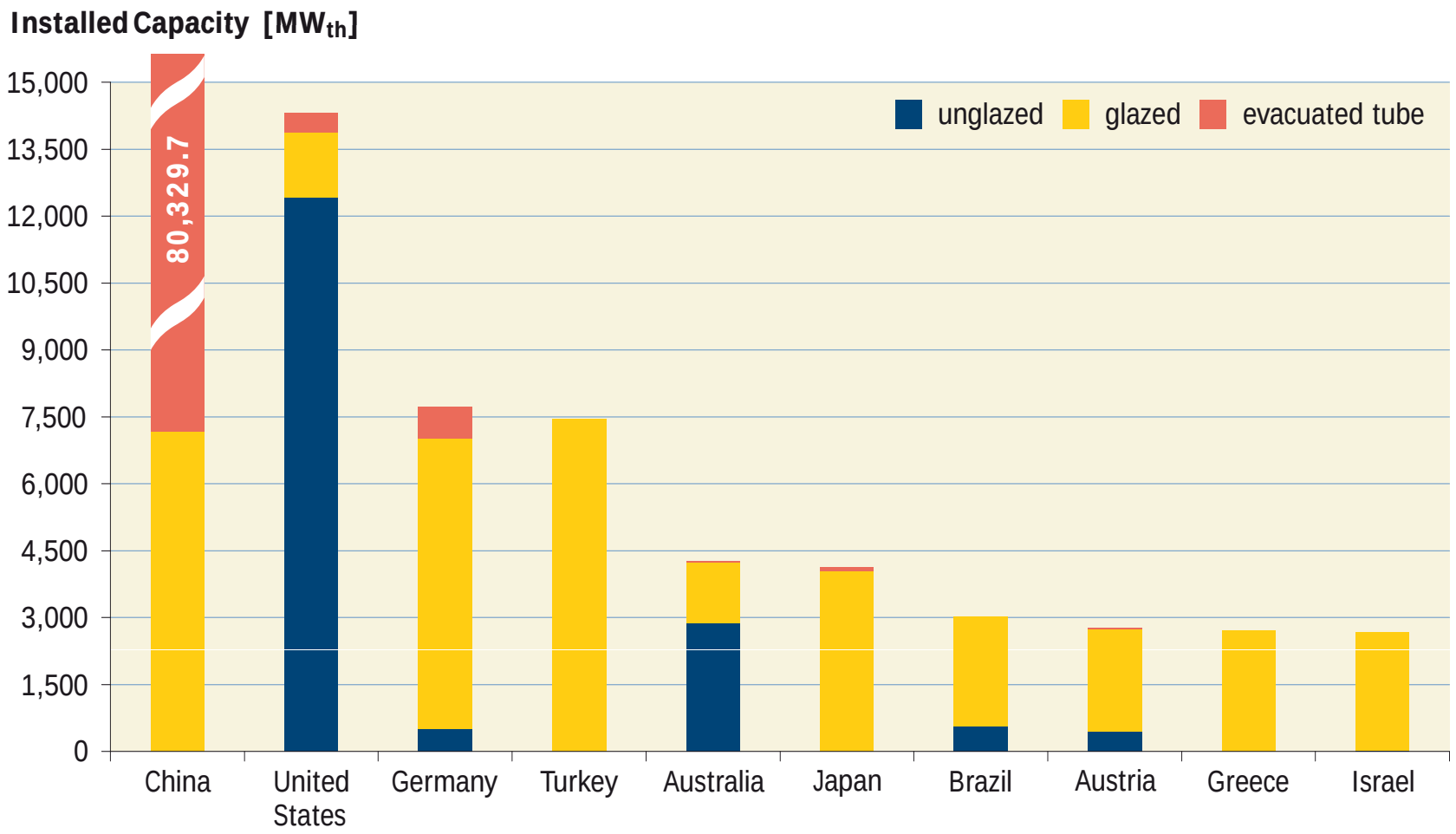
Total Capacity in Operation [GW_{el}], [GW_{th}] and Produced Energy [TWh_{el}], [TWh_{th}],



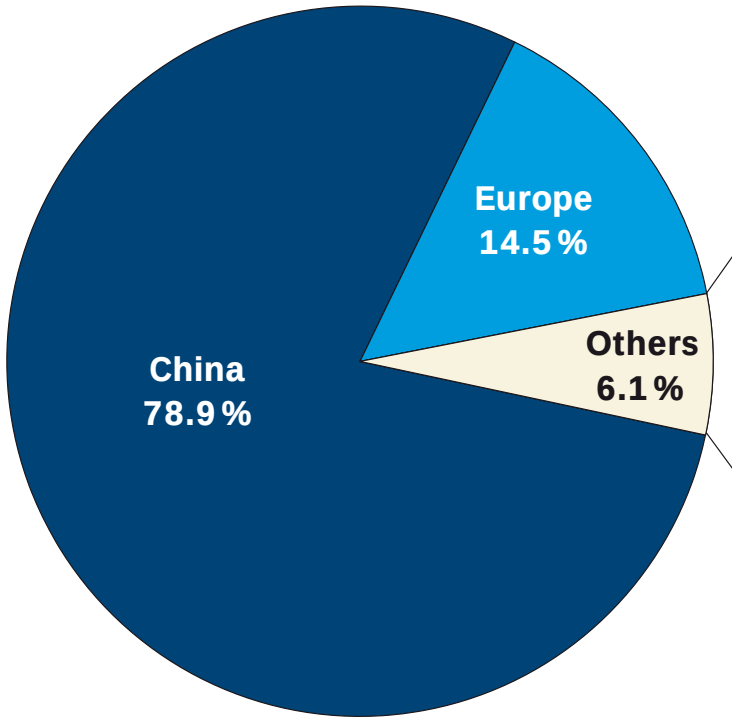
Distribution of Collectors



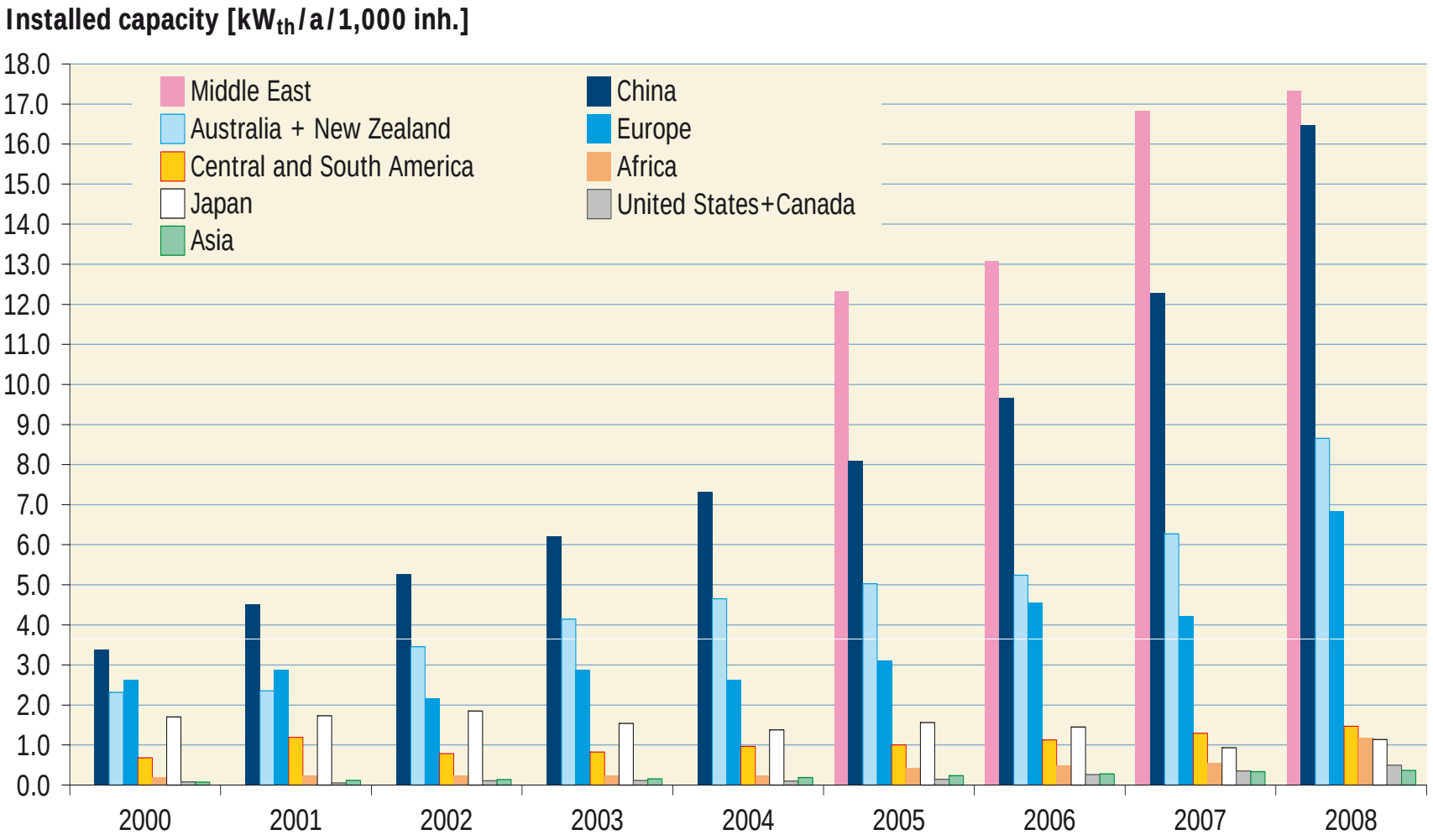
Solar Heat Worldwide - 2008



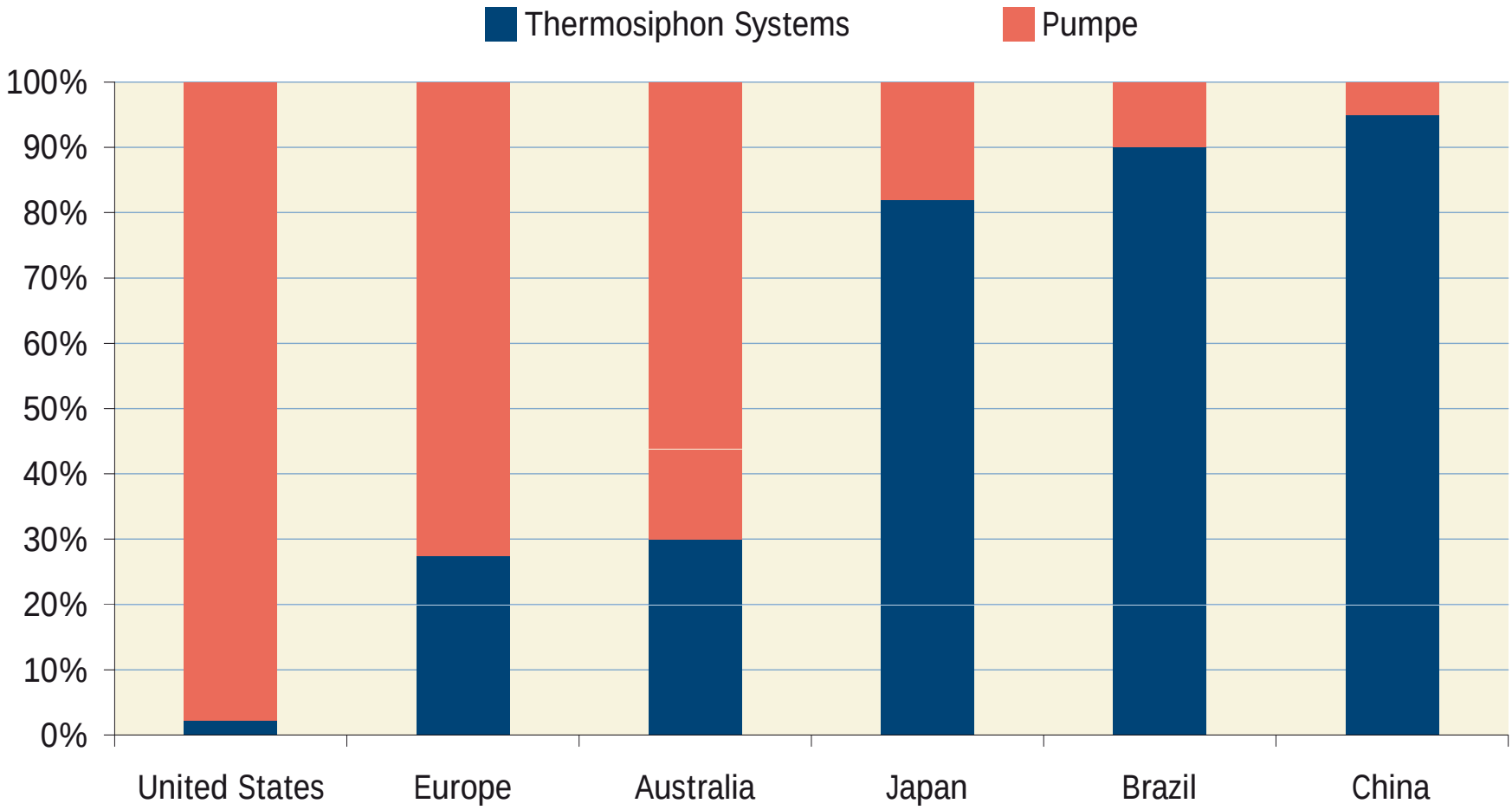
Installations by Economic Region 2008
Flat-plate and Evacuated Collectors



Annually installed capacity of flat-plate and evacuated tube collectors

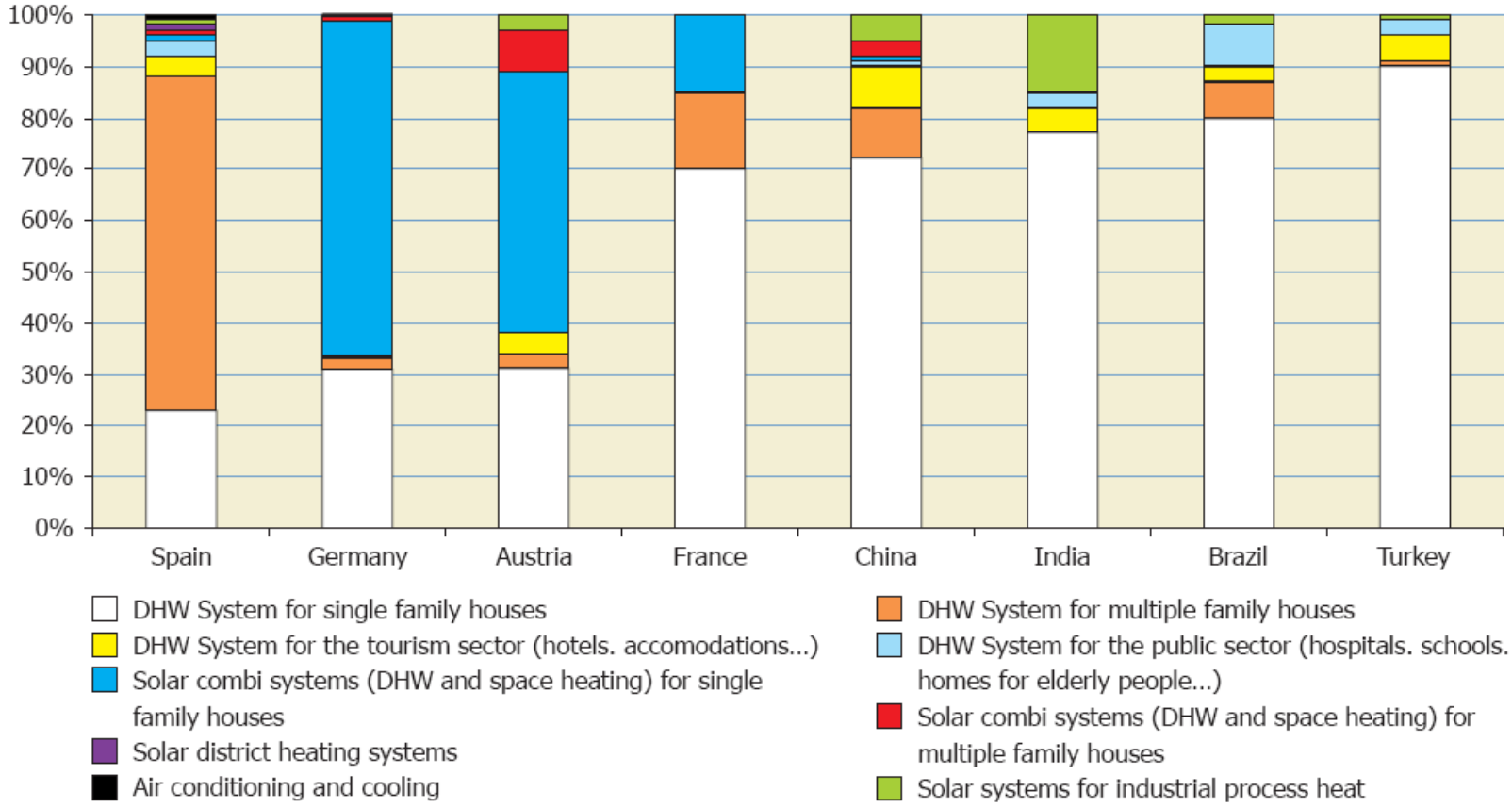


Distribution of different solar thermal systems by economic region



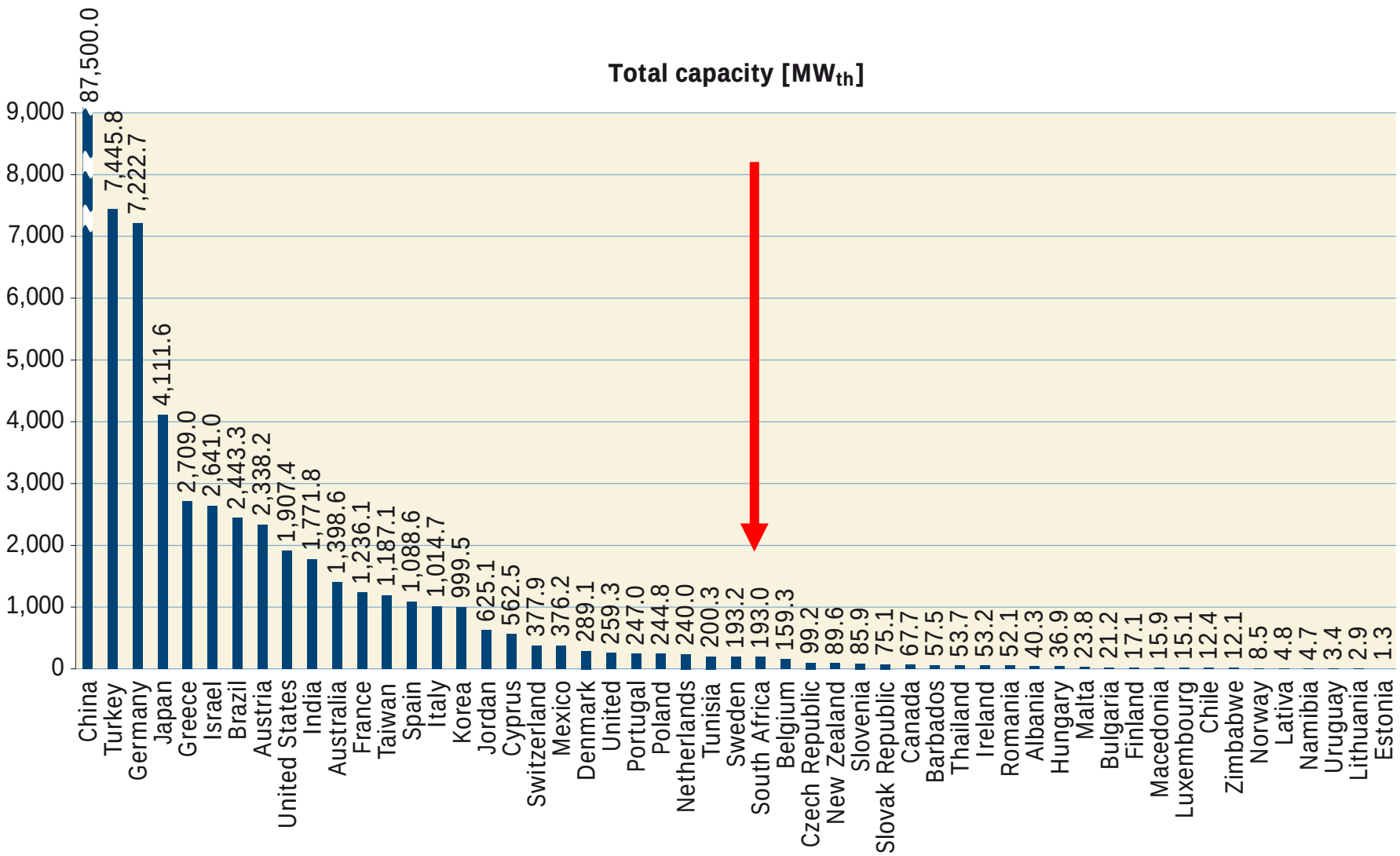
Distribution by Application

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

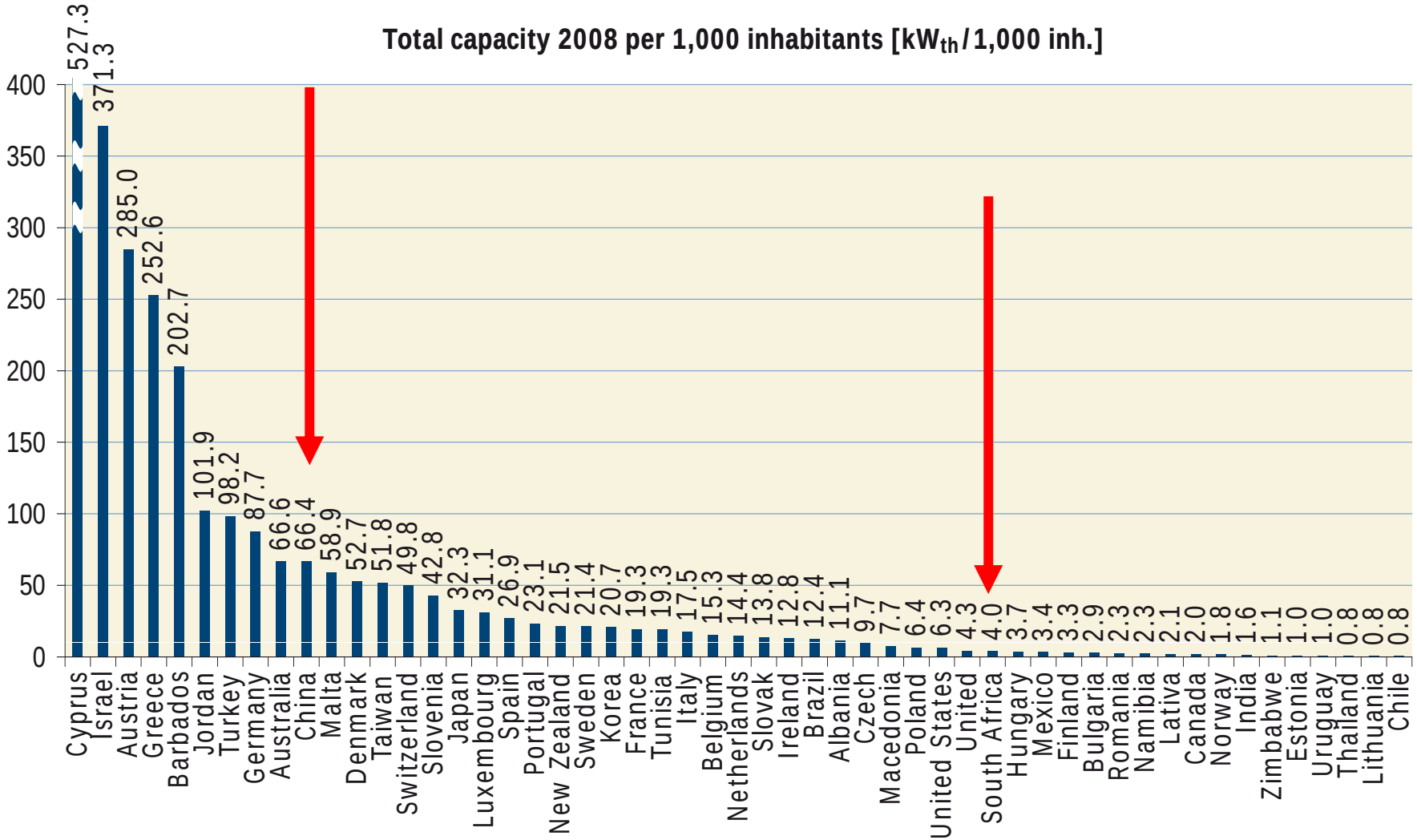


Source: Weiss, W., Mauthner, F.: Solar Heat Worldwide, IEA SHC 2010

Solar Heat Worldwide - 2008



Solar Heat Worldwide



Leading Countries

In terms of the total capacity in operation of flat-plate and evacuated tube collectors at the end of the year 2008, **China** (87.5 GWth), **Turkey** (7.5 GWth), **Germany** (7.2 GWth), **Japan** (4.1 GWth) **and Greece** (2.7 GWth) are the leading countries.

They are followed by Israel (2.6 GWth), Brazil (2.4 GWth), Austria (2.3 GWth), the United States (1.9 GWth) and India (1.8 GWth).
China is by far the largest market, representing 66.4 % of the world market for flat-plate and evacuated tube collectors.

Leading Countries - Market Penetration

In terms of market penetration, based on the total capacity in operation per 1,000 inhabitants,

Cyprus (527.2 kWth)

Israel (371.3 kWth)

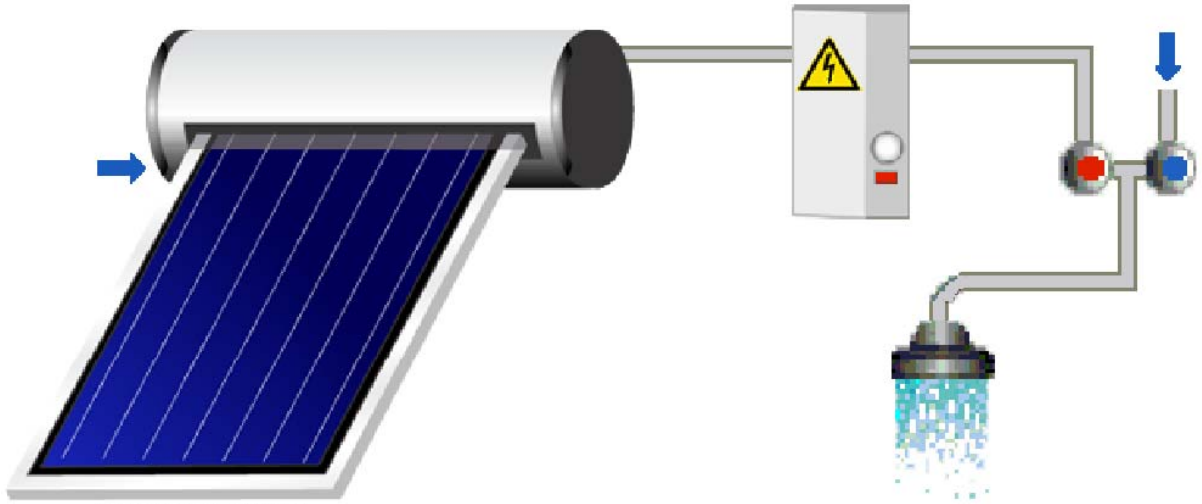
Austria (285.0 kWth)

Greece (252.6 kWth)

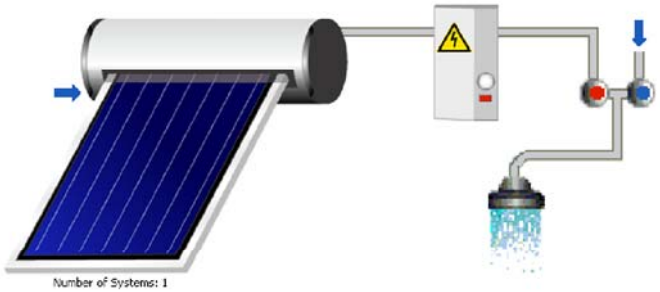
and **Barbados** (202.7 kWth)

are the leading countries.

Solar Yield of a small Solar Thermal System



South African 1 Million Systems Programme



System parameters

3 m² collector area = **2.1 kW_{th}**

Hot water storage: 200 ltr.

Daily hot water consumption: 150 ltr.

Annual Savings

3,400 kWh electricity

CO2: 2,300 kg

Market penetration like in Cyprus or Israel

49 Million inhabitants

450 kW_{th} / 1000 inhabitants

22.05 GW_{th}

Market penetration like in Cyprus or Israel

22.05 GW_{th}

25 TWh electricity

Basic electricity for 12 Million people

A successful example – NICATEC

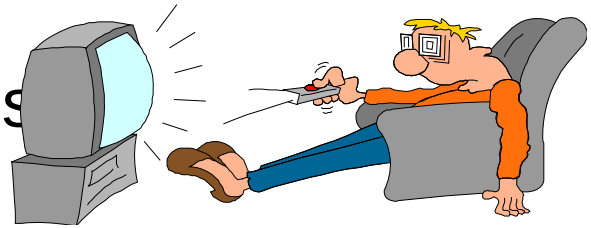
17 Solar Thermal Systems

Collector area: 307 m² (215 kW_{th})

Energy yield: 195,900 kWh/year

Avoided Electricity Production:

240.000 kWh_{el}



Basic electricity for 240 families

PV system cost: US$ 1.25 Mill.

Cost of Solar Thermal Systems: US$ 171,600

Information on Renewable Policy - Worldwide

The *Map* contains a wealth of information on renewable energy, including support policies, expansion targets, current shares, installed capacity, current production, future scenarios, and policy pledges.

The Map can be found on the REN21 website, at

http://www.ren21.net/map


Thank you for
your attention