

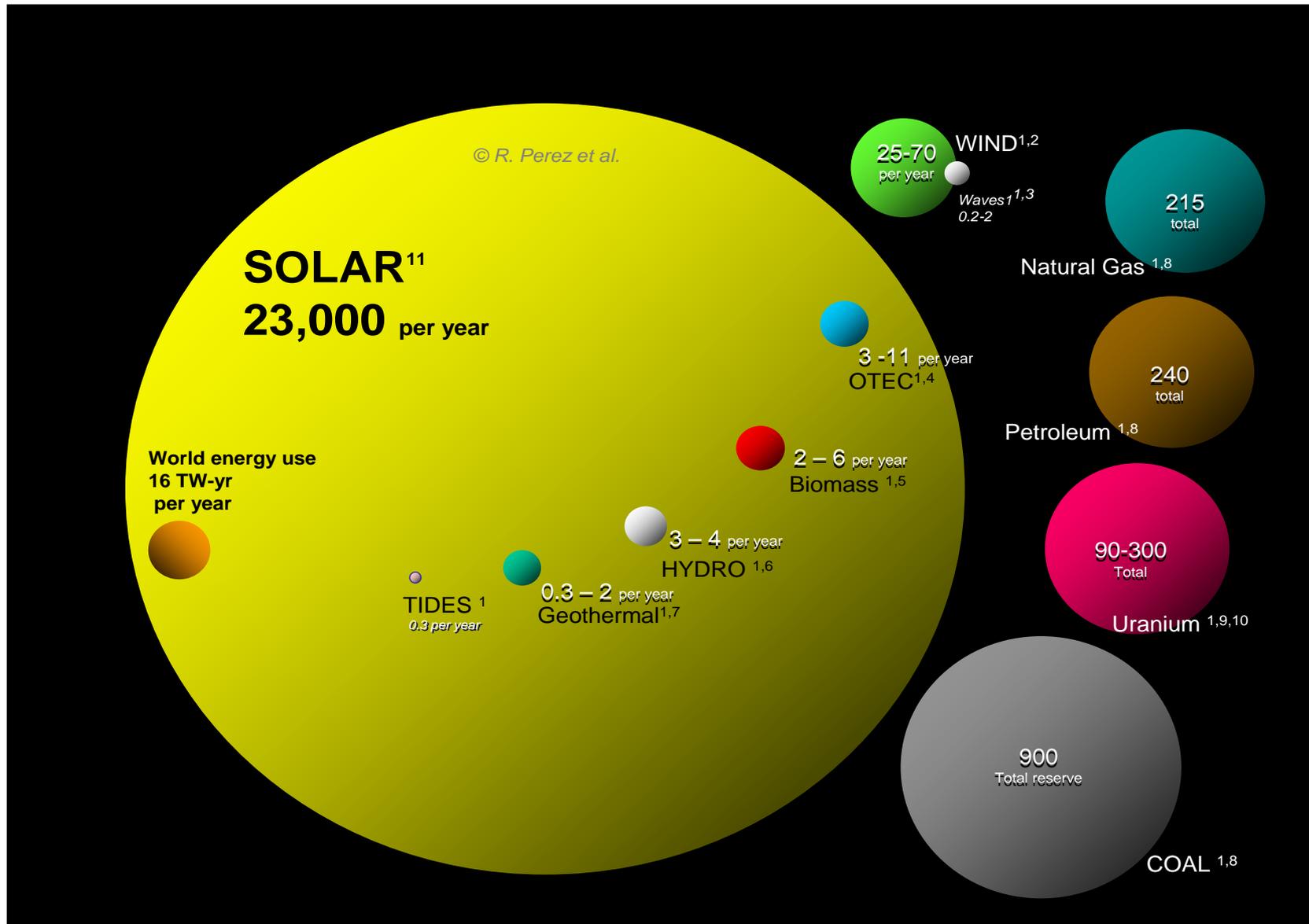


Solar Heating and Cooling

Markets, Applications and Research Activities

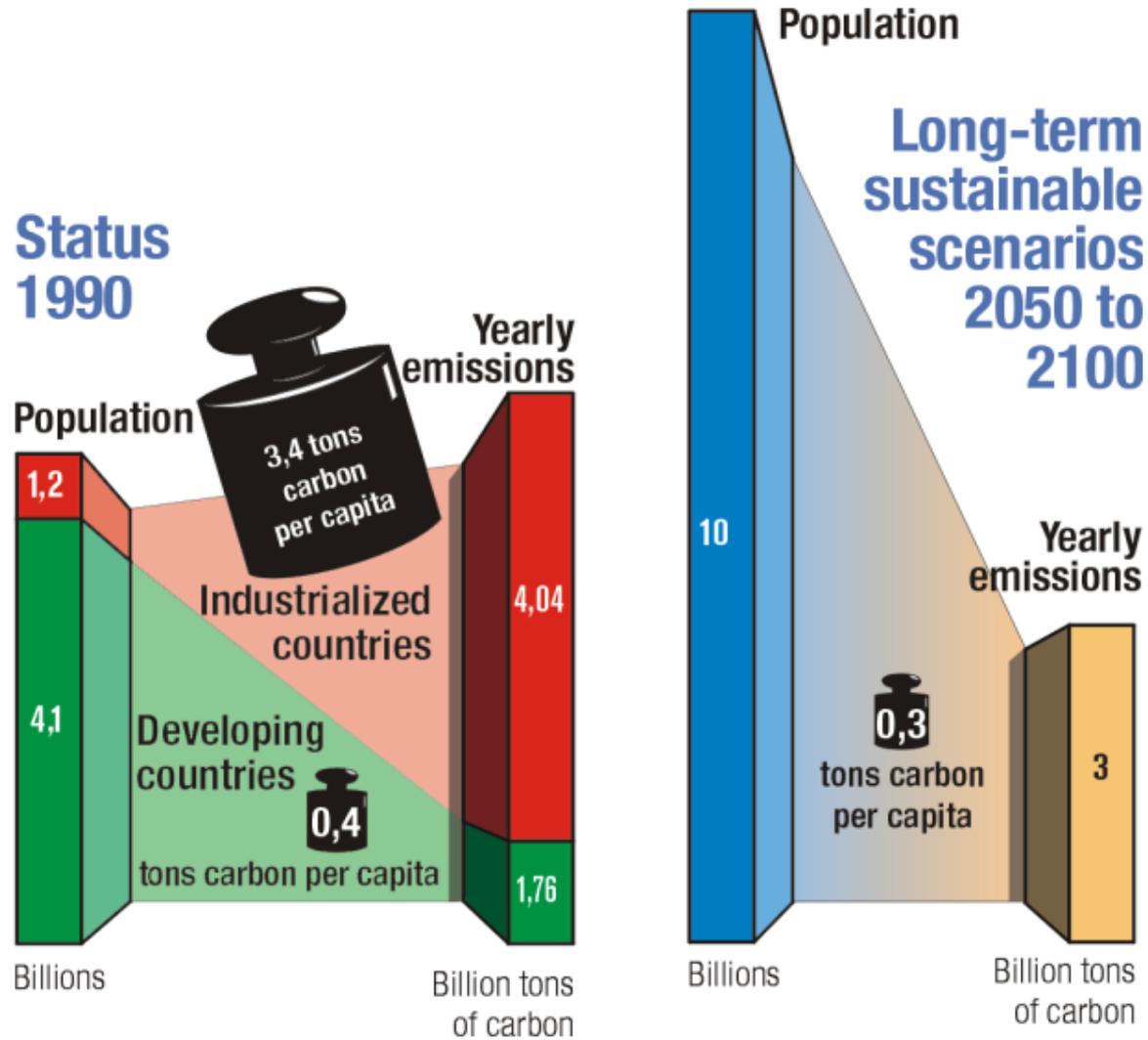
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Comparing finite and renewable planetary energy reserves (Terawatt-years).
 Total recoverable reserves are shown for the finite resources.
 Yearly potential is shown for the renewables. (R. Perez et al.)

A sustainable energy future





At the end of **2011**

a total capacity of

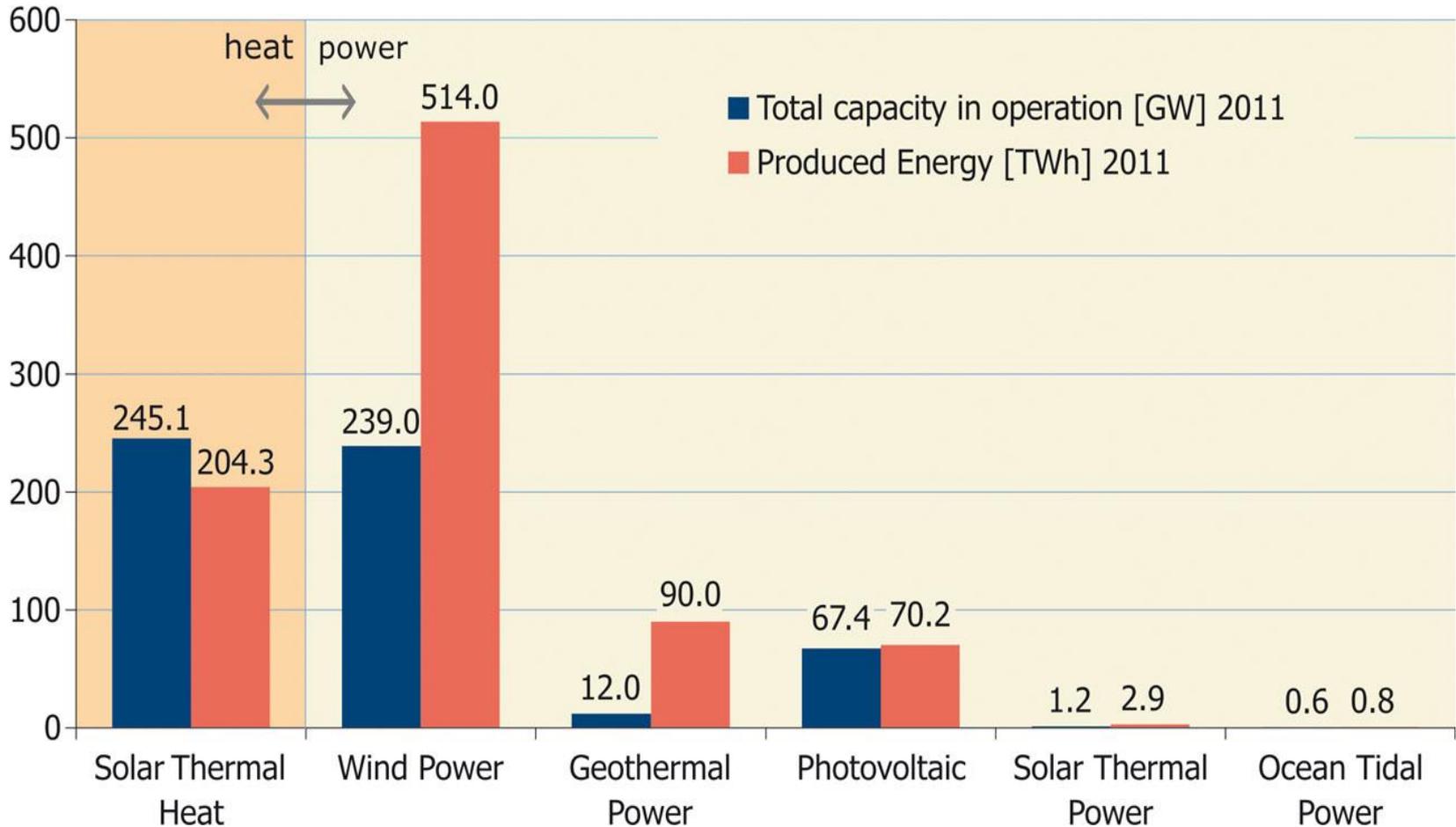
245 GW_{th}

**corresponding to 350 million square meters of
collector area**

were installed worldwide

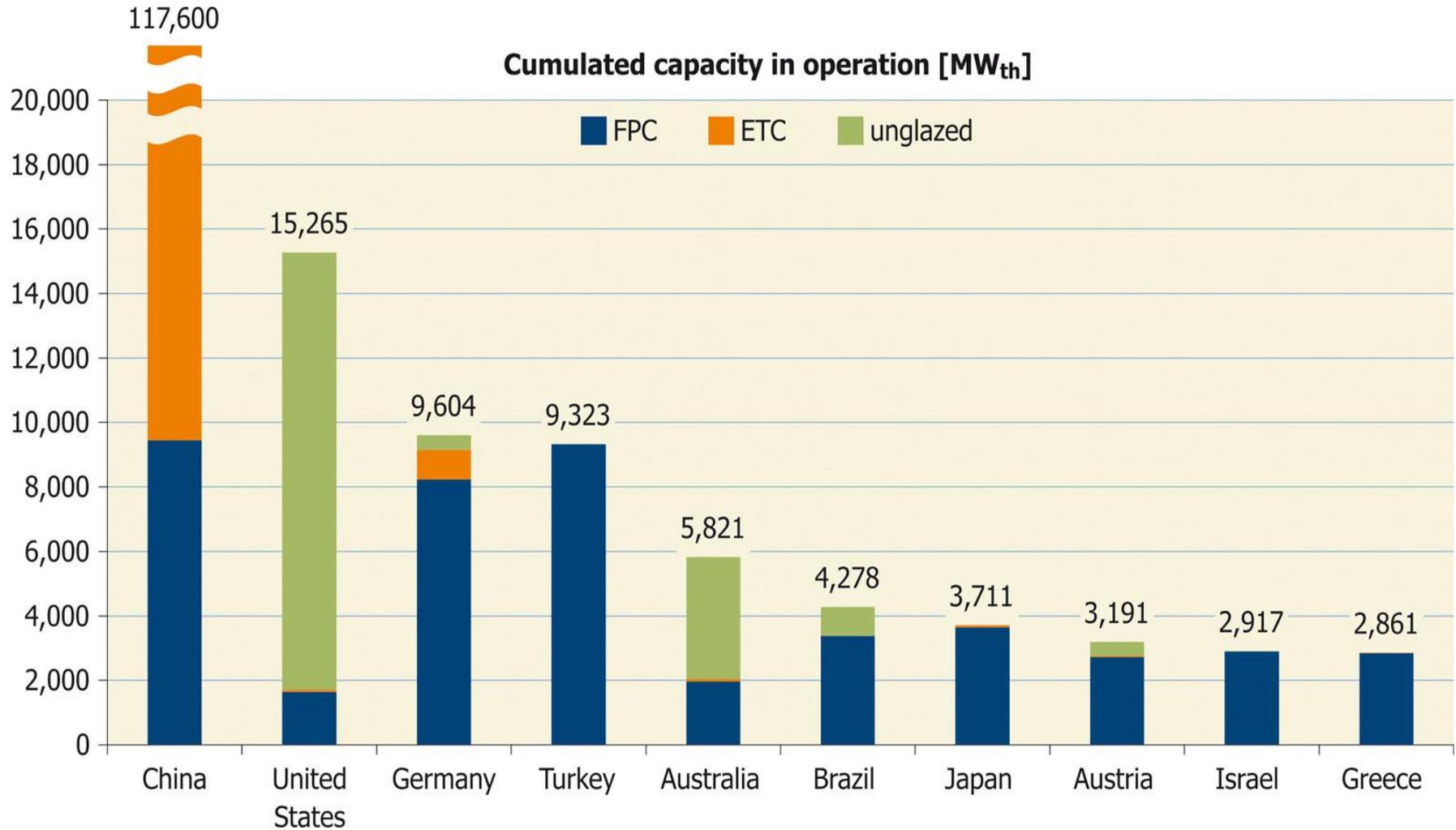
Achievements - 2011

Total Capacity in Operation [GW_{el}], [GW_{th}] and Produced Energy [TWh_{el}], [TWh_{th}], 2011

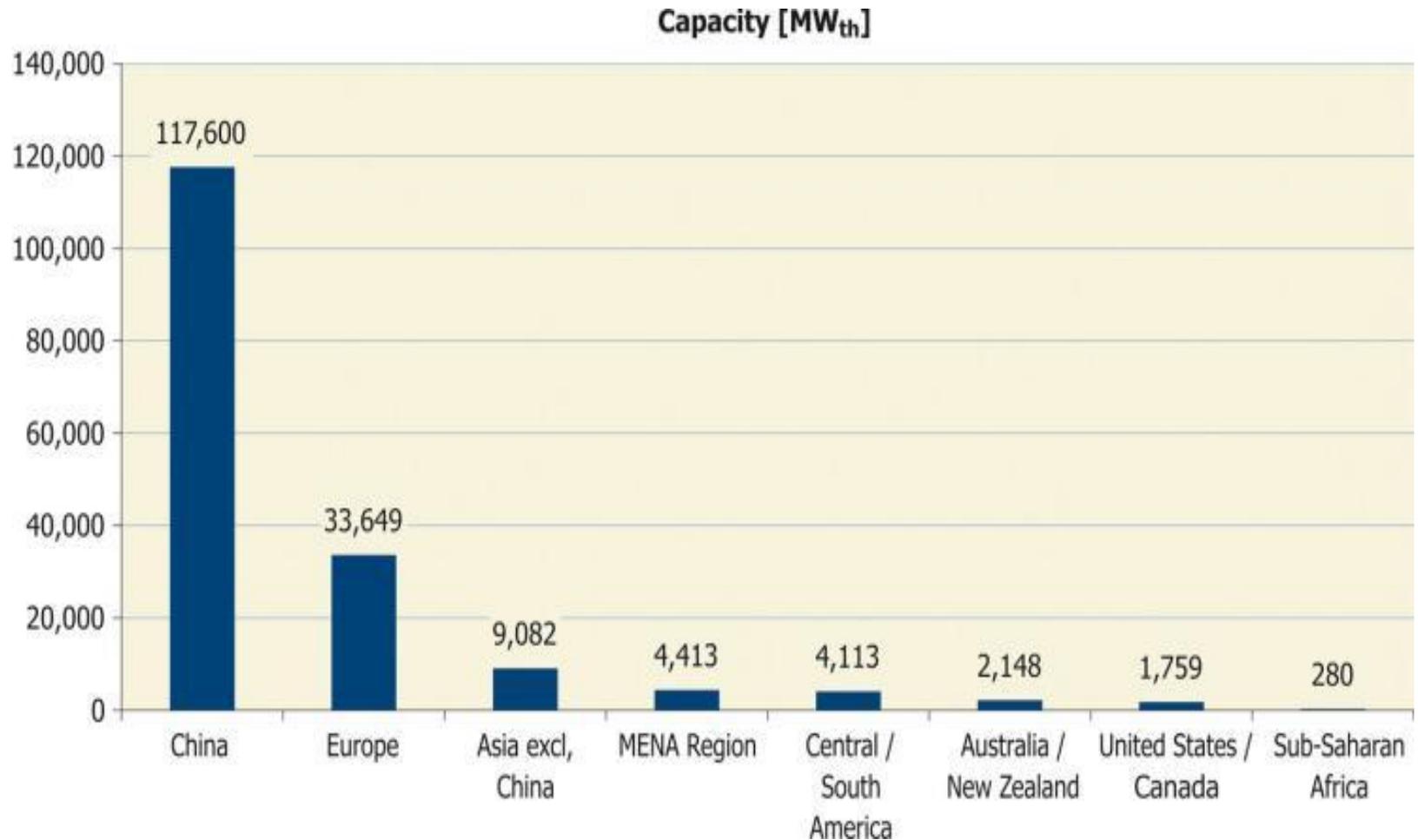


Sources: EPIA, EGEC, Earth Policy Institute, IEA SHC
2011WWEA

Total installed capacity- 2010

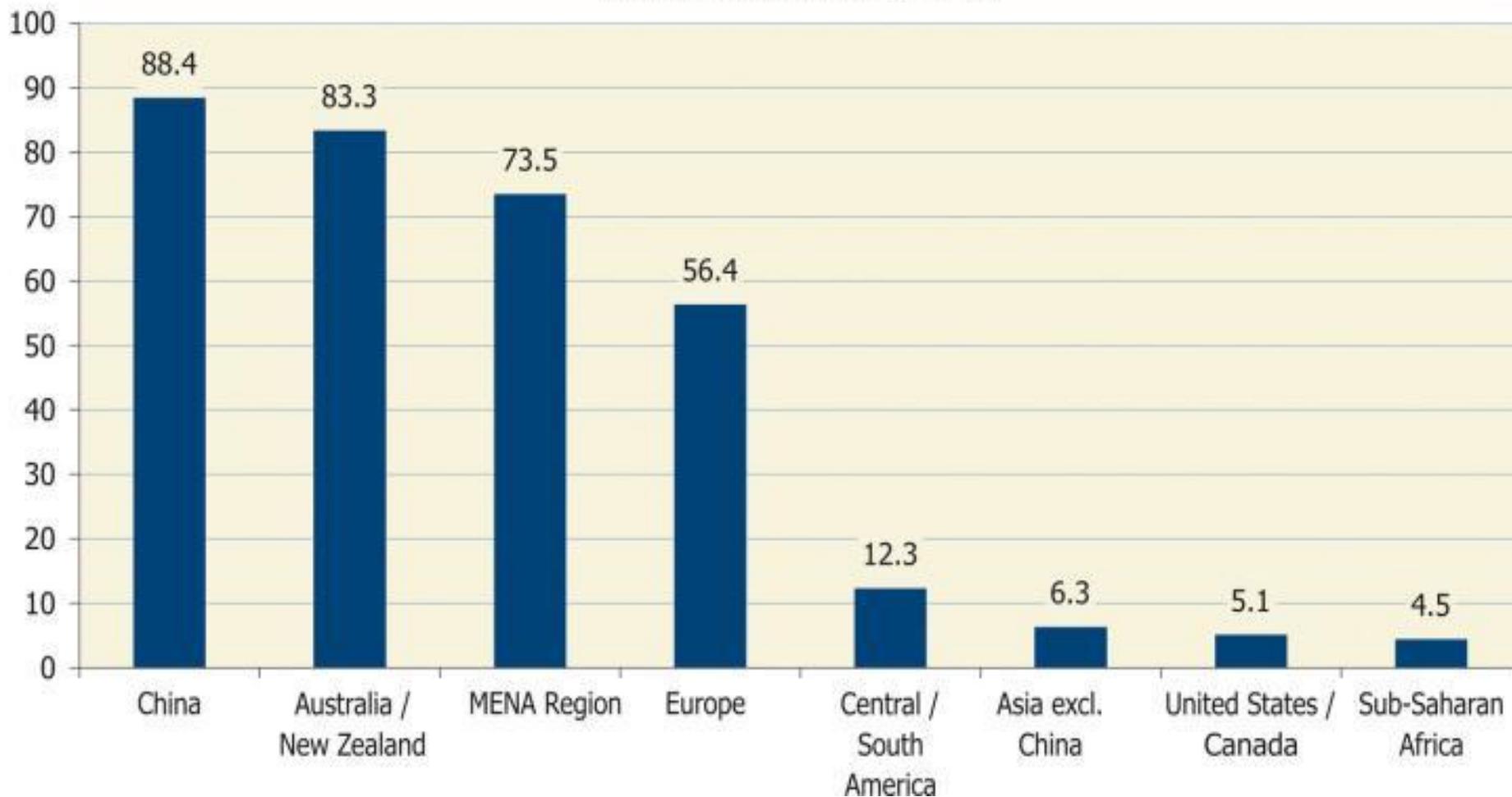


Total capacity of glazed flat plate and evacuated tube collectors in operation by economic region at the end of 2010

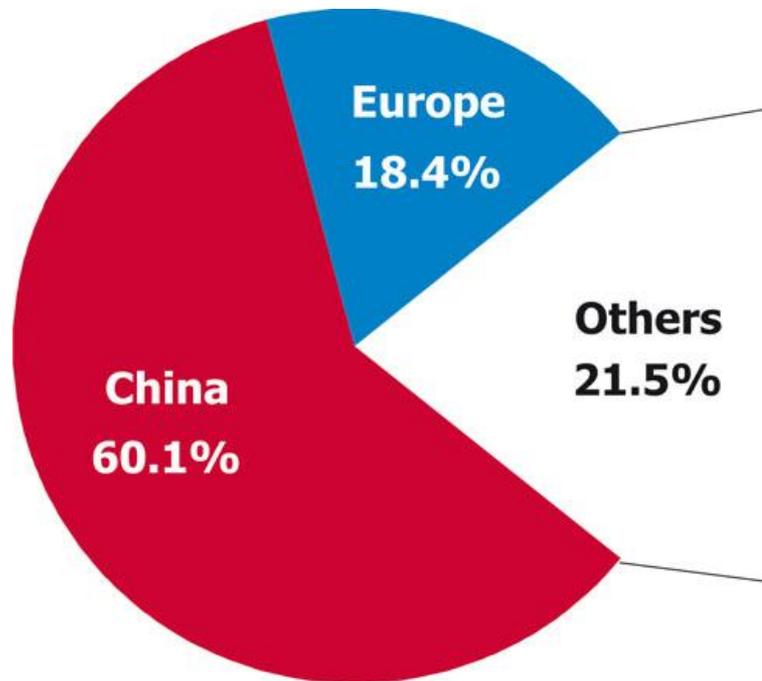


Total capacity of glazed flat-plate and evacuated tube collectors in operation by economic region and in kWth per 1,000 inhabitants by the end of 2010

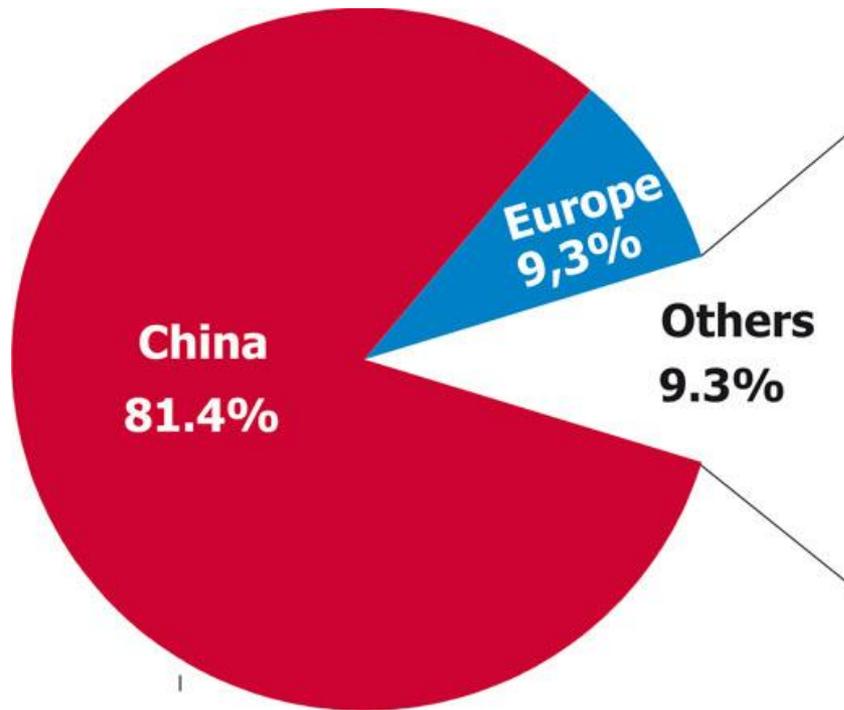
Capacity [kW_{th}/1.000 inh.]



Total installed capacity Share by economic region 2010

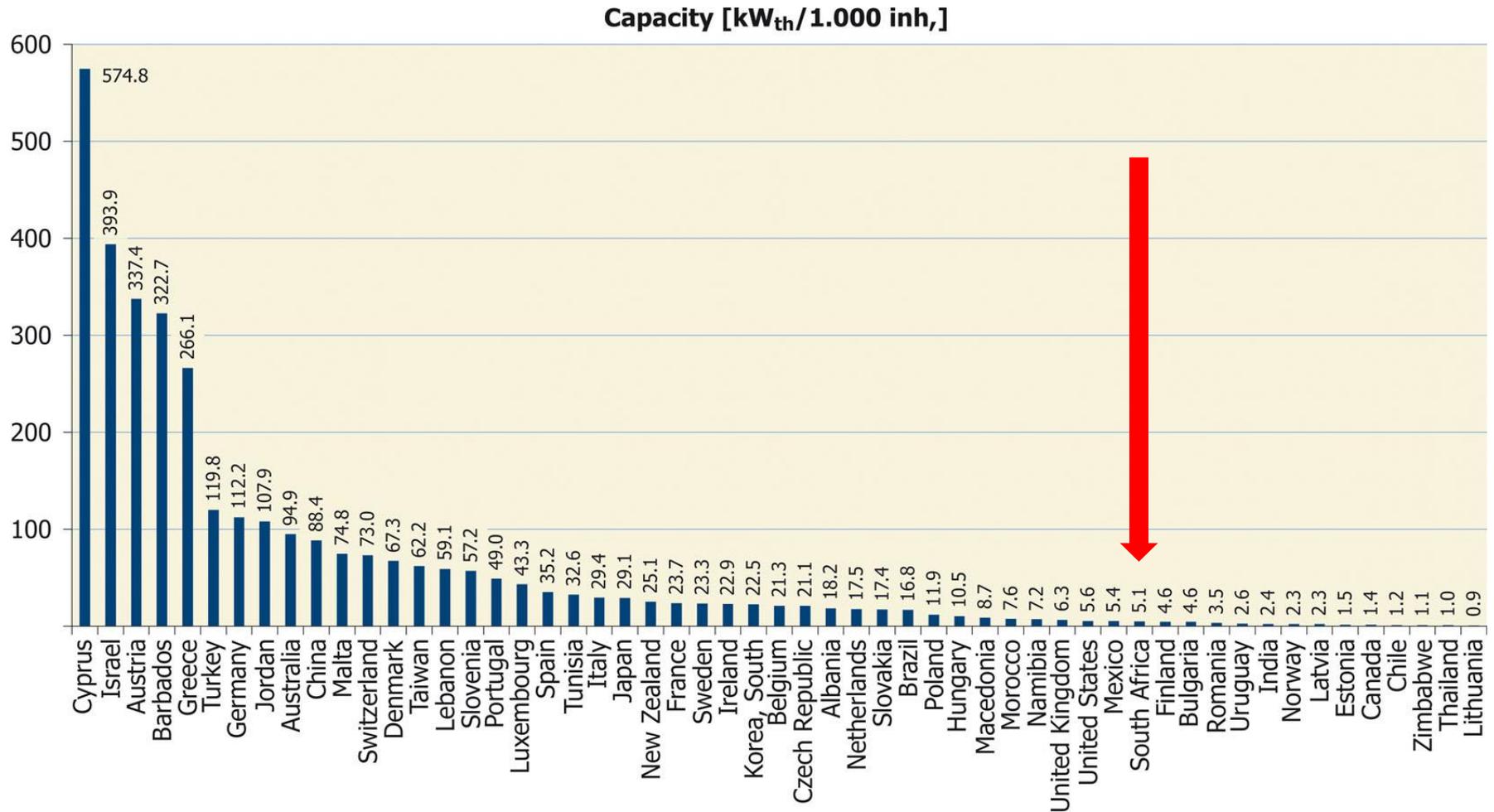


Share of the newly installed capacity by economic region in 2010



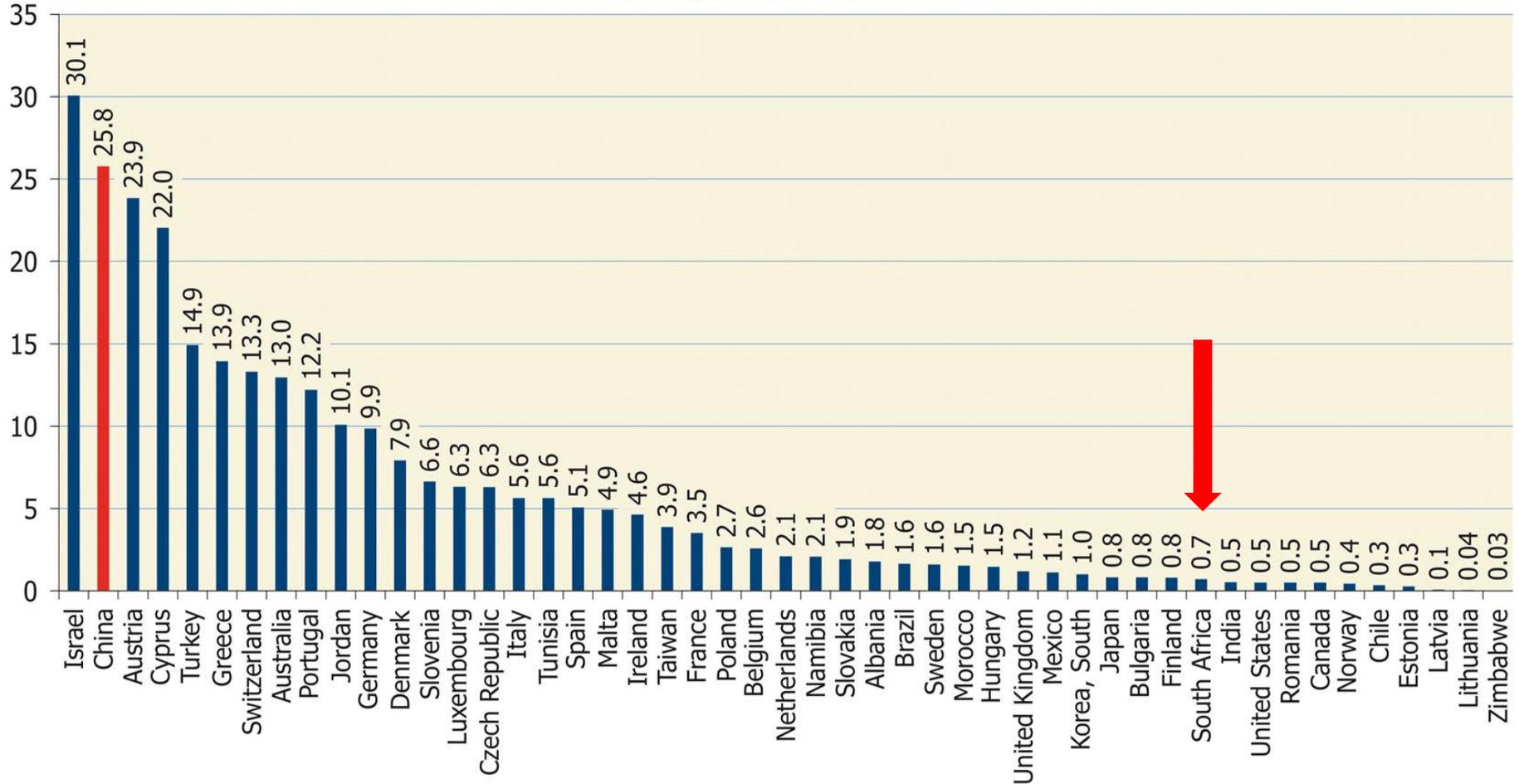
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Total installed capacity/1000 inh.

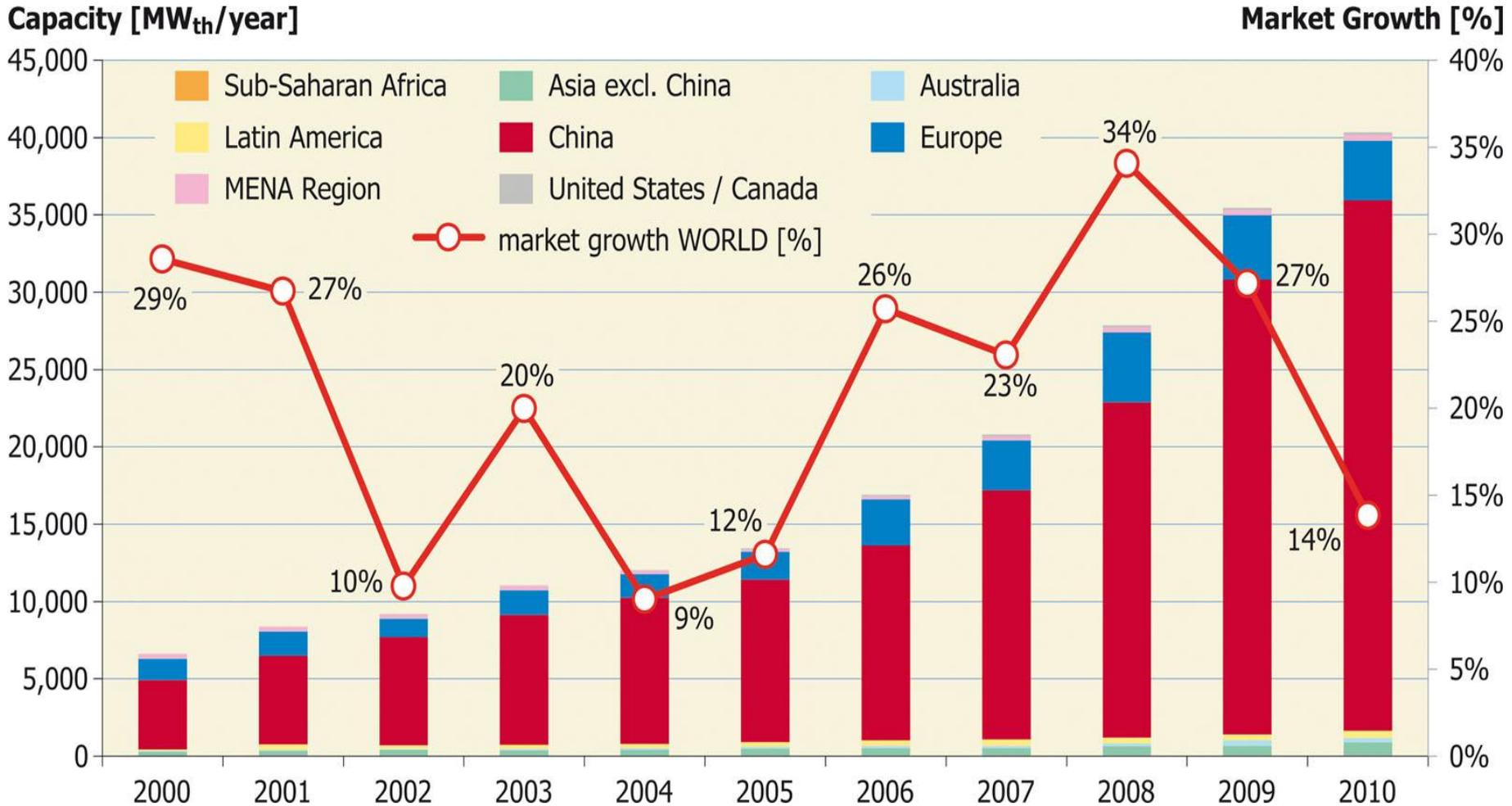


Total installed capacity/1000 inh.

Capacity [$\text{kW}_{\text{th}}/\text{yr}/1,000 \text{ inh.}$]

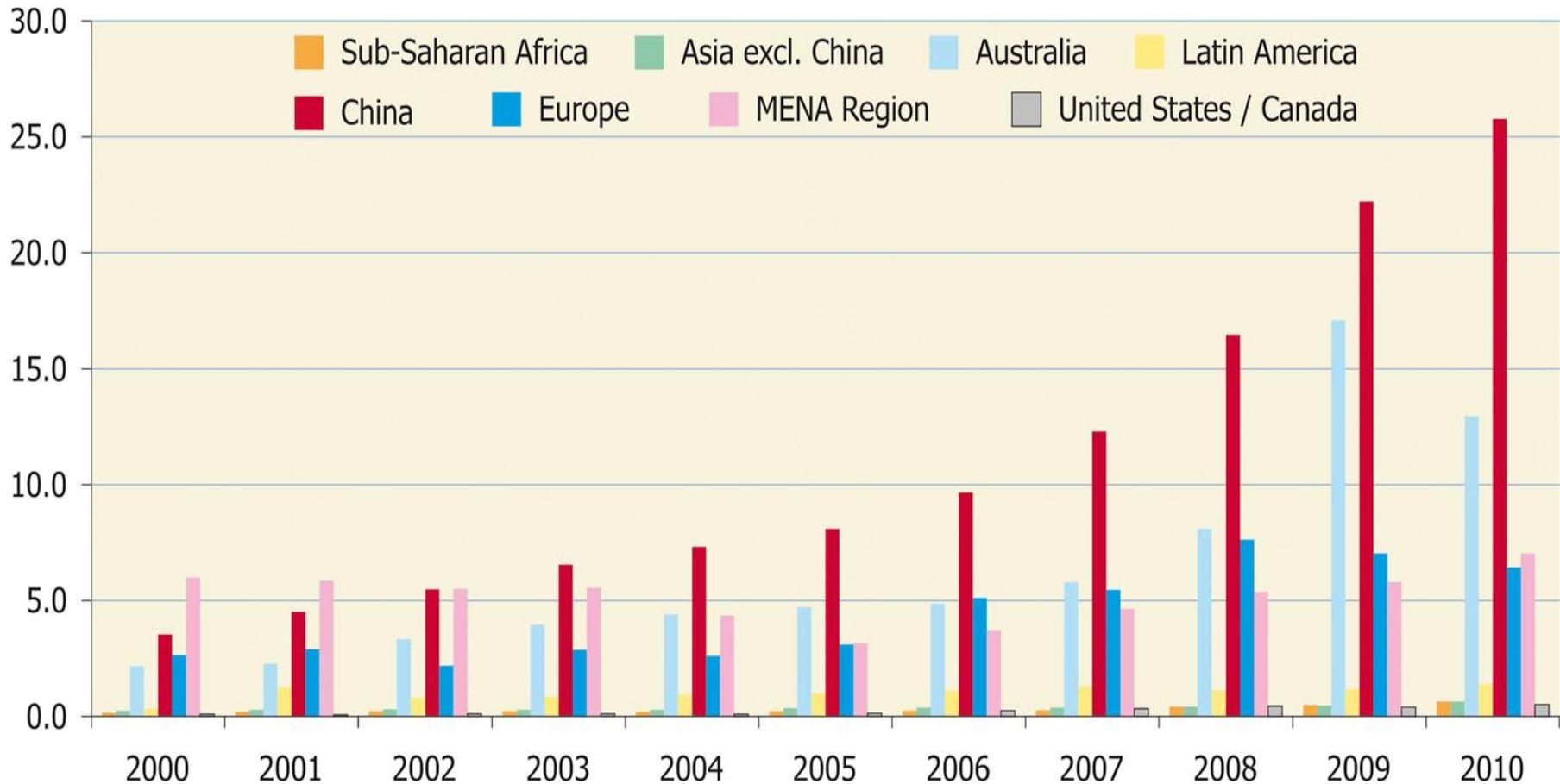


Annually installed capacity of flat-plate and evacuated tube collectors

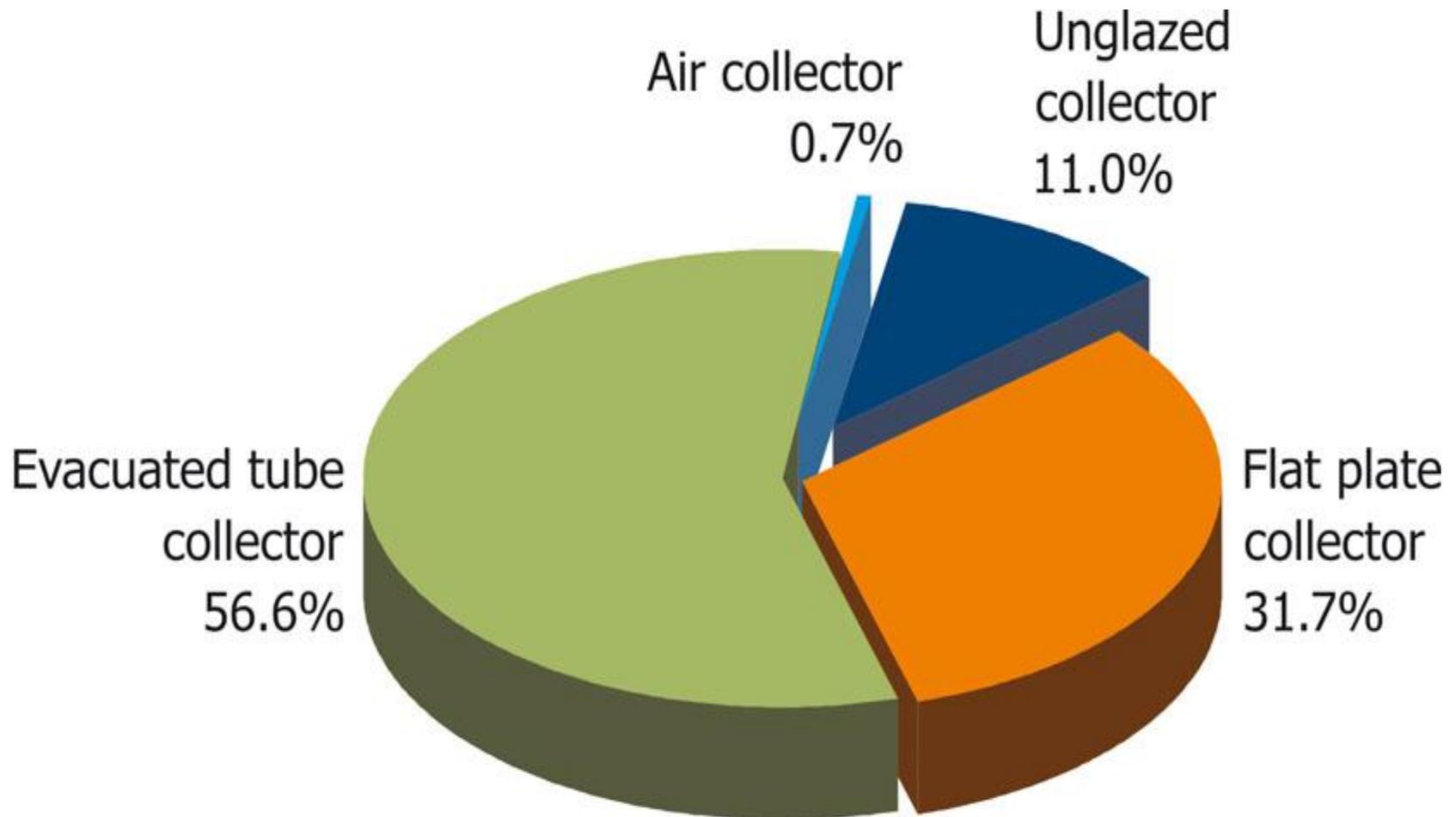


Annually installed capacity of flat-plate and evacuated tube collectors in kW_{th} per 1,000 inhabitants

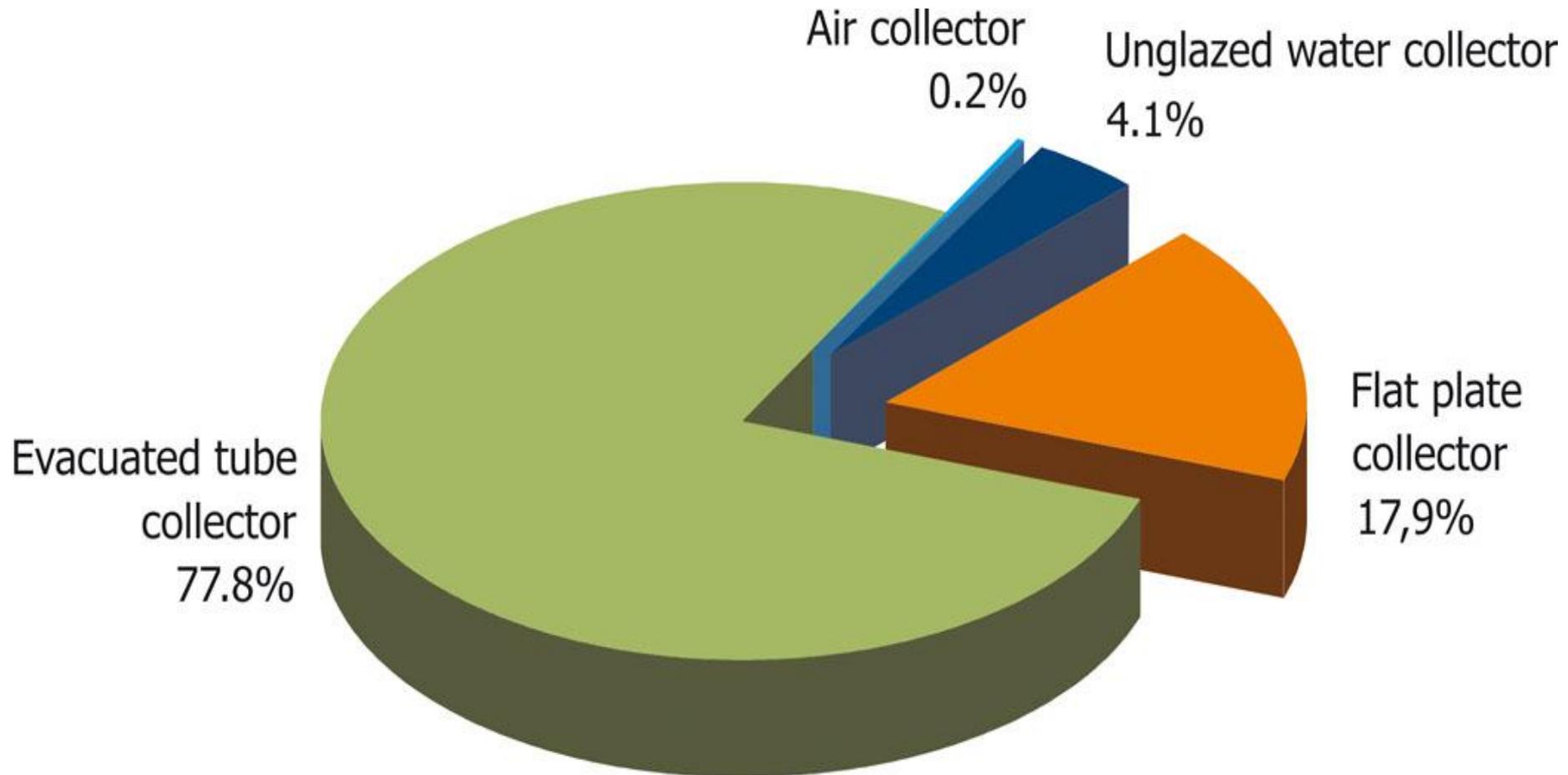
Installed capacity [kW_{th}/year/1,000 inh]



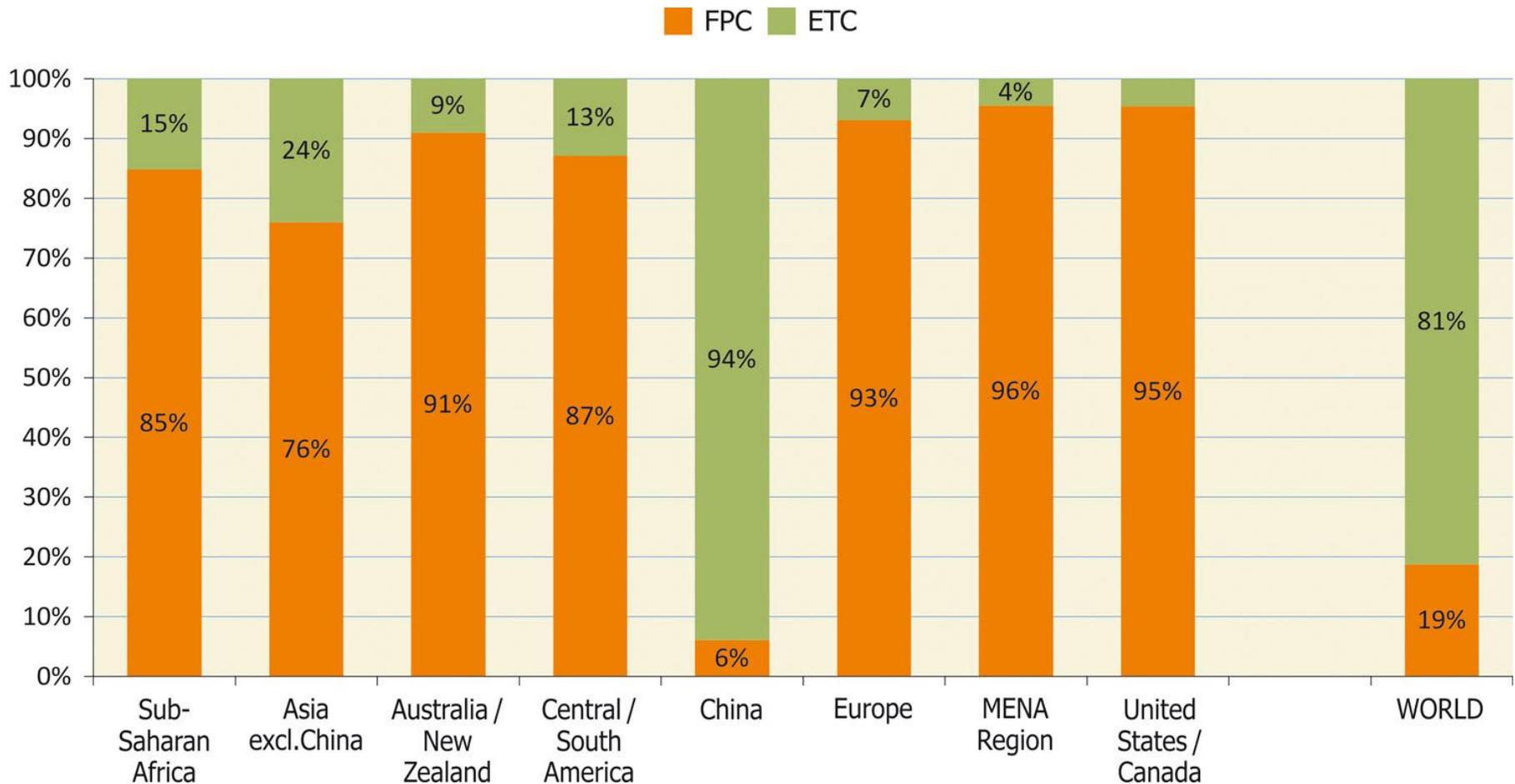
Total installed capacity in operation by collector type in 2010



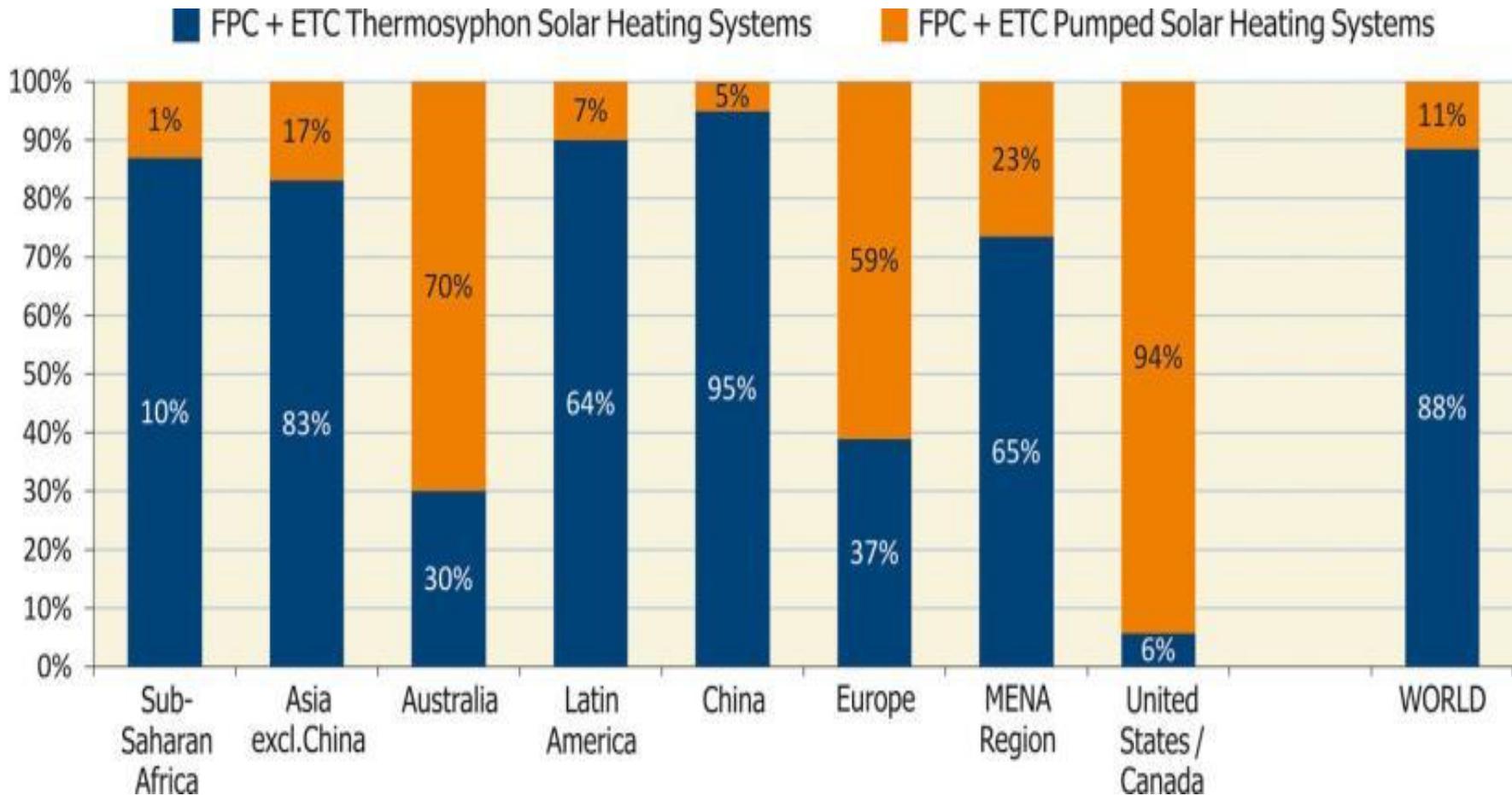
Newly installed capacity by collector type in 2010



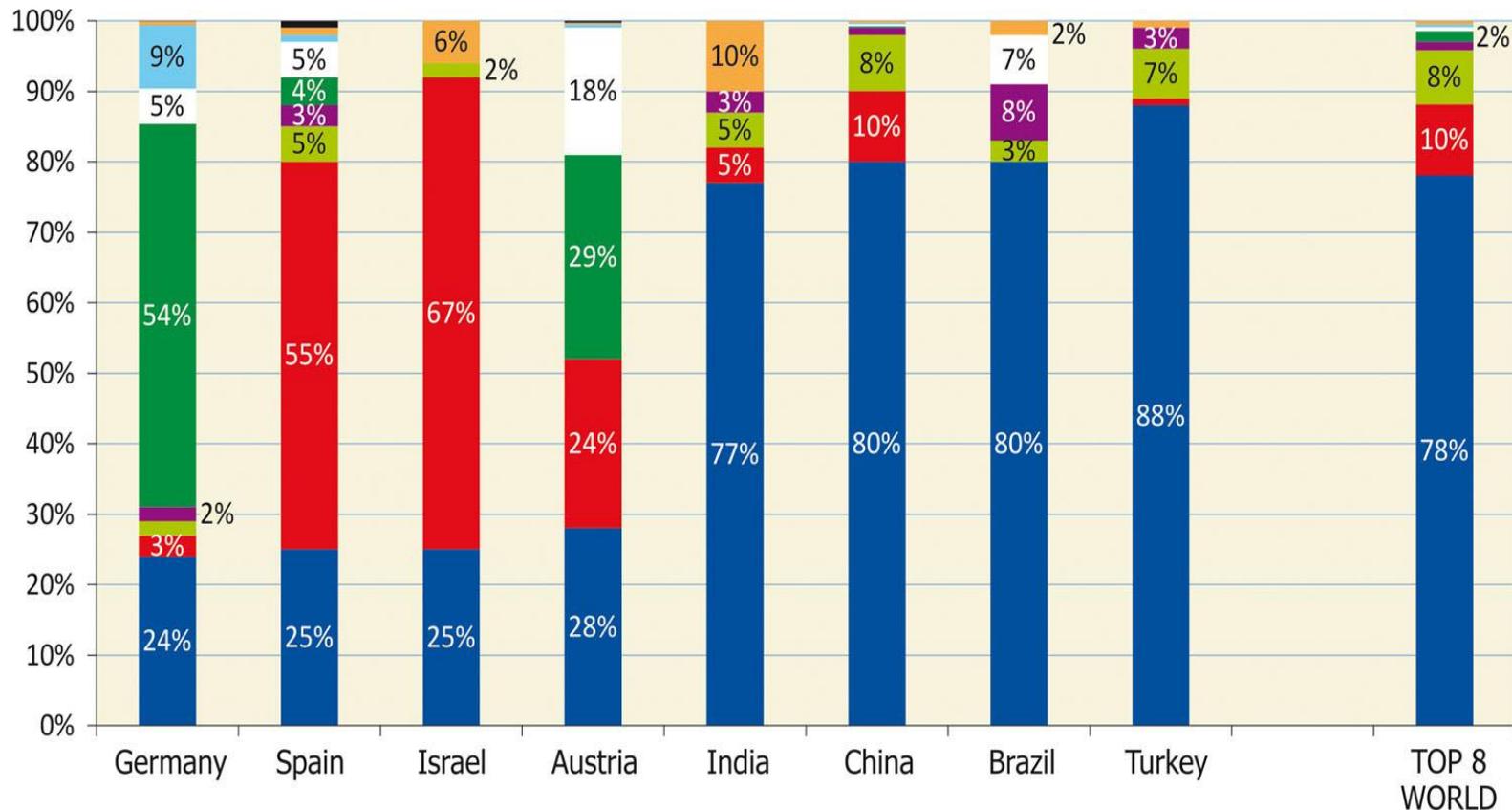
Distribution by type of solar collector for the newly installed capacity in 2010



Weighted distribution by type of system for the newly installed water collector capacity in 2010



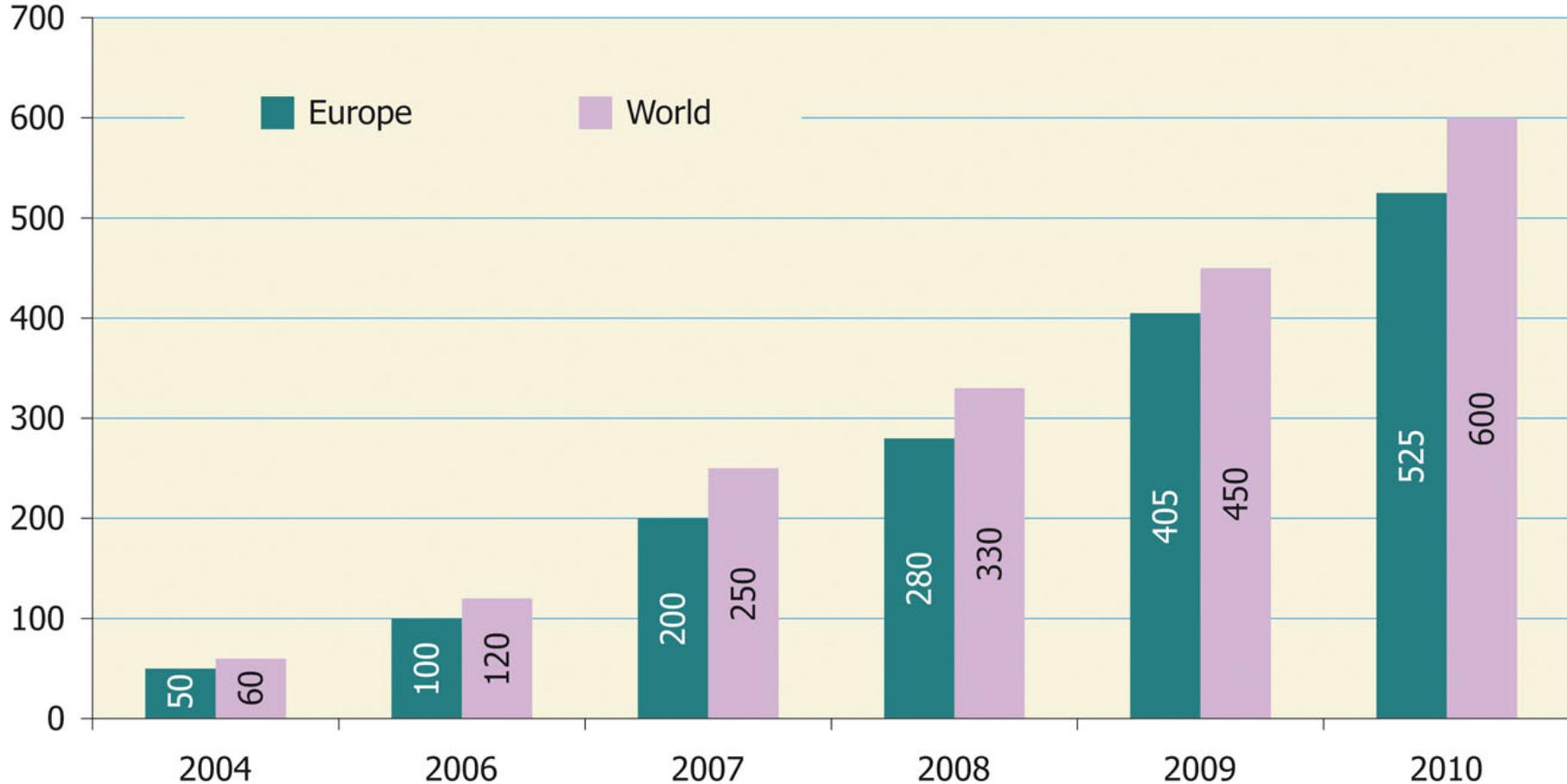
Distribution of different applications of the newly installed capacity for the 8 leading countries worldwide in 2010



- DHW System for single family houses
- DHW System for multiple family houses
- DHW System for the tourism sector
- DHW System for the public sector
- Solar combi systems for single family houses
- Solar combi systems for multiple family houses
- Solar district heating systems
- Solar systems for industrial process heat
- Air conditioning and cooling

Market development of solar air conditioning and cooling systems

Total amount of installed solar cooling systems in Europe and the world



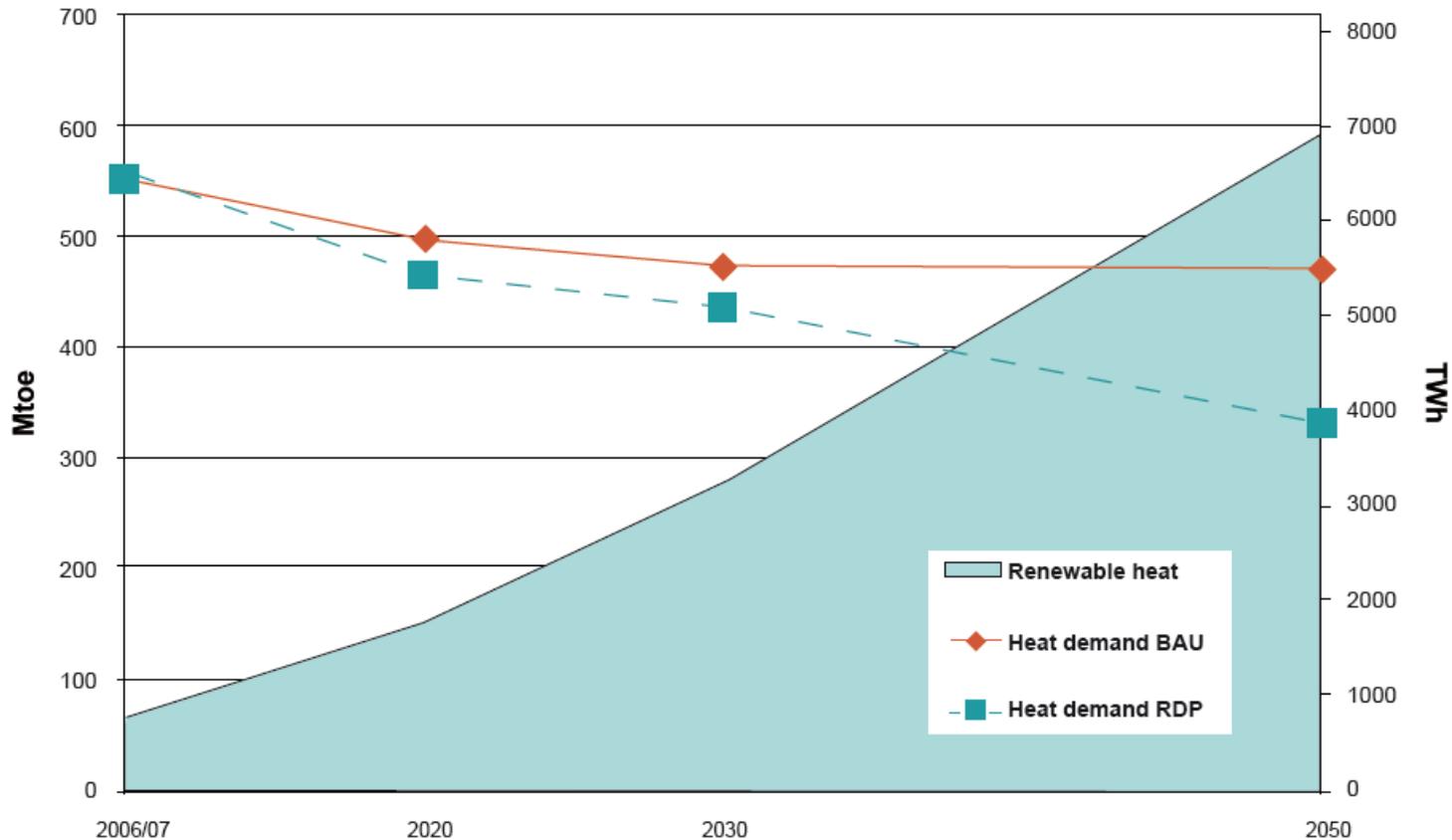
Sources: Solem Consulting / Climasol, Fraunhofer ISE, Rococo, Tecso

Employment



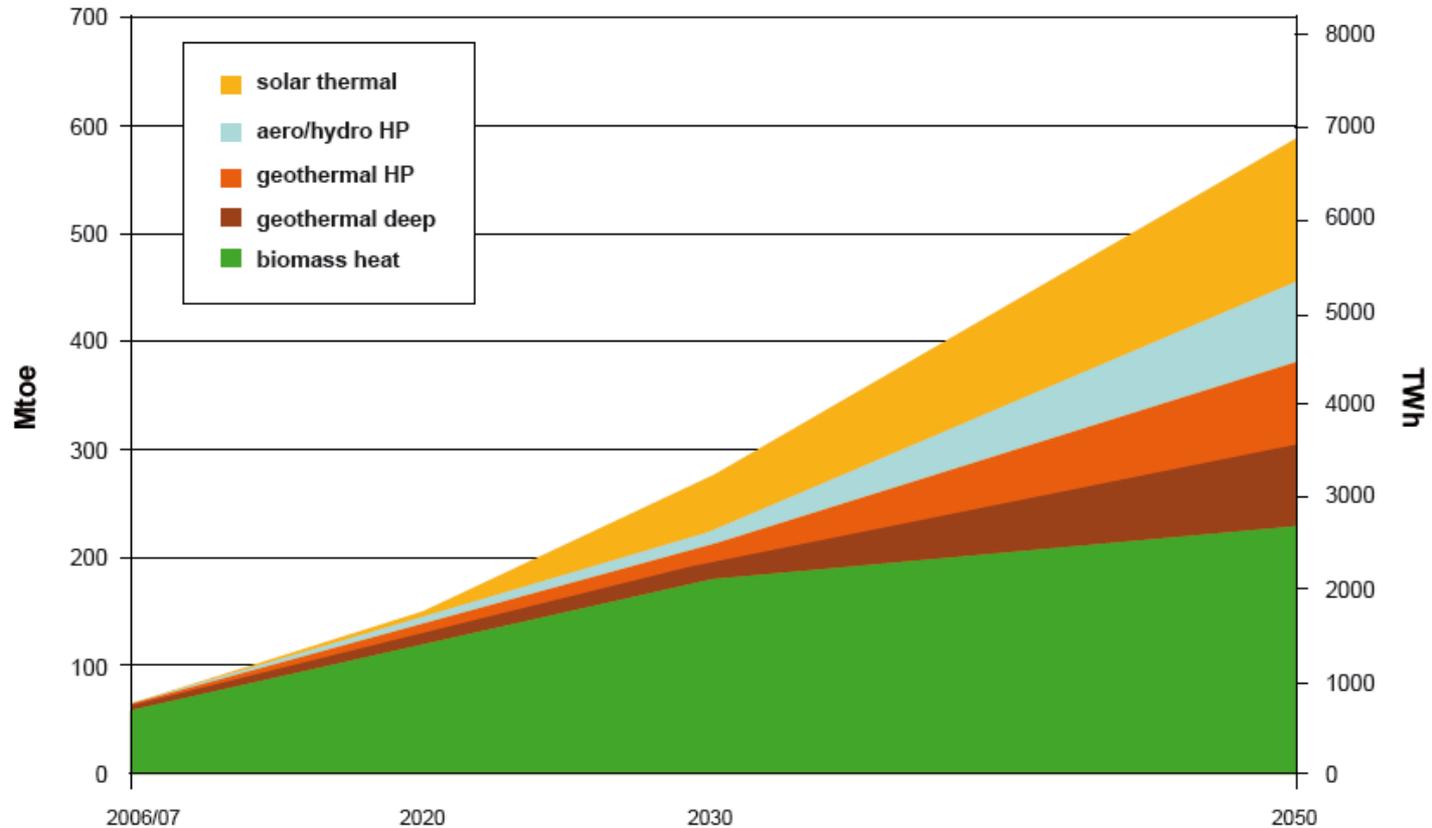
Based on data collected from detailed country reports, the jobs created by the production, installation and maintenance of solar thermal plants is estimated to be **375,000 worldwide**

Heating supply from renewable energy sources in EU



Source: Strategic Research Agenda for Renewable Heating & Cooling, ETP RHC, 2013

Heating potential by renewable energy sources in EU



Source: Strategic Research Agenda for Renewable Heating & Cooling, ETP RHC, 2013