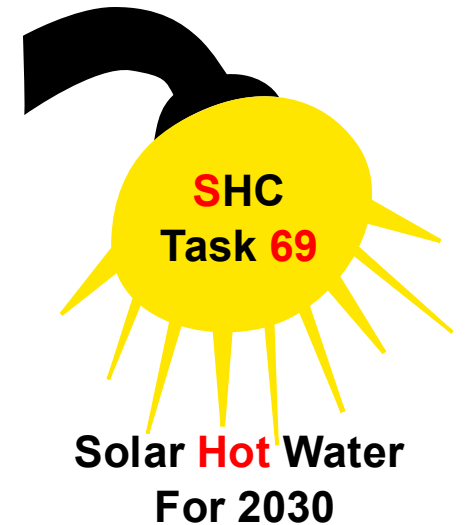




SOLAR HEATING & COOLING PROGRAMME
INTERNATIONAL ENERGY AGENCY

Task 69: Solar Hot Water for 2030



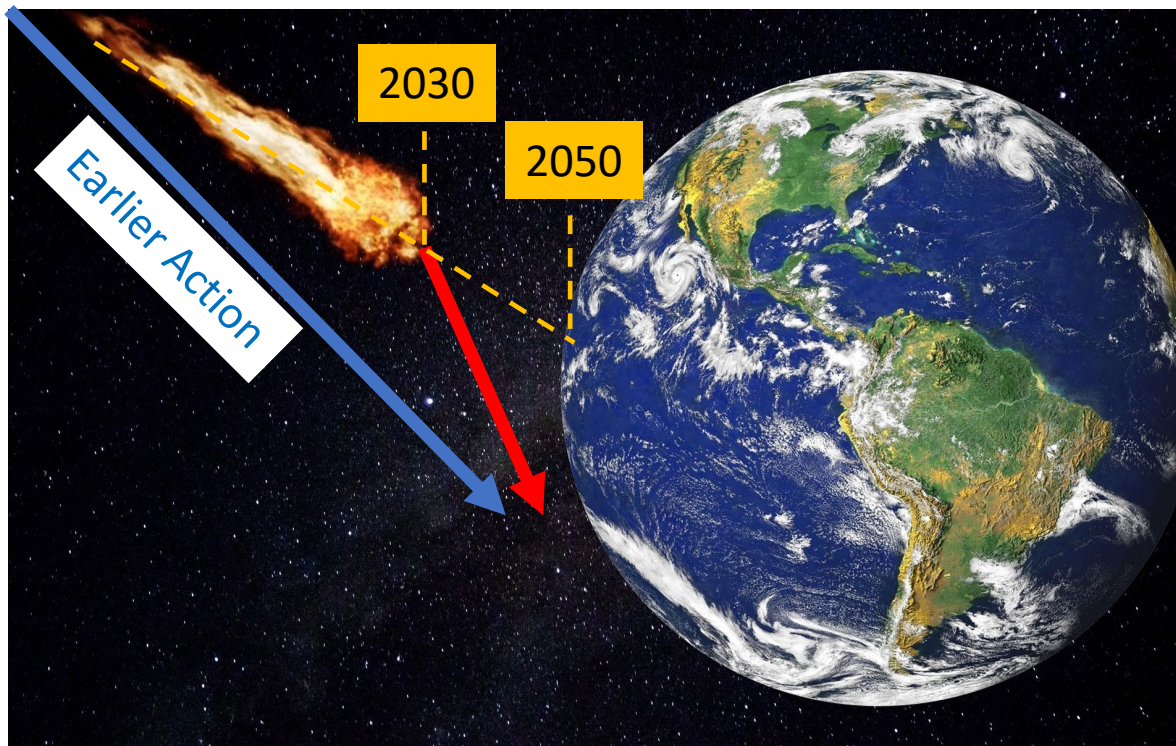
Robert A Taylor, UNSW & He Tao, CABR: Joint TMs

Presented: SOLTRAIN+ & IEA SHC Task 69 Joint Symposium | 23 – 26 September 2025

Motivation

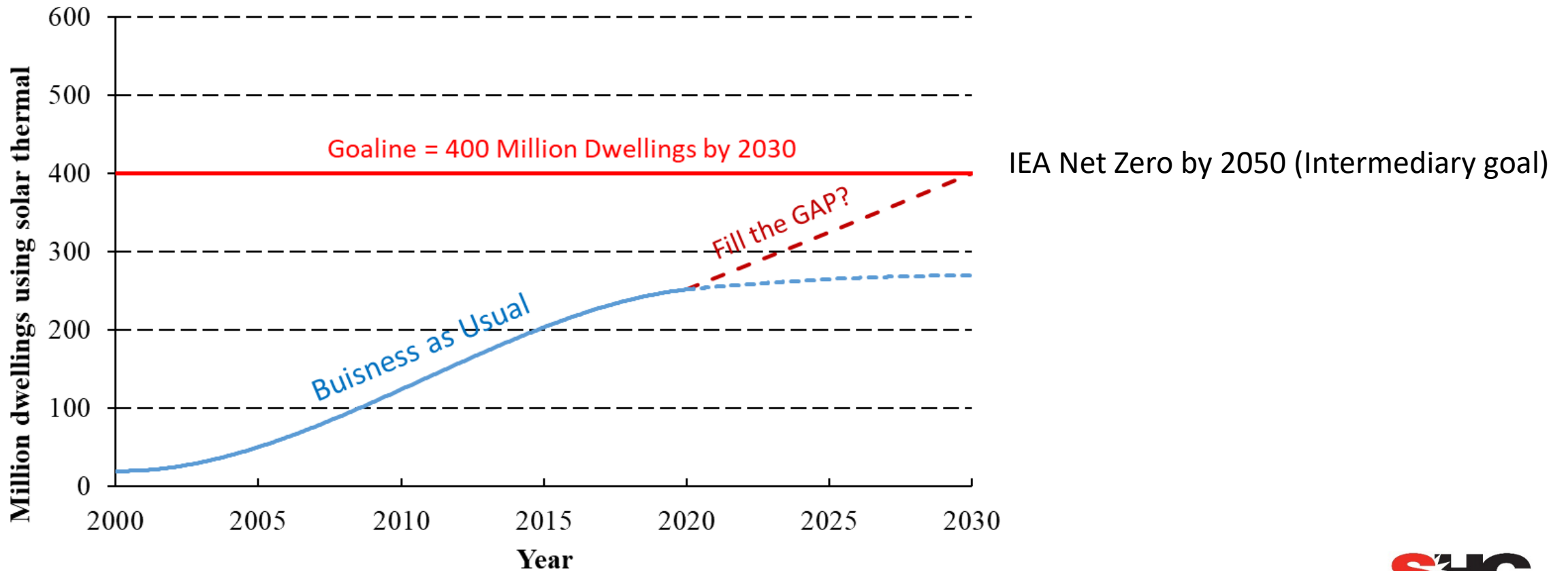
Water heating accounts for ~5-10% of primary energy use globally¹, and up to 50% of a residential building's energy in some markets!

- Solar hot water = Our *Vanguard* technology in the fight against climate change...we cannot forget about it if we hope to achieve net zero.



How to close the gap?

Identify opportunities to improve the performance, cost, and reliability of solar water heaters, aiming to accelerate the rollout of best practices to help meet national and international 2030 targets.



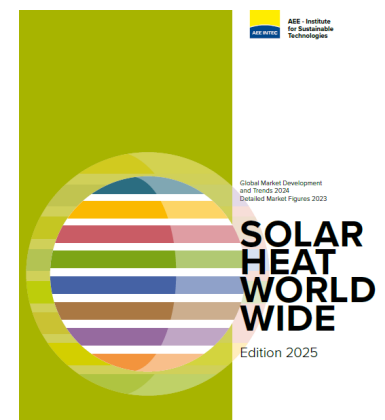
Task 69's Scope

~3.5-year Task, focusing on **2** technologies:

- **Thermosiphons:** The most used solar heating system (~57% of domestic hot water systems in operation in 2019)
- **PV Hot Water:** Rapid PV growth! Can be simple (i.e., low cost) or advanced (i.e., soak up excess PV and power heat pumps).

Note: Both require very few moving parts, can be affordable and reliable, and provide opportunities for new products/components.

Solar Hot Water: Where is the growth?



Download the report:
<https://www.iea-shc.org/solar-heat-worldwide>

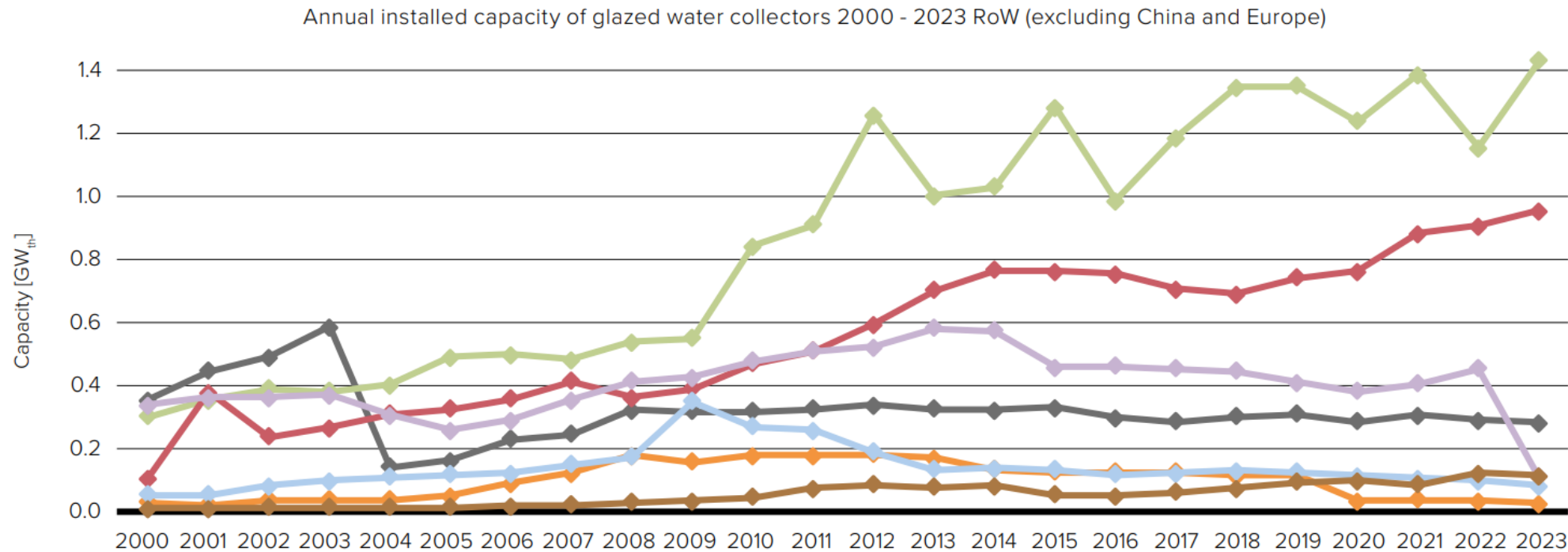
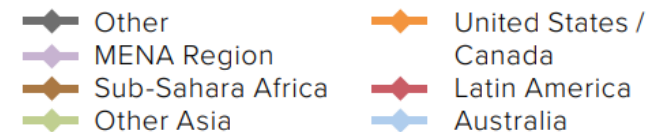


Figure 46: Market development of glazed water collectors in Latin America, United States / Canada, Sub-Sahara Africa, Other Asia, the MENA region, and Australia (excluding China and Europe) from 2000 to 2023

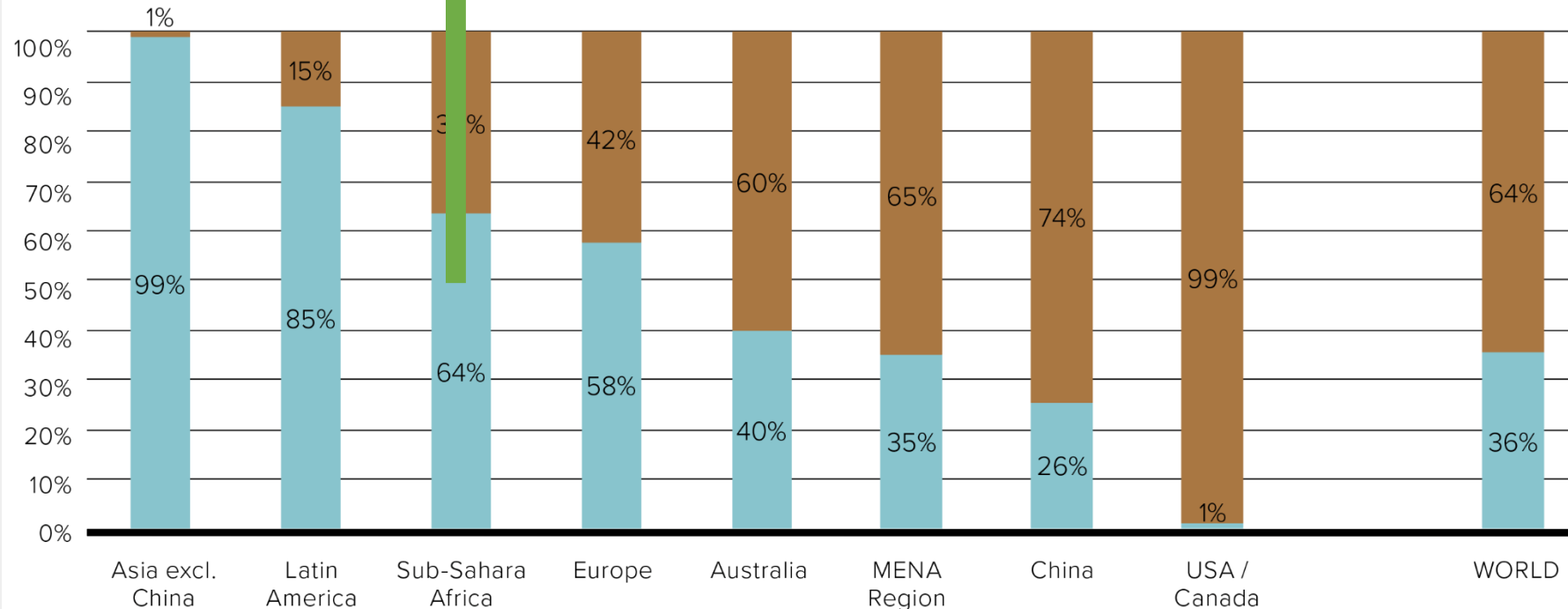


Solar Hot Water – Technology Mix

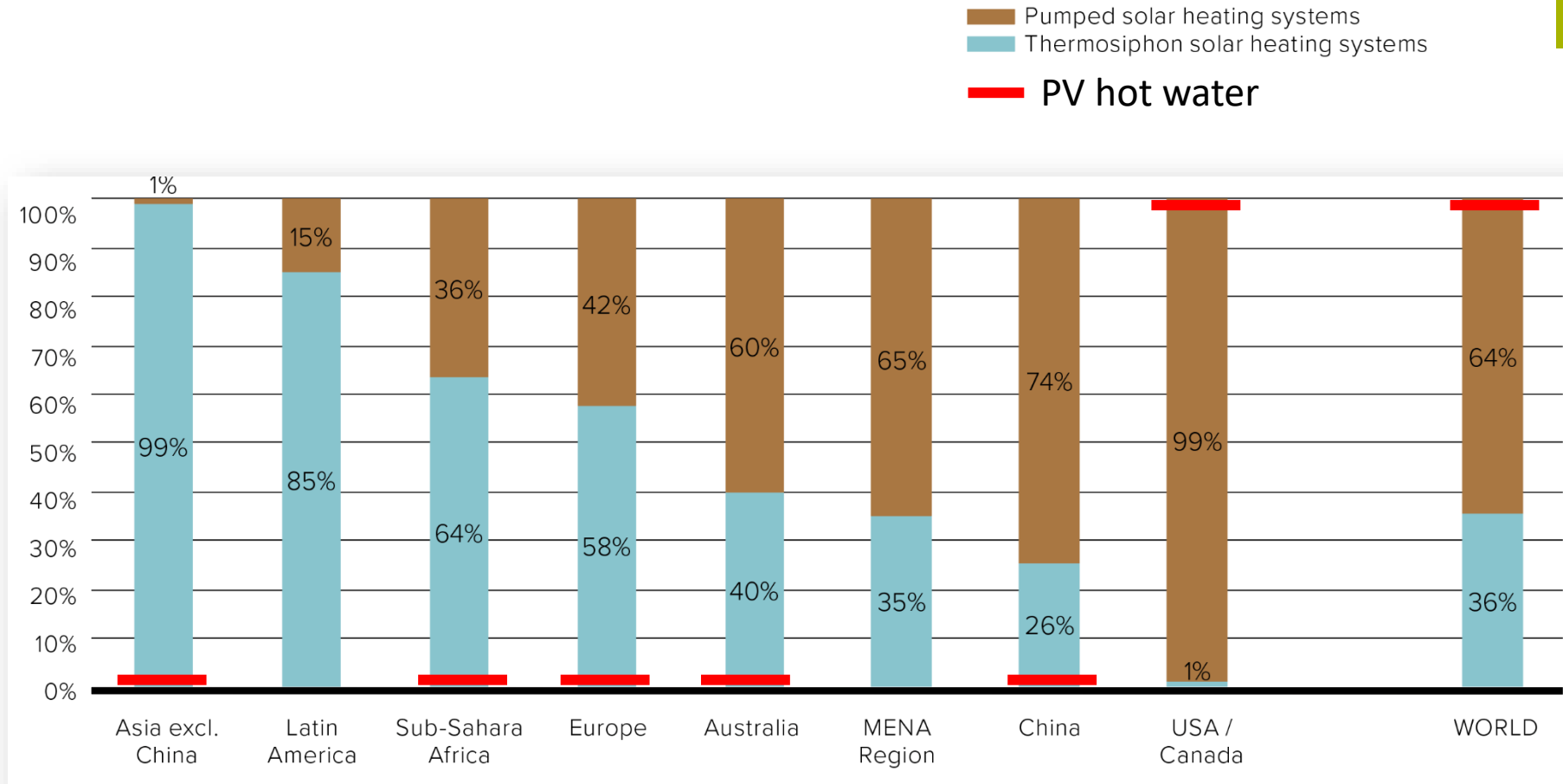
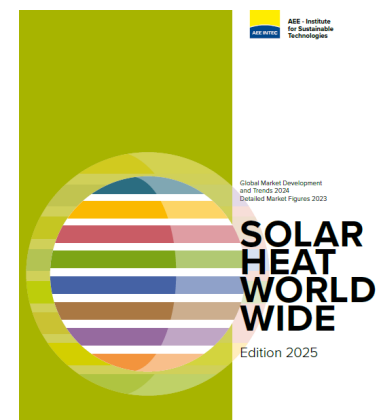


- Pumped solar heating systems
- Thermosiphon solar heating systems

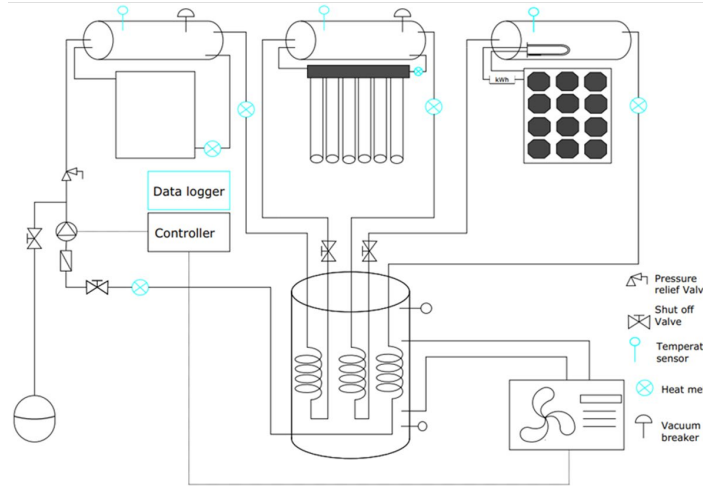
Distribution by type of system for the newly installed glazed water collector capacity in 2020



Solar Hot Water – 2025?



Comparison Study in Namibia Energy Institute



Evacuated tube thermosiphon system:

2.2 m² collector area, 200 L storage tank

Flat plate collector thermosiphon system:

2.1 m² collector area, 200 L storage tank

PV hot water system:

5.2 m² PV collectors (3.5 kW_{el}), 200 L storage tank

- First data = 1 April 2025
- Life cycle analysis will be done by JKU, Austria
- Upcoming Subtask A report

^ To visit during our #7 Task Meeting in Sept. 2025 in Namibia

Solar Hot Water Standards Work

ICS 27.160
CCS F 12



中华人民共和国国家标准

GB/T 44818—2024

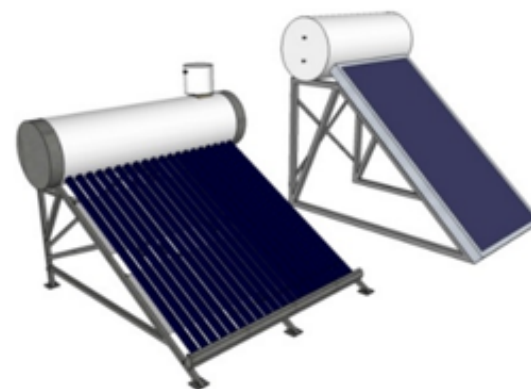
基于项目的温室气体减排量评估技术规范
太阳能热利用

Technical specification at the project level for assessment of greenhouse gas
emission reductions—Solar thermal applications

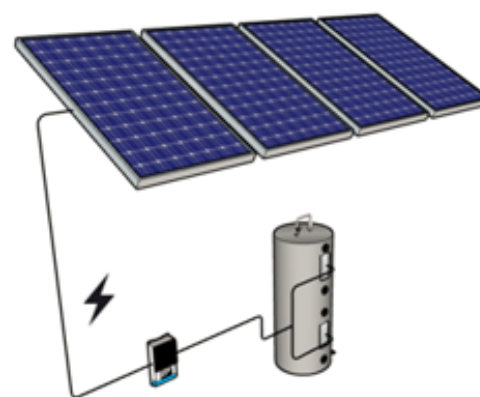
2024-10-26 发布

2025-05-01 实施

国家市场监督管理总局 发布
国家标准化管理委员会



a. *Thermosyphon SWH with evacuated tubula
and flat plate solar collector*



b. *SWH with immersed electrical heating
element(s) and PV panels*



Deliverable D1
Solar Hot Water Standards and
Certifications – Pathways to
2030



IEA SHC TASK 69 | SOLAR HOT WATER FOR 2030

Technology Collaboration Programme
by NEQ

Solar Hot Water: Training Sessions



October 12, 2024, Lianyungang China



September 23, 2025, Windhoek, Namibia

Solar Hot Water Training Survey Votes

Categories	Key training areas requirements	Statistic (China)	Statistic (Namibia)
1	Installation and commissioning of new solar water heaters	31	16
2	Design and installation of heat pump systems	27	17
3	Comprehensive design and control of renewable energy systems	23	13
4	Equipment compatibility and system integration techniques	20	10
5	Smart control systems and automation management	27	11
6	Maintenance and fault diagnosis training	25	17
7	Safety standards and regulations	16	8

Task 69 Summary:

- Brings together everyone who has taken a **cold** shower: Unifies different cultures, perspectives, most climates and markets (meetings in Australia, Europe, China, Africa).
- More innovation than expected: Configurations, monitoring & controls, materials, assessment tools, grid interactions.
- Pulled together a lot of knowledge, information, best practices, training: 8 Task Reports (2 published): [IEA SHC || Task 69 || Solar Hot Water for 2030](#)




Questions?

Contact: Robert.Taylor@UNSW.edu.au



www.iea-shc.org

 @IEASHC

 IEA Solar Heating and Cooling Programme
(group 4230381)