Strategic Work Plan 2019-2024

Main Focus and Current Tasks of the IEA SHC TCP

SOLAR HEATING & COOLING PROGRAMME
INTERNATIONAL ENERGY AGENCY

Solar Heat Farm: 156 694 m²
Silkeborg, Denmark
Source: Arcon-Sunmark

Richard Hall
Alternate Vice Chair, IEA SHC
Director of Solar Governance, Energy Transitions

IEA DHC|CHP

SHC
SOLAR HEATING & COOLING PROGRAMME
INTERNATIONAL ENERGY AGENCY

ieadsm
energy efficiency

IEA HPT

H_2
iea hydrogen

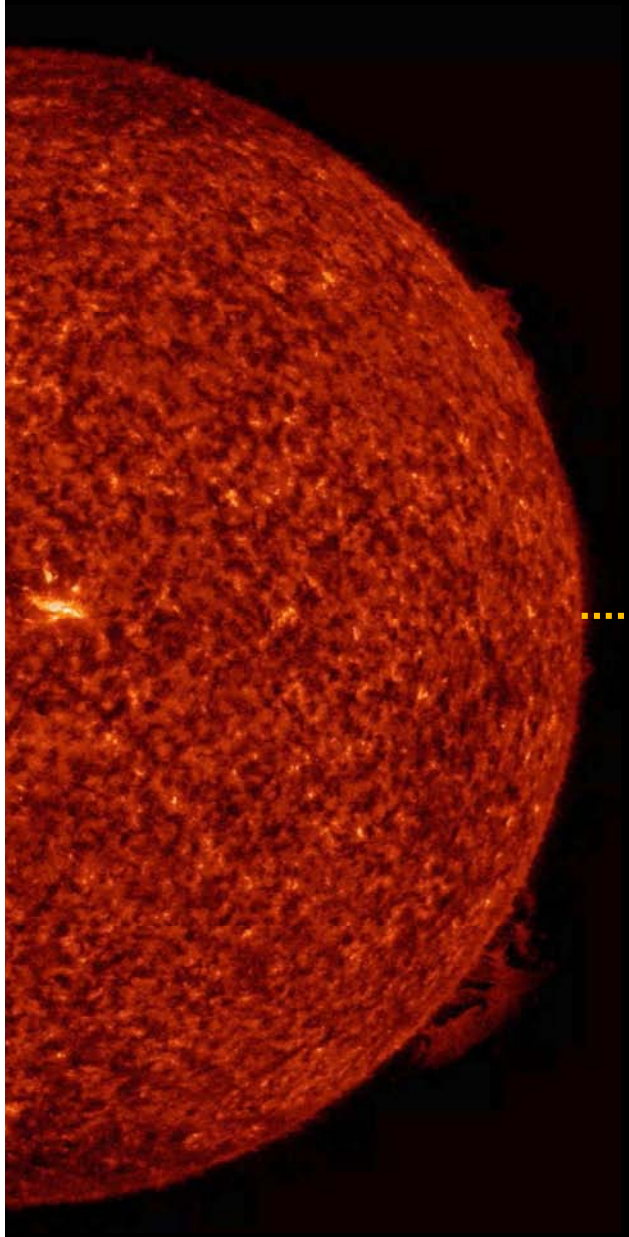
ISGAN
INTERNATIONAL SMART GRID
ACTION NETWORK

iea wind

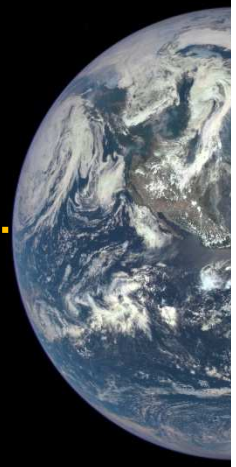
ECES

EBC
Energy in Buildings and
Communities Programme

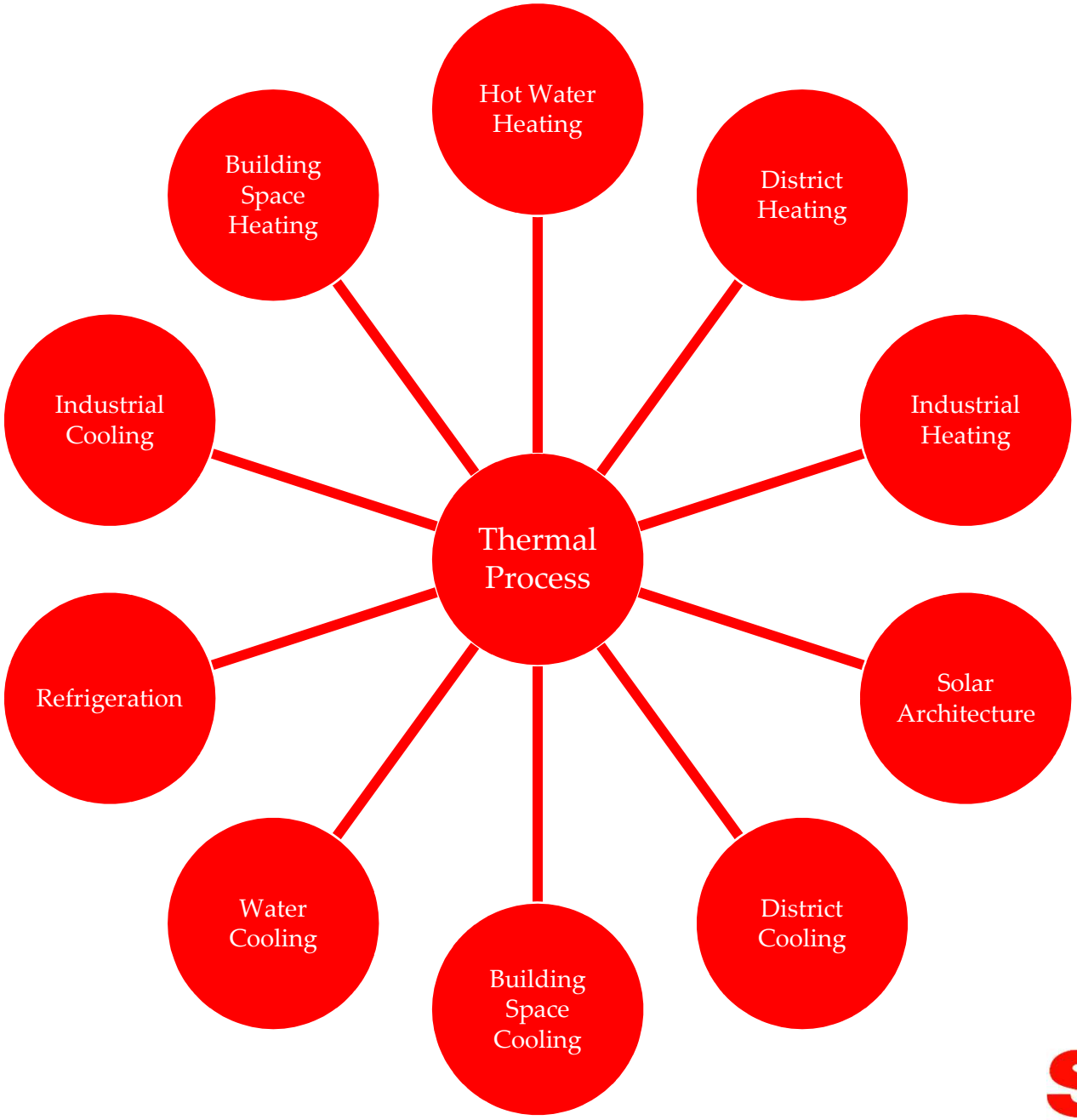
What do we mean by solar heating and cooling?



Is sunlight involved in a thermal process?



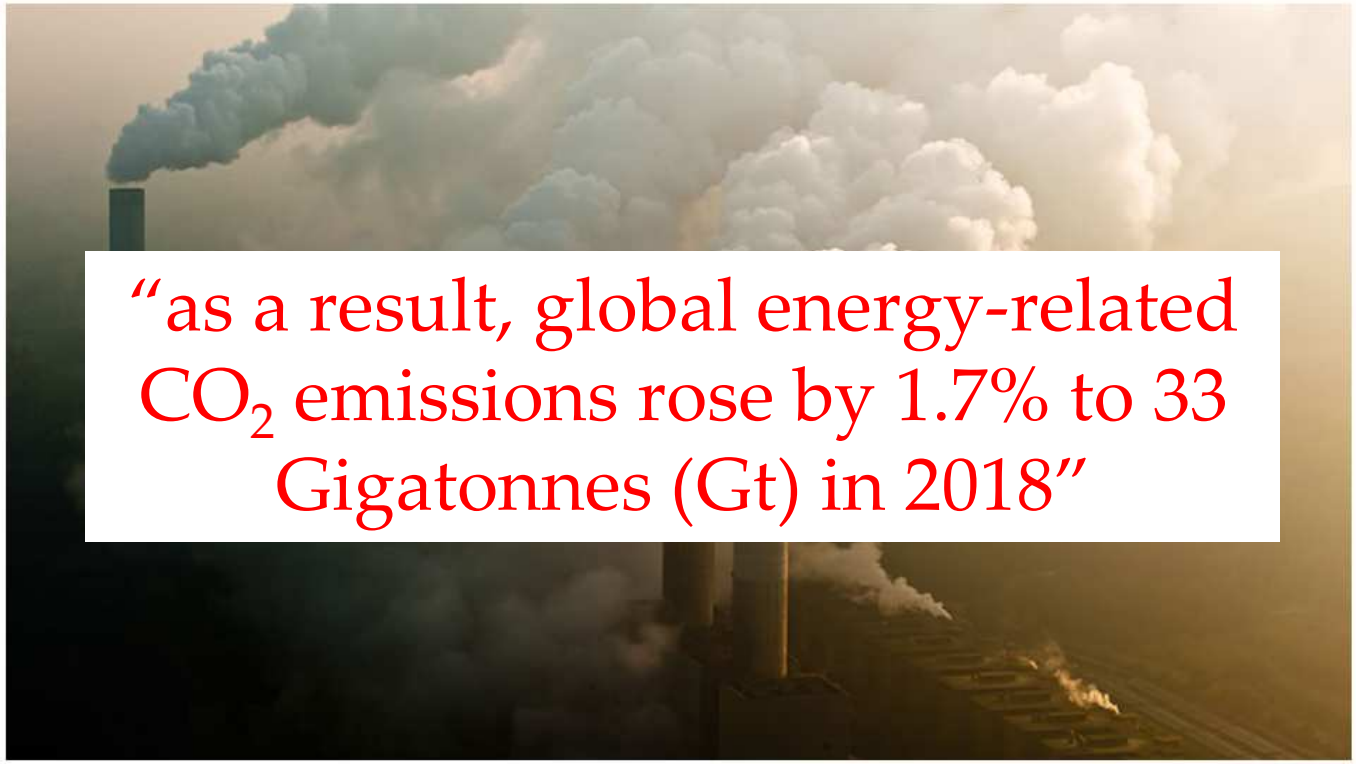
Source: nasa.gov


Hot Water Heating
Building Space Heating
District Heating
Industrial Cooling
Industrial Heating
Thermal Process
Refrigeration
Solar Architecture
Water Cooling
Building Space Cooling
District Cooling

Why use sunlight to drive thermal process?

Global energy demand rose by 2.3% in 2018, its fastest pace in the last decade

26 March 2019



"as a result, global energy-related CO_2 emissions rose by 1.7% to 33 Gigatonnes (Gt) in 2018"

Coal use in power generation accounted for a third of total CO2 emissions last year (Photograph: Shutterstock)

Greenhouse gas emissions

Latest data shows steep rises in CO2 for seventh year

Readings from Hawaii observatory bring threshold of 450ppm closer sooner than had been anticipated

Fiona Harvey *Environment correspondent*

Tue 4 Jun 2019 16.59 BST

▲ Steam rising from the cooling towers of a coal fired power plant. Concentrations of carbon dioxide have increased every year, reflecting our burning of fossil fuels. Photograph: Fehim Demir/EPA

The concentration of carbon dioxide in the atmosphere has increased by the second highest annual rise in the past six decades, according to new data.

Atmospheric concentrations of the greenhouse gas were 414.8 parts per million in May, which was 3.5ppm higher than the same time last year, according to readings from the Mauna Loa observatory in Hawaii, where carbon dioxide has been monitored continuously since 1958.

The UK has declared a state of emergency on climate change

Protesters block traffic outside The Bank of England during the Extinction Rebellion protest in London, Britain April 25, 2019. REUTERS/Simon Dawson - RC1CF289DE50

Did the protests work?

Image: REUTERS/Simon Dawson

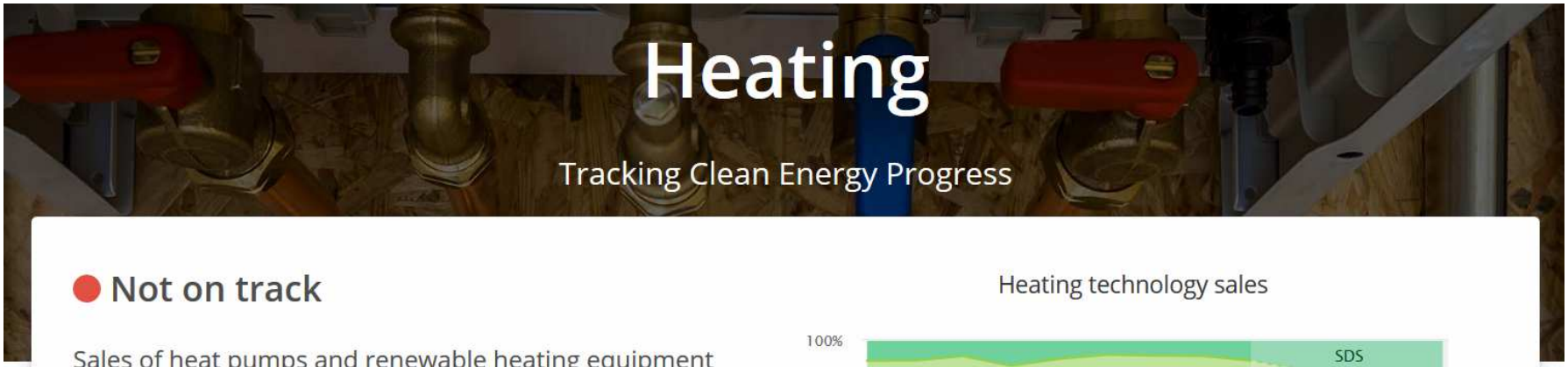
This article is published in collaboration with
Reuters

02 May 2019

Elizabeth Piper
UK Chief Political Ccorrespondent, Reuters

Britain's parliament declared a symbolic climate change "emergency" on Wednesday, backing a call by opposition Labour leader Jeremy Corbyn for "rapid and dramatic action" to protect the environment for generations to come.

Climate change activists from the Extinction Rebellion protest at the Parliament Square in London, Britain May 1, 2019.



Heating

Tracking Clean Energy Progress

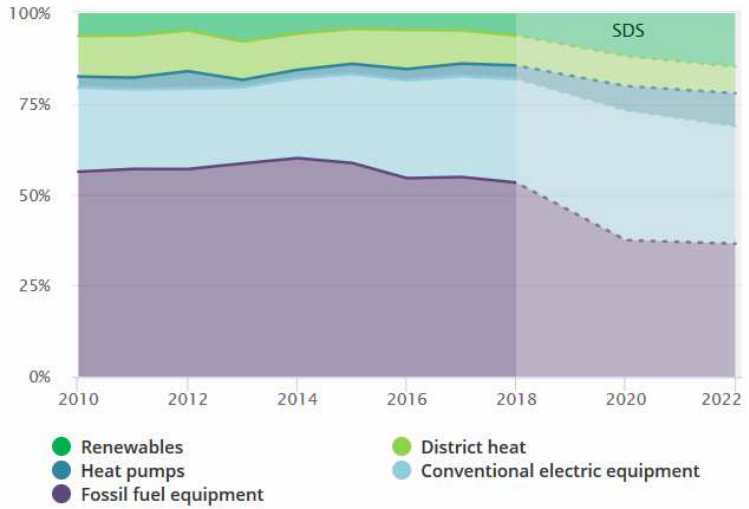
Not on track

Sales of heat pumps and renewable heating equipment such as solar hot water systems have continued to increase by around 5% per year since 2010, representing 10% of overall sales in 2018. Fossil fuel-based equipment, however, still makes up more than 50% of sales, while less-efficient, conventional electric heating equipment adds another 30%. To be in line with the SDS, the share of heat pumps and renewable heating needs to reach 25% of new sales by 2030.

Thibaut Abergel
Lead author

Contributors: John Dulac, Chiara Delmastro

Heating technology sales



Note: excludes traditional use of biomass. 2018 estimated.

Back to Buildings sector | TCEP overview

Last updated **Friday, May 24, 2019**

SOLAR HEATING & COOLING PROGRAMME
INTERNATIONAL ENERGY AGENCY

Objective 3: *To enhance **cooperation** with stakeholders, namely industry, international organizations and local, regional and national governments, potential customers, energy and urban planners.*

- Establish and enhance **partnerships** with intermediary industries and end users, with international organizations/initiatives, such as IRENA[5], ISO[6], ISES[7], Mission Innovation[8], Solar Heat Europe[9], UNEP[10] and UNIDO[11], governments and municipalities, building label organizations.
- Support the greater use of solar designs and applications in **developing countries** through targeted dissemination of Task results, country/sponsor membership in the TCP, Solar Academy activities and other TCP initiatives.
- Collaborate with **other TCPs** to more effectively contribute to the vision.
- Work to address issues regarding building design, aesthetics and architectural value and long-term urban energy strategies.
- Work to bridge solar heat into the broader energy supply system investigations as **sector coupling** of renewable heat and electricity supplies increases.

Objective 4: *To increase **awareness** and **understanding** on the potential and value of solar heating and cooling systems with thermal and PV technologies by providing information to non-technical stakeholders such as decision makers and the public.*

- Communicate the **value** of solar heating and cooling designs and technologies in publications, conferences, workshops and seminars to the public and relevant stakeholders and through the TCP website. Continue outreach activities, including SHC Conference, Solar Academy webinars, SHC Award, and targeted Task and TCP publications.
- Conduct **analysis** that links solar heating and cooling designs and technologies as solutions to energy security concerns, environmental and economic goals.
- Promote the **advantages** of solar thermal and hybrid applications with other renewables.
- Assist the IEA to **better communicate** the value and potential of solar heating and cooling.

[5] IRENA : International Renewable Energy Agency (http://www.irena.org/)
[6] ISO : International Organization for Standardization (https://www.iso.org)
[7] ISES : International Solar energy Society (https://www.ises.org/)
[8] http://mission-innovation.net/
[9] http://solarheateurope.eu/
[10] UNEP : United Nations Environment Programme (https://www.unenvironment.org/)
[11] UNIDO :United Nations Industrial Development Organization (https://www.unido.org/)

What is the IEA Solar Heating and Cooling (SHC) TCP?

What do we mean by solar heating and cooling?

Solar heating and cooling market drivers and segments

Vision, mission and strategic objectives

IEA SHC Snapshot

- 20 member countries, EC and 4 Sponsors (ECREEE, RCREEE, ISES, ECI)

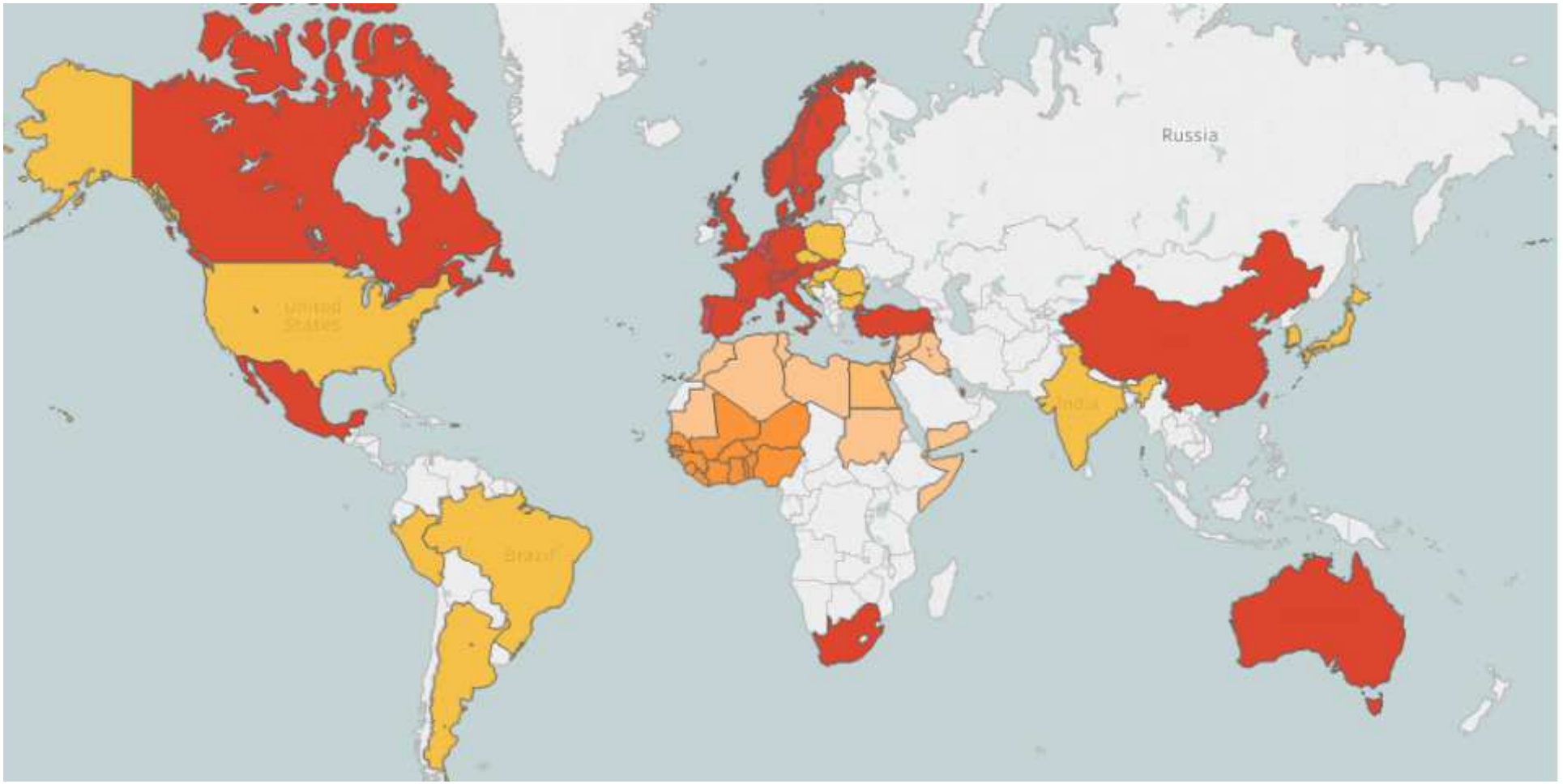
- 7 Tasks focused on:
    - Solar heating and cooling technologies for residential, commercial, industrial and agricultural end-uses
    - Capacity building projects for all solar technologies
    - Market information and projects to support global market deployment.

- Experts participating in Tasks:
    - **Formally participating**
        - Total approx. 300
        - 28% from Industry

    Informally engaged
        - Total approx. 1,000
        - 35% from Industry

SHC SOLAR HEATING & COOLING PROGRAMME INTERNATIONAL ENERGY AGENCY

IEA SHC Members & Reach



20 Member Countries + EC
+ 5 Sponsor Organizations

Sponsors – 47 additional Countries

RCREEE ECREEE ISES

Map is without prejudice to status of or sovereignty over any territory, to delimitation of international frontiers/boundaries and to name of any territory/area.

SHC TCP Mission

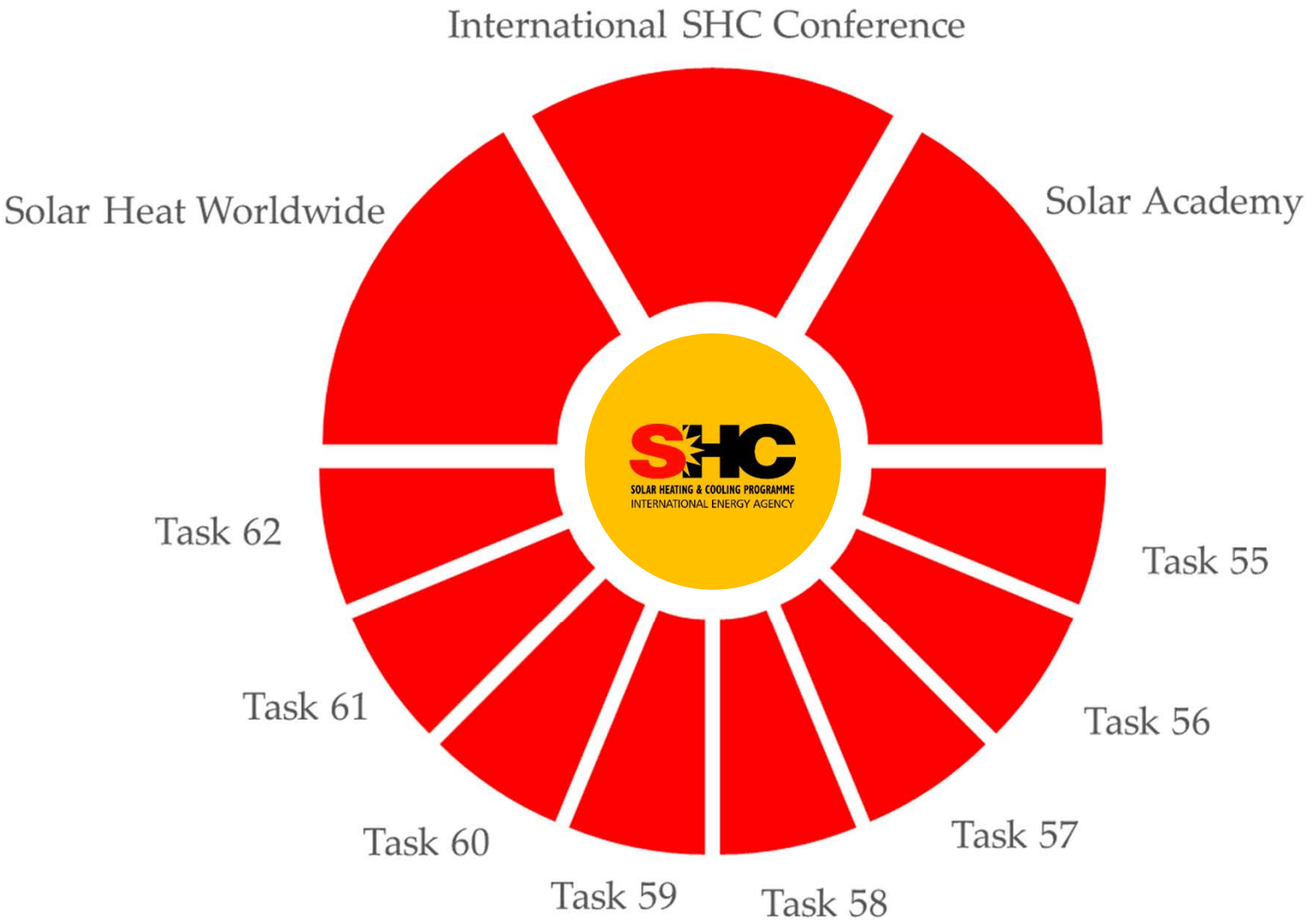
Through multi-disciplinary international collaborative research and knowledge exchange, as well as market and policy recommendations, the SHC TCP will **work to increase the deployment rate of solar heating and cooling systems by breaking down the technical and non-technical barriers to increase deployment.**

Objective 1: *To remain the primary source worldwide of **high quality technical information** and **analysis** on solar heating and cooling and daylighting technologies and markets.*

Objective 2: *To contribute to a significant increase in the **cost effectiveness** of solar heating and cooling technologies and designs through **increased performance** and **reduced costs** to increase their **market competitiveness** in heating and cooling applications.*

Objective 3: *To enhance **cooperation** with stakeholders, namely industry, international organizations and local, regional and national governments, potential customers, energy and urban planners.*

Objective 4: *To increase **awareness** and **understanding** on the potential and value of solar heating and cooling systems with thermal and PV technologies by providing information to non-technical stakeholders such as decision makers and the public.*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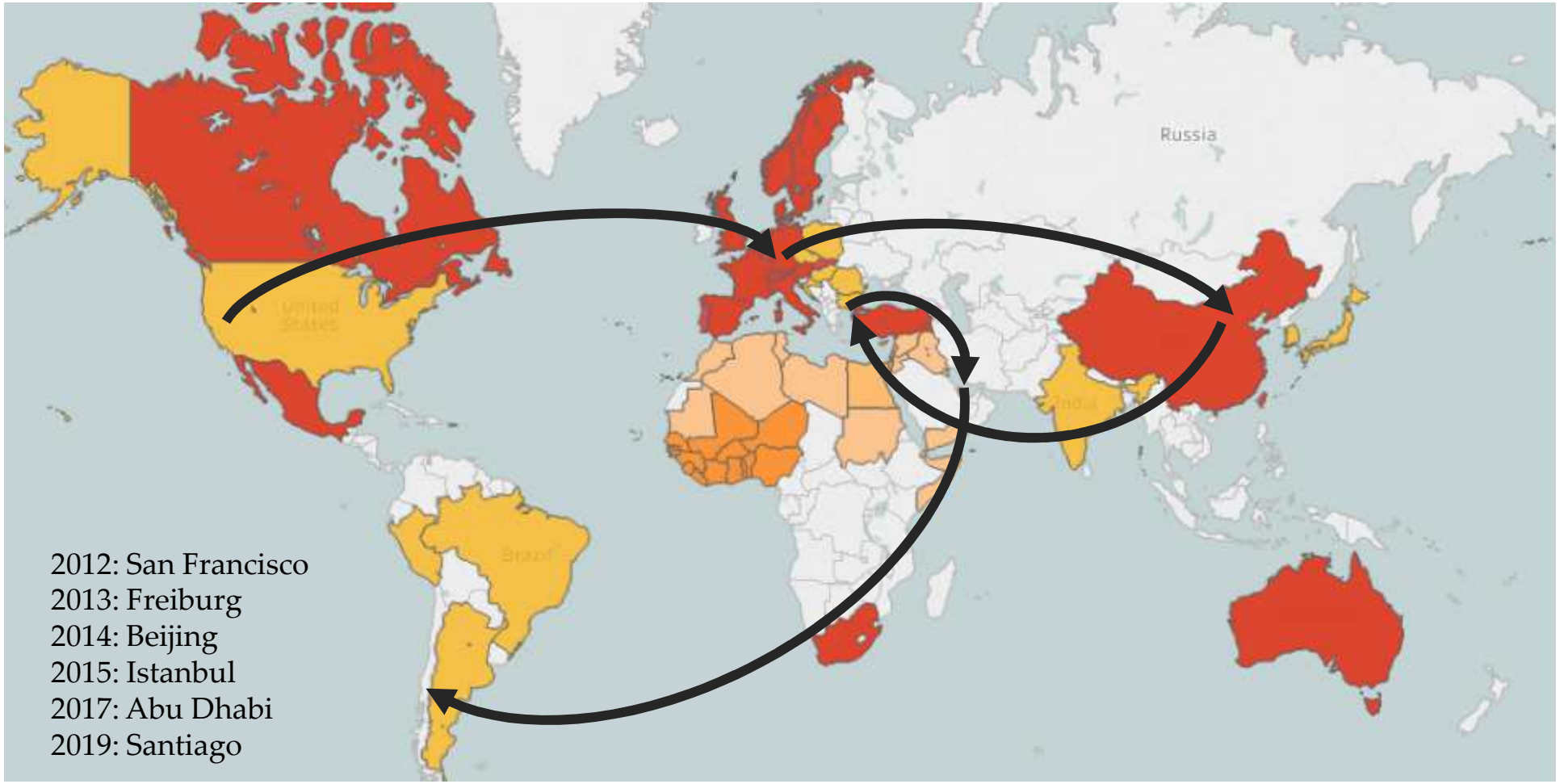
International Conference on Solar Heating and Cooling for Buildings and Industries



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Themes

- **Solar Heating and Cooling Technologies**
- **Solar Heating and Cooling Applications**
- **Solar and Renewable Electricity**
- **Energy Storage for Heat and Electricity**
- **Solar Energy Markets and Policies**
- **Energy Systems and Sector Coupling**
- **Off-Grid & Rural Energy Access**
- **Solar Architecture**
- **Education and Training – 13th International Symposium on Renewable Energy Education (ISREE 2019)**
- **Clean Water Technologies**
- **Special Themes:** Renewable Energy Cities, Renewable Energy for Mobility Community Power Programs, Sustainable Practices in the Mining Industry and History of Solar Energy

Supporting Partners

AMERICAN SOLAR ENERGY SOCIETY

DGS Deutsche Gesellschaft für Sonnenenergie e.V.

STUDENT ENERGY

ELSEVIER

RENALLIANCE renewables working together

GWNET Global Women's Network for the Energy Transition

INTERNATIONAL GEOTHERMAL ASSOCIATION IGA

WORLD BIOENERGY ASSOCIATION

WWEA World Wind Energy Association

iha international hydropower association

I·C·L·E·I Local Governments for Sustainability

ASADES

Global Solar Council

Media Partners

SONNEN ENERGIE

SOLARTODAY

solarthermalworld.org

PRESS RELEASE

IEA SHC Solar Award 2017 – Austria's Climate and Energy Fund wins for large-scale solar thermal plant subsidy program

Abu Dhabi, UAE, 3 November 2017. The Climate and Energy Fund of Austria wins the International Energy Agency Solar Heating Programme (IEA SHC) SHC SOLAR AWARD. The Climate and Energy Fund challenged how subsidies are implemented. Its national support program for large-scale solar thermal plants in commercial applications is based on a 3-pronged approach – financial and technical support, quality assurance and communication. Mr. Ingmar Höbarth, Managing Director, received the award on behalf of the Climate and Energy Fund during SHC 2017, the IEA SHC's International Conference on Solar Heating and Cooling for Buildings and Industry held this year in Abu Dhabi, UAE.

"This year's SHC Solar Award shines a light on a successful government solar thermal support scheme. The recipient, Climate and Energy Fund, understands the potential of large-scale solar plants for Austria's economy and has created an innovative subsidy program to support market expansion of large-scale solar thermal systems", **IEA SHC Chairman Ken Guthrie.**

From left to right: Werner Weiss (IEA SHC Austria rep.), Ken Guthrie (IEA SHC Chairman), Ingmar Höbarth (Climate and Energy Fund Managing Director), Gernot Wörther (Climate and Energy Fund Project Manager), Doug McClenahan (IEA SHC Award Chairman)

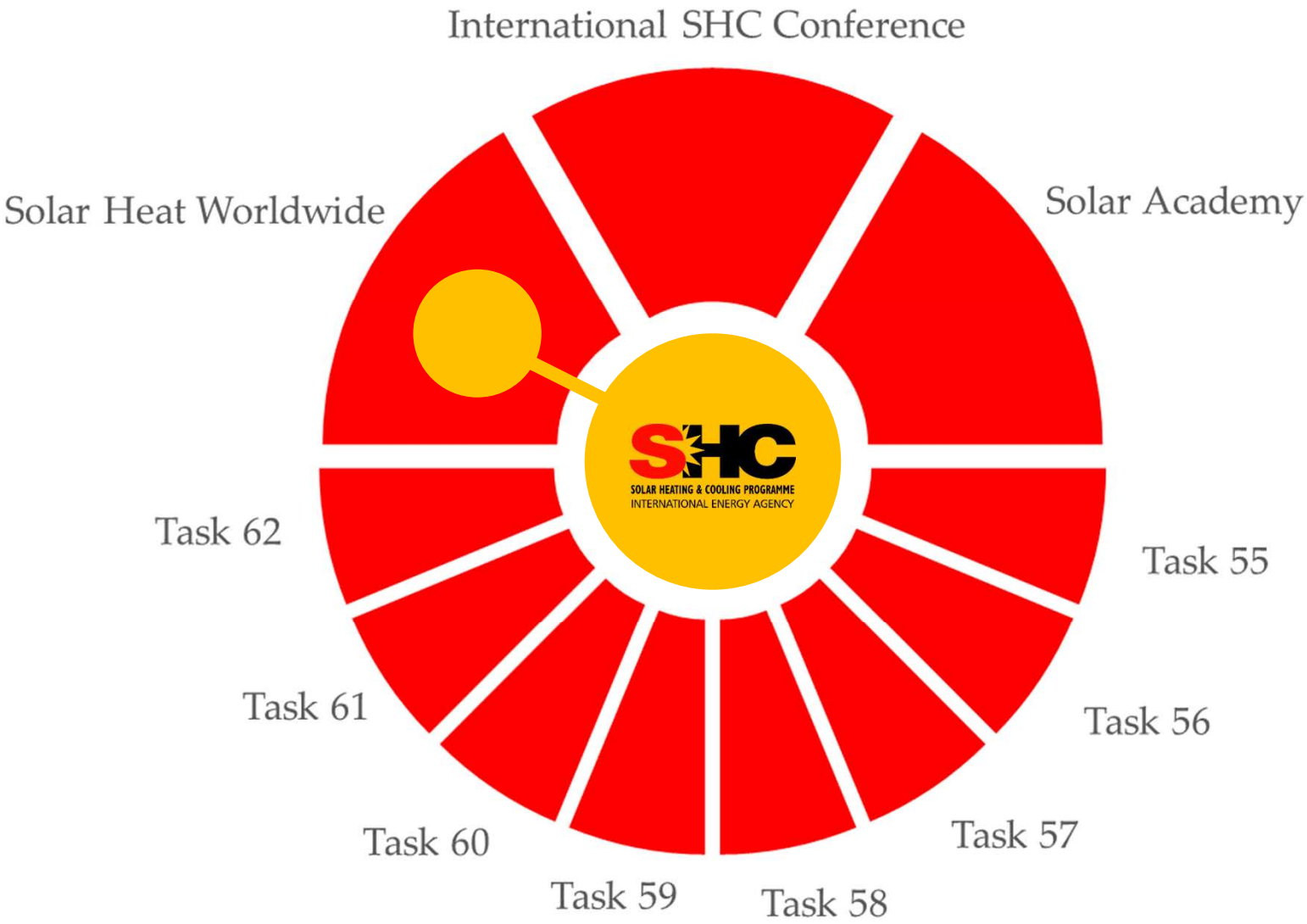
The **IEA SHC Solar Award** is given to an individual, company, or private/public institution that has shown outstanding leadership or achievements in the field of solar heating and cooling. With this year's award, the IEA SHC recognizes not only a government agency implementing a successful support scheme, but also a best

SHC Solar Award

The SHC Solar Award celebrates the work of those committed to increasing the expansion of this renewable energy source.

2017 Winner

klima+ energie fonds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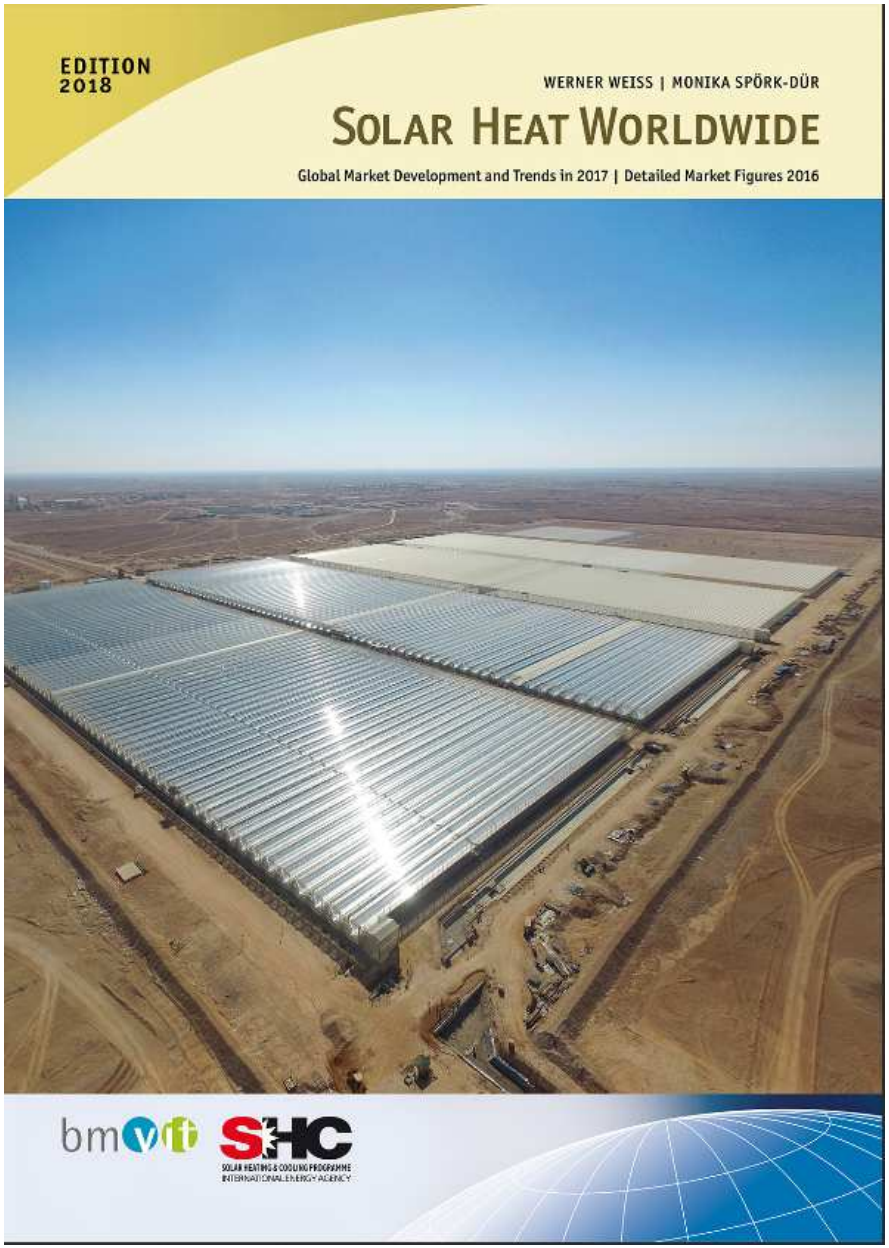
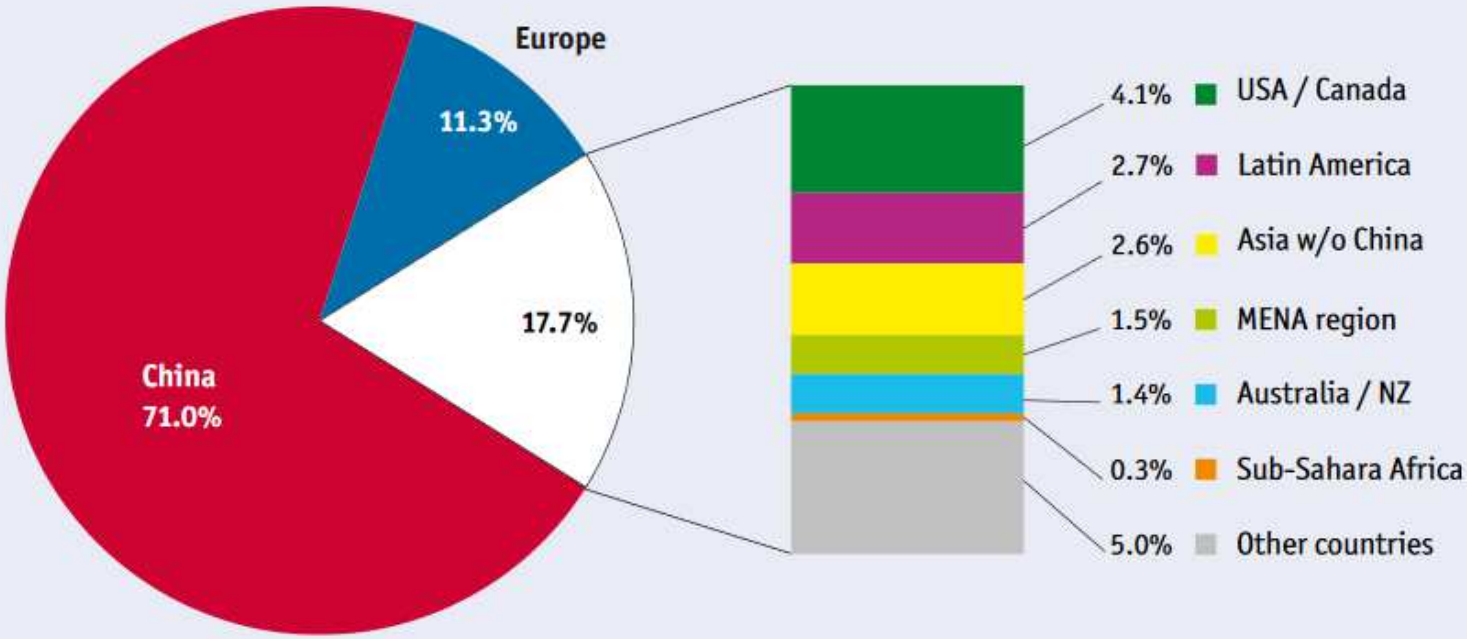
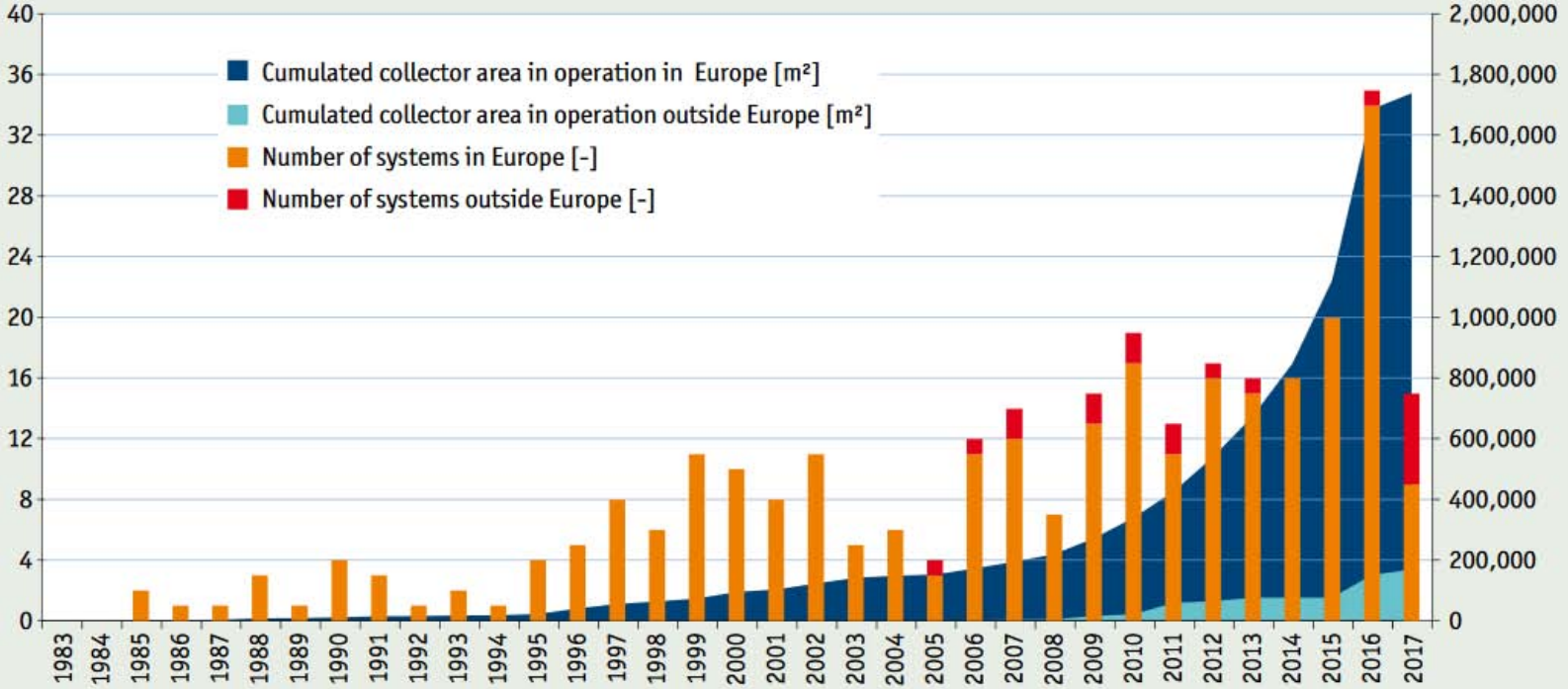


The highest quality source of data on solar heating and cooling deployment



Sub-Sahara Africa:	Botswana, Burkina Faso, Ghana, Lesotho, Mauritius, Mozambique, Namibia, Senegal, South Africa, Zimbabwe
Asia w/o China:	India, Japan, South Korea, Taiwan, Thailand
Latin America:	Barbados, Brazil, Chile, Mexico, Uruguay
Europe:	EU 28, Albania, Macedonia, Norway, Russia, Switzerland, Turkey
MENA countries:	Israel, Jordan, Lebanon, Morocco, Palestinian Territories, Tunisia

Share of the total installed capacity in operation (glazed and unglazed water and air collectors) by economic region in 2016



Large-scale systems for solar district heating and large residential, commercial and public buildings worldwide – annual achievements and cumulated area in operation in 2017 (Data source: Jan-Olof Dalenbäck – Chalmers University of Technology, SE and Sabine Putz – IEA SHC Task 55, Bärbel Epp solarthermalworld.org)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Markets and Contribution to the Energy Supply
Werner Weiss
Irene Bergmann
Gerhard Faninger
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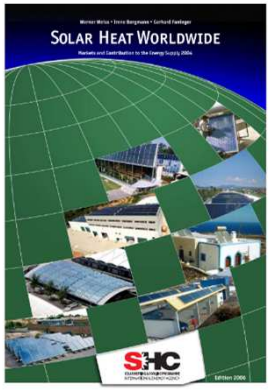
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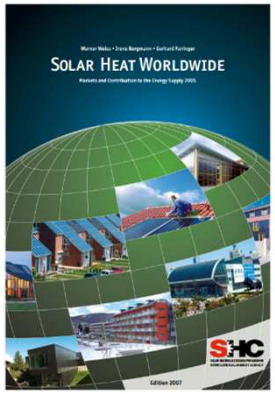
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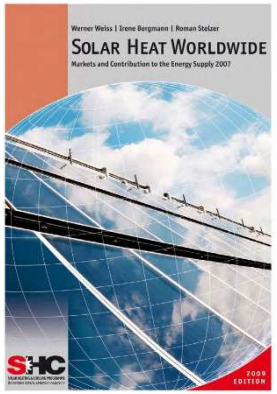
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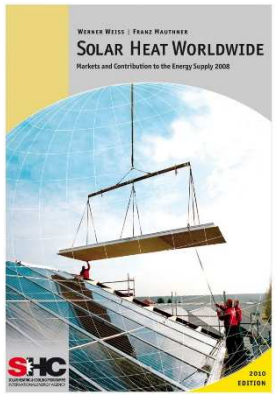
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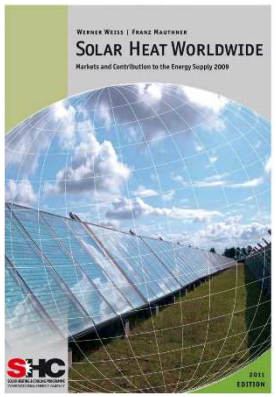
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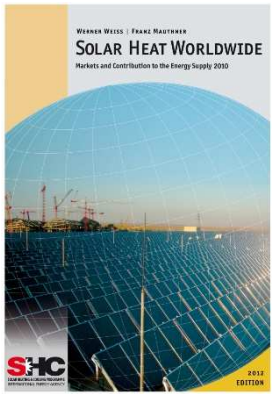
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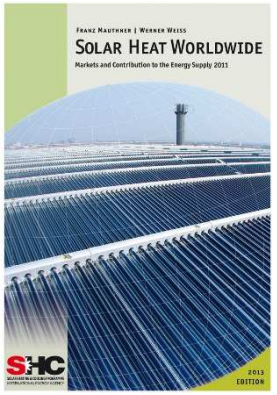
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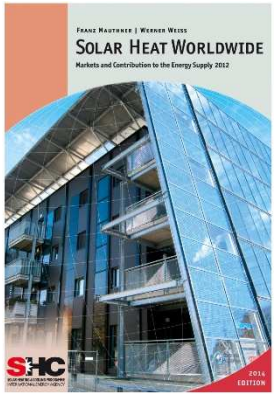
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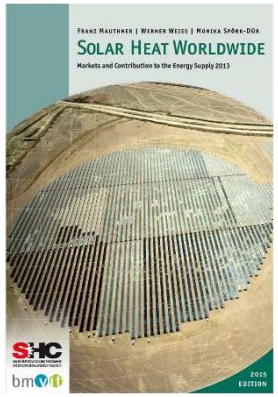
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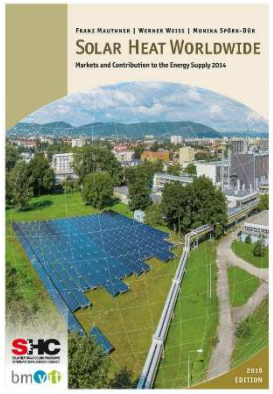
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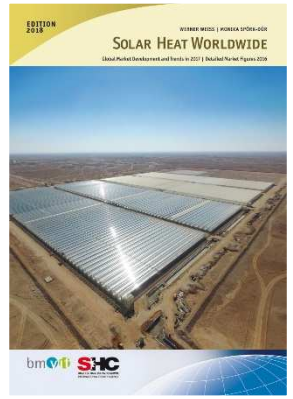
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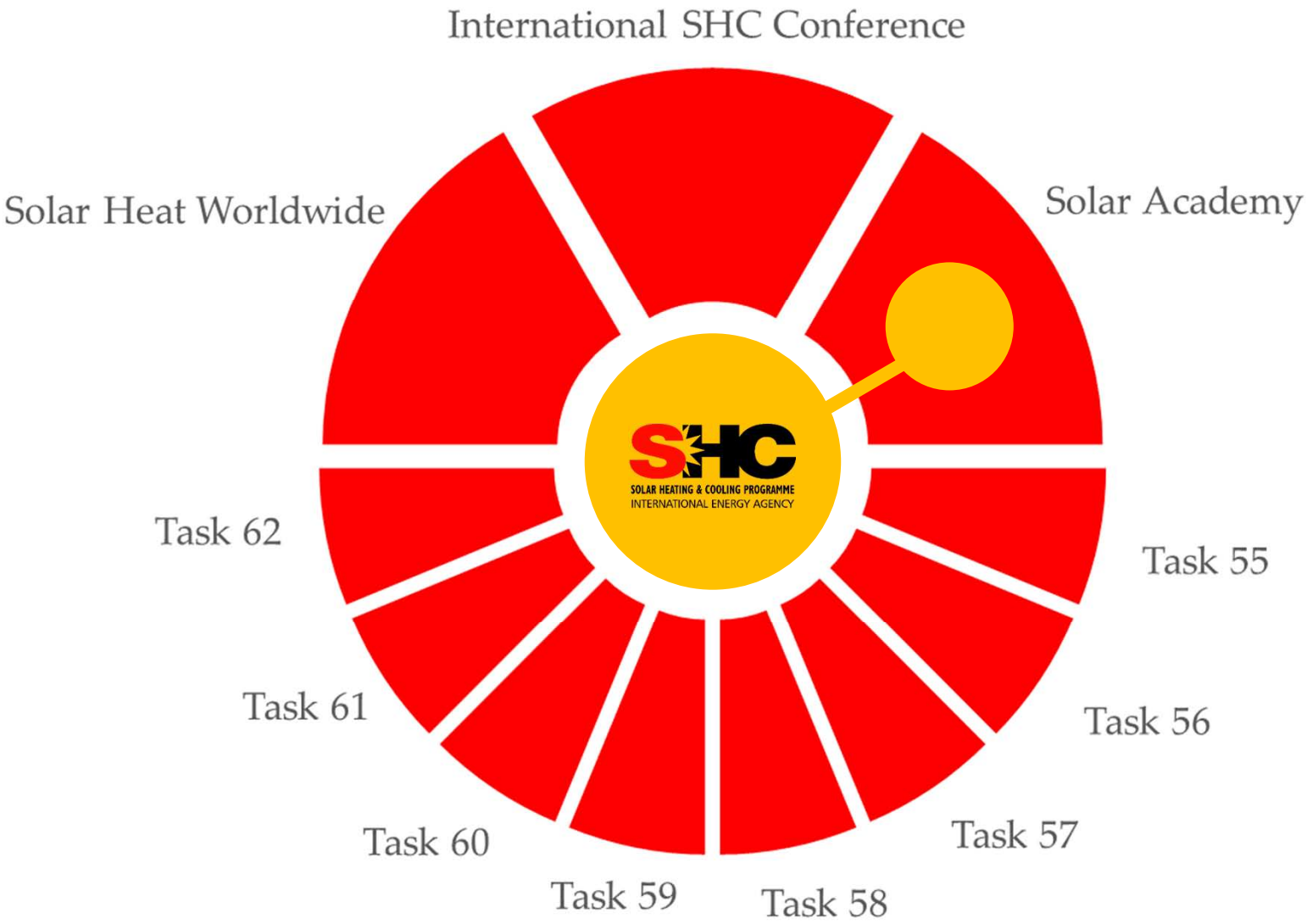
2019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Webinar: IEA SHC Solar Academy Task 55 - Large Scale SHC Systems Integration

International Solar Energy Society (ISES) • 157 views • 2 months ago

As part of the IEA SHC Solar Academy, in which IEA SHC shares it's work and supports R&D and implementation of solar heating ...

Webinar: IEA SHC Solar Academy - Solar Standards and Certification Task 57

International Solar Energy Society (ISES) • 315 views • 5 months ago

As part of the IEA SHC Solar Academy, in which IEA SHC shares it's work and supports R&D and implementation of solar heating ...

Webinar: IEA SHC Solar Academy Solar Heating for Industrial Processes

International Solar Energy Society (ISES) • 865 views • 1 year ago

Panelist speakers and topics: Christoph Brunner: Global view on solar heat for industrial processes - From planning to ...

Webinar: IEA SHC Solar Academy Price Reduction of Solar Thermal Systems

International Solar Energy Society (ISES) • 552 views • 1 year ago

Having the image of being too expensive to buy, too complex to install, too costly to maintain, solar thermal often loses the ...

The Solar Heat Market & Innovation in Portugal

Posted by Richard Hall on Jan 25, 2019 in Innovation in Solar

IEA SHC Solar Academy National Day – Portugal

One of the core activities of the IEA Solar Heating and Cooling Programme (SHC) is a series of Solar Academy National Days. Solar Academy National Days are held twice a year and bring together solar heat experts from around the world to exchange information about developments in solar heat policy and innovation in a specific country. In this blog post I would like to share with you some of the things I learned on the Solar Academy National Day in Portugal, which convened on 15th November in Lisbon.

Department for Business, Energy & Industrial Strategy

International Energy Agency (IEA) Solar Heating and Cooling (SHC) Technology Collaboration Programme (TCP)

SOLAR ACADEMY SHC

FOR HEATING & COOLING IN BUILDINGS & INDUSTRY

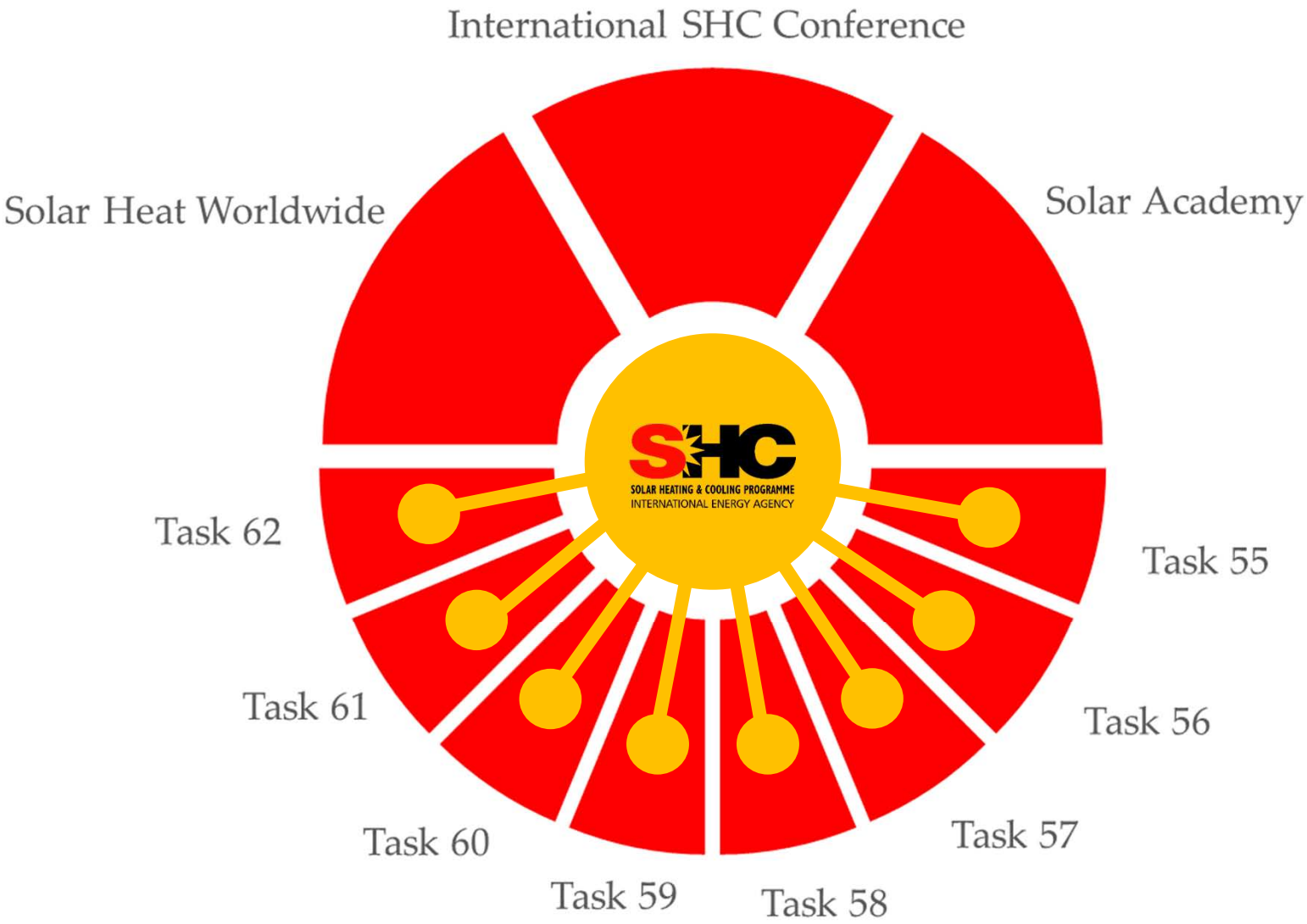
Energy Transitions

Solar Heat Networks: Policy, Planning, Design and Performance

Friday 8th March 2019

Department for Business, Energy and Industrial Strategy (BEIS) Conference Centre

Start Time	Item	Speaker
09:30	Light Breakfast	
10:00	Welcome and Introductions	Oliver Sutton, BEIS
10:15	Introduction to Solar Heat Networks	Richard Hall, Vice Chair IEA SHC
10:25	Development of Solar Heat Networks in Austria: Background and Status	Christian Holter, SOLID
10:45	Development of Solar Heat Networks in Denmark: Background and Status	Jan Erik Nielsen, PlanEnergi
11:15	Coffee and Networking Session	Christian Holter, SOLID
11:30	Integration of Solar onto Heat Networks	IEA SHC International Team
12:30	Solar Heat Networks Workshop	Jan Erik Nielsen, PlanEnergi
12:45	Lunch	
13:45	Adding Seasonal Heat Storage to Heat Networks	Christian Holter, SOLID
14:25	Micro Solar Heat Networks in the UK	
14:40	Solar Heat Networks Workshop	
15:00	Coffee and Networking Session	
15:15	ESCo model	
15:40	Evalu	
15:55		
16:05		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Task 55: Towards the Integration of Large SHC Systems into District Heating and Cooling (DHC) Networks

Operating Agent: Sabine Putz
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Duration: September 2016 — August 2020

Task 56: Building Integrated Solar Envelope Systems for HVAC and Lighting

Operating Agent: Roberto Fedrizzi
roberto.fedrizzi@eurac.edu
February 2016 — January 2020

Task 57: Solar Standards and Certification

Operating Agent: Jan Erik Nielsen
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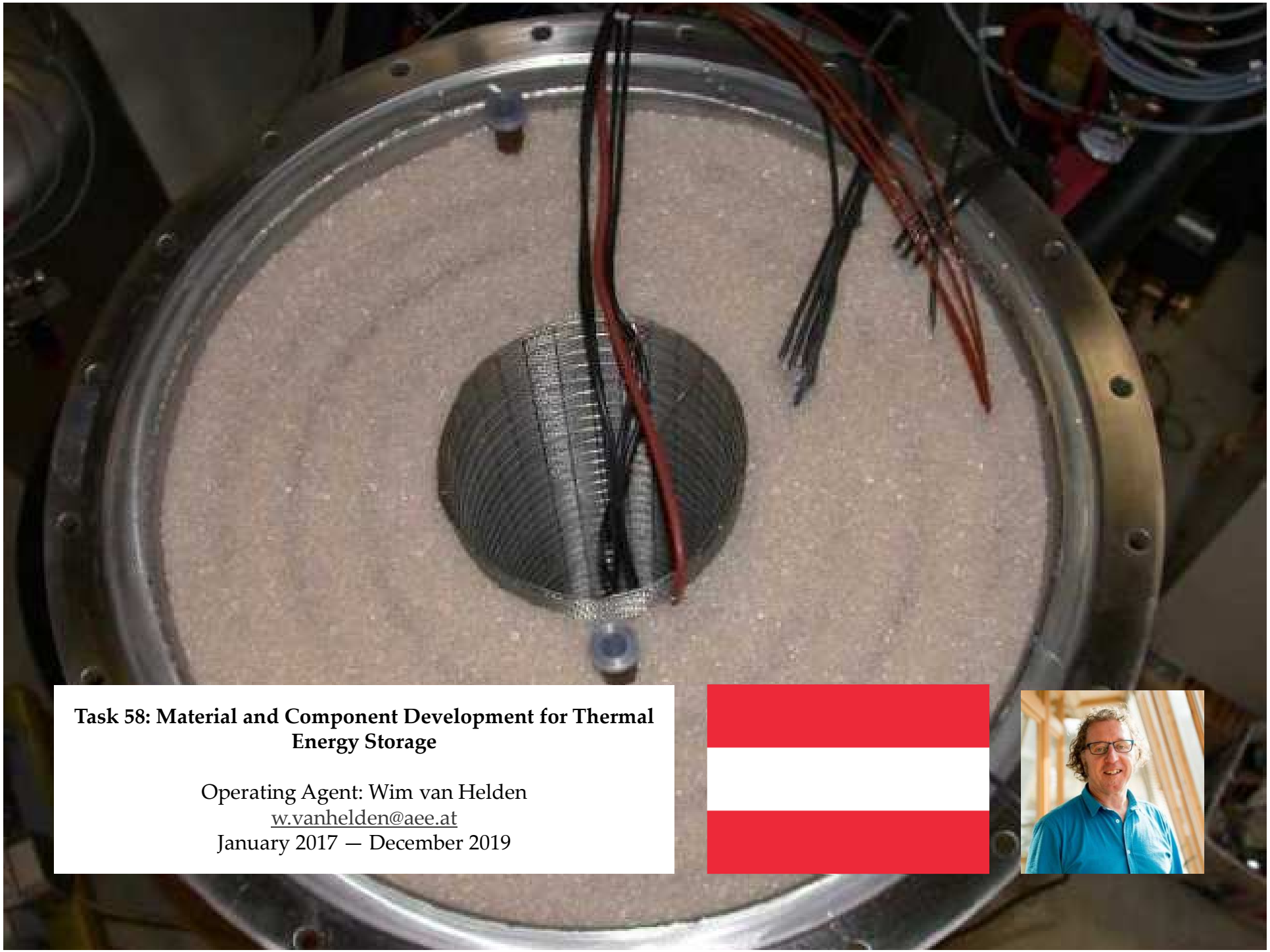
January 2016 — December 2018



Task 58: Material and Component Development for Thermal Energy Storage

Operating Agent: Wim van Helden
w.vanhelden@aee.at
January 2017 — December 2019

Task 59: Renovating Historic Buildings Towards Zero Energy

Operating Agent: Alexandra Troi
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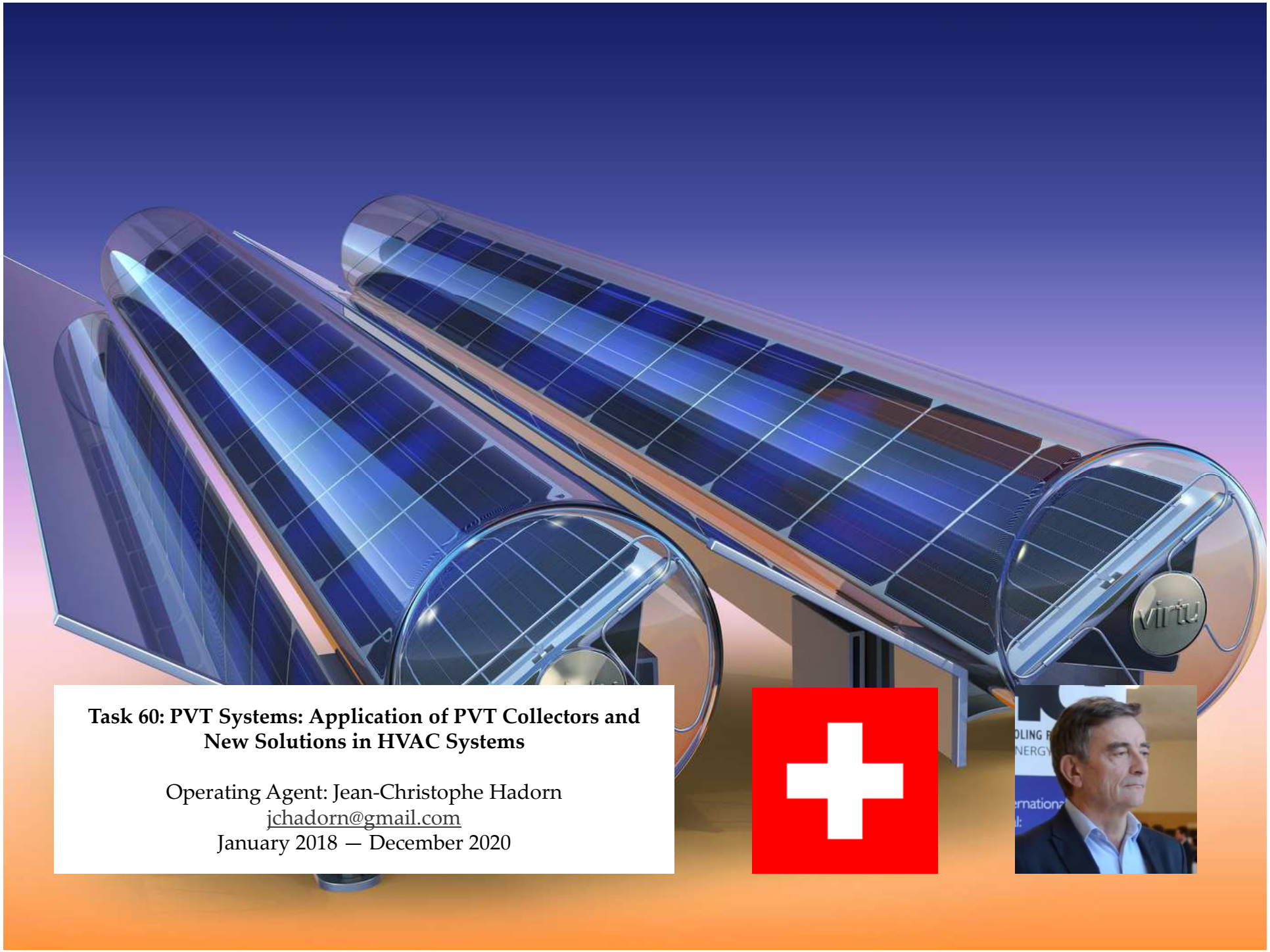
September 2017 — February 2021



Task 60: PVT Systems: Application of PVT Collectors and New Solutions in HVAC Systems

Operating Agent: Jean-Christophe Hadorn
jchadorn@gmail.com
January 2018 — December 2020

Task 61: Integrated Solutions for Daylighting and Electric Lighting: From component to user centered system efficiency

Operating Agent: Jan de Boer
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January 2018 — June 2021

Task 62: Solar Energy in Industrial Water & Wastewater Management

Operating Agent: Christoph Brunner
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October 2018 — September 2022


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156 694 m²
Silkeborg, Denmark
Source: Arcon-Sunmark

Richard Hall
Alternate Vice Chair, IEA SHC
Director of Solar Governance, Energy Transitions