



Where do I get help?

IEA's Technology Collaboration Programmes

Appliances and Equipment: Special Session

 #energyefficientworld

Where do I get help: IEA's Technology Collaboration Programmes

Trainers:

Session: 30 minutes

Purpose: To discuss the international network of experts working on research projects, including Energy in Buildings and Communities (EBC), District Heating and Cooling (DHC), Heat pump technology (HPT), Demand Side Management (DMS), Industrial Technologies and Systems (IETS) and Energy Efficient End-Use Equipment (4E) TCPs.

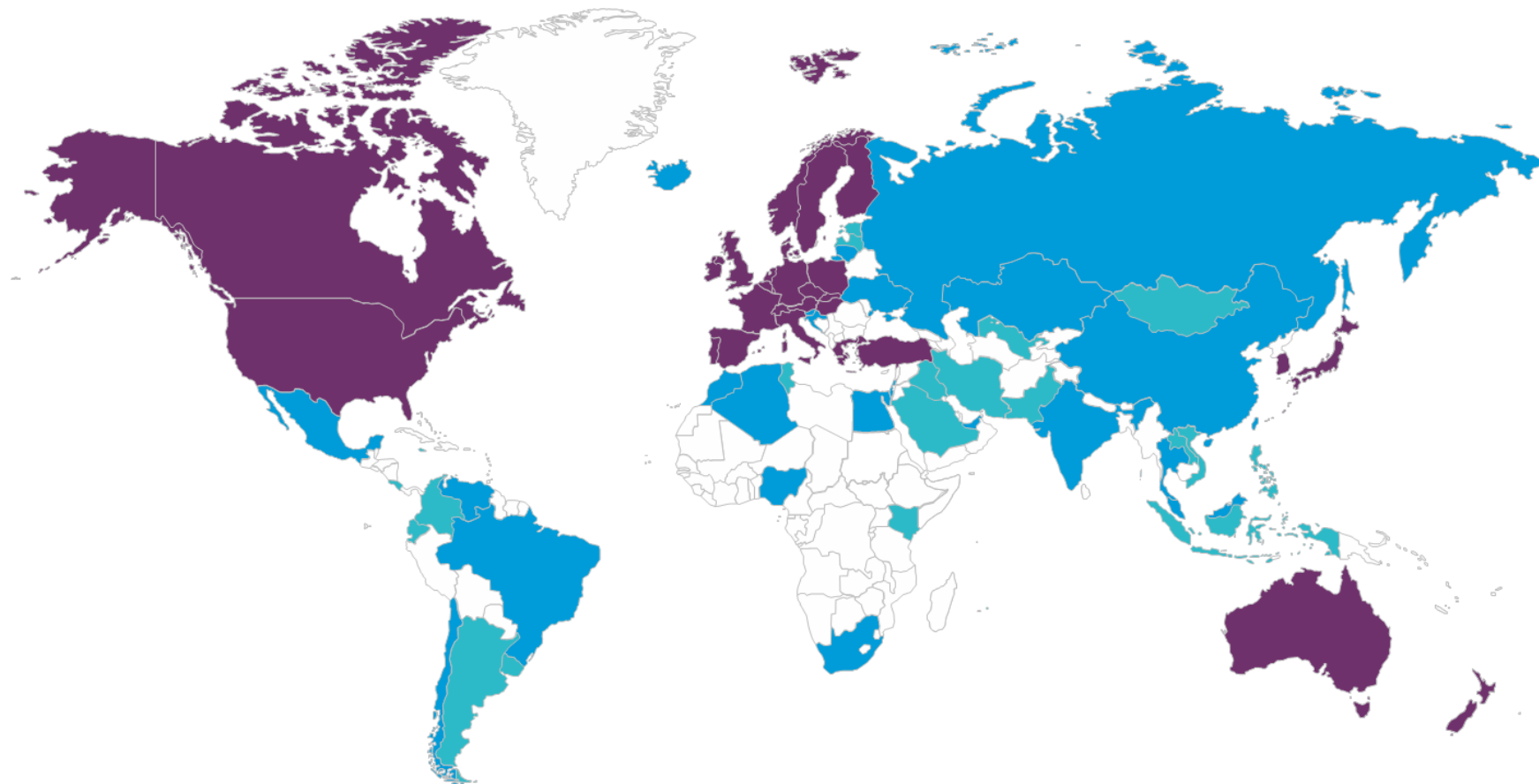
- **1975: IEA founders created a framework for sharing resources and accelerating technology RDD&D**
 - The IEA Implementing Agreements (IAs)
 - Flexible, time-proven, cost-effective mechanism
- **Today: more than 40 years in is a new era of technology collaboration**
 - The IEA is providing increased support to and interactions with multilateral initiatives and for CEM, Mission Innovation, LCTPi, UNFCCC, G7 and the G20
 - TCPs have helped the IEA to develop this unique capacity to provide guidance, inputs and coordination for multi-lateral energy technology collaboration

39 TCPs across a range of sectors

- Cross-cutting activities
- End use and energy efficiency
- Fossil fuels
- Fusion power
- Renewable energy and hydrogen



IEA Technology Collaboration Programme participation



The above map is without prejudice to the status of sovereignty over any territory, to the delimitation of international frontiers and boundaries, and to the name of any territory, city or area. Experts from countries shown above participate in activities of the Technology Collaboration Programmes.

How can my country participate?

- Contact the IEA team and we will guide you through the process:
 - Be invited to Executive Committee meetings
 - Attend meeting as an observer
 - Discuss potential collaboration
 - Be invited to participate as a TCP member country

Energy Efficiency in Buildings related TCPs:

- Buildings and Communities (EBC-TCP)
- Heat Pumping Technologies (HPT-TCP)
- Energy Efficient End-Use Equipment (4E-TCP)
- Demand Side Management (DSM-TCP)

Energy in Buildings related TCPs:

- District Heating and Cooling (DHC-TCP)
- Energy Storage (ECES-TCP)
- Solar Heating and Cooling (SHC-TCP)

Energy Efficient End-Use Equipment (4E-TCP) established in 2008

Site:

<http://www.iea-4e.org>

Video:

<https://youtu.be/zWCpj1ff5Ds>



- 4E provides an international forum for governments and other stakeholders to:
 - Share expertise and develop understanding of end-use equipment and efficiency policies
 - co-ordinate international approaches in the area of efficiency end-use equipment
- Launched in March 2008, 4E now has 13 member countries actively participating in collaborative projects
- 4E seeks to meet the challenges for policy makers to maximise energy efficiency on all types of non-transport appliances and equipment
- Over 500 publications freely available
- Runs workshops for policy makers, industry and experts

Major activities

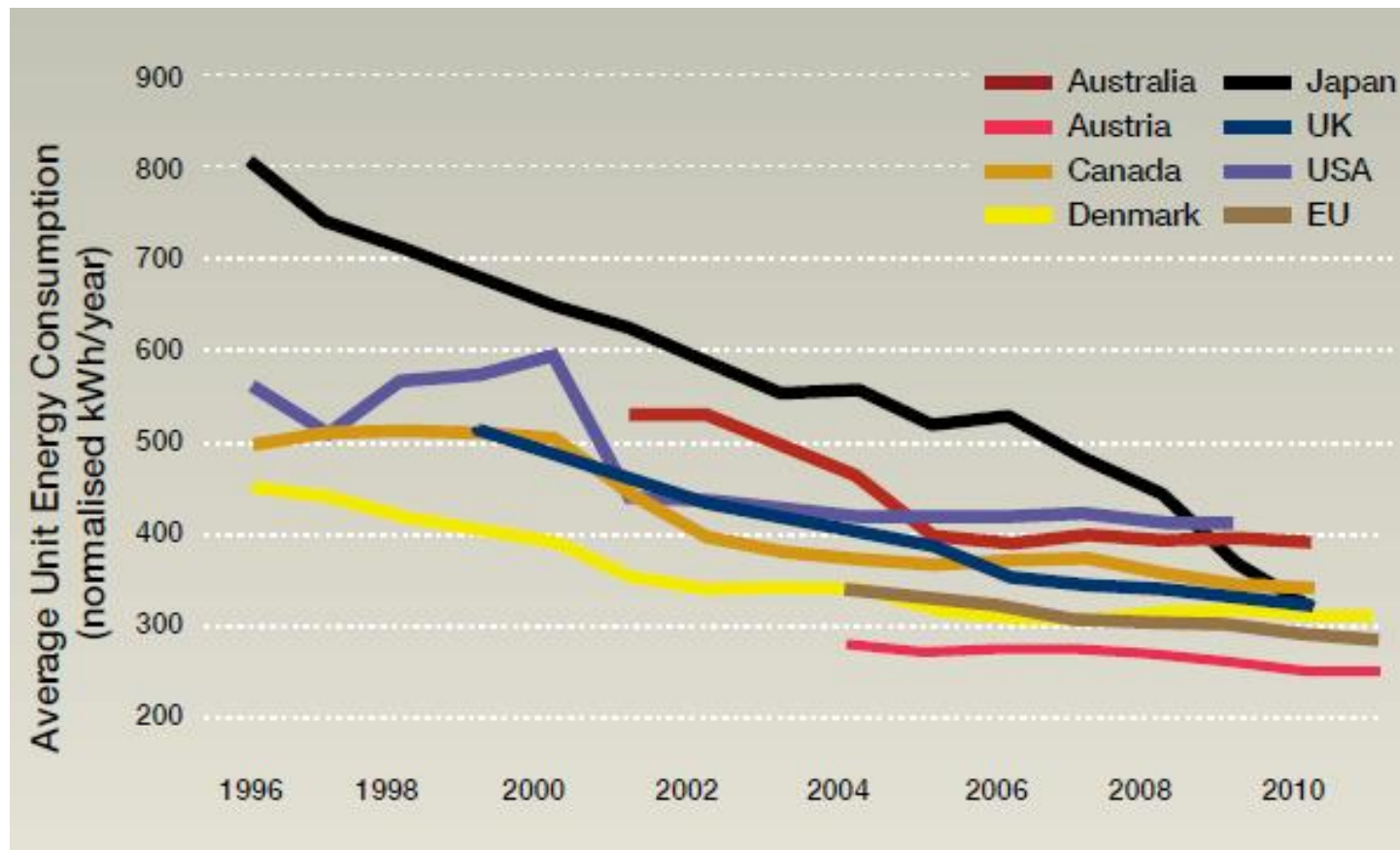
- Electric motor systems
- Solid state lighting
- Connected devices and systems
- Power Electronic Conversion Technology
- Product Energy Efficiency Trends
- Monitoring, Verification and Enforcement (MV&E)
- G20 Connected Devices Alliance (CDA)



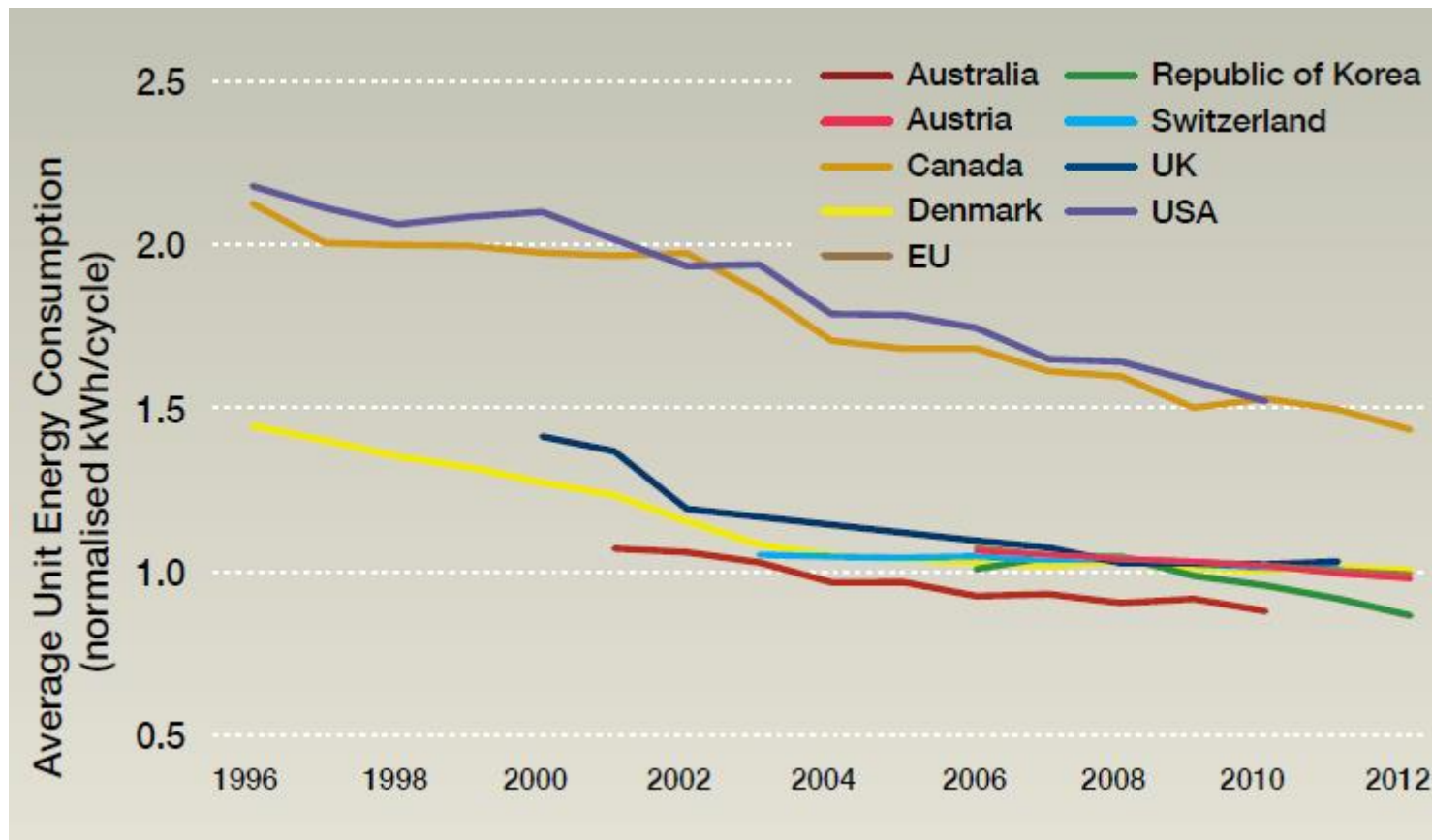
- 4E TCP comprises 13 countries.
 - China joined in 2018.

Country	Contracting Party	Since
China	China National Institute of Standardization	2018
Japan	New Energy and Industrial Technology Development Organisation (NEDO)	2011
Sweden	Swedish Energy Agency	2011
United Kingdom	Department for Business, Energy & Industrial Strategy (BEIS)	2009
Australia	Department of the Environment and Energy	2008
Austria	Ministry for Transport, Innovation and Technology (BMVIT)	2008
Canada	Natural Resources Canada (NRCan)	2008
Denmark	Danish Energy Agency	2008
France	French Environment and Energy Management Agency (ADEME)	2008
Korea	Korea Energy Agency (KEA)	2008
Netherlands	Netherlands Enterprise Agency (RVO.nl)	2008
Switzerland	Swiss Federal Office of Energy (SFOE)	2008
United States	Department of Energy (DOE)	2008

Refrigerators

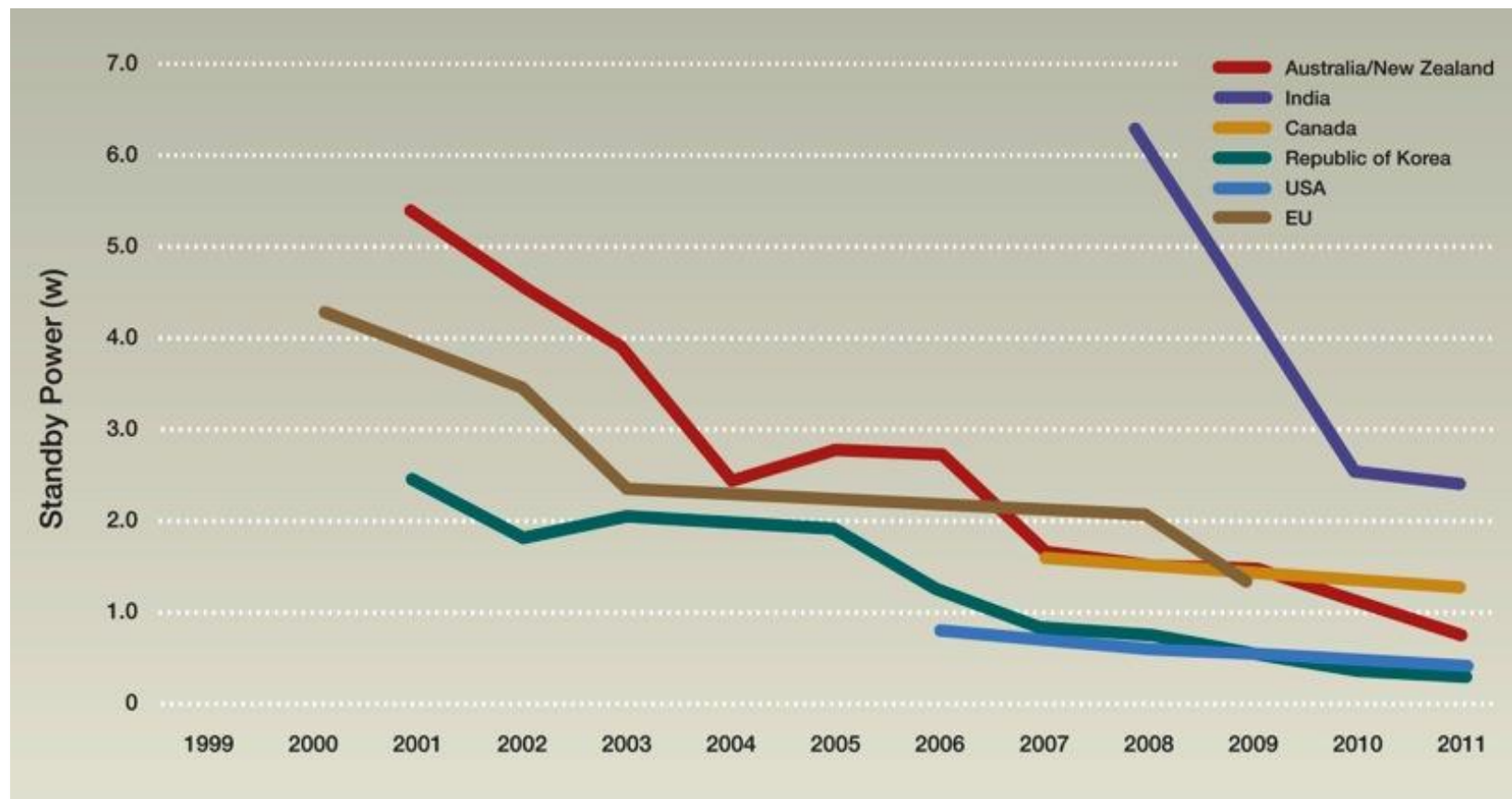


Source: <https://mappingandbenchmarking.iea-4e.org/matrix>



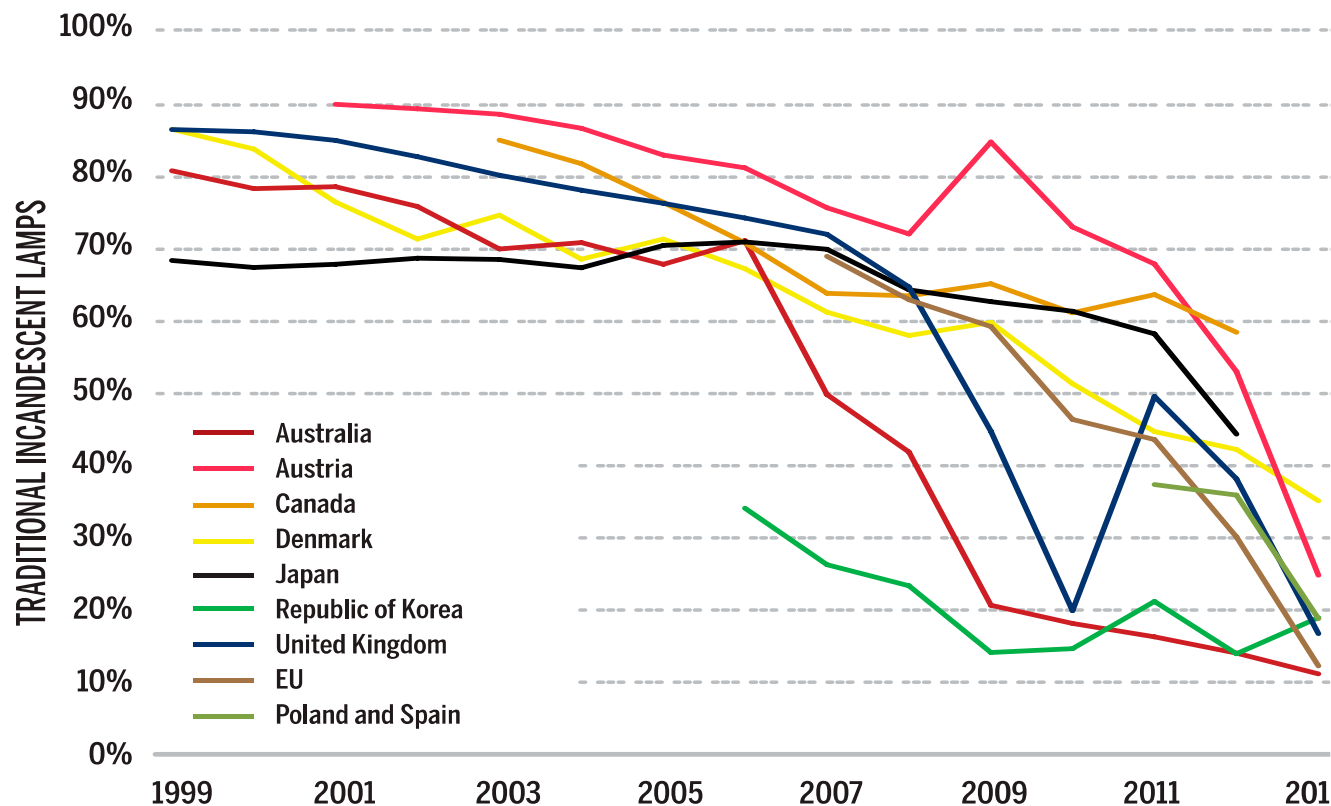
Source: <https://mappingandbenchmarking.iea-4e.org/matrix>

Standby power consumption of TVs (CRT, LCD and plasma)



Source: <https://mappingandbenchmarking.iea-4e.org/matrix>

Tracking policy impacts: lighting



4E TCP Communication Activities



4E TCP uses a wide range of channels to reach its target audience.

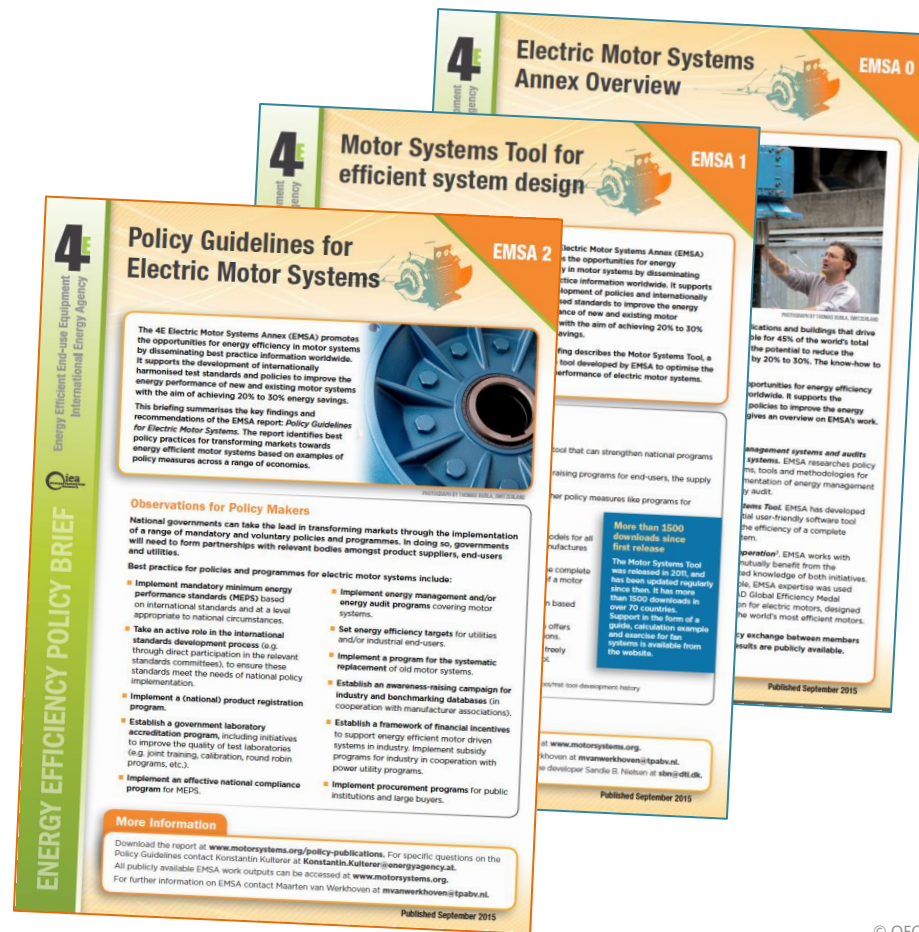
Energy Efficient End-Use Equipment (4E-TCP)

2 page Policy Briefs

Summary of key publications

Clear, concise guidance for policy makers

Available in English, French, German, Korean & Japanese



Energy in Buildings and Communities (EBC-TCP) established in 2002

- **Working Group.** Urban Issues
- **Annex 77.** Integrated Solutions for Daylight and Electric Lighting
- **Working Group.** HVAC Energy Calculation Methodologies for Non-residential Buildings
- **Annex 76.** Deep Renovation of Historic Buildings
- **Annex 75.** Building Renovation at District Level
- **Annex 74.** Energy Endeavour
- **Annex 73.** Net Zero Energy Public Communities
- **Annex 72.** Assessing Life Cycle Environmental Impacts
- **Annex 71.** Building Energy Performance Measurements
- **Annex 70.** Energy Epidemiology
- **Annex 69.** Adaptive Thermal Comfort in Buildings
- **Annex 68.** High IAQ in Low Energy Buildings
- **Annex 67.** Energy Flexible Buildings
- **Annex 66.** Simulation of Occupant Behavior
- **Annex 65.** Super-Insulation
- **Annex 64.** Community Energy Supply Systems with Exergy Principles
- **Annex 63.** Energy Strategies in Communities
- **Annex 62.** Ventilative Cooling
- **Annex 05.** Air Infiltration and Ventilation Centre

EBC Newsletter

www.iea-ebc.org/publications/ebc-news/

EBC Annual Report

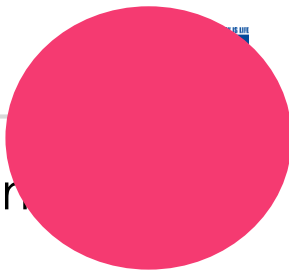
www.iea-ebc.org/publications/annual-reports/

EBC Project Reports

www.iea-ebc.org/publications/summary-reports



Heat Pumping Technologies (HPT-TCP) established in 1978



- **Annex 52.** Long term performance of commercial GSHP systems
- **Annex 51.** Acoustic signature of heat pumps
- **Annex 50.** Heat pumps for multifamily heating and water heating
- **Annex 49.** Heat pumps for nZEB
- **Annex 48.** Industrial Heat Pumps
- **Annex 47.** Heat pumps in District Heating and Cooling Systems
- **Annex 46.** Heat Pumps for Domestic Hot Water
- **Annex 45.** Hybrid Heat Pumps
- **Annex 44.** Performance indicators for energy efficient supermarket buildings pumps
- **Annex 43.** Fuel-driven sorption heat pumps

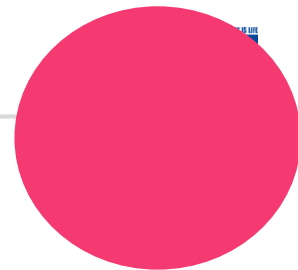
Heat Pumping Technologies (HPT-TCP)

HPT Newsletter

www.heatpumpcentre.org/en/newsletter/

HPT Publications:

www.heatpumpcentre.org/en/hpppublications/



- **Task 25.** Business Models for a more effective market uptake of DSM energy services
- **Task 24 Phase II.** Behaviour Change in DSM – Helping the Behaviour Changers
- **Task 17.** Integration of Demand Side Management, Energy Efficiency, Distributed Generation and Renewable Energy Sources
- **Task 16.** Innovative Energy Services

1. The Logic of DSM

- Behavioural changes are necessary to get the full impact on energy efficiency. What works and what doesn't
- Capturing the Multiple Benefits of Energy Efficiency
- "Do not take away their steering wheel!" How to achieve effective behavioural change in the transport and SME domain"
- Energy Efficiency: A strategy at the heart of the G20
- DSM for the 21st century

2. Governance

- Impact evaluation of Energy Efficiency and DSM programmes
- Energy Efficiency Labels. What can be learnt from the Europe
- Involving people in Smart Energy: A toolkit for utilities, energy agencies and smart city developers
- Advancing Utility Sector Energy Efficiency in the U.S
- Energy savings and greenhouse gas emissions: international standards & harmonised savings calculations in practise
- Energy Efficiency Obligations – A Toolkit for success

- The IEA Energy Efficiency Market report 2016 – What it means for DSM!
- From programmes to markets – how to leverage market forces for energy efficiency

3. Efficiency – Load Level

- ESCo market development: A role for Facilitators to play
- Best Practices in Designing and Implementing Energy Efficiency Obligation Schemes
- Customized, Systemic, Strategic – the way to succeed with energy efficiency in industry
- Taking Stock – 40 years of Industrial Energy Audits
- Improving energy efficiency in SMEs – an interdisciplinary perspective
- Simplified Measurement & Verification for Energy Savings
- Energy-Intensive Industries – energy efficiency policies and evaluations
- Big data for greater energy efficiency

4. Flexibility – Load Shape

- Spotlight on Demand Management
- Using Demand-Side Management to Support Electricity Grids
- Smart Grid Implementation – how to engage consumers?

5. Integration

- Managing Variability, Uncertainty and Flexibility in Power Grids with High Penetration of Renewables
- Integrating renewables and enabling flexibility of households and buildings – results and experiences from successfully implemented projects
- Integration of energy efficiency and renewable energy – multiple benefits!
- Blockchain applications for peer-to-peer community energy trading.

6. Business Models

- How to make the best technology even better, BAT becomes BAT+
- Consequences of learning curves for energy policy
- From selling Energy Efficiency to creating value
- Energy efficiency: a profit center for companies! A strategic and financial discussion of the multiple benefits of energy efficiency
- Mind your business, towards a more user-centered business model

IETS participants work together on industry related:

- Scientific research,
- Technology and systems research and development,
- Demonstration and deployment,
- Technology and systems foresighting,
- Technology and systems assessment of policies and consequences, and
- Dissemination of information.

- Digitalisation, Artificial Intelligence and Related Technologies for Energy Efficiency and GHG Emissions Reduction in Industry
- Energy Efficiency in SMEs
- Industrial Excess Heat Recovery
- Membrane Processes in Refineries
- Energy Efficiency in Iron and Steel Industry
- Industry-based Biorefineries

IETS Newsletter

<https://iea-industry.org/newsletters/subscribe-to-our-new-newsletter/>

IETS Publications

<https://iea-industry.org/publications/>



- Advanced Fuel Cells (AFC TCP)
- Advanced Motor Fuels (AMF TCP)
- Advanced Transport Material (AMT TCP)
- Clean and Efficient Combustion (Combustion TCP)
- Hybrid and Electric Vehicles (HEV TCP)

- **Task 1**, Information Exchange
- **Task 23**, Light-Electric-Vehicle Parking and Charging Infrastructure
- **Task 26**, Wireless Power Transfer for Evs
- **Task 28**, Home grids and V2X technologies
- **Task 29**, Electrified, connected and automated vehicles
- **Task 30**, Assessment of environmental effects of electric vehicles
- **Task 31**, Fuels and energy carriers for transport
- **Task 32**, Small Electric Vehicles
- **Task 33**, Battery Electric Buses
- **Task 34**, Batteries
- **Task 35**, Fuel Cell Electric Vehicles
- **Task 36**, EV consumer adoption and use
- **Task 37**, Extreme Fast Charging
- **Task 38**, Marine Applications (e-Ships)
- **Task 39**, Interoperability of e-Mobility Services
- **Task 40**, CRM4EV - Critical Raw Material for Electric Vehicles
- **Task 41**, Electric Freight Vehicles



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