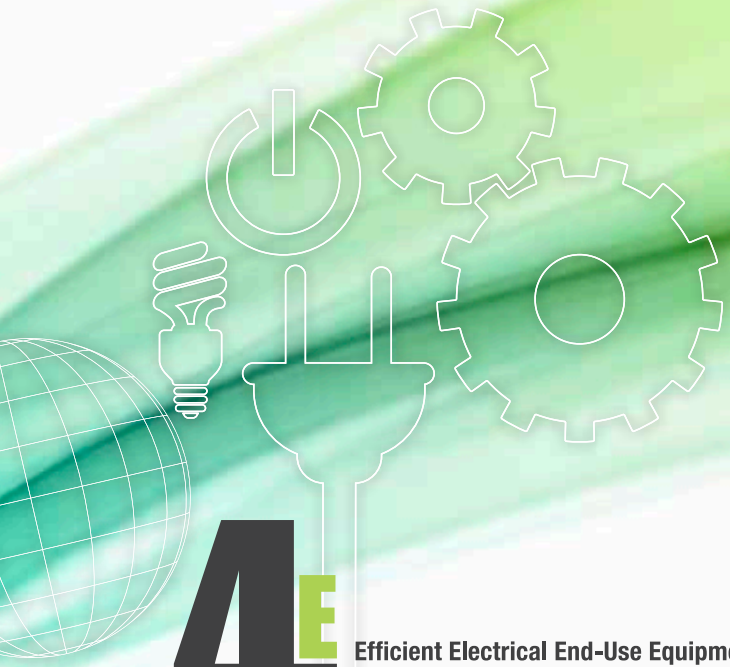
Annual Report 2010

Implementing Agreement for a Co-operative Programme on Efficient Electrical End-Use Equipment (4E)



4E Efficient Electrical End-Use Equipment
International Energy Agency

iea Energy Technology Network

Contents

FIGURES

TABLES

Chair's Statement

If 2009 was a year of consolidation for 4E, 2010 has seen much of our hard work give 4E a real presence in the international energy efficiency policy debate.

From the outset, 4E has attempted to deliver projects that answer some of the key questions faced by Governments – concerning both technology and policies. The fact that we have seen widespread and growing interest in our activities during 2010 suggests that the projects selected are proving to be strategically important.

The Mapping and Benchmarking Annex provides a good example. In 2008, Governments identified a need to compare the performance of electrical equipment across regions and recognised that 4E was in a unique position to access the necessary data. The results delivered during 2010 for the first time enable Governments to better understand how their appliance performance compares to that in other countries, and why. The importance of this work has been recognised by the Super-efficient Equipment and Deployment (SEAD) initiative and we hope to have even greater impact during 2011 as a result of our collaboration with them.

The Solid State Lighting Annex (SSL), launched in July alongside the Clean Energy Ministerial (CEM) in Washington DC, is another example where 4E has responded to a need expressed by Governments – in this case for an international quality assurance framework so that consumer confidence (and energy efficiency benefits) will not suffer as a result of low quality products entering the market.

Interest in participating in the SSL Annex has been intense amongst Governments and industry alike; and it has been a major factor in the decision by the Japanese and Swedish Governments to join 4E in late 2010. Both these countries are well-known for their focus on energy efficiency and were involved in the development of 4E, so I welcome their participation and am confident that they will bring considerable additional expertise to 4E over the next few years.

As we reach the end of the first three years of 4E, it is timely to review progress and begin setting new targets. Our Strategic Planning Workshop held in Ottawa in November 2010 was the start of an important process to identify projects that meet the common priorities of our 13 member countries. This coincided with a unanimous vote to extend 4E to February 2014, which will allow time to develop some of the many exciting new projects that were highlighted, and to bring to fruition the valuable work of our existing Annexes that is described later in this report.

During 2010 we have seen the work of the Annexes bear fruit and as more 'results' become available, our outreach activities are becoming increasingly important. The green ICT and electronics seminar held in Vienna, the 'Saving More Energy Through Compliance' conference in London and the Motors Summit in Zurich are examples of the type of focussed communication to a specialised audience where 4E can make a difference.

2010 has been a busy and exciting year for all of those involved in 4E. I would like to take this opportunity to thank all the national delegates and Operating Agents for their continued commitment to making 4E the success it has become – and in helping to make 4E even more effective during 2011.

Hans-Paul Siderius
Chairman, 4E
January 2011

Key 4E achievements in 2010

January

Presentation to International Partnership on Energy Efficiency Collaboration (IPEEC)

March

Electrical End-use Efficiency Chances for Green ICT and Electronics in Austria workshop

July

Launch of Solid State Lighting Annex at the Clean Energy Ministerial, Washington DC

August

Publication of second 4E Newsletter, *"Bright Spark"*

September

'Saving More Energy Through Compliance' Conference, London

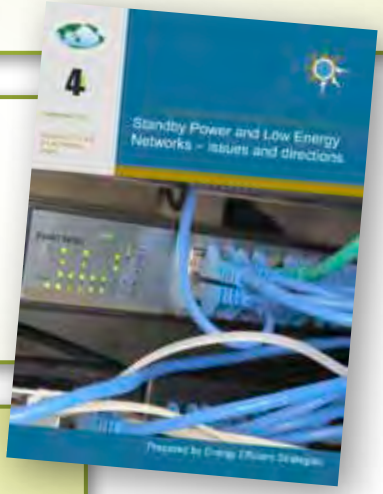
Key 4E achievements in 2010

September

Publication of Benchmarking report for Domestic Cold Appliances

September

Publication of report: "Standby Power and Low Energy Networks – issues and directions"



Motor Summit 2010, Zurich

October

October

International Standby Power Conference (with APEC and APP)

Key 4E achievements in 2010

Publication of Benchmarking report for Televisions

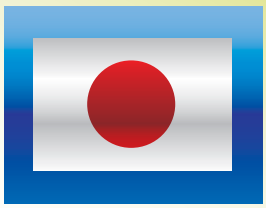
October

November

4E Strategic Planning workshop, Ottawa

December

Japan joins 4E



December

Sweden joins 4E[1]

[1]Sweden's official signature was received in January 2011

The Co-operative Programme on Efficient Electrical End-Use Equipment (4E)

4E is an International Energy Agency (IEA) Implementing Agreement established in 2008 to support governments to formulate effective policies which increase production and trade in efficient electrical end-use equipment.

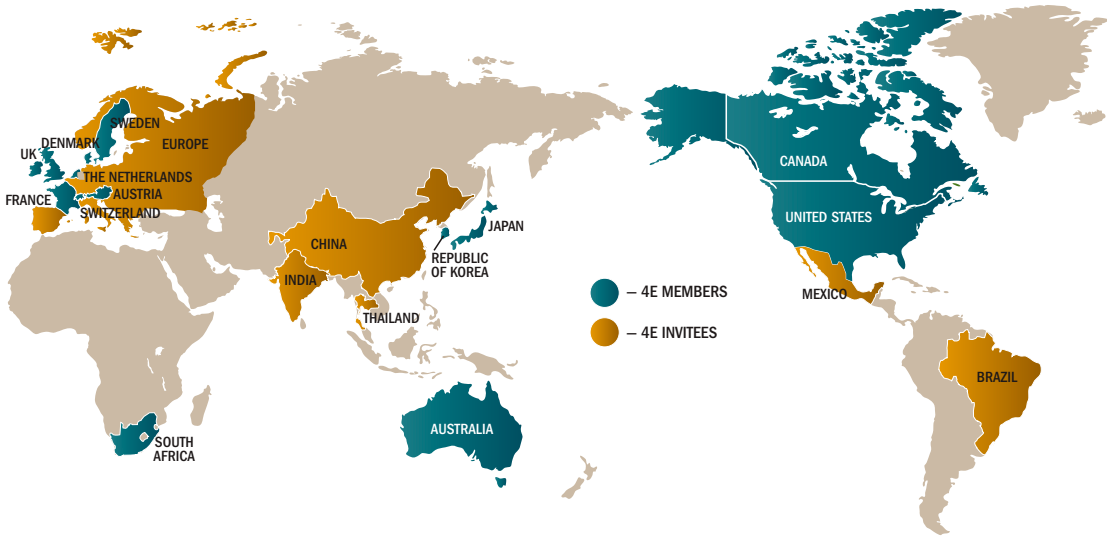
Globally, electrical equipment is one of the largest and most rapidly expanding areas of energy consumption which poses considerable challenges in terms of economic development, environmental protection and energy security. As the international trade in appliances grows, many of the reputable multilateral organisations (for example the G8, APEC, IEA and IPEEC[2]) have highlighted the role of international cooperation and the exchange of information on energy efficiency as crucial in providing cost-effective solutions to climate change.

Thirteen countries have joined together to form 4E as a forum to cooperate on a mixture of technical and policy issues focussed on increasing the efficiency of electrical equipment. But 4E is more than a forum for sharing information – it initiates projects designed to meet the policy needs of participants.

Participants find that pooling of resources is not only an efficient use of available funds, but results in outcomes which are far more comprehensive and authoritative.

The 4E Implementing Agreement focuses on the area of electrical equipment and joins energy efficiency policy makers from Asia with Europe and North America. The focus allows 4E to deal in sufficient detail to be effective in identifying and tackling barriers; while 4E's reach gives it an important role in collaborating and extending the activities of other organisations, which is particularly crucial when tackling issues relating to global trade and harmonisation. This is an efficient use of resources which avoids duplication of efforts and enables 4E to deliver policy advice to member governments on a range of topical energy efficiency opportunities.

4E is managed by an Executive Committee (ExCo) comprising one voting delegate from each participating country. Like all IEA Implementing Agreements, participation is open to all countries. The executive group meets twice yearly to manage the work programme of 4E, which is laid out within a Programme of Work approved on an annual basis, and to promote the activities of 4E. Secretariat functions for the ExCo are provided by the Operating Agent, funded by annual membership fees.



[2]International Partnership for Energy Efficiency Community

Executive Committee

The fifth and sixth meetings of the Executive Committee (ExCo) were held during 2010. These were convened in Vienna (4 March) and Ottawa (4-5 November). Attendance is indicated in Table 1. Japan and Sweden participated as observers throughout 2010 as they completed their formal membership process.

Table 1: Attendance at 2010 Executive Committee Meetings

CONTRACTING PARTY	5TH EXCO	6TH EXCO
Australia	✔	✔
Austria	✔	✔
Canada	✔	✔
Denmark	✔	✔
France	✔	A
Korea	✔	✔
Netherlands	✔	✔
Switzerland	✔	✔
South Africa	✔	A
UK	✔	✔
USA	✔	✔
Observers	Japan, Sweden	Japan, Sweden

Legend: A = apologies

In November 2010, the following decisions were unanimously approved by the 4E Executive Committee:

- The end-of-term date was changed from 12 March 2013 to 28 February 2014 as requested by the IEA Committee on Research and Technology (CERT). This decision prolongs the period of the current term by 11 months and applies to the end of terms of all current Annexes.
- Mr Hans-Paul Siderius (Netherlands) and Shane Holt (Australia) were re-appointed as Chair and Vice-Chair respectively for a further period of two years, to November 2012.
- Mr Davide Minotti, (United Kingdom) was elected Vice-Chair for a period of two years to November 2012.

Future ExCo and related meetings will be held as follows:

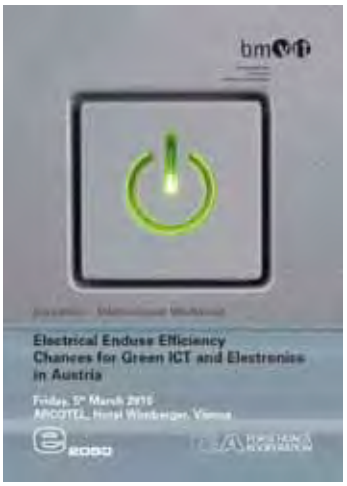
- 16-20 May 2011 — 7th ExCo Meeting — Zurich, Switzerland
- 10-14 October 2011 — 8th ExCo Meeting — Sydney, Australia

During 2010, the Executive Committee organised or participated in several one-off events of considerable strategic importance. These have extended 4E's collaborative efforts on topics of particular interest to member governments and helped to highlight areas of future 4E projects. They include:

- *Electrical End-use Efficiency Chances for Green ICT and Electronics in Austria Workshop*, 5 March 2010.
- *The Clean Energy Ministerial* and launch of the Super-efficient Equipment and Deployment (SEAD) initiative, 20 July 2010.
- Monitoring Verification and Enforcement Conference: *Saving More Energy Through Compliance*, September 2010.
- *4E Strategic Planning Workshop*, November 2010.

These initiatives are described in more detail below.

ELECTRICAL END-USE EFFICIENCY CHANCES FOR GREEN ICT AND ELECTRONICS IN AUSTRIA



'Green ICT' is currently seen as one of the major strategic topics in the international discussion on energy efficiency. This workshop was organised by the Austrian Government to provide a framework to discuss related R&D topics and priorities amongst 4E experts and Austrian industries and SMEs.

Hosted by the Austrian Federal Ministry for Transport, Innovation and Technology (BMVIT) to coincide with the ExCo meeting in Vienna, this workshop provided an opportunity for an invited audience from government and industry to exchange information on current and planned policy initiatives, and new developments in Eco-Design and Green IT.

It is expected that the workshop discussions and outcomes will assist for the further development of the Austrian R&D programmes and strategies.

THE CLEAN ENERGY MINISTERIAL AND LAUNCH OF THE SUPER-EFFICIENT EQUIPMENT AND DEPLOYMENT (SEAD) INITIATIVE.

In July, 4E took part in the Clean Energy Ministerial in Washington D.C. to help launch the Super-Efficient Equipment and Appliance Deployment Initiative (SEAD), a new international market transformation program, to outline areas of future co-operation and announce 4E's new Solid **State Lighting (SSL) Annex.**

Efficient SSL replacing less efficient lighting has the potential to cut global lighting electricity consumption by 30% - approximately equivalent to the total electricity consumed by Canada and the United Kingdom combined.

The Annex will work with SEAD to establish quality assurance criteria for this rapidly emerging technology.

4E's Shane Holt at the launch of the Super-Efficient Equipment Initiative (SEAD) where the new 4E Solid State Lighting Annex was announced.

Shown from left to right are:
Secretary Steven Chu, Department of Energy, United States
Deputy Chairman, Montek Singh Ahluwalia, Planning Commission, India
Gene Rodrigues, Chair, Consortium for Energy Efficiency
Andrew Velthaus, Senior Policy Advisor, The Global Environment Facility
Shane Holt, Director, Appliance Energy Efficiency Program, Australia & representing IEA 4E
Commissioner Gunther Oettinger, European Commission

In launching the SSL Annex, 4E Chairman, Hans-Paul Siderius announced: "The market for LEDs and OLEDs is growing rapidly and offers enormous potential to improve energy efficiency. The experience with compact fluorescent lamps has shown the need to guard against unwarranted performance claims so that the general public is not disappointed by Solid State Lighting. These concerns are shared by many Governments and I am extremely excited that 4E is tackling these issues alongside SEAD, which is encouraging even more Governments to become involved."

4E will also collaborate with SEAD through its ***Mapping & Benchmarking Annex***, sharing information and analysis on national and global trends in appliance energy consumption. Collaboration between 4E and SEAD on these technical assessments will allow Governments to accelerate implementation, avoid duplication and produce a more comprehensive geographic analysis. It is a demonstration of the practical advantages of international collaboration.

MONITORING VERIFICATION AND ENFORCEMENT CONFERENCE: 'SAVING MORE ENERGY THROUGH COMPLIANCE'

This 4E Conference, held in London from the 14-16 September 2010, attracted 120 government officials, representatives of enforcement authorities, industry representatives and compliance experts from 25 countries.

Under discussion was the potential to optimise and safeguard the energy and greenhouse gas savings from the standards and labelling programmes (S&L) that are the cornerstone of most national energy efficiency policies. The Conference focussed on ways to improve compliance with the over 1,300 mandatory and voluntary energy efficiency standards currently in place, which are estimated to save more than 500 TWh each year.

Lord Henley, Parliamentary Under-Secretary, Defra, UK Government

The Conference was organised by a special committee of the 4E ExCo, comprising Australia, Canada, Denmark, France and the UK and was funded by these countries and a matched contribution by CLASP (Collaborative Labeling and Appliance Standards Program). The Conference was hosted in London by the UK Government's Defra (Department for Environment, Food and Rural Affairs).

The Conference clearly revealed the potential for international collaboration to improve monitoring, verification and enforcement (MV&E) practices, with Conference participants agreeing that:

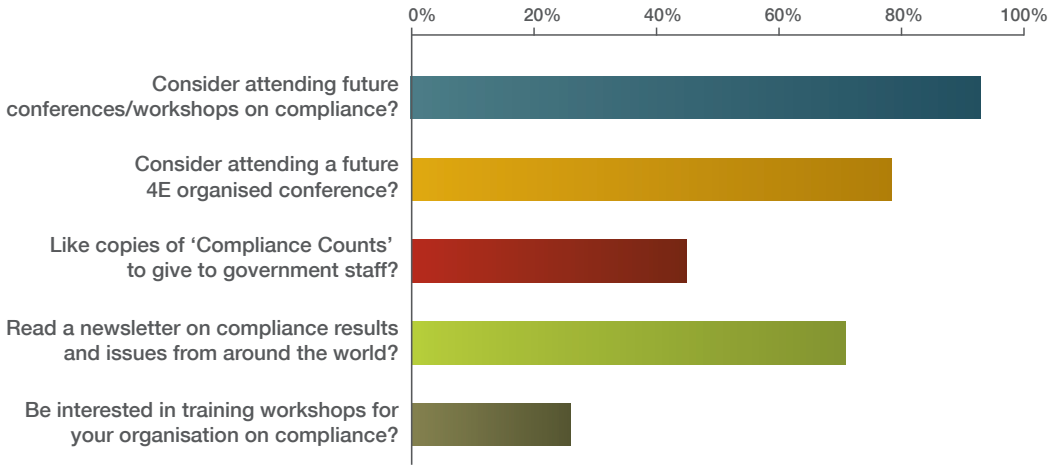
- Governments and energy efficiency program administrators should pay greater attention to MV&E activities, including further investment in compliance procedures and activities.
- The transference of information and skills in MV&E between countries and S&L programs provides an effective means to promote good practice rapidly. There is also considerable potential to improve enforcement capacity through the sharing of data between programs. Avenues to promote and facilitate international exchange and collaboration on MV&E should be pursued with individual governments and international organisations.

- That the publication "Compliance Counts: A Practitioner's Guidebook on Best Practice Monitoring, Verification, and Enforcement for Appliance Standards & Labeling" launched at the Conference was a valuable contribution. Published by CLASP, this manual describes the data, facilities, and institutional and human resources needed to support MV&E activities, and provides guidance on the issues to consider in the design and implementation of effective compliance regimes.

Looking forward, Conference participants proposed the following priority projects would improve MV&E practices through international collaboration:

- The establishment of regional networks to develop initiatives for sharing capacity, information and expertise on MV&E, as an initial step towards further global initiatives.
- Further opportunities to bring together interested parties to share experiences and strengthen ongoing communications, including international Conferences.
- The publication of an MV&E newsletter to provide up-to-date information of compliance related activities, reports and notices from around the world to a relevant stakeholder group.
- The provision of targeted training in MV&E processes for interest countries and programs.
- The wide dissemination of the CLASP Guidebook "Compliance Counts" to appropriate organisations.

Figure 1: Conference participant's support of further MV&E activities



In response to the discussions at the Conference, the ExCo is currently reviewing it's future role in collaboration on MV&E and how it can best continue to provide leadership on this important issue.

All Conference presentations and links to publications are available at:

www.iea-4e.org/events-and-meetings/compliance-conference

4E STRATEGIC PLANNING WORKSHOP

Since it was established in March 2008, 4E has been occupied in fulfilling the commitments and expectations of the initial Programme of Work. After nearly three years of operation and many changes in the energy efficiency environment, delegates felt it was timely to evaluate 4E's progress and consider future priorities.

A survey of national 4E delegates provided initial feedback and these responses were elaborated in a Strategic Planning Workshop held in Ottawa on 3 November 2010.

Delegates identified the establishment of 4E as a significant achievement in its own right; while the work of the Mapping & Benchmarking Annex was rated as the most important 4E activity by the largest number of delegates. Other achievements highlighted included:

- *Getting commitment from countries.*
- *Maintaining focus.*
- *Creating a global network of experts.*
- *Helpful to have formal rules of cooperation and a clear framework rather than ad hoc bi/multi lateral cooperation.*
- *Discussion and collaboration of people who can affect the programs and policies enable real practical and effective change.*

Areas identified for improvement included the speedier initiation of Annexes and better highlighting of outcomes. Allowing greater flexibility in who can join Annexes, including industry, was also cited by delegates.

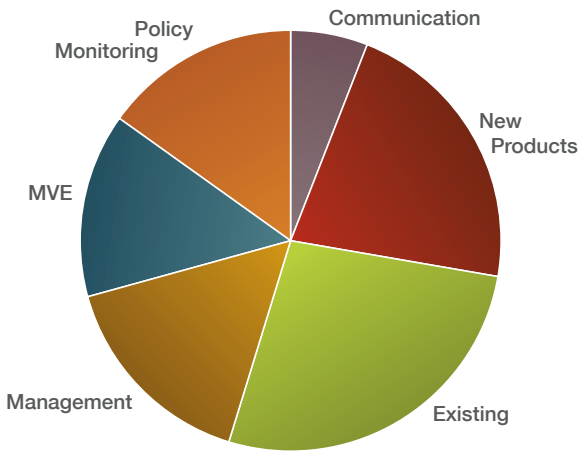
Establishing and maintaining effective links with other external organisations was also a high priority, and in this context, International Partnership on Energy Efficiency Collaboration (IPEEC) and Super-Efficient Equipment and Appliance Deployment Initiative (SEAD) were singled out.

With respect to priorities for future 4E activities (see Figure 2), delegates endorsed the following hierarchy:

- Deliver on commitments made.
- Communication and outreach:
  - Dissemination of results,
  - Engaging other countries,
  - Linkages to other organisations,
  - Communication between annexes.
- New projects and annexes on areas/ products of growing significance (energy, coordination).
- Management and strategic planning.

The Workshop discussed a wide range of potential new projects, some of which will be further developed by lead countries and presented to forthcoming ExCo meetings.

Figure 2: Priorities for future activities (weighted by level of priority)



4E Annexes

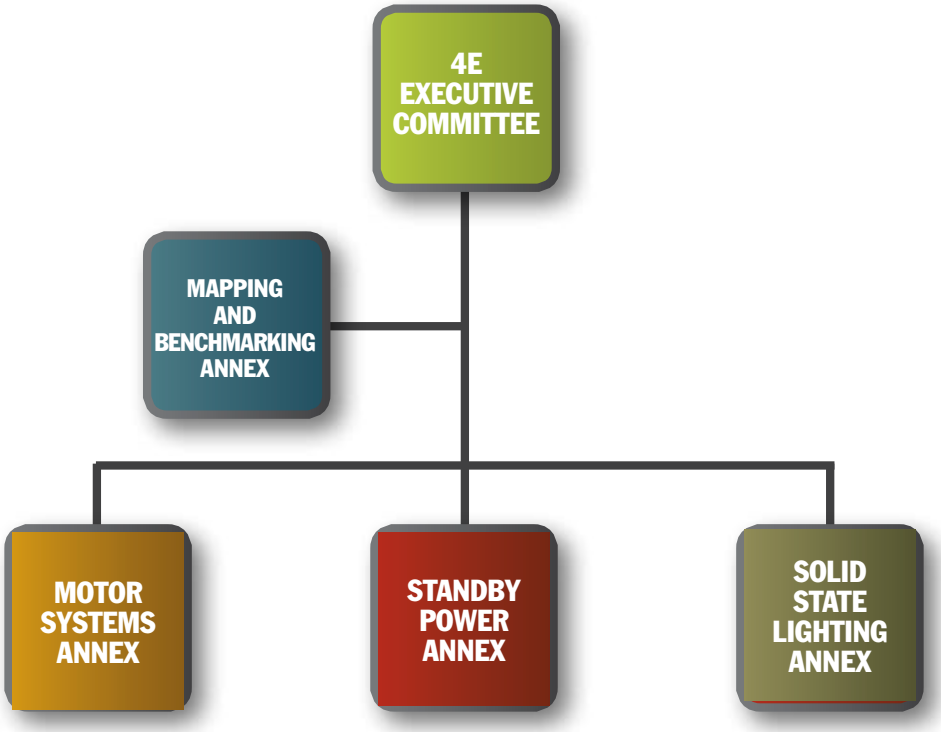
The main collaborative research and development activities under 4E are undertaken within a series of Annexes, each of which has a particular project focus and agreed work plan. These work plans, and their respective budgets, are typically set for a three year period and are negotiated amongst the participating countries.

The new Solid State Lighting (SSL) Annex, co-led by France, Japan and the United States, was launched in July 2010, joining the three existing Annexes:

- Electric Motor Systems Annex (EMSA), launched in November 2008 and led by Switzerland.
- Mapping and Benchmarking Annex, launched in June 2009 and led by the United Kingdom.
- Standby Power Annex, launched in November 2009 and led by Australia.

Reports on each of these four Annexes are included below.

Due to the pivotal role that the Mapping and Benchmarking Annex plays in identifying policy gaps and informing future priorities for 4E, all participants are obliged to belong to, and fund, activities within this Annex. Otherwise, membership of all other Annexes is voluntary, depending on the priorities of individual countries.



4E Mapping and Benchmarking Annex

The overall goal of the Mapping and Benchmarking Annex is to provide policy makers with a single source knowledge-base on product performance, and associated policy tools employed by economies across the world, thus addressing the need for easy-to-understand, credible and reliable information to inform policy-making at the national and regional levels.

The Annex seeks to identify: the differences in the performance of products sold in the various regions of the world; the primary causes for these differences; the potential for national, regional and global improvement in product performance; and the potential mechanisms that policy makers may engage to realise this potential.

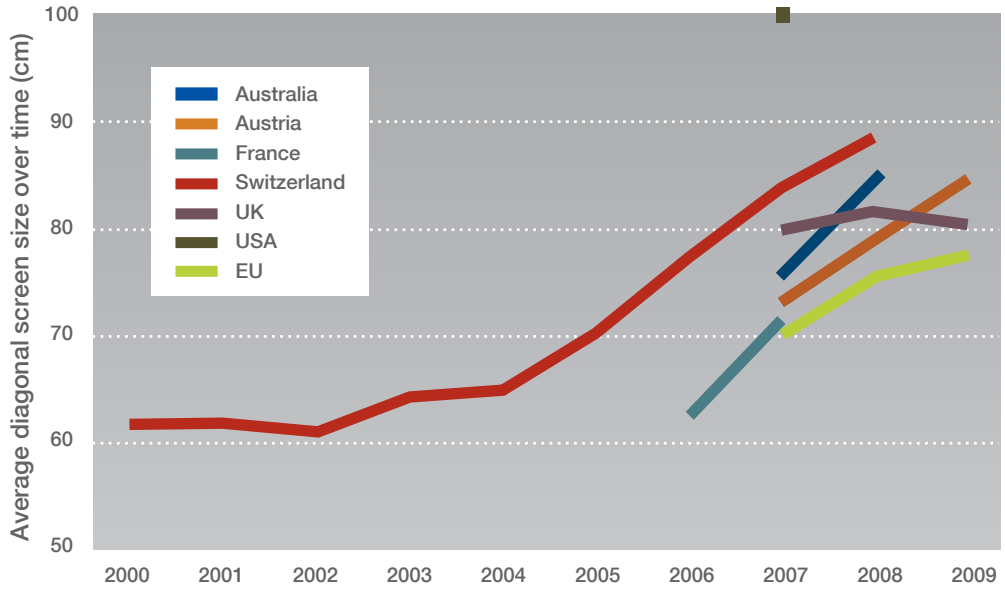
The Mapping and Benchmarking Annex produces two primary outputs for each product:

A. **Mapping sheets** which, for each country where data is available, provide policy makers with a detailed breakdown of the product's energy efficiency and consumption, and the associated regulatory regimes, to allow identification of the impacts of policy on product performance over extended periods. Figure 3 below shows an example for the changing efficiency of UK washing machines between 1999 and 2007. It can clearly be seen how EU policies on labelling, and the industry agreement to improve the efficiency of units, has resulted in improvements of approximately 30% in both the product and sales weighted efficiency of washing machines, with simultaneous improvements in wash quality and no adverse effect on spinning efficiency.

Figure 3: Mapping of UK washing machines, 1999-2007

B. **Benchmarking reports** which draw together the information from the individual mapping sheets (by 'normalising' individual country/regional data to account for variations in local regulations and test methodologies) to provide policy makers with a view of product consumptions and efficiencies in various countries or regions in a form comparable worldwide. The resulting comparisons are then further analysed to try to provide policy makers with: guidance on trends in the market and which policies have been effective in the past; and to signpost areas where policy makers should be focused in the short to medium term. Figure 4 illustrates the extraordinary growth in TV screen size over the last five years, an increase of 40% in diagonal screen size equating to a doubling in screen area, which is an indicator that policy makers may want to take actions related to total unit consumption rather than based simply on measures of efficiency that is proportional to screen size.

Figure 4: Benchmarking of television screen sizes, 7 countries



The product definitions which set the parameters defining the products for use in data collection and analysis are also useful secondary outputs, distilling the often complex data on the sub-groups and functionalities within a product category into a key set of metrics that describe the performance of that product.

ANNEX WORK PLAN

The Annex work plan is based on the development of product definitions, mapping sheets and benchmarking reports for those products agreed by the participants. These focus on electrical appliances which are responsible for significant energy consumption across most regions.

The agreed schedule of products to be targeted in 2009/10 and 2010/11 is shown below:

2009/10	2010/11
Air Conditioners	Clothes Dryers
Domestic Cold Appliances	Computer Monitors
Televisions	Complex Set Top Boxes
Washing Machines	Desktop PCs
Domestic Lighting	Dishwashers
	Integral Retail Display Cabinets
	Notebook Computers
	Refrigerated Vending Machines
	Computer Display Screens

MAJOR ACHIEVEMENTS DURING 2010

During 2010, significant progress was made on these tasks as follows:

- Reports on the national performance of several of the significant end-use categories of domestic appliances have now been produced for most of the major economies. This has involved the defining of common appliance categories and engagement with a large number of national experts to source the most robust sets of data available.
- Through agreed processes for correcting the differences between national datasets, international comparisons of cold appliances and televisions have been undertaken to highlight the trends in performance and current values.
- Inclusion of analysis of the technical and policy reasons for performance trends in all reports.

PUBLICATIONS IN 2010

NAME	DATE IN 2010	ACCESS
Cold Appliances: Mappings for 10 countries plus Benchmarking	January - March	Public
Televisions: Mappings for 8 countries plus Benchmarking	August - December	Public
Washing Machines: Mappings for 10 countries	November 2010	Public
Air Conditioners: Mappings for 6 Countries	November 2010	Public
Newsletter	October 2010	Public

OUTREACH IN 2010

EVENT	DATE IN 2010	LOCATION	INTENDED AUDIENCE
Eco-design and Energy Labelling UK Government Stakeholder meeting	18 February	London, UK	All main UK stakeholders in Energy Efficiency industry
Eco-design and Energy Labelling UK Government Stakeholder meeting	10 June	London, UK	All main UK stakeholders in Energy Efficiency industry
UK Energy Efficiency Partnership for Homes	20 July	London, UK	All main UK stakeholders in Energy Efficiency industry
Ecodesign Product Innovation seminar	30 July	Taipei, Taiwan	Engineers, managers, designers, researchers and marketing experts from Taiwanese industry
APEC Expert Group on Energy Efficiency and Conservation (EGEE&C)	18 September	Sendai, Japan	APEC Economies
Austria in the IEA Annexes - Progress Meeting	22 September	Vienna, Austria	Government, industry and university staff involved in IEA Implementing Agreements
Government Partnership for Domestic Energy Efficiency, Stakeholder Forum	19 October	London, UK	High level industry and stakeholders representatives interested in domestic Energy Efficiency
Eco-design and Energy Labelling UK Government Stakeholder meeting	8 November	London, UK	All main UK stakeholders in Energy Efficiency industry
ExCo IEA Energy Conservation in Buildings and Community Systems (ECBCS)	12 November	Tokyo, Japan	ECBCS country representatives

EXPERTS MEETINGS PLANNED FOR 2011

▶ 8th Annex Management Meeting	Teleconference	17 February 2011
▶ 9th Annex Management Meeting	Zurich, Switzerland	18 May 2011
▶ 10th Annex Management Meeting	Teleconference	August 2011
▶ 11th Annex Management Meeting	Australia	October 2011

PARTICIPANTS

Australia, Austria, Canada, Denmark, France, Korea, Netherlands, South Africa, Switzerland, United Kingdom, United States. Japan and Sweden also participated in 2010 while considering joining 4E.

LEAD COUNTRY	UNITED KINGDOM
Contact	Mr. Davide Minotti Sustainable Products and Materials Division, Department for Environment, Food and Rural Affairs (DEFRA) Ergon House, c/o 17 Smith Square, London, SW1P 3JR, UK Email: davide.minotti@defra.gsi.gov.uk Phone: +44 2072385448
Operating Agent	Mr. Stuart Jeffcott Jeffcott Associates Ltd 1 Roebuts Close, Newbury, Berkshire, RG14 7AP, UK. Email: stuart@jeffcott.co.uk Phone: UK: +44 7773778019 China: +86 13801135414 Australia: +61 406375979

4E Electric Motor Systems Annex (EMSA)

The Electric Motor Systems Annex (EMSA) focuses on improving the efficiency not only of motors themselves but also the core motor system such as the pumps, fans, compressors and auxiliary components – like variable speed drives, gears, transmission belts and brakes – to which they may be attached. Its goal is to increase the energy efficiency of motor systems by 20% to 30% within 20 years. As electric motor systems are responsible for over 40% of global electricity use, this represents a significant potential saving.

ANNEX WORK PLAN

Working through its individual tasks, EMSA disseminates best practice information and aims to support standards and policy development processes to improve the energy performance of new and existing motor systems in both industrialized and developing countries.

	TASK	TASK LEADER
A	Implementation support & outreach	Conrad U. Brunner (Switzerland)
B	Technical guide for motor systems	Sandie B. Nielsen (Denmark)
C	Testing centres	Sarah Hatch (Australia)
D	Instruments for coherent motor policy (start 2010)	Konstantin Kulterer (Austria)
E	Training & capacity building	Sandie B. Nielsen (Denmark)
F	Energy management in industry	Rob de Klerck (The Netherlands)
G	New motor technologies	currently suspended
H	Total motor systems integration (start later)	To be appointed

MAJOR ACHIEVEMENTS DURING 2010

During 2010 the work of EMSA has contributed to:

- The expansion of Global Motor Systems Network by 25% in 2010 to over 2,000 people in 65 countries through systematic outreach: web, newsletter, workshops and international conferences.
- An increasing number of countries with minimum energy performance standards for motors accounting for 70% of global electricity use (e.g. Australia, Brazil, China, Canada, Mexico, New Zealand, European Union, Switzerland, USA amongst others).
- The introduction of minimum energy performance standards for pumps and fans (e.g. the 27 countries of the European Union and China).
- Internationally harmonized testing standards and efficiency classes for electric motors (IEC). Relevant publications in 2010 include:
  - IEC 60034-31 Selection of energy-efficient motors including variable speed applications – Application guide.

- Round-robin Report parts 1, 2 & 3: edited end of 2010 covering 17 laboratories in 11 countries, and 75 motors with 194 tests.
- Revision of IEC 60034-2-1: One preferred method for motors up to 1000 kW (Low uncertainty, segregated losses with stray load from residual loss, improvements for sequence of tests, seals, standard reporting format).
- Progress with expanded motor and variable frequency drive standards (IEC 60034-2-3: Specific test methods for determining losses and efficiency of converter-fed AC motors).

Progress with each of the tasks included:

Task A: As the overarching management element of EMSA, Task A coordinated the implementation of the Annex and managed the maintenance of the EMSA website, production of publications and newsletters and the organisation of EMSA conferences and meetings during the year.

Task B: In line with its objective to set up an online technical guide for motor systems, Task B developed a pre-release version of the motor systems calculation tool. This is a key component of the guide and allows users to calculate the efficiencies of different types of motors and motor systems. In addition, the table of contents for the guide was compiled.

Tack C: Furthering its goal to encourage improvements in motor testing, as well as compliance and check testing around the world, formal cooperation between Task C and APP (Asia-Pacific Partnership on Clean Development and Climate) on the APP, '*Harmonization of Test Procedures*', motors project was approved by the Executive Committee in March 2010. In addition, it also participated in the International Electrotechnical Commission (IEC) international testing round-robin against IEC 60034-2-1, '*Rotating electrical machines - Part 2-1: Standard methods for determining losses and efficiency from tests*'. Task C is currently working to produce an interpretive guide to IEC 60034-2-1 and to develop a test data set for laboratories to compare algorithms. The online discussion forum, **www.leonardo-energy.org/testing-centres-motor-efficiency**, continued to provide a focal point for the network of testing laboratories and had 15,000 visitors in one year with several articles published.

Task D: Working towards its goal to prepare a Best Practice Guide (summary handbook) for policy makers on motor policy around the world, Task D produced a first draft of the handbook and a template for policy measures was circulated.

Task E: Progressing its goal to produce a package of dissemination and training material in the form of an 'off-the-shelf' training course, Task E prepared a list of Frequently Asked Questions for European motor MEPS (Minimum Energy Performance Standards) and held two meetings with REPAMOTOR, the Danish association of motor repairers.

Task F: Concentrating on its focus on how to successfully implement an energy management system in industrial companies, Task F cooperated closely with Dutch associations (FME-CWM, FEDA, UNETO-VNI, KIVI NIRIA), electrical energy and gas suppliers and technical universities on the development of the draft international standard EN-ISO 50001 on energy management.

Task G: In line with its remit to support the development of energy performance test and classification standards for 'new motor technologies', Task G facilitated ongoing discussions on the new motor technology implications for standards, leading to the production of a list of issues for consideration in the standards development process. At the end of October 2010, the United Kingdom withdrew from EMSA (but not 4E), therefore the ongoing management of Task G will be undertaken by one of the other participating countries.

Task H: The launch of Task H was delayed due to lack of funding.

Sub-sites for Tasks B, E and G on the EMSA website at **www.motorsystems.org/emsa-tasks** also came online during 2010.

4E

PUBLICATIONS IN 2010

NAME	DATE IN 2010	ACCESS
Newsletter (English, Chinese & German)	February	Public
Newsletter (English, Chinese & German)	June	Public
Motor Summit presentation slides and abstracts	October	Public
EMSA Annual Report 2009/10	December	4E and EMSA internal

OUTREACH IN 2010

EVENT	DATE IN 2010	LOCATION	INTENDED AUDIENCE
Austrian Industry Forum	2 March	Vienna	Engineers and industry
ACEF Asian Clean Energy Forum	23 June	Manila	Engineers & Industry
Motor Summit	27/28 October	Zurich	Engineers and industry
Task C workshop: Testing Centres	26 October	Zurich	Engineers and industry
Task G workshop: New motor technology	28 October	Zurich	Engineers and industry & standards developers

EXPERTS MEETINGS HELD IN 2010

- 3rd EMSA meeting — Vienna, Austria — 1-2 March 2010
- 4th EMSA meeting — Zurich, Switzerland — 25 October 2010

OUTREACH PLANNED 2011

- EEMODS'11 — Washington, DC — 12-14 September 2011

EXPERTS MEETINGS PLANNED FOR 2011

- 5th EMSA meeting — Zurich, Switzerland — 16 - 17 May 2011
- 6th EMSA meeting — Washington, DC — 8- 9 September 2011

PARTICIPANTS

Australia, Austria, Denmark, Netherlands, Switzerland, United Kingdom[3]

[3]The United Kingdom withdrew from EMSA on 31 October 2010

LEAD COUNTRY	SWITZERLAND
Contact	Mr. Roland Brüniger Zwillikerstrasse 8, CH 8913 Ottenbach, Switzerland Email: roland.brueniger@r-brueniger-ag.ch Phone: +41 447600066
Operating Agent	Mr. Conrad U. Brunner A+B International Gessnerallee 38a, CH-8001 Zurich, Switzerland Email: cub@cub.ch Phone: +41 442263070

4E Standby Power Annex

The overall goal of the Standby Power Annex is to monitor and report on the amount of energy consumed by electrical appliances in low-power (standby) modes, how this is changing, and to support the development of policies which seek to minimise excessive energy consumption by products in these modes. At the core of the Annex is the issue of network standby, which is an area of growing importance and concern because of the rapidly increasing number of networked products and the magnitude of the energy used within these networks.

The Standby Power Annex aims to increase the knowledge base for decision-making, facilitate international comparisons and provide tools to assist policy implementation by focusing on:

1. Development of methodologies to assist in the collection and analysis of standby power data from existing and new products.
2. Compilation of measured data on standby power consumption for products from agreed sources across participating economies, and from selected benchmarking countries, to enable tracking of:
   a. The current and future consumption by products when in standby,
   b. The aggregate associated current projected consumption at the national/international level,
   c. The impact of policy actions on standby within the marketplace.
3. Development of practical policy approaches that may enable effective management of standby power in globally and locally traded products.

The Standby Power Annex works closely with the Mapping and Benchmarking Annex to ensure that actions and data collection are coordinated and that duplication of effort is avoided as far as possible. In addition, cooperative arrangements are in place with standby projects under the Asia Pacific Partnership on Clean Development and Climate (APP), the Asia-Pacific Economic Cooperation (APEC) and Europe.

ANNEX WORK PLAN

To deliver the objectives of this Annex, a three year Work Plan has been agreed, containing the following elements:

TASK	DELIVERABLES
A. DATA RELATED ACTIVITIES:	
Undertake data collection, data collation and analysis, information dissemination through publication of reports, organisation of workshops and seminars, provision of information to other organisations, groups and conferences	▶ Publication of an agreed methodology to undertake field measurements of standby power, and core products ▶ Training workshops for in-store surveys in participating countries (one per participant) ▶ Collate, analyse and publish national, regional and global data (Annual Report and web data)
B. EVALUATION OF POLICIES	
Undertake studies to assess standby power polices in force and proposed, document different approaches and assess their relevance in different market structures information dissemination through publication of reports, organisation of workshops and seminars, provision of information to other organisations, groups and conferences	▶ Collation of national standby power evaluation studies ▶ Methodology for the assessment of standby power consumption and policy impacts ▶ Technical assistance on the evaluation of policies ▶ Inter-country evaluations of standby policies (one per year)

TASK	DELIVERABLES
C. HORIZONTAL POLICY APPROACH	
Undertake technical work which will assist in the development of a horizontal policy approach to tackle standby power for the growing number of products on the market information dissemination through publication of reports, organisation of workshops and seminars, provision of information to other organisations, groups and conferences	▶ Review of current standby policy options adopted by countries (report) ▶ Assessment of options for a horizontal standby approach (report) ▶ Identification of key functions and power allowances ▶ Organise three regional workshops (EU, USA, ASIA) over 2 year period ▶ Produce final report summarising information and policy conclusions
D. NETWORK PRODUCTS:	
While networking is technically a sub-element within a generalised horizontal approach to standby, it is an area of growing importance and concern, due to the number of products within this element and the magnitude of the energy related issues within networks. This task will examine the technical issues involved in network products and the potential for policies to enable effective power management.	▶ Technical review of international and industry standards and protocols for networked products (report) ▶ Identification of network functional allowances ▶ Conference on network related energy issues ▶ Produce final report summarising information and policy conclusions

MAJOR ACHIEVEMENTS DURING 2010

During 2010, significant progress was made with the following items:

- Network Standby Report – The release of the report articulated why network standby is a new problem requiring new solutions and was able to outline projects and a path forward which will enable policy makers to tackle these issues.
- Data collection methodology for field measurements of standby power was finalised. Alongside the acceptance of the collection methodology, a data sharing agreement was established enabling the annex, access to measurement information for 6,000 products tested in Europe by the SELINA project.
- Development of projects – following on from the Network Standby Report the Annex worked in cooperation with APP to initiate seven projects that will provide some of the missing information required to solve the network standby problem. These projects will be completed in 2011.
- Outreach with other organisations – the Annex collaborated with several groups working in the standby field to gain access to a broader audience and promote global recognition of standby issues particularly those relating to Network Standby. Included working with APP, SELINA, EU Lot 26 Consultants and APEC.

PUBLICATIONS IN 2010

NAME	DATE IN 2010	ACCESS
Standby Power and Low Energy Networks - issues and directions	September	Public
Load Down Newsletters: ▫ Edition 4 ▫ Edition 5 ▫ Edition 6 ▫ Edition 7	February June August September	Public

OUTREACH IN 2010

EVENT	DATE IN 2010	LOCATION	INTENDED AUDIENCE
APP/4E/SELINA International Standby Power workshop	2 March	Vienna, Austria	4E members, APP, SELINA partners, Industry, suppliers and policy makers
Network Standby workshop	28-29 April	Paris, France	Network standby experts from 4E and APP
Alignment of Standby Power Approaches – Moving Towards 1 Watt and Beyond conference (joint 4E/APP/ APEC event)	19-21 October	Tokyo, Japan	Industry, technical experts, suppliers, government policy makers from Asia, Europe and North and South America

EXPERTS MEETINGS HELD IN 2010

- 2nd Standby Annex meeting — Vienna, Austria — 3 March 2010
- 3rd Standby Annex meeting — Ottawa, Canada — 2 November 2010

EXPERTS MEETINGS PLANNED FOR 2011

- 4th Standby Annex meeting — Zurich, Switzerland — 17 May 2011
- 5th Standby Annex meeting — Australia — October 2011

PARTICIPANTS

Australia, Canada, Korea, Netherlands, Switzerland, United Kingdom. Austria, Denmark and Sweden joined in 2011.

LEAD COUNTRY	AUSTRALIA
Contact	Mr Shane Holt Email: Shane.Holt@climatechange.gov.au Phone: +61 261593661
Operating Agent	Ms Melissa Damnics, Maia Consulting 24 Princess Street, Seddon, VIC 3011, Australia Email: Melissa@EnergyConsult.com.au Phone: +61 396897195

4E Solid State Lighting Annex

Solid State Lighting (SSL) has the potential to provide artificial lighting more efficiently than current technologies, at competitive lifetime costs. However the wide variation in performance of SSL sources in the market severely threatens consumer confidence in SSL lighting, thereby delaying market acceptance and slowing down penetration rates.

Launched in July 2010, the goal of the new SSL Annex is to develop simple tools to help Governments and consumers world-wide quickly and confidently identify which SSL lighting products have the necessary efficiencies and quality levels to effectively reduce the amount of energy that is currently consumed by artificial lighting. The SSL Annex works internationally to support the work that is being carried out on a national level to address the main challenges with SSL technologies, namely that: there is a lack of confidence with SSL; Governments don't have the tools they need to determine which SSL products are good investments; and everyone needs straightforward, reliable and internationally recognised procedures to test for basic SSL quality. The SSL Annex has already made a commitment to work with the Super Efficient Equipment & Appliance Deployment (SEAD) Initiative to establish quality assurance criteria for this rapidly emerging technology.

ANNEX WORK PLAN

The three main tasks of the SSL Annex are to:

1. **Develop SSL Quality Assurance** by working to clarify the SSL market worldwide, to reduce the risks in using SSL and to provide Governments and consumers with recommendations that they can trust when investing in SSL products.
2. **Harmonize SSL Performance Testing** by working with global testing laboratories to increase the quality and confidence of SSL laboratory test results; working to assess a range of existing SSL test procedures; and building a system of testing that is manageable, robust and acceptable to a broad range of stakeholders.
3. **Develop Standards and Accreditation Infrastructure** by working with existing accreditation bodies to develop a structure for world-wide interim reliability of SSL testing laboratories' performance data.

TASK	DELIVERABLES
1. DEVELOP SSL QUALITY ASSURANCE	
Subtask 1.1: Product Definition Categories A. Establishment of the Detailed work program B. Product definition categories, key performance characteristics, review of related test methods	▶ Product definition categories ▶ Set of key performance characteristics – luminous flux, luminous efficacy, chromaticity, colour rendering, life (lumen maintenance, etc.), safety characteristics, flicker, dimming, etc. ▶ Reference existing test methods ▶ List of required test methods
Subtask 1.2: Minimum Performance Values	▶ Suite of metrics and values to define minimum performance values of SSL, for energy efficiency, lighting quality, and safety

[4]A global initiative launched in July 2010 with support of the Major Economies Forum (MEF) to collaborate on test methods to measure appliance efficiency and coordinate incentives for manufacturers to provide more efficient equipment and appliances which could dramatically reduce energy consumption and carbon emissions while saving consumers money. SEAD will initially focus on televisions and lighting.

TASK	DELIVERABLES
Subtask 1.3: Product declaration marks and tested value reporting	▶ A proposed recommendation for a set of product declaration marks certifying that the product have been tested with the appropriate protocols; proposal to include making the tested values publicly available
Subtask 1.4: Life cycle cost analysis and Environmental impact study	▶ A report on the Life Cycle Analysis (LCA) and the environmental impact of SSL based on available material
Subtask 1.5: Replacement lamp equivalency claims	▶ An international specification for LED replacement lamp equivalency claims ▶ Develop equivalency specifications (luminous flux) of SSL when compared with common incandescent lamps
2. HARMONIZE SSL PERFORMANCE TESTING	
Subtask 2.1: Evaluation of current test methods and suggested improvements	▶ Proposed test methods for testing the performance characteristics of SSL products (identified in 1.1) based on improvements from existing standards e.g. IEC, CIE, ISO, ANSI, IESNA, JIS, CATS, BSI, SA, etc.
Subtask 2.2: Round Robin 1 among Nucleus Labs	▶ Results of a round-robin among the 4 nucleus laboratories (Asia 1, Asia 2, USA and EU), to be conducted to validate the proposed test method
Subtask 2.3: Round Robin 2 among participating labs	▶ Results of a round-robin campaign of testing SSL products by a panel of public, private and industry-owned laboratories
Subtask 2.4: Communication of Results to stakeholders	▶ Communication of results to 4E member, non 4E member governments and other stakeholders
3. DEVELOP STANDARDS AND ACCREDITATION INFRASTRUCTURE	
Subtask 3.1: List of National/regional/ international standards related to SSL. Identify missing international standards	▶ Create table of existing/needed standards. ▶ Link with existing standardization technical committees e.g. IEC, CIE, ISO ANSI, IESNA, JIS, CATS, BSI, SA, etc. ▶ Develop a Contact list of accreditation bodies for coordination. ▶ Possible requests for upgrade and new international standards
Subtask 3.2: Collaboration with accreditation bodies worldwide on the need and feasibility for international accreditation of SSL products	▶ Explore the coordinated international accreditation of testing laboratories for SSL measurement with a global architecture offering traceability of SSL worldwide, work to introduce short-term accreditation as a stop-gap measure
Subtask 3.3: Develop proposed recommendation (platform) for mutual recognition of accreditation programs for testing SSL products	▶ Proposed recommendation for mutual recognition of accreditation programs for SSL testing

MAJOR ACHIEVEMENTS DURING 2010

During the first half of 2010, meetings with government representatives and industry stakeholders were organized to identify the top priorities for international action on Solid State Lighting to be coordinated on behalf of governments. As a result of support from France, the USA and Japan, the 4E ExCo approved the work plan for the SSL Annex in July 2010 and the appointment of Professor Marc Fontoynont as the Annex Operating Agent.

The Annex held a kick-off meeting in September, on the site of the World Expo in Shanghai, attended by 15 experts from eight countries.

OUTREACH IN 2010

EVENT	DATE IN 2010	LOCATION	AUDIENCE
International Workshop on Solid State Lighting (SSL): Test Methods, Quality Standards, and Policies & Programmes to Promote High Quality SSL	26-27 January	Stockhom, Sweden	Government representatives, energy agencies, lighting industry
Light & Building	14-15 April	Frankfurt, Germany	Lighting professionals, Energy Agencies
Journées Nationales de la Lumière (JNL)	September	France	Lighting professionals
Nord Led	November	Copenhagen, Denmark	Scandinavian lighting professionals, government reps, lighting industry
China SSL 2010	December	Shenzhen China	SSL industry Chinese Officials US Government
Global Lighting Forum	December	Shenzhen China	To world lighting companies
ForumLed	December	Lyons, France	International meeting with US-Chinese-European Experts

EXPERTS MEETINGS HELD IN 2010

- Kick-off meeting — Shanghai Expo 2010, China — 22-23 September

OUTREACH IN 2011

▶ Strategies in Lighting	Hong Kong	May
▶ Energy Efficiency	Copenhagen, Denmark	May
▶ International Forum Led	Lyons, France	December
▶ DOE Events	USA	To be decided

EXPERTS MEETINGS PLANNED FOR 2011

▶ 2nd Expert meeting	Gaithersburg, Washington DC, USA	19-21 April 2011
▶ 3rd Expert meeting	Europe	DOE-EPA Reps

PARTICIPANTS

Australia, France, Netherlands, United Kingdom. Denmark, Japan and Sweden joined in 2011.

LEAD COUNTRY	FRANCE, IN ASSOCIATION WITH JAPAN AND UNITED STATES
Contact	Bruno Lafitte Email: bruno.lafitte@ademe.fr Phone: +33 493957256
Operating Agent	Prof. Marc Fontoynont ENTPE-DGCB Rue Maurice Audin, 69120 Vaulx-en-Velin, Lyon, France Email: Marc.FONTOYNONT@entpe.fr Phone: +33 472047027

4E Outreach and Communication

In addition to the targeted outreach activities identified earlier, the ExCo published the following materials during 2010:

- 2009 Annual Report.
- Generic 4E presentation outlining the aims and structure of 4E.
- Update to the "*Frequently Asked Questions*" information sheet.
- 4E page in IEA '*Energy Technology Initiatives: Implementation through Multilateral Co-operation*' publication

4E also participated in the following events during 2010:

- International Partnership on Energy Efficiency Collaboration (IPEEC) 2nd ExCo, 25-26 January 2010, Paris.
- International Technology Cooperation - Electricity Co-ordination Group, 27 April 2010, Paris.

WEBSITE

The 4E dedicated website is the primary means of communicating the activities of 4E to a wider audience and, through the restricted areas, to ExCo delegates.

The site is regularly updated and 'news' items are posted frequently. During 2010, the site was upgraded to improve general functionality and the security of the restricted areas. Sprang Media have been maintained as the host and to provide expert advice and assistance where required.

4E operates a group of linked sites, one for each Annex, in addition to the main site. These received 16,000 visits from 9,500 individual visitors during 2010 (see **Figure 5**). Overall, the 4E websites recorded a total of more than 46,000 page views by visitors from 116 separate countries (see **Figure 6**).

Figure 5: Total 4E site visits, 2010

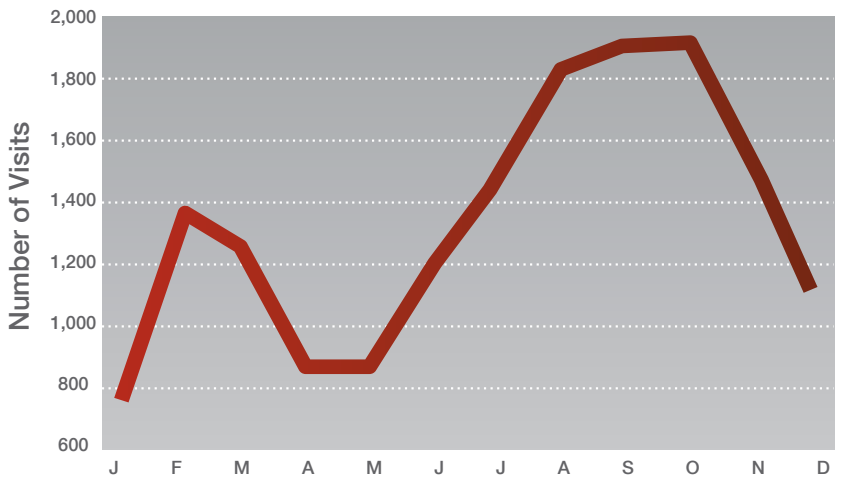
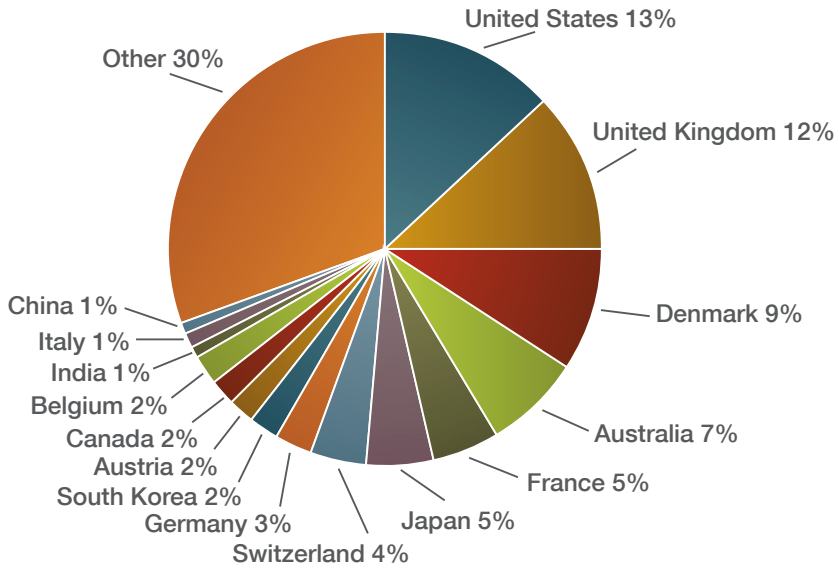


Figure 6: Countries of origin – 4E website visitors



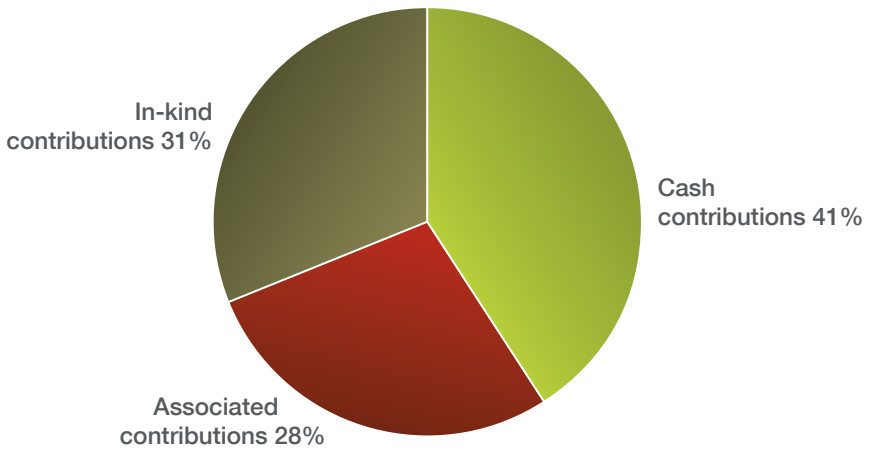
NEWSLETTERS

During 2010, 4E has produced nine newsletters aimed at promoting the work of the Implementing Agreement and its Annexes to a wide range of stakeholders. EMSA produced two newsletters (each in an English, Chinese and German version), the Mapping & Benchmarking Annex published one and the Standby Power Annex collaborated on four editions. The second edition of '*Bright Spark*' covering all of 4E activities was launched in August.

4E Group Finances

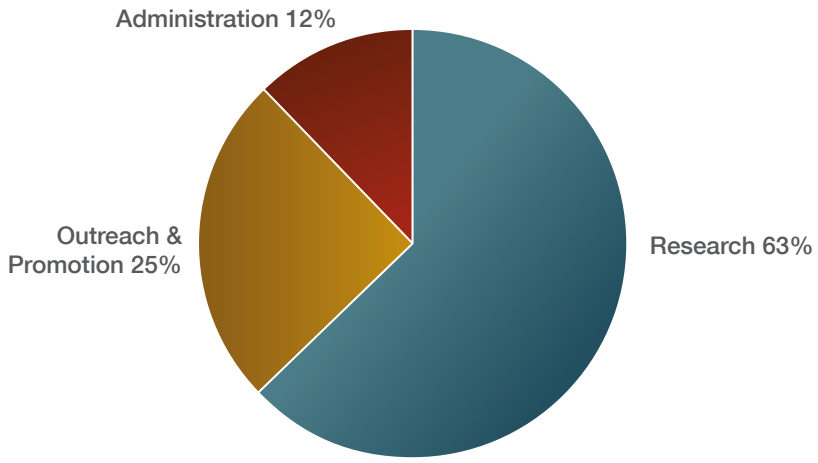
The total expenditure relating to 4E activities during 2010 was estimated to be just over €1 million. Cash contributions in the form of annual fees paid by participants comprised the largest share, as indicated in Figure 7. The value of the time spent by delegates and national experts was also a significant contribution, as were funds provided by countries and other organisations in support of 4E activities (associated contributions).

Figure 7: Source of funding for 4E activities in 2010



Over 60% of 4E funds were dedicated to research activities in 2010, while promotion and outreach activities accounted for 25%. Administration, including financial management coordination and member liaison, used approximately 12% of resources.

Figure 8: Distribution of 4E Expenditure in 2010



4E Executive Committee Delegates

CHAIRMAN	VICE-CHAIR
Mr. Hans-Paul Siderius hans-paul.siderius@agentschapnl.nl Phone: +31 886022609	Mr. Shane Holt Shane.Holt@climatechange.gov.au Phone: +61 261593661 *Additional Vice-chair from 4 November 2010:* Mr. Davide Minotti davide.minotti@defra.gsi.gov.uk Phone: +44 2072385448

DELEGATES

Australia

Mr. Shane Holt
Shane.Holt@climatechange.gov.au
Phone: +61 261593661

Alternate from 8 September 2010:

Ms. Melanie Slade
Melanie.Slade@climatechange.gov.au
Phone: +61 261593349

Austria

Mr. Michael Hübner
michael.huebner@bmvit.gv.at
Phone: +43 171162652922

Mr. Konstantin Kulterer
konstantin.kulterer@energyagency.at
Phone: +43 15861524114

Canada

Mr. John Cockburn
John.Cockburn@NRCan-RNCan.gc.ca
Phone: +1 6139964359

Ms Katherine Delves
kdelves@nrcan.gc.ca
Phone: +1 6139471207

Denmark

Mr. Ture Hammar
tha@ens.dk
Phone: +45 33926865

Mr. Peter Nielsen
pen@ens.dk
Phone: +45 33926735

France

To 30 April 2010:

Mr. Hervé Lefebvre
herve.lefebvre@ademe.fr

Replacement from 1 May 2010:

Mr Johan Ransquin
Johan.ransquin@ademe.fr
Phone: +33 493957950

Ms. Thérèse Kreitz
Therese.kreitz@ademe.fr

Republic of Korea

Mr. Yungrae Kim
yrkim@kemco.or.kr
Phone: +82 312604246

Mr. Je En Kim
jekim@mke.go.kr

DELEGATES

The Netherlands

Mr. Hans-Paul Siderius
hans-paul.siderius@agentschapnl.nl
Phone: +31 886022609

Mr. T.M.P. (Tjeerd) Schoustra
t.m.p.schoustra@minez.nl

Switzerland

Dr. Michael Moser
michael.moser@bfe.admin.ch
Phone: +41 313253623

Mr. Roland Brüniger
roland.brueniger@r-brueniger-ag.ch
Phone: +41 447600066

Mr. Felix Frey
Felix.frey@bfe.admin.ch
Phone: +41 313225644

South Africa

Dr Minnesh Bipath
minneshb@saneri.org.za
Phone: +27 102014751

Mr Barry Bredenkamp
barryb@cef.org.za
Phone: +27 102014857

United Kingdom

Ms. Sara Eppel
sara.eppel@defra.gsi.gov.uk

Mr. Davide Minotti
davide.minotti@defra.gsi.gov.uk
Phone: +44 2072385448

United States

To 26 October 2010:

Mr. Christopher Kent
kent.christopher@epa.gov

Ms. Katharine Kaplan
Kaplan.katharine@epa.gov

Mr. Andrew Fanara
Fanara.andrew@epa.gov

Replacement from 27 October 2010:

Mark Friedrichs
Mark.friedrichs@ee.doe.gov
Phone: +1 2025860124

Richard Karney
Richerd.karney@ee.doe.gov
Phone: +1 2025869449

OPERATING AGENT

Mr. Mark Ellis
P.O. Box 109
Wagstaffe, NSW 2257, Australia
mark@energyellis.com
Phone: +61 243602931

Membership of 4E Annexes

COUNTRY	M&B	MOTOR SYSTEMS	STANDBY POWER	SOLID STATE LIGHTING
Australia	✔	✔	✔	✔
Austria	✔	✔	○	
Canada	✔		✔	
Denmark	✔	✔	○	○
France	✔			✔
Japan	✔			○
Republic of Korea	✔		✔	
The Netherlands	✔	✔	✔	✔
South Africa	✔			
Sweden	○	○	○	○
Switzerland	✔	✔	✔	
United Kingdom	✔	✔	✔	✔
United States	✔			

✔ The United Kingdom withdrew from EMSA on 31 October 2010

○ Joined in 2011

Annex Delegates

MAPPING AND BENCHMARKING

COUNTRY	NAME	ORGANISATION	EMAIL	PHONE
UK	Davide Minotti	Department of Environment, Food and Rural Affairs	Davide.Minotti@ defra.gsi.gov.uk	+44 2072385448
Australia	Shane Holt	Department of Climate Change and Energy Efficiency	Shane.Holt@ climatechange.gov.au	+61 261593661
Austria	Michael Huebner	Federal Ministry for Transport, Innovation and Technology	Michael.huebner@ bmvit.gv.at	+43 171162652922
Canada	John Cockburn	Natural Resources Canada	jcockbur@nrcan.gc.ca	+1 6139964359
Denmark	Ture Hammer	Danish Energy Agency	tha@ens.dk	+45 33926865
France	Johan Ransquin	ADEME (Environment and Energy Management Agency)	johan.ransquin@ ademe.fr	+33 493957950
Japan	Masataka Kobayashi Kiyoshi Saito	Ministry of Economy, Trade and Industry (METI) The Japan Electrical Manufacturers' Association (JEMA)	kobayashi-masataka@ meti.go.jp kiyoshi_saito@ jema-net.or.jp	
Korea	Kim Yungrae	Korea Energy Management Corportation (KEMCO)	yrkim@kemco.or.kr	+82 312604246
Netherlands	Hans-Paul Siderius	NL Agency	hans-paul.siderius@ agentschapnl.nl	+31 886022609
Republic of South Africa	Barry Briedenkamp	National Energy Efficiency Agency	barryb@ cefgroup.co.za	+27 102014857
Switzerland	Roland Brueniger	Federal Office of Energy	roland.brueniger@ r-brueniger-ag.ch	+41 447600066
USA	Mark Friedrichs	Department of Energy	Mark.Friedrichs@ ee.doe.gov	+1 2025860124

OPERATING AGENT

Mr. Stuart Jeffcott
Jeffcott Associates Ltd
1 Roebuts Close, Newbury, Berkshire, RG14 7AP, UK.
Email: stuart@jeffcott.co.uk
Phone: UK: +44 7773778019
China: +86 13801135414
Australia: +61 406375979

MOTOR SYSTEMS (EMSA)

COUNTRY	NAME	ORGANISATION	EMAIL	PHONE
Australia	Sarah Hatch	Department of Climate Change and Energy Efficiency	Sarah.Hatch@ climatechange.gov.au	+61 261593345
Austria	Konstantin Kulterer	Austrian Energy Agency	Konstantin.Kulterer@ energyagency.at	+43 15861524114
Denmark	Sandie B. Nielsen	Danish Technological Institute	sbn@teknologisk.dk	+45 72201257
Netherlands	Rob de Klerck	Agentschap NL	rob.deklerck@ agentschapnl.nl	+31 0886027180
Switzerland	Conrad U. Brunner	A+B International	cub@ abinternational.ch	+41 442263070

OPERATING AGENT

Mr. Conrad U. Brunner
A+B International
Gessnerallee 38a, CH-8001 Zurich, Switzerland
Email: cub@cub.ch
Phone: +41 442263070

STANDBY POWER

COUNTRY	NAME	ORGANISATION	EMAIL	PHONE
Australia	Shane Holt	DCCEE	Shane.Holt@ climatechange.gov.au	+61 261593661
Austria *	Wolfgang Wimmer	ECODESIGN company	wimmer@ ecodesign-company.com	+43 1403561130
Canada	John Cockburn	NRCan	John.Cockburn@ NRCan-RNCan.gc.ca	+1 6139964359
Denmark**	Annette Gydesen	Viegand & Maagoe	ag@vmas.dk	+45 33349000
Korea	Yungrae Kim	KEMCO	yrkim@kemco.or.kr	+82 312604246
The Netherlands	Hans-Paul Siderius	NL Agency	hans-paul.siderius@ agentschapnl.nl	+31 886022609
Sweden	Peter Bennich	Swedish Energy Agency	peter.bennich@ energimyndigheten.se	+46 736256782
Switzerland	Roland Brüniger	SFOE	roland.brueniger@ r-brueniger-ag.ch	+41 447600066
United Kingdom	Davide Minotti	DEFRA	davide.minotti@ defra.gsi.gov.uk	+44 2072385448

OPERATING AGENT

Ms Melissa Damnics,
Maia Consulting
24 Princess Street, Seddon, VIC 3011, Australia
Email: Melissa@EnergyConsult.com.au
Phone: +61 396897195

* Joined 23.2.2011
** Joined 8.2.2011

SOLID STATE LIGHTING (SSL)

COUNTRY	NAME	ORGANISATION	EMAIL	PHONE
Australia	Melanie Slade	Department Climate Change &Energy, Australian Government	Melanie.slade@ climatechange.gov.au	+61 261593349
Denmark*	Casper Kofod Carsten Dam-Hansen	Energy Piano DTU Fotonics	ck@energypiano.dk cadh@fotonik.dtu.dk	+45 40459876 +45 46774513
France	Therese Kreitz	ADEME	therese.kreitz@ ademe.fr	+33 493957984
Netherlands	Wouter Koek	VSL	wkoek@vsl.nl	+31 152691500
Sweden	Peter Bennich	Swedish Energy Agency	peter.bennich@ energimyndigheten.se	+46 736256782
UK	Davide Minotti	DEFRA, UK Government	davide.minotti@defra. gsi.gov.uk	+44 2072385448

UK

Prof. Marc Fontoynont
ENTPE-DGCB
Rue Maurice Audin, 69120 Vaulx-en-Velin, Lyon, France
Email: Marc.FONTOYNONT@entpe.fr
Phone: +33 472047027

* Joined 8.2.2011

4E

About the International Energy Agency (IEA)

The IEA was established as an autonomous agency in November 1974. Its mandate is two-fold: to promote energy security amongst its member countries through collective response to physical disruptions in oil supply; and to advise member countries on sound energy policy.

The IEA carries out a comprehensive programme of energy co-operation among 28 advanced economies, each of which is obliged to hold oil stocks equivalent to 90 days of its net imports.

The Agency aims to:

- Secure member countries' access to reliable and ample supplies of all forms of energy; in particular, through maintaining effective emergency response capabilities in case of oil supply disruptions.
- Promote sustainable energy policies that spur economic growth and environmental protection in a global context – particularly in terms of reducing greenhouse-gas emissions that contribute to climate change.
- Improve transparency of international markets through collection and analysis of energy data.
- Support global collaboration on energy technology to secure future energy supplies and mitigate their environmental impact, including through improved energy efficiency and development and deployment of low-carbon technologies.
- Find solutions to global energy challenges through engagement and dialogue with non-member countries, industry, international organisations and other stakeholders.

With a staff of around 190, mainly energy experts and statisticians from its 28 member countries, the IEA conducts a broad programme of energy research, data compilation, publications and public dissemination of the latest energy policy analysis and recommendations on good practices.

4E

IEA Implementing Agreements (IAs)

To support the IEA's core issues, the IEA created a legal contract –the Implementing Agreement – and a system of standard rules and regulations that would allow interested member and non-member Governments to pool resources and research the development and deployment of particular technologies.

This IEA technology collaboration programme is open to IEA member and non-member countries. Typically, participants are:

- Governmental or energy technology entities representing Governments
- Research institutes and universities
- Energy technology companies

For more than 30 years, technology collaboration has been a fundamental building block among IEA member and non-member countries in facilitating progress of new or improved energy technologies. In 2007, there were 41 collaborative projects with several thousand participants from 72 countries, organisations or companies working in the areas of Cross-Cutting Activities, End-Use (buildings, electricity, industry, transport), Fossil Fuels, Fusion Power, Renewable Energies and Hydrogen.

Each Implementing Agreement has a unique scope and range of activities, although the work typically includes technology and policy assessments, research projects, information exchange and the dissemination of results and experiences.

International energy technology collaboration provides many advantages to participants, including:

- Reduced cost and avoidance of duplication of work
- reater project scale
- Information sharing and networking
- Linking IEA member countries and non-member countries
- Linking research, industry and policy
- Accelerated development and deployment
- Harmonized technical standards
- Strengthened national research, development and demonstration (RD&D) capabilities

Further information is available at:
http://www.iea.org/techno/index.asp

iea Energy Technology Network