Annual Report 2010
Implementing Agreement for a Co-operative Programme on Efficient Electrical End-Use Equipment (4E)
Contents

Chair’s Statement ............................................................................................................................................ 1
Key 4E achievements in 2010 ........................................................................................................................... 2
About 4E .......................................................................................................................................................... 5
Executive Committee ....................................................................................................................................... 6
4E Annexes .................................................................................................................................................... 11
  4E Mapping and Benchmarking Annex ...................................................................................................... 12
  4E Electric Motor Systems Annex (EMSA) ................................................................................................. 17
  4E Standby Power Annex .......................................................................................................................... 21
  4E Solid State Lighting Annex .................................................................................................................. 24
  4E Outreach and Communication ............................................................................................................. 28
  4E Group Finances ................................................................................................................................... 30
  4E Executive Committee Delegates .......................................................................................................... 31
  Membership of 4E Annexes ...................................................................................................................... 33
  Annex Delegates ...................................................................................................................................... 34
About the International Energy Agency (IEA) ............................................................................................... 38
IEA Implementing Agreements (IAs) ............................................................................................................. 39

FIGURES

Figure 1: Interest in further MV&E activities .......................................................................................... 9
Figure 2: Priorities for future activities (weighted by level of priority) ....................................................... 10
Figure 3: Mapping of UK washing machines, 1999-2007 .................................................................... 12
Figure 4: Benchmarking of television screen sizes, 7 countries .............................................................. 13
Figure 5: Total 4E site visits, 2010 ........................................................................................................... 28
Figure 6: Countries of origin – 4E website visitors .................................................................................. 29
Figure 7: Source of funding for 4E activities in 2010 ............................................................................. 30
Figure 8: Distribution of 4E Expenditure in 2010 .................................................................................. 30

TABLES

Table 1: Attendance at 2010 Executive Committee Meetings ................................................................. 6
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

- Presentation to International Partnership on Energy Efficiency Collaboration (IPEEC)
- Electrical End-use Efficiency Chances for Green ICT and Electronics in Austria workshop
- Publication of second 4E Newsletter, “Bright Spark”
- ‘Saving More Energy Through Compliance’ Conference, London
Key 4E achievements in 2010

- Publication of Benchmarking report for Domestic Cold Appliances
- Publication of report: “Standby Power and Low Energy Networks – issues and directions”
- Motor Summit 2010, Zurich
- International Standby Power Conference (with APEC and APP)
Key 4E achievements in 2010

- **Publication of Benchmarking report for Televisions**
  - October

- **4E Strategic Planning workshop, Ottawa**
  - November

- **Japan joins 4E**
  - December

- **Sweden joins 4E**
  - December

\(^1\)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 IPEEC2) 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.

---

2International Partnership for Energy Efficiency Community
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**

<table>
<thead>
<tr>
<th>CONTRACTING PARTY</th>
<th>5TH EXCO</th>
<th>6TH EXCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Austria</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Canada</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Denmark</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>France</td>
<td>✓</td>
<td>A</td>
</tr>
<tr>
<td>Korea</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Netherlands</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Switzerland</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>South Africa</td>
<td>✓</td>
<td>A</td>
</tr>
<tr>
<td>UK</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>USA</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Observers</td>
<td>Japan, Sweden</td>
<td>Japan, Sweden</td>
</tr>
</tbody>
</table>

**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.
- **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.
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.

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.

In response to the discussions at the Conference, the ExCo is currently reviewing its 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)](image)
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](image-url)
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](image)

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:

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

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

<table>
<thead>
<tr>
<th>NAME</th>
<th>DATE IN 2010</th>
<th>ACCESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold Appliances: Mappings for 10 countries plus Benchmarking</td>
<td>January - March</td>
<td>Public</td>
</tr>
<tr>
<td>Televisions: Mappings for 8 countries plus Benchmarking</td>
<td>August - December</td>
<td>Public</td>
</tr>
<tr>
<td>Washing Machines: Mappings for 10 countries</td>
<td>November 2010</td>
<td>Public</td>
</tr>
<tr>
<td>Air Conditioners: Mappings for 6 Countries</td>
<td>November 2010</td>
<td>Public</td>
</tr>
<tr>
<td>Newsletter</td>
<td>October 2010</td>
<td>Public</td>
</tr>
</tbody>
</table>
## OUTREACH IN 2010

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

<table>
<thead>
<tr>
<th>LEAD COUNTRY</th>
<th>UNITED KINGDOM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contact</strong></td>
<td>Mr. Davide Minotti&lt;br&gt;Sustainable Products and Materials Division, Department for Environment, Food and Rural Affairs (DEFRA)&lt;br&gt;Ergon House, c/o 17 Smith Square, London, SW1P 3JR, UK&lt;br&gt;Email: <a href="mailto:davide.minotti@defra.gsi.gov.uk">davide.minotti@defra.gsi.gov.uk</a>&lt;br&gt;Phone: +44 2072385448</td>
</tr>
<tr>
<td><strong>Operating Agent</strong></td>
<td>Mr. Stuart Jeffcott&lt;br&gt;Jeffcott Associates Ltd&lt;br&gt;1 Roebuts Close, Newbury, Berkshire, RG14 7AP, UK.&lt;br&gt;Email: <a href="mailto:stuart@jeffcott.co.uk">stuart@jeffcott.co.uk</a>&lt;br&gt;Phone: UK: +44 7773778019&lt;br&gt;China: +86 13801135414&lt;br&gt;Australia: +61 406375979</td>
</tr>
</tbody>
</table>
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.

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

**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 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.

Task 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.
PUBLICATIONS IN 2010

<table>
<thead>
<tr>
<th>NAME</th>
<th>DATE IN 2010</th>
<th>ACCESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newsletter (English, Chinese &amp; German)</td>
<td>February</td>
<td>Public</td>
</tr>
<tr>
<td>Newsletter (English, Chinese &amp; German)</td>
<td>June</td>
<td>Public</td>
</tr>
<tr>
<td>Motor Summit presentation slides and abstracts</td>
<td>October</td>
<td>Public</td>
</tr>
<tr>
<td>EMSA Annual Report 2009/10</td>
<td>December</td>
<td>4E and EMSA internal</td>
</tr>
</tbody>
</table>

OUTREACH IN 2010

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

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

---

*The United Kingdom withdrew from EMSA on 31 October 2010*
<table>
<thead>
<tr>
<th>LEAD COUNTRY</th>
<th>SWITZERLAND</th>
</tr>
</thead>
</table>
| **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:

<table>
<thead>
<tr>
<th>TASK</th>
<th>DELIVERABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. DATA RELATED ACTIVITIES:</td>
<td></td>
</tr>
</tbody>
</table>
| 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) |
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**

<table>
<thead>
<tr>
<th>NAME</th>
<th>DATE IN 2010</th>
<th>ACCESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standby Power and Low Energy Networks - issues and directions</td>
<td>September</td>
<td>Public</td>
</tr>
<tr>
<td>Load Down Newsletters:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Edition 4</td>
<td>February</td>
<td>Public</td>
</tr>
<tr>
<td>□ Edition 5</td>
<td>June</td>
<td></td>
</tr>
<tr>
<td>□ Edition 6</td>
<td>August</td>
<td></td>
</tr>
<tr>
<td>□ Edition 7</td>
<td>September</td>
<td></td>
</tr>
</tbody>
</table>
### OUTREACH IN 2010

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

### 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

**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

<table>
<thead>
<tr>
<th>Subtask 1.1: Product Definition Categories</th>
<th>DELIVERABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Establishment of the Detailed work program</td>
<td>▶ Product definition categories</td>
</tr>
<tr>
<td>B. Product definition categories, key performance characteristics, review of related test methods</td>
<td>▶ Set of key performance characteristics – luminous flux, luminous efficacy, chromaticity, colour rendering, life (lumen maintenance, etc.), safety characteristics, flicker, dimming, etc.</td>
</tr>
<tr>
<td></td>
<td>▶ Reference existing test methods</td>
</tr>
<tr>
<td></td>
<td>▶ List of required test methods</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subtask 1.2: Minimum Performance Values</th>
<th>DELIVERABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>▶ Suite of metrics and values to define minimum performance values of SSL, for energy efficiency, lighting quality, and safety</td>
</tr>
</tbody>
</table>

*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 Fontyournont 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

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

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.

<table>
<thead>
<tr>
<th>LEAD COUNTRY</th>
<th>FRANCE, IN ASSOCIATION WITH JAPAN AND UNITED STATES</th>
</tr>
</thead>
</table>
| 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:


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).
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.

![Chart showing countries of origin for 4E website visitors](image)

**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](chart)

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](chart)
### 4E Executive Committee Delegates

<table>
<thead>
<tr>
<th>CHAIRMAN</th>
<th>VICE-CHAIR</th>
</tr>
</thead>
</table>
| **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 |

<table>
<thead>
<tr>
<th>DELEGATES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Australia</strong></td>
<td><strong>Austria</strong></td>
</tr>
</tbody>
</table>
| 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 | Mr. Michael Hübner  
michael.huebner@bmvit.gv.at  
Phone: +43 171162652922  
Mr. Konstantin Kulterer  
konstantin.kulterer@energyagency.at  
Phone: +43 15861524114 |
| **Canada** | **Denmark** |
| Mr. John Cockburn  
John.Cockburn@NRCan-RNCan.gc.ca  
Phone: +1 6139964359  
Ms Katherine Delves  
kdelves@nrcan.gc.ca  
Phone: +1 6139471207 | Mr. Ture Hammar  
tha@ens.dk  
Phone: +45 33926865  
Mr. Peter Nielsen  
pen@ens.dk  
Phone: +45 33926735 |
| **France** | **Republic of Korea** |
| 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 | 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  
Mr. T.M.P. (Tjeerd) Schoustra  

Mr. Hans-Paul Siderius  
hans-paul.siderius@agentschap.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  
Richard.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

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>M&amp;B</th>
<th>MOTOR SYSTEMS</th>
<th>STANDBY POWER</th>
<th>SOLID STATE LIGHTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Austria</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>France</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Japan</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>The Netherlands</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>South Africa</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Switzerland</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>United States</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

✓ The United Kingdom withdrew from EMSA on 31 October 2010
○ Joined in 2011
## Annex Delegates

### MAPPING AND BENCHMARKING

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

### 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)

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

### OPERATING AGENT

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

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

### 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)

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

**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
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.
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
- Larger 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