



4E 2019-2024 Mid-term Review:

Strategic Issues document

16 September 2022

Contents

1	Document Objectives.....	1
2	Introduction to the Role of 4E.....	1
3	Context.....	1
4	SWOT analysis.....	2
5	Key Strategic Questions.....	3
5.1	What do we want 4E to achieve by 2029?.....	3
5.2	What do you want 4E's Mission to be?.....	4
5.3	How should 4E best define what activities to focus on?.....	4
5.4	How do we target products or cross-cutting issues to focus on?.....	5
5.5	Fostering greater engagement.....	5
5.6	Extending co-operation with external organisations.....	6
5.7	How do we match our resources to our ambition?.....	6

1 Document Objectives

The current five-year term of 4E will end in February 2024 and it is anticipated that we will apply to the IEA for a further extension of five years, extending 4E's life to 2029.

As part of this application, 4E will be required to present a Strategic Plan for the 2024-2029 period, as we have for each of the previous 4E terms of five years. The Strategic Plan is a two-page document that highlights the major focus of 4E's activities during the term (note that the Strategic Plan is not a workplan).

Establishing a 4E Strategic Plan for each five-year period has proved to be a useful process: recognising changes in both the world around us and in the priorities of our Members in order to identify a common direction over the next five years.

This discussion document is intended to stimulate thought amongst 4E Members in preparation for a series of debates that will begin alongside the ExCo in November 2022. It poses a number of questions that may be useful to consider in determining 4E's role and aspirations, but is not comprehensive nor intended to limit other ideas or issues being raised.

In the lead-up to the ExCo, we will also use the online **Forum** on the 4E website for Members to raise issues or to ask questions.

There will be additional inputs to the process of finalising a new Strategic Plan, including:

- A short survey of Members (Aug-Sept 2022)
- An assessment of Annexes and Project achievements

2 Introduction to the Role of 4E

4E was formally established in 2008 as an IEA Implementing Agreement to provide a platform for co-operation in appliances and equipment energy efficiency policy development amongst governments. From a core group, membership has grown to 15 members, comprising those economies that have mature EES&L programmes.

Our Implementing Agreement states that 4E will 'Develop greater understanding of policies and practices in the field of energy efficient end-use equipment and systems'. The emphasis on policies is somewhat unique amongst TCPs, which tend to focus more on technology research.

The 2014-19 Strategic Plan identified a number of priorities for 4E, including:

- The energy consumed by systems of equipment
- Digitalisation and rapidly evolving products such as electronic devices
- Increasing the international harmonisation of product policies
- Linkages with the IEA and other key international initiatives such as related TCPs.

3 Context

4E's effectiveness is highly influenced by the environment in which we operate and therefore some understanding of these developments is an important driver for 4E's direction.

Throughout 4E's existence, the understanding and appreciation of the role of energy efficiency (EE) has grown steadily. The increased focus on EE by IEA has helped to draw the attention of governments to the potential, particularly through:

- The presentations of scenarios (World Energy Outlook)
- Identifying EE as the 'First Fuel'
- The work to reach 'Net Zero Energy (NZE)'.

To reach NZE, a number of milestones have been identified for appliances and equipment, e.g.:

- 'LED lighting 100% of sales by 2030'
- 'New Appliances to 2020 best available technology by 2035'

These milestones are not necessarily comprehensive, and for those that do exist each would require further work to identify how they translate into policy terms. For example, the recent joint TCP 'article' coordinated by the IEA seeks to do just this (see: <https://www.iea.org/reports/technology-and-innovation-pathways-for-zero-carbon-ready-buildings-by-2030>).

Since the publication of *'More Data, Less Energy'* with 4E, the IEA also continues to make Digitalisation a major focus, particularly as a means to achieve improved energy management and demand flexibility. From the outset, EDNA has played a significant role within this work, albeit that EDNAs' scope covers only a part of the entire digitalisation topic.

However, this focus on EE is not followed by all governments and not necessarily translated into policy development towards appliances and equipment. Throughout 4E's term, we have seen most Members go through cycles, varying from antipathetic towards EE regulations to very ambitious. One of the benefits of 4E has been that Members with greater ambitions can help ride through the times when other Members are not able to pursue much policy development, and continue to strengthen arguments for more action.

Institutionally, the IEA has also drawn the secretariats of the Energy Efficiency Hub (EEH) and SEAD within its sphere of influence. The EEH replaces IPEEC as a high level forum intended to 'inform policy-making and communicate emerging best practices' rather than undertake new work. Of particular relevance to 4E is that two of the first EEH Task Groups established are 'Digitalisation' and 'SEAD'.

As the Secretariat of SEAD, the IEA has re-launched it as the delivery mechanism for the 'Product Efficiency Call to Action' announced at COP26. The call to action aims to double the efficiency of the following products sold globally by 2030:

- Industrial motor systems
- Air conditioners
- Refrigerators
- Lighting

With these new arrangements, SEAD has become the IEA's major focus for their work on the energy efficiency of appliances and equipment. It is less clear what role 4E performs for the IEA or alongside SEAD.

Although EE has gained in prominence, the falling costs of renewable energy sources has led to a surge in developments and resulting pressure on the management of the power supply system. Alongside this has been huge interest in policies and mechanisms to guide decarbonization and the clean energy transition. The role of appliances and equipment is often seen mainly in terms of demand flexibility. The potential for efficient equipment to improve the pace and affordability in the transition to greater levels of renewable energy utilisation is not well understood within many governments.

In 2008, there was no other intergovernmental group with a focus on energy efficient appliances and equipment: now there are a variety of groups active in this area, including UNEP (United for Efficiency) and SEAD. CLASP is also increasingly active and extremely well-funded. All of these are promoting EES&L programmes and providing support for their implementation, particularly in developing countries.

The major challenges have also changed: there are many important new policy issues to be resolved regarding digitalisation, the role of energy efficiency in facilitating the clean energy transition¹ and identifying concrete pathways to Net Zero for individual appliances.

In addition, some 4E Members have expanded product policy to include other environmental aspects like repairability, recyclability, life-time, particularly where energy consumption during the 'use phase' of the product is not the main environmental impact. As the energy efficiency standards converge towards the theoretic maximum efficiency, energy savings from the further development of these standards will decrease and other aspects, such as the life-time of the appliance, will contribute a greater share of the CO₂-emissions from products.

4 SWOT analysis

An assessment of 4E's strengths, weaknesses, opportunities and threats helps to ensure that the Strategic Plan is grounded in reality and can be delivered effectively. The following list is built upon previous input from Members but is not definitive, and current Members may have a different view.

It should be noted that these contain both external factors, and issues that are internal to 4E.

Strengths

- 4E delegates contribute a unique body of knowledge and experience related to energy efficiency product policy development
- The work done by 4E is generally considered by Members to be of value, although Members differ in what they consider most valuable

¹ Including the efficient use of clean energy.

- 4E is considered by those outside 4E a source of credible information
- Through the IEA, 4E disseminates information to a wide group of governments and policy makers
- Within 4E's broad mandate, we are relatively unconstrained – only limited by the ambitions of its Members.

Weaknesses

- Our limited coverage of major end-use technologies means that we can not meet all demands from Members
- Uncertainty in Member priorities reduce ability to support long-term projects (where this uncertainty may be political, financial or due to lack of representation at a senior level)
- Different Members' policy development cycles make it difficult to plan 4E work for maximum relevance
- Difficulties in co-ordination and transferring information effectively without face-to-face meetings
- Limited funds prevent large projects with potentially more significant impacts
- Limited time available for delegates to engage/review/manage projects

Opportunities

- Continue to explore the differences between the policies of member countries and identifying opportunities for increased alignment
- 4E could focus on relatively unexplored policy areas, such complex products AND systems
- 4E could make better use of access to policy makers within Member governments
- 4E could provide guidance to those governments that are unclear on the role of energy efficiency in the transition to clean energy, the process of decarbonization and the interaction with renewable energy policies
- Provide guidance on the ability of policies/demonstrations/programs/consumer education on heat pumps to advance decarbonization
- 4E could provide guidance to those governments that are unclear on the potential for digitalisation in the transition to clean energy, and what policies are required
- 4E could gain greater visibility and credibility by working more with the IEA and collaboration with other TCPs, which could also allow 4E's work to be seen in perspective e.g. within the context of the buildings sector
- 4E has the opportunity to become more involved in international standardization.

Threats

- International fora with overlapping coverage have the potential to cause confusion amongst key audiences, waste resources and compete for funding
- Most governments are still struggling to resolve major issues in the transition to Clean Energy and how energy efficiency fits within the broader context
- 4E is very reliant upon a relatively small number of committed individuals and they are spread increasingly thinly, often having to wear several hats
- Language problems present hurdles in sharing information and agreeing actions within 4E
- Governments' budget cuts and relatively low value of international work limits Members contributions to funds and effort made available to 4E.

In the planned survey of 4E Members, we hope to gain further information on the current views of Members.

5 Key Strategic Questions

In this section, we discuss some of the major strategic issues facing 4E, which could help to influence what we want to do next. These questions are not intended to be a comprehensive list of all the issues facing 4E but to stimulate thought and act as starting points of discussion. Some issues are raised that may appear radical, but this is only because we should discuss a range of options and it does not indicate that any decisions have been made already or any options are favoured.

5.1 What do we want 4E to achieve by 2029?

The current vision of 4E is:

The aims of the Technology Collaboration Programme on Energy Efficient End-use Equipment (4E TCP) are to promote energy efficiency as the key to ensuring safe, reliable, affordable and sustainable energy systems.

While this is certainly true, it is extremely general and perhaps does not provide a sufficient focus to prioritise actions over the next five years. The following options, or something similar, may help to encapsulate common goals amongst the 4E community provide a shared vision for 2029:

Recognition by all governments of the need to improve the energy efficiency of equipment as a vital component in transitioning to a clean energy future.

Recognition that substantial cuts in the energy consumption of equipment is a realistic and vital step to transitioning to a clean energy future.

Recognition that the successful transition to a clean energy future will only be possible through substantial cuts in the energy consumption of equipment.

We collaborate to optimise the way products and systems use energy to accelerate the transition to a clean energy future.

Overcoming barriers to improvements in the EE of complex technologies and systems requires unique knowledge and experience of the world's leading jurisdictions

We welcome comments and suggestions for a vision to guide 4E's work to 2029.

5.2 What do you want 4E's Mission to be?

The current mission of 4E is:

As an international platform for collaboration between governments, the 4E TCP provides policy guidance to its members and other governments concerning energy using equipment and systems. The 4E TCP prioritises technologies and applications with significant energy consumption and energy saving potential within the residential, commercial and industrial sectors (not including transport). To meet its aims, the 4E TCP harnesses the expertise of governments, industry, experts and other TCPs for joint research related to the development and deployment of energy efficient equipment.

This also continues to reflect how we work in practice, and may not need changing. However, it could be summarised more succinctly as:

We stimulate improved energy efficient policies for products by sharing expertise and information amongst governments/Members.

5.3 How should 4E best define what activities to focus on?

Initially it was envisaged that 4E should focus on filling gaps to assist Members' policy development aspirations that were not being addressed by other organisations/initiatives and where 4E could make a positive contribution in a relatively short time. The broad scope and untethered funding made 4E potentially more able to strategically target issues of importance, where others could not go.

Below is a summary of the circumstances under which 4E Annexes have been established, indicating the gaps that existed at the time which the Annex was intended to address.

Topic	Circumstance at Commencement
Mapping & Benchmarking	No information on efficiency trends for major appliances across major economies routinely collected, compared and published. Intention for Members to use this to trigger issues of concern that may require policy intervention
Motor Systems	No international test methods for motor systems No metrics or MEPS in force for fans, pumps compressors. Potential to improve international harmonisation
Standby Power	Many countries keen to track progress towards IEA 1 Watt target & develop regulations where needed
Solid State Lighting	No regulations in place - several 4E Members considering regulations for lighting products to drive quality SSL. Potential to improve international harmonisation
Electronic Devices	Very little awareness of network standby issue or the impact of connectivity. 4E Members keen to gain understanding of digitalisation and the role of governments
Power Electronic Conversion Technology	Emerging technology with potential for significant energy efficiency gains. Very little awareness in EE policy environment.

Should 4E focus on addressing gaps in policy coverage which are not currently being addressed? Or should 4E be seeking to provide support across a broader spectrum of technologies and/or cross-cutting issues i.e. more like a hub?

5.4 How do we target products or cross-cutting issues to focus on?

One of 4E's strengths is that we have a broad mandate within which Members are free to determine our priorities. Resources are also only constrained by the contributions that Members wish to make.

This section therefore considers prioritisation and asks some questions to stimulate further discussion.

Most 4E Members regulate a similar cross-section of products and much of our work has focussed on sharing the details of product specific metrics, test methods and requirements between Members, particularly for globally traded products. This has enabled Members to gain from each others' research and innovation in terms of both improvements to existing regulations and newly regulated product categories.

The different regulatory cycles for individual products within 4E Members means that product priorities are seldom aligned between 4E Members, however projects such as PEET can help to tease out common issues of concern/interest, e.g. questions about embedded motors, or test methods for displays.

Sharing information in this way naturally facilitates greater alignment, albeit that the process takes time as each Member works through their own internal regulatory adoption processes. However, since we know that there are benefits from the harmonisation of test methods, metrics and requirements, we could more actively seek to identify these opportunities.

Should we place a higher priority on international harmonisation for globally traded products as an objective of our work? 4E has also considered some cross-cutting, perennial issues such as MV&E. There have been unsuccessful attempts to establish an MV&E Annex in the past, and we have now arrived at the current practice of face-to-face meetings alongside the ExCo (when these occur). A further potential cross-cutting issue is the growing relevance of issues related to the circular economy, such as the life-time of the appliance, to the overall CO₂-emissions from products. There is potential for 4E to incorporate these aspects within its coverage.

Do we need to consider issues relating to the circular economy, such as repairability and extending product lifetimes?

An additional consideration is whether we should broaden our focus to include other policy types apart from regulatory approaches. In the past we have examined the role of voluntary agreements, and their relative impact compared to regulations, and some Annex work has included information and audit programmes; however, these examples tend to be the exception. Our ability to consider non-regulatory policy types may be constrained by the mandate of our Members, i.e. depending on whether their agencies are solely focussed on Standards and Labelling or have a broader remit.

Should 4E's work encompass non-regulatory policy types?

5.5 Fostering greater engagement

Until 2020, all ExCo delegates met twice per year in person over a number of days for discussions and decision-making. These extended meetings included formal and informal exchanges of information that fostered a close working relationship between delegates. The deep understanding of views that resulted from such frank exchanges bred a sense of the '4E community' and was considered by most Members to be a unique benefit of 4E.

Due to Covid it has not been possible to meet face-to-face since the beginning of 2020, and there is little doubt that the cohesion of 4E has suffered, as has our ability to take account of differences of opinion. Looking forward, the ability of Members to travel to meetings may be limited by the continued impacts of Covid and/or increasing restrictions on overseas travel due to ghg emissions, financial or time pressures.

If, as appears likely, we are moving into a world more reliant on online interactions, can we take steps to ensure that 4E retains a sense of inclusiveness and community?

4E provides a variety of ways for Members to be involved in our work: whether through voluntary participation in Annexes, ExCo Project working groups, PEET workshops, etc. Members signal their interest in these topics/work areas through their participation.

Therefore, it is of concern when engagement on a number of issues appears to be diminishing. This not only means that the bulk of responsibility in 4E is carried by a relatively small subsection of Members², but unless many jurisdictions are represented, it also hinders the ability to share information.

² For example, few Members have been able to commit to initiating and leading Annexes, since of the current four Annexes, one Member is the lead of both PECTA and EMSA, and there have been considerable difficulties in finding a country willing to lead the SSL Annex until recently.

To justify delegates and their countries committing resources towards these efforts and maximise engagement, not only in terms of financial contributions but also their time, we have tried to support those activities which are closely aligned with national priorities. However, it is not always easy to match changing priorities with longer-running work programmes, or to deal with very short-term demands.

Are there ways to make our work is of greater relevance to more Members?

Do we offer the right balance between ways of participating in 4E work?

5.6 Extending co-operation with external organisations

During this term of 4E, our engagement with the IEA Secretariat has increased, through both joint projects (EES&L Achievement Reports) and the publication of outputs from the 4E work. This includes Webinars and provides valuable visibility and credibility for 4E, amongst governments and industry.

To make the most of this relationship requires 4E to be in-tune with the IEA's priority topics at the time, relevant publications and their schedules. Not all of 4E's work can be used by the IEA without considerable tailoring.

To what extent should we attempt to produce outputs suitable for publication by the IEA and/or undertake joint activities?

4E has also increased our engagement with other TCPs, mainly but not exclusively with the Users TCP. Liaison has included information sharing (formal and informal) on a range of projects and joint webinars. Questions about how to organise joint projects amongst TCPs continue to hinder genuine collaboration but the IEA co-ordination of the recent TCP 'article'³ could provide a model for various TCPs to contribute towards thematic publications.

Should we urge to the IEA to co-ordinate inputs from TCPs on common themes, such as digitalisation?

In the previous term, 4E and SEAD agreed to avoid confusion between the organisations by sharing information and defining SEAD's primary field of influence as 'developing countries', while acknowledging that 4E's main focus was on countries with establish S&L programmes. This arrangement ceased in 2018, and has not yet been re-instated.

Since the IEA has taken over as the Operating Agent of SEAD, 4E has gained regular updates via reports to the ExCo and presentations in advance of the 'Call to Action' at COP26. At the suggestion of 4E, the 'EES&L Achievements Report' was proposed as a concrete way in which 4E could support the 'Call for Action'. However, there have been no other approaches to 4E made by SEAD regarding future collaborative efforts.

Should 4E seek to formalise a relationship with SEAD and if so, what should be the basis?

The Energy Efficiency Hub is now up and running and many 4E Members are involved at a high level. As yet it is difficult to determine how it will operate, however there may be opportunities to showcase some of 4E's work here.

Overall, historically our aim has been to use limited external engagements to extend our outreach i.e. to gain visibility for our work. However, *are there additional strategic opportunities that we should be harnessing?*

5.7 How do we match our resources to our ambition?

As background to the above topics, it may be helpful to understand the resources available to 4E.

4E's resources comprise:

- Human capital: the time and expertise of 4E delegates, experts and Operating Agents
- Financial: the fees paid by Members into the common funds (ExCo and Annexes)

The in-kind value of the time contributed voluntarily by 4E delegates/experts is very difficult to assess but is estimated to be about equal to the financial contribution (see Table 3), although the relative contribution of each towards individual projects varies.

The fees paid to the ExCo and Annexes have not altered since 2016 (apart from the addition of PECTA in 2019), and are shown in Table 1.

³ <https://www.iea.org/reports/technology-and-innovation-pathways-for-zero-carbon-ready-buildings-by-2030>

Table 1: Annual fee structure

4E Entity	Annual Fee (€)
ExCo	€20,000
EMSA	€15,000
SSLA	€22,000
EDNA	€15,000
PECTA	€20,000

Total income from fees and voluntary contributions typically amount to around €880,000 per annum. As shown in Table 2, overall the cost of Operating Agents account for 45% of the 4E annual budget.

On average in 2021, each Member contributed €58,600, although this varies considerably depending on which Annexes a Member elects to participate in.

Table 2: 4E financial contributions 2021

	ExCo	EMSA	SSLA	EDNA	PECTA	Total	Av. Per Member based on 15 Members
Income	€300,000	€135,000	€154,000	€210,000	€80,000	€879,000	€58,600
OA fees	€107,800	€75,000	€138,000	€60,000	€15,000	€395,800	€26,387
Balance	€192,200	€60,000	€ 16,000	€150,000	€65,000	€483,200	€32,213

Table 3: 4E estimated in-kind contributions 2021

	ExCo	EMSA	SSLA	EDNA	PECTA	Total	Av. Per Member based on 15 Members
In-kind	€212,000	€240,000	€337,000	€216,000	€198,000	€1,203,000	€80,200