Ministry of Foreign Affairs – (Department for Multilateral Cooperation and Climate Change - MKL

Meeting in the Council for Development Policy 26 October 2017
Agenda item 7

1. Overall purpose	For discussion and recommendation to the Minister
2. Title:	Support to International Energy Agency (IEA): Energy Efficiency in Emerging Economies (E4) Phase II
3. Presentation for Programme Committee:	23 February 2017

Energy Efficiency in Emerging Economies (E4) Phase II

Key results:

- High quality data for development of energy efficiency indicators in end-use sectors at national, regional and local levels across all six target emerging economies;
- Significant knowledge of the potential role of energy efficiency in NDCs; significant number of technical government staff trained on energy modelling;
- Improved design of at least three existing or new national or regional energy efficiency policies; strengthened implementation of at least three existing or new national or regional energy efficiency policies;
- Strengthened knowledge and uptake of the use of digitalisation for policy design, implementation and evaluation; development of technology roadmaps.

Justification for support:

- Energy efficiency is highly relevant for SDG 7 & 13;
- Unlocking energy efficiency is key to obtaining the long-term goals of the Paris Climate Agreement;
- The largest developing economies constitutes the gravity in future energy demand;
- Denmark is leading energy efficiency within the OECD and home to leading EE technology suppliers; increasing the EE markets benefit growth and job creation.

How will we ensure results and monitor progress

- Country work programs developed during inception phase;
- Financial and activity based progress is reported annually;
- Result indicators on uptake and implementation of EE policy measures is reported annually and in final reporting;
- A Steering Group is monitoring progress;
- Ongoing IEA consultations with the MEUC and Danish Energy Agency on progress and coordination will continue.

Risk and challenges

- Lack of local capacity to deliver;
- Change in overall government policy move against clean energy transition;
- Lack of supplementary funding;
- Programme does not influence policy outcomes;
- Low local prioritisation of energy efficiency.

File No.	2017-8980			
Country	Emerging/transitioning economies			
Responsible Unit	MKL			
Sector	Energy Efficiency			
Mill.	**2017**	**2018**	**2019**	**Total**
Commitment	25			25
Projected ann. Disb.	10	10	5	25
Duration	3 years			
Finance Act code.	06.34.01.70 Climate Envelope			
Desk officer	Monica Hapiach Christensen			
Financial officer	Jonas Henriques			

SDGs relevant for Programme

Budget – indicative (MDKK)

Overall cross-cutting	
Global activities:	*3,9*
Regional activities:	*3,95*
In-country	
Brazil:	*0,725*
China:	*4,0*
India:	*3,6*
Indonesia:	*3,6*
Mexico:	*1,9*
South-Africa	*1,7*
Other:	*0,6*
Administration/Overhead	
IEA	*1,325*
Programme Support	
Total:	**25**

Strat. objective(s)	Thematic Objectives	List of Engagement/Partners
Reduced GHG emissions in 6 target countries progressing low-carbon transformation of their energy systems through energy efficiency improvements	Strengthened information systems and planning frameworks for promoting and implementing EE policies and measures.	– International Energy Agency
	Policy makers and governments are enabled to identify, design, implement and evaluate priority EE policy measures.	– Brazil – China – India – Indonesia – Mexico – South Africa with a second tier of countries (including Ukraine, Vietnam and Thailand)
	Priority EE policy measures form part of Nationally Determined Contributions (NDCs).	– Second tier of countries including – Ukraine – Vietnam – Thailand

The Danish Climate Envelope

Programme to support Energy Efficiency in Emerging Economies (E4), Phase 2

September 2017

File no.: 2017-8980

Contents

Abbreviations

ADB	Asian Development Bank
APEC	Asia-Pacific Economic Cooperation
AFD	French Development Agency
ASEAN	Association of Southeast Asian Nations
CAF	Latin-American Development Bank
C2E2	Copenhagen Centre on Energy Efficiency (the SE4All Energy Efficiency Hub)
CEM	Clean Energy Ministerial
Danida	Denmark's Development Cooperation
DEA	Danish Energy Agency
EBRD	European Bank for Reconstruction and Development
E4	Energy Efficiency in Emerging Economies
ESMAP	Energy Sector Management Assistance Programme (World Bank)
GHG	Greenhouse Gas Emissions
GIZ	German International Development Agency
G20	Group of 20 largest economies
G7	Group of 7 largest economies
IDB	Inter-American Development Bank
IEA	International Energy Agency
IIP	Institute for Industrial Productivity
IPEEC	International Partnership for Energy Efficiency Cooperation
MEUC	Ministry of Energy, Utilities and Climate (Denmark)
MoFA	Ministry of Foreign Affairs (Denmark)
NDCs	Nationally Determined Contributions (nationale klimaplaner)
OECD	Organization for Economic Co-operation and Development
RCEEE	Regional Center for Renewable Energy and Energy Efficiency
REEEP	Renewable Energy and Energy Efficiency Partnership
SDGs	UN Sustainable Development Goals
SE4All	Sustainable Energy for All (initiative of the UN Secretary General)
UNDP	UN Development Programme
UNECLAC	UN Economic Commission for Latin America and the Caribbean
UNEP	UN Environment Programme
UNESCAP	UN Economic and Social Commission for Asia and the Pacific
USAID	United States Agency for International Development
WB	World Bank

1. Introduction

The objective of this development engagement is for the International Energy Agency (IEA) to support a core group of six of the largest developing countries' energy transition in a low-carbon, sustainable direction, aiming to achieve efficient high-impact and cost-effective improvements in energy efficiency at national and sector levels.

In 2013, Denmark funded the 4-year Phase 1 of *Energy Efficiency in Emerging Economies (E4*) with 25 MDKK, co-sponsored by the European Commission with approximately 20 MDKK. This programme document details the objectives and management arrangements for the development cooperation for the *Energy Efficiency in Emerging Economies Programme, Phase 2, from 2018 – 2020* as agreed between the parties specified below.

The Danish support is provided as development cooperation funding under the Danish Climate Envelope and within the framework of the Guiding Principles for the Danish Climate Envelope dated February 2016. The Danish support is also in line with the Strategy for Denmark's Development Cooperation.

2. Parties

This agreement is between the following three parties:

- The International Energy Agency (IEA);
- The Danish Ministry of Foreign Affairs (MFA); and
- The Danish Ministry of Energy, Utilities and Climate (MEUC).

3. Documentation

The "Documentation" refers to the partner documentation for the supported intervention, which is the "Concept Note - The IEA & Energy Transition Support", included in Annex G. This concept note has been used as part of the outreach for the Energy Transition Package, and it has, among other projects, drawn on the E4 Phase 1 programme and the preparation of E4 Phase 2.

4. Programme context

Meeting the Sustainable Development Goals (SDGs), in particular Goal 7 calling for the provision of clean and affordable energy for all, requires the sharing, transfer and implementation of best available knowledge, analysis and policy advice on clean energy deployment to developing and emerging economies. Sub-goal 7.3 requires a doubling of the global rate of improvement in energy efficiency by 2030.[1] The world is currently not on track to meet Goal 7. The engagement of the large emerging economies will be the key determinant of success in achieving these targets as the emerging economies are now the most important actors in the global clean energy transition. The IEA's World Energy Outlook (WEO) 2016 predicts that the centre of gravity of energy demand will switch decisively to emerging economies who, led by China and India, will account for more than 90% of global net energy demand growth by 2040. The large emerging economies and their energy demand trajectories are key variables for the entire global energy system.
Energy efficiency is essential to decarbonising the global energy system as called for by SDG 13, and has great potential to deliver wider social, economic and environmental benefits, including energy security, higher productivity, cleaner air and better comfort.

The collective ambitions of countries, as outlined in their National Determined Contributions (NDCs), are currently insufficient to achieve the target(s) of the Paris Climate Agreement. The energy sector makes up approximately two-thirds of global greenhouse gas (GHG) emissions and, according to the IEA, nearly half of the GHG emission reductions needed for global emissions to peak in the near-term (2020-2025) could, at

[1] UN Sustainable Development Goal 7

no net economic costs, stem from energy efficiency improvements.[2] Continuing efforts to unlock and implement effective energy efficiency measures across all sectors in emerging economies is thus key to meeting the Paris Climate Agreement target of limiting global warming to well below two-degrees Celsius.[3]

Energy efficiency policies play an increasing role in the global energy market and there has been a 20% increase in the share of world energy consumption covered by mandatory standards and regulations since 2000. However, there remains vast untapped potential and scope for improvements across each of the energy using sectors.[4]

The overall objective of the programme can also be expected to contribute directly to public good creation closely related to the long-term Human Rights situation in the targeted partner countries by i.e. mitigating climate change, improving air quality and provide access to sustainable energy, although this is not a specific, prioritised focus of the programme. Energy efficiency is a key part of providing access to clean, secure and affordable energy, which in return is essential to social and economic growth. It is becoming increasingly evident that energy efficiency improvements facilitates energy access by making costly energy resources go further, including those that are renewable. Efficient lighting, as seen from E4 Phase 1 collaboration with India, provides a useful illustration of this point; if highly efficient LED light bulbs are used rather than traditional lights bulbs ten times as many families can have access to lighting and reap the benefits of improved opportunities for learning and economic activity outside daylight hours; street lighting has also been shown to improve women's lives by improving their safety and hence their ability to engage in social and economic activity outside their homes. Also, as the focus has been in Mexico, improvements in energy efficiency in the housing sector will in most cases provide for better comfort and healthier indoor environment, which in many instances will benefit women and children in particular. Further, the programme will in general contribute to good governance and improved framework conditions for energy efficiency improvements through capacity building and best-practice policy advice. Energy efficiency, therefore, indirectly contributes to addressing rights-fulfilment in multiple ways. The E4 programme will also concretely in activities contribute to alleviating (HR and gender development) challenges by encouraging the participation and representation of women in activities such as training, workshops and policy developments (under the programme).

In 2013, with support from Denmark and the European Commission, the IEA initiated the Phase 1 of the Energy Efficiency in Emerging Economies programme (2014 – 2017) (hereafter referred to as E4). The objective of the E4 is to spur energy efficiency improvements in targeted emerging economies by providing support and advice on i) country specific analysis, ii) in-depth country support for energy efficiency policy deployment, and iii) multi-country engagement, analysis, knowledge sharing and capacity building. The outcomes of the Programme are more and better policies and measures for energy efficiency, through improving capacity, knowledge, data, and raising the profile of energy efficiency within the broader energy policy context.

E4 target countries are Brazil, China, India, Indonesia, Mexico and South Africa, and to a lesser extent Thailand and Ukraine, while other countries are engaged with E4 via international and regional training and knowledge-sharing workshops and webinars. Targeted countries were selected due to their large emission footprints and the potential for improvements in energy efficiency to reduce current and future emissions. Through country-specific analysis and modelling, in-depth country support for energy efficiency policy deployment, capacity building (through training, webinars and secondments), and multi-country engagement and knowledge sharing, E4 has contributed significantly to the scaling up of energy efficiency action in target countries (see detailed achievements of the programme in *Annex A: Phase 1: 2014 -2017: Achievements and lessons learned*).

[2] Energy and Climate Change – World Energy Outlook Special Report 2015
[3] Energy and Climate Change – World Energy Outlook Special Report 2015
[4] IEA's Energy Efficiency Market Report 2016

The appraisal report by the Danish MFA of Phase 2 of E4 shows that the programme has been successful in delivering energy efficiency policy improvements and has in return enhanced the relationships and trust between the IEA and the targeted emerging economies. Two examples of E4 engagement results are:

- The detailed modelling carried out by the IEA, in collaboration with South African government officials, has contributed to South Africa's National Energy Efficiency Strategy. The modelling has improved confidence in the strategy by improving the evidence base used to set targets, and has also helped in the identification of the specific policy measures that would be necessary to attain those targets. This work was undertaken in partnership with Swiss and Danish funded projects that proposed a mechanism for tracking progress against the targets and elaborated the strategy. This example illustrates the benefit of IEA working alongside other International partners as an independent advisor and increasing the confidence of the government in their recommendations.
- In Mexico, IEA and Mexican experts collaborated to develop a new and detailed overview of the drivers for future increases in energy consumption. In particular, as Mexico's economy grows, it is inevitable that more air conditioners will be used putting severe pressure on Mexico's existing electricity network and economy. In response to this analysis, E4 worked with the Mexican Government to develop a space cooling strategy for Mexico, involving a wide range of stakeholders in the process. The recommendations emerging from the strategy have led to a number of activities being implemented by the Mexican Government, by IEA and by other organisations. This is an example of IEA analysis preparing the ground for other agencies to implement specific actions in a prioritised, coordinated manner.

Other examples of enhancing analytical capacity through IEA's E4 collaboration include the special Chinese-language report on Energy Efficiency in China (a supplementary publication to the Energy Efficiency Market Report 2016); special Energy Efficiency Outlooks for South Africa and India; Energy Efficiency Policy Recommendations Series produced through collaborative processes for Ukraine, South-East Asia and Latin America, and a special focus on cities in Mexico in the 2016 Energy Technologies Perspectives publication.

It is clear that there is substantial potential to build on the current activities and a strong appetite from the emerging economies for further engagement in Phase 2 of the Programme (future opportunities for engagement are outlined in *7. E4 Phase 2: 2018-2020*).

5. Strategic considerations

5.1 Danish strategic considerations

Denmark sees great value in supporting the continuation of E4 with a contribution of 25 MDKK and wishes to ensure that: a) E4 continues to bring IEA's core energy efficiency competences and expertise to emerging economies, b) E4 continues to be demand-driven and thereby secures ownership, up-take and added value in coordination with other energy efficiency focused initiatives in the target countries and internationally, and c) that E4 is anchored within the overall strategy and development plans for the IEA. The support aligns with the objective of the Danish Climate Envelope to assist developing and emerging economies with the transition to a low carbon economy by supporting national and community-level climate change policies, planning frameworks and information systems and scaling up climate-relevant technologies, infrastructure and markets.

E4 is also aligned with the strategic objective of "Inclusive, Sustainable Growth in the Danish strategy for development cooperation and humanitarian assistance "The World 2030". The E4's thematic focus area is the SDG7 "Affordable and clean energy" with strong interlinkages to SDG13 "Climate Action"; priority SDGs in "The World 2030". Furthermore, the E4 focuses on core Danish competencies within the energy sector in targeted emerging and transitioning economies, by e.g. providing data for energy system modelling and setting standards and targets for energy efficiency in the building sector, where Denmark is present in

ongoing bilateral energy and climate cooperation with a prioritised focus on energy efficiency. The E4 Phase 2 is also an opportunity to continue to harvest synergies between the Danish bilateral and multilateral engagement, and special attention to this coordination and synergy opportunities is part of the E4 Phase 2 programme. Denmark is leading the world in energy efficiency performance and is home to many energy efficiency technology providers – both in efficient energy production and supply, and in end-user segments. The E4 also underpins the SDG17 on partnerships by advancing information technologies, review and monitoring frameworks, regulations and incentive structures that enable investments in clean energy and reinforce national oversight of sustainable development. The E4 thus enhances Denmark's engagement in the context of SDGs, while promoting Danish development priorities and experiences.

An important strategic additional element of E4 Phase 2 is its ability to leverage additional funding and thus to extend the range and impact of the programme. Concretely, continued support for E4 Phase 2 has generated interest from like-minded donors also seeking to advance IEA's wider role in the post-Paris global implementation architecture in advancing a global transition to low-carbon energy systems. Following extensive outreach from IEA's Executive Director, Fatih Birol, Denmark and Sweden, an ambitious "Clean Energy Transitions Programme" - focusing both on advancing energy efficiency and renewable energy - will be launched at the IEA Ministerial meeting in early November with expected contributions of around 20 million EUR.

5.2 IEA strengths and strategic considerations

The IEA is an autonomous organisation within the framework of the Organization for Economic Cooperation and Development (OECD), which works to ensure reliable, affordable and clean energy for its 29 member countries, 6 association countries (China, India, Indonesia, Morocco, Singapore and Thailand) and beyond. The IEA is at the heart of global engagement and dialogue on energy, building on a solid network and unique convening power and delivering authoritative statistics and analysis at the national, regional and global levels. The IEA has expertise covering the full spectrum of energy issues and advocates policies with energy efficiency at the centre of the energy system. The IEA supports countries in improving both their evidence based policy and the narrative for energy efficiency and has expertise in assessing the current and future impact of energy policies and technologies, drawing on the IEA's vast wealth of energy statistics, micro/macro/meta-analysis and modelling capability. It is acknowledged that IEA is rather new in terms of capacity building (compared to e.g. ESMAP), but also that the combination of technical assistance and the unique expertise in the IEA can be a valuable combination and that there is a demand for further IEA activities in this regard in particular from key emerging economies.

As outlined in the IEA Ministerial communique (2015), the IEA is pursuing a modernisation agenda, consisting of three pillars: 1) opening the doors of the IEA to emerging economies; 2) broadening the IEA's core mandate of energy security; and 3) transforming the IEA into a global hub for clean energy technologies and energy efficiency.[5] The first and third of these pillars are particularly pertinent to the objective of the Danish Climate Envelope to work with developing countries to transition to low carbon economies. Emerging economies are advancing fast and facing similar challenges to OECD countries of deploying large scale sustainable energy systems, including tapping into the best-practice potential for deploying energy efficiency measures and technologies while integrating renewable energy sources.

The position of the IEA at the centre of global energy efficiency activities and analysis brings greater opportunities for E4 to leverage the data, best-practice analysis, expertise and contacts of the IEA in furthering energy efficiency opportunities in emerging economies. IEA's unique overview of the whole energy system and the strength of analysis and modelling add considerable credibility to engagement with energy policy makers on the subject of energy efficiency. It means that the evidence base for policy decisions is stronger, incorporating the analysis of impacts, costs and benefits. It allows energy policy

[5] Summary of the Chair, 2015 IEA Ministerial Meeting

makers to consider efficiency within their wider energy policy making, an important consideration for the success of energy efficiency.

E4 is the first large cross-agency programme in the IEA, and it has been very successful in building connections and drawing expertise from across almost every division and team in the IEA (for more information, see *Annex B: Programme Support Mechanisms*). Given the links between the objectives of E4 and the modernisation agenda of the IEA, E4 has formed a major component of the strategic push to open the agency's doors to non-members, and to become a clean energy hub. E4 has contributed to building capacity within the organisation, specifically in skills needed for working with emerging economies. The IEA Executive Director, Governing Board and senior managers throughout the agency value the programme very highly, as evidenced by the willingness to engage with E4 activities such as the Energy Efficiency Training Weeks, in the development of online training and in the IEA's Global Energy Efficiency Conference.

6. E4 Phase 1: 2014 – 2017: Achievements and lessons learned

E4 has in its first phase assisted the target countries with improving data and modelling capability; increasing awareness of energy efficiency's potential benefit to their economies; and improving the capacity to implement evidence-based policy decisions (specific details are outlined in *Annex A: Phase 1: 2014-2017: Achievements and lessons learned*). In addition, the global knowledge base on energy efficiency has been enhanced through the use of new data and information sources from the emerging economies. As testament to the achievements of Phase 1 of E4, there is a large demand for analytical and capacity building support from the Programme, including from a number of non-target countries and regions.

In *Annex A: Phase 1: 2014 – 2017: Achievements and lessons learned*, there is a description of the key observations, lessons learned as well as a summary of achievements from E4 Phase 1. These relate to, for example, energy efficiency policy development, capacity building and analysis, strengthening the IEA's outreach, building communities of practice, webinars and online training for wider dissemination, multiple benefits of energy efficiency, importance of experts and building and maintaining interest in energy efficiency. One examples of a major success is the IEA-China collaboration including interaction between modellers in IEA and the Chinese Energy Research Institute, working together to build new China modules of the IEA's Energy Technology Perspectives' model. This has been very successful in fostering exchange and capacity building while delivering solid tools to be used for analysis and decision making. (Two other examples from South-Africa and Mexico are highlighted in section 4). Relationships with the relevant ministries in all target countries have been established, there is greater acceptance of the importance of energy efficiency and its multiple benefits amongst policy and decision makers, and data availability and quality has been improved by activities in Phase 1. All these lessons and observations have and will be used to inform the E4 Phase 2 programme, including in the development of country work plans (see *7.2 Inception phase*).

7. E4 Phase 2: 2018 – 2020

Large and cost effective opportunities for reducing the future growth in energy demand in the major emerging economies exist and remain untapped, and E4, drawing on the analytical expertise of the IEA and on the relationships developed during Phase 1 of the programme, is in a unique position to deepen its engagement with the major emerging economies and support them to act on the opportunities. Detailed analysis carried out by E4 shows that by implementing more aggressive, but cost effective, energy efficiency policies in India, could reduce energy demand by 16% by 2040 compared with a business as usual scenario[6]; and implementing more cost effective and aggressive policies in South Africa could reduce energy demand by 15% as soon as 2030 compared with a business as usual scenario[7]. Further details of

[6] Energy Efficiency Outlook for South Africa – Sizing up the opportunity
[7] India Energy Outlook – World Energy Outlook Special Report 2015

these types of opportunities are outlined in *Annex A: Phase 1: 2014 -2017: Achievements and lessons learned.*

E4 Phase 2 will continue to be implemented by the IEA's Energy Efficiency Division with support from specialists across the IEA, in partnership with target country government officials and experts. It will build on Phase 1 of the program by a thematic deepening of end-use sectors data requirements, analysis and baseline settings, and further enhance the development and implementation of best-practice policy measures, including their enforcement. Where energy efficiency policy road-maps or strategies have been developed, these will be taken up in E4 Phase 2 to advance their implementation and secure impact. In addition, Phase 2 will leverage recent IEA flagship analysis and policy advice on, for example, digitalisation, market based mechanisms and energy efficiency-renewable energy integration as well as attempt to elevate the role of energy efficiency policies in the planning and implementation of NDCs. Many programme activities are underway or will be launched before the end of the Phase 1 and potentially included in E4 Phase 2 (see *Annex A: Phase 1: 2014 – 2017: Achievements and lessons learned*).

Target countries under E4 Phase 2 will include a selected group of the largest emerging economies (Brazil, China, India, Indonesia, Mexico and South Africa) with a second tier of countries (including Ukraine, Vietnam and Thailand) covered through regional approaches, unless additional funding is secured through the Clean Energy Transitions Programme (see 7.*3 Clean Energy Transitions Programme*).

7.1 Scope

E4 Phase 2 will work with (but not be limited to) the following energy efficiency areas, with the anticipated objectives set out below each area:

Improved data collection and analysis;

- Increase number of replicable quality data for the development of energy efficiency indicators in end-use sectors (e.g. industry, transport, households) at national and local decision maker levels.
- Increase national knowledge and expertise to collect and conduct analysis on energy efficiency data and indicators through cross-government collaboration and partnership with key stakeholders.
- Increase number of national and local governments, in-country energy experts and local/sectoral stakeholders aware of the importance and the modalities to collect and generate energy efficiency data and indicators to support decision-making, policy prioritisation, target setting, progress tracking and enable the evaluation of energy efficiency policies and programmes.
- Increase knowledge and use of new digital technologies and approaches for data collection and analysis on energy efficiency.

Enhanced energy supply and demand modelling and scenarios;

- Increase knowledge and capacity to build and manage integrated supply and demand modelling to support energy strategy and planning as well as policy making.
- Increase knowledge on the potential role of energy efficiency in National Determined Contributions through modelling and scenarios.
- Increase number of technical government staff trained on energy modelling including energy efficiency modelling for end-use sectors.

Advancing best practice in energy efficiency policies and programmes;

- Strengthen the design of national or regional energy efficiency policies in support of national and international climate goals.
- Increase capacity to implement national or regional energy efficiency policies in support of national and international climate goals, including energy efficiency-renewable energy integration.

- Support the uptake of energy efficiency standards for municipal services to scale up energy efficiency implementation.
- Disseminate best-practice examples of using market based instruments to drive private sector financing and investment in energy efficiency.
- Disseminate best-practice examples of using energy service company (ESCO) models to drive energy efficiency implementation, including examples from China and India.

Promote best available energy efficient technologies and systems;

- Increase knowledge and awareness of best practice policies for supporting energy efficient technologies and systems, including the use of digitalisation for policy design, implementation and evaluation.

Improved capacity and systems monitoring and evaluation of existing and future energy efficiency policies

- Increase knowledge and capacity at national and local level to undertake monitoring and evaluation of existing and future energy efficiency policies and programmes for all end-use sectors.
- Increase the adoption and implementation of tools and frameworks for monitoring progress and best practice evaluation methodologies for energy efficiency policies or programmes at the national and local levels.
- Increase awareness and adoption of the best practices to evaluate the multiples benefits of existing and future energy efficiency policies.
- Increase knowledge and use of new digital technologies and approaches for monitoring and evaluation of existing and future energy efficiency policies.

Enhancing global and regional energy efficiency capacity building for emerging economies

- Increase the number of government staff and other key stakeholders with access to comprehensive in-person training on energy efficiency policies, including sectoral training and training for municipal stakeholder.
- Increase the global outreach through comprehensive online training modules and webinars on energy efficiency, including the release and ongoing support for the use of two online courses on energy efficiency indicator statistics and policy making.
- Increase the number of international energy efficiency workshops for knowledge sharing and awareness.
- Continue to provide platforms for the dissemination of best-practice, and the building of communities of practice across sectors, within countries, and across regions through the provision of webinars and regional/country-specific events, and ongoing participation in the E4 Online Community for Training Alumni.
- Investigate opportunities to deliver multiple benefits training for senior decision makers, the training of trainers to further disseminate energy efficiency knowledge within countries.
- Maintain the current levels of gender diversity in the Energy Efficiency Training Weeks and other E4 capacity building activities.

7.2 Inception Phase

The first three months of Phase 2 is dedicated to an inception phase focused on the development of detailed work plans on a country-specific basis in close collaboration with target country governments. These work plans will detail proposed work that can be achieved with the Danish contribution alone, and will also include additional activities that are dependent on securing funding from other sources, in the unlikely event these are not already secured by the beginning of Phase 2. The inception phase will also

allow for consideration of the exact mix of bilateral, multilateral, in-country and Paris-based activity for each country and for the programme as a whole.

These tailored work plans will be established based on: the areas of interest of each target country; where the IEA can add value in the context of other international and national activities in each country; and the lessons learnt from Phase 1. The prioritisation of resources will be made based on country readiness, capacity to implement and the expected impact of activities and support. High impact activities and activities that build on existing momentum will be prioritised. IEA will then engage regularly with the government of the key emerging economies at multiple levels from the energy ministers down to the energy efficiency practitioners. This multi-level engagement ensures the programme is in line with national energy priorities and ensures that it gets a high degree of buy-in from the emerging economy governments. In turn, the high-level buy in means that the IEA has easy access to a wide range of stakeholders in the various organisations that need to be engaged to ensure successful energy efficiency policies are developed and implemented. The work plans will need to take account of contextual uncertainties among the target countries and thus will be subject to ongoing revision as appropriate, whilst still including SMART[8] achievement indicators to enable future evaluation.

In addition, Phase 2 will leverage recent IEA analysis and policy advice on, for example, digitalisation, market based mechanisms and energy efficiency-renewable energy integration as well as attempt to elevate the role of energy efficiency policies in the planning and implementation of (NDCs). The blend of activities varies from country to country and from topic to topic depending on existing capacity and priorities at that point in time. Country work plans will evolve as engagement progresses and relationships are consolidated. Deep relationships, flexibility and trust are key values. As there are many agencies collaborating on energy efficiency in all of the target countries, the IEA-E4 team regularly communicates with these agencies and stakeholders to make sure activities build on each other, exploiting synergies and avoiding repetition. Coordination with other bilateral or multilateral energy efficiency focused initiatives in each country will continue to take place, as well as with ongoing national energy efficiency initiatives and analyses, continuing to ensure that E4 does not duplicate work and provides added value. The exact nature of the collaboration will vary by country and each case is limited to a small number of the most relevant actors, but it is certainly expected to involve close collaboration with the relevant Danish agencies as in the first phase. Other relevant implementation agencies include other IEA member country development agencies (GIZ, USAID, etc.) development banks (ADB, EBRD, IDB, World Bank), Institute of Industrial Productivity (IIP), UNDP, UNEP, UNESCAP, UNECLAC, regional energy efficiency organizations (like IPEEC, REEEP, RCREEE), economic/political groups (ASEAN, Arab League, APEC) and bilateral and international programmes such as Sustainable Energy for All (SE4All) - Energy Efficiency Hub, the World Bank-Energy Sector Management Assistance Programme (WB-ESMAP), NDC-Platform and the G20 initiative on Energy Efficiency, as well as internally with other IEA-led energy sector programmes and initiatives targeted at low-carbon energy systems in emerging economies. As E4 matures from strengthening the fundamental structure for energy efficiency within the partner countries and moves to more work on policy evaluation, retaining and strengthening partnerships with other implementation focused organisations is all the more important. The possibility of leveraging additional funding opportunities through such engagement will also be explored. Again, complementarity of respective strengths will guide the nature of the collaboration. Moreover, the IEA will work closely with international fora to share lessons learned. These fora could include Clean Energy Ministerial (CEM), IEA Energy Ministerial, SE4Alll, ASEAN Energy Ministers' Meeting, APEC Economic Leadership Week, G20 and G7.

7.3 Clean Energy Transitions Programme

An important strategic element of the E4 Programme is its ability to leverage and mobilize additional funding from likeminded donors and thus to extend the range and impact of the Programme. Elements of

[8] SMART indicators are Specific, Measurable, Attainable, Relevant and Timely

this in Phase 1 included additional funding for extra regional energy efficiency capacity building. In Phase 2, this is expected to take on a greater scale through the IEA's current focus on securing new resources for a wider "Clean Energy Transitions Programme" focusing both on advancing energy efficiency and renewable energy holistically. The broader focus will also enhance the opportunities for synergies with the Danish bilateral cooperation in key emerging economies.

Denmark's continued support for E4's second phase is already generating interest from like-minded donors seeking to advance IEA's wider role in the post-Paris global implementation architecture in advancing a global transition to low-carbon energy systems. In this context, the IEA aims to support the emerging economies in implementing the energy components of their climate plans (NDCs) via the Clean Energy Transitions Programme. E4 is seen as a model for this initiative and energy efficiency will be a key focus for the whole programme, thus leveraging larger resources to build on the Danish support. A formal announcement of the programme will take place at the IEA Ministerial meeting in early November with expected contributions of about 20 million EUR.

E4 Phase 2 activities that are reliant on Danish funding only will be classified as tier one, whereas tier two activities will be reliant on the Clean Energy Transitions Programme[9]. This will ensure that secured funding is only allocated to high priority activities and will prevent overspend or under-delivery on priority activities. The Clean Energy Transitions Programme negotiations will likely be completed before the development of the country work plans in the inception phase of E4 Phase 2 and should thus create opportunities for leverage and expansion of relevant energy efficiency activities. However, if negotiations are not complete, the priority rankings of activities into two tiers will be drafted into the country work plans in the inception phase to direct initial actions and future expansion, should additional funding be secured at a later date.

8. Delivery model

The selection of the key areas of E4 collaboration and the specific activities included in the E4 Phase 2 programme are always developed on the principles of being partner-country driven and results-oriented. Through visits, workshops and discussions, the delivery model of Phase 1 was driven by three dimensions: the needs of the partner countries; the abilities and strengths of the IEA; and the activities of other relevant international actors in the country.

The first dimension ensures the work is focused on the right priorities, and also maximises its impact potential by addressing local imperatives, i.e. focusing on issues likely to be taken up and fully delivered by local actors. The second dimensions maximises effectiveness by drawing on the IEA's position as the global authority and source of energy data and analysis, including its comprehensive perspective across all aspects of energy. It also strengthens the credibility of the work by drawing on the IEA brand, and by placing it in the wider policy context, which in turn has brought more credibility to the topic of energy efficiency as a core element of wider social and economic development policy.

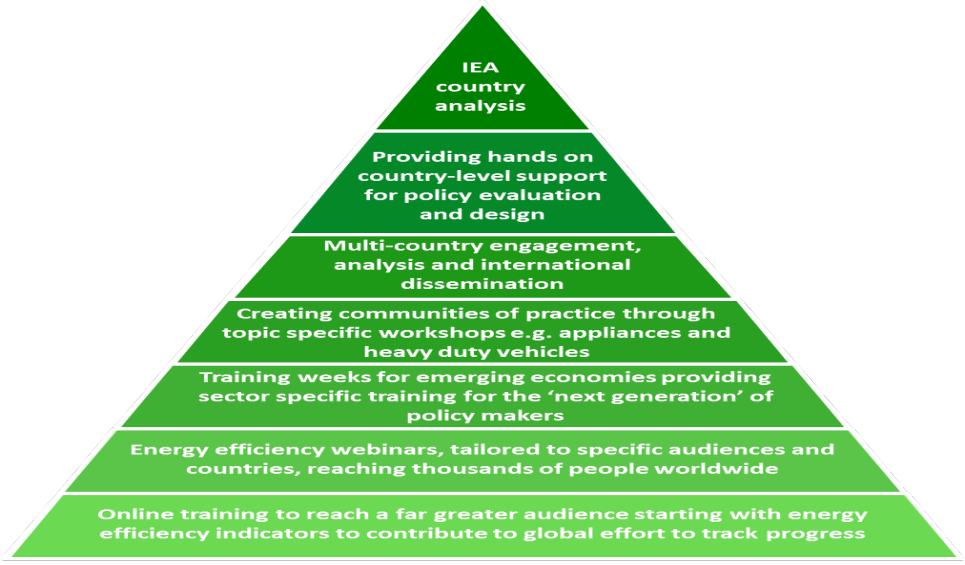
By focusing on IEA's position and strengths, E4 has created a bridge between analysis and knowledge creation, and the use of this knowledge to develop and implement policies and deliver impacts. IEA's roles relate to building knowledge sets, capacity and analysis in order for the best decisions to be made and the most effective policies to be designed. These are then taken to the stages of implementation and delivery by other actors, principally of course the governments themselves, but also other international actors. These include development agencies such as the Danish Energy Agency (DEA), GIZ, United Nations Environment and the World Bank as well as others who can take the more on-the-ground delivery-focused role following on from E4 work programs and activities. Examples include IEA's role in developing the

[9] Tier one activities will be the highly prioritized activities ranking high on all of the criteria: i) Top country demand/priority, ii) highest impact and iii) expertise in the IEA. Tier two activities will include next wave of country prioritized activities.

analysis of district heating business models in China, now being taken to on-the-ground delivery by DEA, and its role in develop the building codes roadmap in Mexico, now taken forward by the World Bank. This partnership approach is expected to be even more important in Phase 2, and is a key element in the strategic underpinnings of the E4.

The programme has also developed its own framework of points of engagement with partner countries. Figure 2 below, shows the various methods and levels of interventions used by E4, from in-depth country analysis through to the use of online training to build capacity and build and maintain networks across a far greater global audience. The framework balances resource allocation across countries and activities. The pyramid illustrates the levels of proposed activity, with those at the top of the pyramid having most short term impact and being most resource intensive, whereas the activities at the base of the pyramid will be required as an investment to ensure capacity is built to support implementation in the long term. The latter activities are equally as important as the former as energy efficiency requires long term policy settings to have a lasting impact. It also seeks to target all specific points of intervention that are a) appropriate to IEA's capabilities and strengths, and b) necessary to form a complete delivery model to ensure change and impact is delivered (i.e. there are no weak points in the change process). This in turn is informed by the underlying theory of change, discussed in the next section.

Figure 2: Methods and levels of intervention in the E4 Programme



8.1 Theory of Change

Three specific characteristics are inherent to the energy efficiency field that need to be taken into account when implementing an effective delivery model for E4. First, energy efficiency typically takes a low profile within governments and energy ministries around the world in terms of political prioritisation and financing. Secondly, human capacity in the energy efficiency field is generally weak compared with other fields within the energy sector. Thirdly, energy efficiency data reliability and availability is generally weak.

As the framework conditions have been improved during Phase 1, this has enabled more specialised activities to take place in some of the partner countries that have a more immediate impact. The outcomes of these, more specialised activities do not just lead to direct impact (GHG reductions, energy and financial savings), but also feedback to continue to strengthen the framework conditions.

Based on Phase 1 experiences, the following diagram illustrates the intervention logic for E4 Phase 2. It is aligned with the framework for the Danish Climate Envelope in that it will: 1) support more effective

policies and planning; 2) promote climate solutions through more effective markets and investments; and 3) build a more robust international architecture.

Figure 3: Intervention Logic for E4 Phase 2

The overall outcome of the programme is that the six target emerging economies are making progress towards low carbon energy systems, while reaping the social and economic development benefits of improved energy efficiency and adding to the global knowledge base on energy efficiency. This outcome will be delivered through a range of capacity building inputs[10], which are key to creating transformational change in the target countries. E4 delivers a range of capacity building activities, from the E4 Energy Efficiency Training Weeks, to webinars, to online training and capacity building through hosting secondees and connecting target country key policy makers with IEA experts to provide ongoing support and guidance. Building the capacity within emerging economies to enable them to develop and implement evidence based energy efficiency policies, and to evaluate the success of those policies in the future, will contribute to lasting changes, reducing energy use and GHG emissions over the long term.

The IEA's role is to stimulate increased knowledge and interest in energy efficiency policies, providing evidence to make the case and offering best-practice policy examples and lessons from elsewhere. All of this is to drive local analysis and decision-making, rather than to displace it, and therefore the success of this approach depends on local capacity. Not only are energy efficiency departments or sections in Ministries often sparsely staffed, they tend to experience high personnel turnover. This is in some ways a universal problem, but does tend to occur more often in a topic such as energy efficiency which is often

[10] It should be noted that many international endeavours make similar inputs and while it is not possible to coordinate them all, the IEA makes best endeavours to ensure other interventions are built upon and resources are used in the most appropriate and effective manner.

seen as somewhat peripheral or a lower priority, even within energy policy. Therefore, E4 specifically targets mid-level policy makers with energy efficiency training opportunities through its intensive week-long training events, as well as through online training and webinars. These activities are focused on the very people responsible for developing and implementing relevant policies, and constitute the pool from which senior policy makers will be drawn in the future.

The capacity building elements outlined above also feed directly into supporting enabling environments through knowledge, political support and awareness. They build stronger institutions for design and implementation of policies, and also support other partners' (development agencies etc.) implementation in taking the further steps on on-the-ground implementation. It also leads directly to specific policy outcomes, new mechanisms and strengthened enforcement mechanisms, amongst others. By definition, the programme, through IEA experts, brings policy making towards international best practice by sharing such practice, training in its delivery, and creating opportunities for learning and exchange. Key element of this is the IEA's core ability to strengthen data and analysis modelling, and the related skills in governments, to make better decisions and ultimately deliver better impacts.

8.2 Key assumptions

Energy efficiency in the emerging economies is a vast subject including many national and international actors and subject to many unpredictable circumstances such as changes in government and key personnel. The proposed theory of Change has therefore been built on the following assumptions:

- The emerging economies continue to value working with the IEA so demand remains high and the IEA team remains influential even while there are many domestic and international distractions for the key interlocutors.
- The IEA is successful in linking energy efficiency with national social and economic development priorities so that the energy efficiency policy makers are sufficiently resourced to act on what they learn through working with the IEA.
- That the narrative connecting energy efficiency to social and economic development is sufficiently compelling to survive changes in government because for energy efficiency to be successful it requires long term policy settings.
- That the IEA working with other local and International stakeholders is able to convince the key domestic and international actors that all interventions should be building towards the same outcomes rather than dividing resources and leading to disparate and ineffective actions.
- That implementing agencies buy into this concept from an early stage and channel their resources into implementation of activities that have been identified through analysis and are in line with the long term narrative.
- That sufficient resources are allocated to evaluation to reinforce the narrative concerning the benefits of energy efficiency and provide evidence of the benefits as well as an ongoing feedback loop.

9. Objective and summary of engagement

The objective of the development cooperation among the parties is for the IEA to support a core group of six of the largest emerging economies' energy transition in a low-carbon, sustainable direction, aiming to achieve efficient and cost effective improvements in energy efficiency at national and sector levels. For this to happen, in-country energy efficiency experts and policy decision makers need to be aware of the opportunities, measures and applicability of effective energy efficiency policies and the contributions they make to the clean energy transition and climate change, as well as broader economic and social development goals.

The IEA will assist stakeholders in developing their own tools and models to make recommendations and decisions based on solid evidence. These tools and frameworks will be built with the long-term perspective

in mind so that impacts can be tracked and policies can be adjusted if they are not achieving their desired outcomes. E4 will follow a demand-driven and outcome-oriented approach, with emphasis on coordination and synergies between both the most appropriate domestic and international actors to ensure resources are used most effectively and capacity is built where it is most needed.

The support is aligned with the objective of the Danish Climate Envelope by assisting developing and emerging economies with the transition to a low carbon economy by supporting and strengthening national and community-level climate change policies, planning frameworks and information systems and scale up climate-relevant technologies, infrastructure and markets.

9.1 Results Framework

The ability of energy efficiency to deliver substantial GHG emissions reductions is clear. According to IEA analysis, it will be the single largest contributor to CO_2 reductions globally. IEA's so-called Bridge Scenario, published at COP21 in 2015, highlighted the potential acceleration in GHG emissions abatement from stronger energy efficiency action. For the six key E4 countries, the abatement potential from energy efficiency is 1.35 Gt between now and 2030. This is 40% of the global abatement potential from energy efficiency, and 16% of the total global energy related abatement potential. This shows the great significance of energy efficiency in these countries to global GHG abatement.

However, in programmatic terms, there are significant challenges in precisely measuring the GHG impact of energy efficiency support actions. As well as issues such as attribution and the effect of structural changes, energy efficiency has unusually long time cycles from policy formulation to impact. The IEA has commenced new work on analysing the impact of energy efficiency on key variables such as GHG emissions. As this work continues, analysis will be bought to bear in order to develop more precise methods of directly measuring the GHG impacts of energy efficiency policies, and, in turn, energy efficiency support actions.

For reporting purposes the following objective, outcome and outputs have been selected to show the expected progress and intervention logic of the E4. An actual, measureable results framework with specific baselines, targets and impact indicators in relation to energy savings and GHG emission reductions will be established as part of the inception phase when details on sector focus, intervention activities and work plans have been agreed and specified.

Project title		**Energy Efficiency in Emerging Economies, Phase 2 (E4 Phase 2)**	
Project Objective and Overall Outcome		Six of the largest emerging economies are in transition to a low-carbon, sustainable energy system via efficient and cost effective improvements in energy efficiency at national and sector levels through better data, policy frameworks and tools.	
Impact Indicator		GHG emissions reduced through increased use and uptake of improved energy efficiency data, models, enabling framework conditions and best-practice policies for advancing energy efficiency improvements.	
Baseline	Year	2017	Limited potential for reducing GHG emissions through energy efficiency measures since energy efficiency experts and policy makers have inadequate capacity, data and models to advance energy efficiency policies and implement improvements.
Target	Year	2020	High and improved potential for reducing GHG emissions since energy efficiency experts and policy makers have significantly strengthened their capacity to develop and use data, models, policies and regulations to advance and implement energy efficiency improvements.
Outcome		Strengthened planning frameworks and information systems for promoting and implementing energy efficiency policies and measures; policy makers and	

		governments are enabled to identify, design, implement and evaluate priority energy efficiency policy measures as part of their Nationally Determined Contribution (NDC).	
Outcome indicator		An increased number of governments, in-country energy experts and local/sectoral stakeholders are aware of energy efficiency opportunities and benefits, models and best-practice policy applicability; the development of at least six national or sectoral policies and regulations in targeted, emerging economies.	
Baseline	Year	2017	Limited awareness of energy efficiency opportunities and benefits, models and best-practice policy amongst many energy efficiency experts and policy makers; limited capacity, access and enabling frameworks for promoting and implementing energy efficiency measures.
Target	Year	2020	Consolidated awareness of energy efficiency opportunities and benefits, models and best-practice policy for energy efficiency experts and policy makers in the six target emerging economies; increased capacity, access and enabling frameworks for promoting and implementing energy efficiency measures across all end-use sectors; significant inputs to at least six national or sectoral policies and regulations is provided.
Output		Improved Data Collection and Analysis	
Output indicator		Increased availability of replicable, quality data for development of energy efficiency indicators in end-use sectors at national, regional and local decision maker levels; increased national knowledge and expertise to collect and conduct analysis on energy efficiency data and indicators through cross-government collaboration and partnership with key stakeholders; increased number of national and local governments, in-country energy experts and local/sectoral stakeholders aware of the importance and the modalities for accessing energy efficiency data and indicators to support decision-making, policy prioritisation, target setting, progress tracking and enabling the evaluation of energy efficiency policies and programmes; Increased knowledge and use of new digital technologies and approaches for data collection and analysis on energy efficiency.	
Baseline	Year	2017	Inadequate and limited quality data in government for the development of energy efficiency indicators; poor knowledge and expertise of energy efficiency data collection and analysis; limited awareness of the importance of energy efficiency data and indicators; limited or no knowledge or use of new digital technologies and approaches for data collection and analysis.
Annual target	Year 1	2018	Improvement in access to quality data for development of energy efficiency indicators in selected end-use sectors at national level among energy efficiency policy makers; improved expertise of energy efficiency data collection and analysis.
Annual target	Year 2	2019	Better access to quality data for development of energy efficiency indicators in several end-use sectors at national level and local level; improved knowledge and expertise of energy efficiency data collection and analysis; Increased awareness of the importance of energy efficiency data and indicators at national and local levels.
Annual target	Year 3	2020	Sustained access to high quality data for development of energy efficiency indicators in end-use sectors at national, regional and local levels; strengthened knowledge and expertise of energy efficiency data

			collection and analysis; significant awareness of the importance of energy efficiency data and indicators at national and local levels; increased knowledge and use of at least one new digital technology or approach for data collection and analysis.
Output		Enhanced Energy Supply and Demand Modelling and Scenarios	
Output indicator		Increased knowledge and capacity to build and manage integrated supply and demand modelling to support energy strategy and planning as well as policy making; increased knowledge of the potential role of energy efficiency in NDCs; increased number of technical government staff trained on energy modelling including energy efficiency modelling for end-use sectors.	
Baseline	Year	2017	Limited knowledge and capacity to build and manage integrated modelling; limited knowledge of the potential role of energy efficiency in NDCs; limited technical government staff trained of energy modelling.
Annual target	Year 1	2018	Gradual improvement in knowledge and capacity to build and manage integrated modelling; gradual improvement in knowledge of the potential role of energy efficiency in NDCs.
Annual target	Year 2	2019	Improved knowledge and capacity to build and manage integrated modelling; Improved knowledge of the potential role of energy efficiency in NDCs; increased number technical government staff trained on energy modelling.
Annual target	Year 3	2020	Significant knowledge and capacity to build and manage integrated modelling across all six target emerging economies; significant knowledge of the potential role of energy efficiency in NDCs; significant number of technical government staff trained on energy modelling.
Output		Advanced Best Practice in Energy Efficiency Policies and Programmes	
Output indicator		Strengthened design of at least three national or regional energy efficiency policies in support of national and international climate goals; increased capacity to implement at least three national or regional energy efficiency policies in support of national and international climate goals, including energy efficiency-renewable energy integration.	
Baseline	Year	2017	Poor design of existing or new national or regional energy efficiency policy; poor capacity and likelihood of implementing existing or new national or regional energy efficiency policy; lack of coordination between relevant national agencies and international partners.
Annual target	Year 1	2018	Gradual improvement in design of existing or new national or regional energy efficiency policy; gradual improvement in implementation of existing or new national or regional energy efficiency policy influenced by improved networks of national and international stakeholders.
Annual target	Year 2	2019	Improved design of at least two existing or new national or regional energy efficiency policies; Improved implementation of at least two existing or new national or regional energy efficiency policies.
Annual target	Year 3	2020	Improved design of at least three existing or new national or regional energy efficiency policies; strengthened implementation of at least three existing or new national or regional energy efficiency policies. National and international stakeholders are well coordinated.
Output		Promoted Best Available Energy Efficient Technologies and Systems	

Output indicator		Increased knowledge and awareness of best practice policies for supporting energy efficient technologies and systems, including the use of digitalisation for policy design, implementation and evaluation. Development of specific technology roadmaps.	
Baseline	Year	2017	Limited knowledge and awareness of best practice policies for supporting energy efficient technologies and systems.
Annual target	Year 1	2018	Gradual improvement in knowledge and awareness of best practice policies for supporting energy efficient technologies and systems including the use of digitalisation for policy design, implementation and evaluation.
Annual target	Year 2	2019	Improved knowledge and awareness of best practice policies for supporting energy efficient technologies and systems including the use of digitalisation for policy design, implementation and evaluation.
Annual target	Year 3	2020	Strengthened knowledge and awareness of best practice policies for supporting energy efficient technologies and systems including the use of digitalisation for policy design, implementation and evaluation. Development of two technology roadmaps.
Output		Improved Capacity and Systems Monitoring and Evaluation of Existing and Future Energy Efficiency Policies	
Output indicator		Increased knowledge and capacity at national and local level to undertake monitoring and evaluation of existing and future energy efficiency policies and programmes for all end-use sectors; adoption and implementation of tools and frameworks for monitoring progress and best practice evaluation methodologies for at least three energy efficiency policies or programmes at national and local levels; increased awareness and adoption of best practice to evaluate the multiple benefits of existing and future energy efficiency policies; increased knowledge and use of new digital technologies and approaches for monitoring and evaluation of existing and future energy efficiency policies.	
Baseline	Year	2017	Limited knowledge and capacity to undertake monitoring and evaluation of energy efficiency policies; limited adoption of tools and frameworks for monitoring progress and best practice evaluation methodologies; limited awareness of best practices to evaluate the multiple benefits of energy efficiency; limited knowledge or use of new digital technologies and approaches for monitoring and evaluation of energy efficiency policies.
Annual target	Year 1	2018	Gradual improvement in knowledge and capacity to undertake monitoring and evaluation of energy efficiency policies and programmes in selected end-use sectors; introduction to tools and frameworks for monitoring progress and best practice evaluation methodologies; gradual increase in awareness on best practices for evaluation of multiple benefits of energy efficiency .
Annual target	Year 2	2019	Improved knowledge and capacity to undertake monitoring and evaluation of energy efficiency policies and programmes in most end-use sectors; introduction to tools and frameworks for monitoring progress and best practice evaluation methodologies; introduction to best practice for evaluation of multiple benefits of energy efficiency; gradual increase in knowledge and use of new technologies and approaches for monitoring and evaluation of energy efficiency policies.
Annual	Year 3	2020	Strengthened knowledge and capacity to undertake monitoring and

target			evaluation of energy efficiency policies and programmes for all end-use sectors across all of the six target emerging economies. Successful adoption and implementation of tools and frameworks for monitoring progress and best practice evaluation methodologies for at least three energy efficiency policies or programmes at national and local level; improved awareness and adoption of the best practices to evaluate the multiples benefits of existing and future energy efficiency policies; increased knowledge and use of at least one new digital technology or approach for monitoring and evaluation of existing and future energy efficiency policies.
Output		Enhanced Global and Regional Energy Efficiency Capacity Building for Emerging Economies	
Output indicator		Increased number of government staff and other key stakeholders with access to comprehensive in-person training on energy efficiency policies (at least 600 people trained); increased global outreach through comprehensive online training modules and webinars on energy efficiency (at least 15 training events and webinars held); increased number of international energy efficiency workshops for knowledge sharing and awareness (at least 6 workshops).	
Baseline	Year	2017	Increasing, but low number of government staff and in-county energy efficiency experts with access to comprehensive in-person training on energy efficiency policies; limited number of online training modules and webinars on energy efficiency; limited number of accessible international energy efficiency workshops for knowledge sharing and awareness.
Annual target	Year 1	2018	Gradual increase in number of government staff with access to comprehensive in-person training on energy efficiency policies (at least 200 people trained since the start of phase 2); gradual increase in webinars on energy efficiency (at least 5 webinars held since the start of phase 2); gradual increase in number of international energy efficiency workshops for knowledge sharing and awareness (at least 2 workshops held since the start of phase 2)
Annual target	Year 2	2019	Increase in government staff with access to comprehensive in-person training on energy efficiency policies (at least 400 people trained since the start of phase 2); gradual increase in training modules and webinars on energy efficiency (at least 10 training events and webinars held since the start of phase 2); increase in international energy efficiency workshops for knowledge sharing and awareness (at least 4 workshops held since the start of phase 2).
Annual target	Year 3	2020	Significant increase in government staff with access to comprehensive in-person training on energy efficiency policies (at least 600 people trained since the start of phase 2); significant increase in training events and webinars on energy efficiency (at least 15 training events and webinars held since the start of phase 2); significant increase in international energy efficiency workshops for knowledge sharing and awareness (at least 6 workshops held since the start of phase 2).

It should be noted that the IEA's internal results framework for client supported technical cooperation is restricted to results that can be achieved within the technical cooperation and which are under the direct

control of the project[11]. While the E4 Phase 2 Programme provides a material contribution to the outcomes and impacts, outcomes and impacts may also stem from factors both within and beyond control of the engagement. The inclusion of the outcomes and indicators is therefore not to be interpreted as a legal commitment by the IEA to fully achieve all the outcomes.

10. Monitoring, Reporting and Evaluation

The parties have agreed to the following management and reporting framework with the aim to ensure adequate dialogue and timely decisions in regard to this development engagement. Progress will be measured through the IEA's monitoring framework supported by the OECD's finance systems, which facilitate the necessary processes for monitoring and evaluation. These processes have also been used for past Voluntary Contributions from the Danish MFA and will secure tracking of the expected outcomes under each activity. Financial Reporting will be in accordance with OECD financial regulations.

Subject to the outcome of the Clean Energy Transitions Programme, E4 will look to streamline reporting requirements for each of the Phase 2 financial contributors, subject to the agreement of Denmark. During the inception phase the IEA will establish individual country and cross county work plans that will form the basis for activity monitoring. Denmark (MEUC) and other IEA member countries will have oversight and can provide guidance and participate in making decisions on E4 through the following reporting and consultation mechanisms:

- IEA's Governing Board, of which Denmark (MEUC) is a member and has overall oversight of IEA's programme of work. Governing Board meetings take place three to four times a year.
- Energy Efficiency Working Party (EEWP) is the committee providing advice on IEA's energy efficiency activities, and includes representation from Denmark (MEUC) and other IEA member countries. The Energy Efficiency Division will report bi-annually on its activities to support E4 to the EEWP.
- The E4 Reference Group, which was in place for Phase 1, will continue unless there is a decision to combine it with a group overseeing the Clean Energy Transitions Programme. Membership will be based on existing membership (Denmark (MEUC), European Commission, US and Japan) and be expanded as appropriate. The Reference Group will operate under the aegis of, and report to the EEWP. The role of the Reference Group will be to discuss and assess the Programme scope and progress against objectives, progress indicators and on the experience from Phase 1. The Reference Group will provide a forum: (i) to discuss the IEA's activities under the Programme, (ii) to exchange views on the opportunities and challenges related to Programme implementation, (iii) to consult on modalities to strengthen implementation, and (iv) to identify opportunities for collaboration and synergies with programmes of other members of the Reference Group or others, for example identifying opportunities for E4 to collaborate with national agencies or other bodies active in the same countries. The E4 Reference Group will meet twice a year, either in person or via video conference, and its terms of reference will be developed in cooperation with E4 Reference Group members. It is anticipated that these will be completed during the inception phase in order to incorporate any changes related to the Clean Energy Transitions Programme into the existing E4 Reference Group membership structure and mandate.
- Reference Group discussions will be supported by reports prepared specifically for each meeting to advice on latest developments, and by more comprehensive annual evaluation reports of programme activities.

[11] This is to ensure that the IEA is held accountable only for results that are under its control.

- Specifically, the Reference Group will be presented an Inception Report, including work plans and budget, on the E4 Programme subject to approval by Denmark (MEUC).

Specifically, the following monitoring and evaluation framework is implemented for Phase 2 of E4:

- The E4 Program Manager will report regularly on the progress of E4 activities to the Head of the Energy Efficiency Division.
- The IEA will consult with the Danish Government focal points (MEUC) on the implementation of the program at least once every three months via conference call. Progress will be reported in the annual progress report which will be accompanied by an annual financial report following the template in *Annex C: Standards requirements for financial management capacity*.
- The IEA will provide Denmark (MEUC and MFA) with an annual financial report giving a breakdown of expenditure by activity and category as defined in the financial report template in *Annex C: Standard requirements for financial management capacity*. The financial report will be based on information included in the OECD's accounts, which are subject to independent audit. The income and expenditure that will relate to the E4 Programme will be subject to audit in accordance with the auditing procedures that apply to the IEA.
- An annual narrative report will be provided in an activity based format, and will include completed and planned activities (as per the *7.1 Scope*) according to the detailed work plans developed in the inception phase (see *Annex D: Indicative activity reporting template*)) and impact indicators as per the 9*.1 Results Framework*).
- In the final six months of Phase 2, the IEA will conduct a wrap-up assessment of the program achievements (both Phases 1 and 2) and submit a final substantive report within six months of the end of Phase 2. This report will include a section on achievements relating to the indicators in the Results Framework presented in section 9.1. The report will be shared with the Reference Group to support a final wrap-up meeting after the conclusion of Phase 2.
- These reporting activities will be supported by regular internal reviews and briefings to the IEA's senior management.
- Coordination of E4 Phase 2 activities will take place in the ongoing coordinating meetings with relevant energy efficiency focused activities, in particular with the Danish Energy Agency's government-to-government cooperation, the SE4All energy efficiency Hub, the NDC-Platform, the G20 energy efficiency initiatives and the WB-ESMAP.
- To improve external communication and outreach, E4 will develop a brief communication and outreach plan in order to highlight E4's ongoing work to different target audience through the IEA website and social media as well as through brochures, publications, webinars, workshops, conferences and meetings.

There are currently no plans for conducting a mid-term review during the implementation phase of E4 Phase 2. Mid-term reviews or evaluations of the program will be discussed with the IEA and decided with donors to the Clean Energy Transition Programme.

Denmark shall have the right to carry out any technical mission that is considered necessary to monitor the implementation of the programme.

After the termination of the programme support, Denmark reserves the right to carry out an evaluation in accordance with this article.

11. Risk Management

E4 faces several challenges, in particular fluctuations in target country willingness, commitment and capacity to participate in the programme, which may result from changes in counterparts, contacts and national priorities due to macro or micro-level events. These are inevitable risks in any country, but they should nevertheless be considered and addressed during programme formulation and implementation.

Risks are reflecting the key assumptions of the Theory of Change and structured according to their feature of being contextual, institutional or programmatic. Overview of these risks is provided in the *Annex F* with indication of their likelihood, impact and mitigation approach. Only the risk associated with the "lack of local capacity to deliver" is assessed "likely and with major impact". The risk is determined to be internal political priorities and mitigated by IEA's continued engagement of the most relevant target countries' specialists, as well as at the political decision makers' level. All risks are justified and explained in *Annex F*.

12. Program Budget

The total proposed budget contribution of the Danish MFA to the IEA is DKK 25,000,000 over 36 months. This amount is proposed to be distributed between the geographical activities listed in the Indicative Program Budget below. Allocations will be conducted and reported in DKK. Reallocations in the budget exceeding 10% of the total program budget and/or changes in the results framework cannot be conducted without prior discussion and approval by Denmark (MEUC and MFA). Such reallocations can be presented and approved at the time of the Inception Report or afterwards in a written exchange between IEA and Denmark.

An indicative budget has been developed below based on experience from E4 phase 1. This will be elaborated during the inception phase of phase 2. It is important to note that the IEA will be able to provide financial reporting on actual expenditure by geographical activity as listed in the Indicative Program Budget (e.g. "Global", "Regional", "Country: Brazil" etc.), but not by other outputs or activities that may be described in this program document.

Budget by Geographical Activity	2018	2019	2020	Total (DKK)
Global*	1,300,000	1,300,000	1,300,000	3,900,000
Regional*	1,400,000	1,400,000	1,150,000	3,950,000
Country: Brazil	300,000	225,000	200,000	725,000
Country: China	1,000,000	1,500,000	1,500,000	4,000,000
Country: India	1,200,000	1,400,000	1,000,000	3,600,000
Country: Indonesia	1,100,000	1,100,000	1,100,000	3,300,000
Country: Mexico	800,000	600,000	500,000	1,900,000
Country: South Africa	600,000	600,000	500,000	1,700,000
Country: Thailand	100,000	100,000	100,000	300,000
Country: Other	100,000	100,000	100,000	300,000
VC Administration Charge**	1,325,000	-	-	1,325,000
TOTAL (DKK)	**9,225,000**	**8,325,000**	**7,450,000**	**25,000,000**

* Some training and capacity building activities as well as sector policy advice and analysis will have global or regional relevance and target audience from multiple countries.

** The VC Admin charge is 5.3% of the total VC amount. It will be billed in full in the year in which the VC is accepted. In the final financial report, the VC admin charge must not exceed 5,3% of the total VC amount.
The IEA/OECD accounting policy (i.e. Financial instructions FI 6.36) provides that the VC administrative cost recovery charge is recorded upon acceptance and entry of the VC amount.

As with Phase 1, the contribution is planned to follow an umbrella Voluntary Contribution model, with the funding directly administered by the E4 team within the Energy Efficiency Division. As with Phase 1, all funding allocation, management and reporting, is carried out within the Energy Efficiency Division, but also involves spending across other parts of the IEA (see *Annex B: Programme Support Mechanisms*).

12.1 Financial Management

Financial management procedures of Denmark's contribution will follow those of the IEA that are aligned to the OECD "Financial Regulations of the Organization [C(2008)92/REV1]". Danish funds are earmarked and shall be managed and accounted for separately from other funds covering activities not related to E4. The annual financial report will be based on information included in the organization's accounts, which are subject to independent audit (for more information, see *Annex C: Standards requirements for financial management capacity*).

The annual financial report will be forwarded to MEUC and MFA no later than June 30th the following year together with the most recent annual OECD audited financial statements.

The total budget will be DKK 25,000,000 and shall be used for the agreed purpose only. As a rule, any unspent funds at the end of the implementation period must be returned to Denmark. However, the Parties may consult on the possibilities of unspent funds to be reallocated to any subsequent phase or other activity towards the same objectives. Since Denmark's contribution will be held in a multi-donor funded account, joining the interest accrued from other donors, interests accrued from the deposit of Danish funds will not be returned to Denmark at the end of the implementation period.

The OECD/IEA shall administer the contribution in accordance with its Financial Regulations and other relevant OECD rules, policies and procedures and IEA guidance on VC management, which currently provide for an administrative cost recovery charge of 5.3% of the total contribution amount. The expenditure will be recorded in the accounts of the OECD, which follow generally accepted accounting principles.

IEA has the obligation to inform the MEUC and the Danish MFA, immediately, if any changes, including overspending of budget lines outlined in the Indicative Programme Budget (above the 10% threshold), or irregularities in the management of funds are foreseen or have occurred.

13. Anti-corruption Clause

No offer, payment, consideration or benefit of any kind, which could be regarded as an illegal or corrupt practice, shall be made, promised, sought or accepted – neither directly nor indirectly – as an inducement or reward in relation to activities funded under this agreement, incl. tendering, award, or execution of contracts. Any such practice will be grounds for the immediate cancellation of this agreement and for such additional action, civil and/or criminal, as may be appropriate. At the discretion of the Danish MFA, a further consequence of any such practice can be the definite exclusion from any projects funded by the Danish MFA.

Annex A: Phase 1: 2014 – 2017: Achievements and lessons learned

In 2013, Denmark funded the 4-year Phase 1 of E4 with 25 MDKK, co-sponsored by the European Commission with approximately 20 MDKK. E4 has assisted the target countries with improving data and modelling capability; increasing awareness of energy efficiency's potential benefit to their economies; and improving the capacity to implement evidence-based policy decisions. In addition to this, the global knowledge base on energy efficiency has been enhanced through the use of new data and information sources from the emerging economies. As testament to the achievements of Phase 1 of E4, there is a large demand for analytical and capacity building support from the Programme, including from a number of non-target countries and regions.

Below is a brief summary of achievements, key observations and lessons learned from Phase 1. A summary of these achievements by country and region is included in Table 1.

Energy efficiency policy development

E4's support, has improved the evidence on which governments in target countries can base their policy decisions and is starting to assist in detailed policy design. The support mechanisms include improving the knowledge and capacity of the key actors through: training; webinars and workshops sharing of analysis of best practice; and hands-on participation by IEA experts to assist with specific policy design. Two examples of the latter are:

- Detailed modelling carried out by the IEA, in collaboration with South African government officials, has contributed to South Africa's National Energy Efficiency Strategy. The modelling has improved confidence in the strategy by improving the evidence base used to set targets, and has also helped in the identification of the specific policy measures that would be necessary to attain those targets. This work was undertaken in partnership with Swiss and Danish funded projects that proposed a mechanism for tracking progress against the targets and elaborated the strategy. This example illustrates the benefit of IEA working alongside other International partners as an independent advisor and increasing the confidence of the government in their recommendations.
- In Mexico, IEA and Mexican experts collaborated to develop a new and detailed overview of the drivers for future increases in energy consumption. In particular, as Mexico's GDP grows, it is inevitable that more air conditioners will be used putting severe pressure on Mexico's existing electricity network and economy. In response to this analysis, E4 worked with the Mexican Government to develop a space cooling strategy for Mexico, involving a wide range of stakeholders in the process. The recommendations emerging from the strategy have led to a number of activities being implemented by the Mexican Government, by IEA and by other organisations. This is an example of IEA analysis preparing the ground for other agencies to implement specific actions in a prioritised, coordinated manner.

Capacity building and analysis

Capacity building, in particular enhancing analytical capabilities, within target countries is the key to ensuring that E4 creates lasting, transformational change. The training of policy and data modelling professionals in each of the E4 countries (as well as those based elsewhere in the world) leads to better quality data collection, data and policy analysis, and therefore, more effective, evidence-based policy making within each country. Building the capacity of policy makers to undertake their own data collection, analysis and evaluation of energy efficiency policies is key to ensuring long-term, transformational change

towards improving energy efficiency globally. An important element of the training strategy is to help countries better monitor their progress so that the impacts of energy efficiency policies can be understood and improved. In addition this process contributes to monitoring E4 outcomes and the global effort to track progress against SDG7, Sustainable Energy for All and the Paris Agreement.

Capacity building and training activities have also been designed to help foster exchange between countries and regions and the sharing of best practice, as well as building Communities of Practice[12] in which participants can continue to contribute to and learn from in the future.

In the early stages of the implementation of E4 it became clear that the human resources available to absorb the capacity building on offer (both from IEA and others) to the extent that people would be able to take action were in very short supply. Even in a country like China, where energy efficiency policies have been evolving for nearly thirty years, the number of skilled policy professionals is inadequate for the challenges they face. In a country like South Africa, where work on energy efficiency started much more recently, the capacity to absorb assistance is even more lacking. This observation led to the development of detailed training courses (that did not already exist elsewhere) for junior policy makers in each of the main sectors of the economy namely; appliances and lighting; buildings; industry; and transport. IEA decided to run these courses concurrently so that small groups of officials could travel to training events together thus strengthening their relationships and mutual understanding with each other as well as with peers from other countries. Previous experience suggests that this is more likely to lead to action than if individuals receive isolated training. This training has become E4's flagship training programme known as the Energy Efficiency in Emerging Economies Training Week that has been held in Paris in 2015, 2016 and 2017. In 2017, due to the success of the Paris events, regionally-tailored training weeks will also be held in Singapore, Georgia (as part of the EU4Energy Project) and Brazil (see details in Table 1 below), using funds leveraged from Singapore's Energy Market Authority, EU4Energy and the Latin American Development Bank (CAF). These training weeks will have reached over 600 people by the end of Phase 1. Participants are selected for the training weeks on the basis of their roles and experience, while also taking into account the importance of gender diversity. Over time, the number of women participating in the Paris training week has risen from a quarter in 2015, to a third in 2016 to nearly half of all participants in 2017. Other training events include workshops and webinars, with attendees expected to number 500 and 2400 respectively by the end of Phase 1.

Other examples of enhancing analytical capacity through IEA collaboration include the special Chinese-language report on Energy Efficiency in China (a supplementary publication to the Energy Efficiency Market Report 2016); special Energy Efficiency Outlooks for South Africa and India; Energy Efficiency Policy Recommendations Series produced through collaborative processes for Ukraine, South-East Asia and Latin America, and a special focus on cities in Mexico in the 2016 Energy Technologies Perspectives publication.

Strengthening the IEA's outreach

The first phase of E4 has also provided the opportunity for the IEA and its member countries to benefit from improved data for IEA analysis and modelling, broader learning networks and greater global engagement on energy efficiency analysis and policy implementation. Furthermore, E4 has provided a strong platform for the IEA modernisation agenda in opening the Agency's doors to emerging economies

[12]Peer-to-peer groups of energy efficiency policy makers working on similar issues. E4 experience has highlighted how many of the issues are shared and hence how peer-to-peer exchange can build knowledge and capacity.

and developing into a clean energy and energy efficiency hub. At the 2015 IEA Ministerial meeting, China, Indonesia and Thailand – all emerging economies and large energy consumers - became Association Members and Mexico started the Accession process to become an IEA member. Since then, India, Morocco and Singapore have also become Association Members.

The IEA's enhanced focus on energy efficiency and its widening engagement with key emerging economies are closely linked. In a number of countries, the Danish support for the first phase of E4 has been very important in building relationships and social capital contributing to those countries becoming some of the IEA's first Associate Members[13].

The IEA's expertise in the full spectrum of energy issues, and a global resource for energy efficiency in emerging economies, is reflected in the widespread use of IEA's publications. A list of reports and publications supported by E4 is included in *Annex E: List of Supplementary Materials*.

Communities of Practice

Bringing together a broad range of stakeholders to discuss energy efficiency challenges and data needs can create 'communities of practice' where people share policy experiences, research outcomes and data sources to build a stronger evidence base for policy initiatives. These communities can be built within countries, creating coalitions and building support for strengthening and implementing new energy efficiency policies across government agencies, as well as across regions. Within South Africa, Mexico and Indonesia for example, E4, capitalising on the convening power of the IEA, has helped to coordinate between government agencies, by increasing the frequency and substance of inter-departmental and inter-ministerial meetings, facilitating discussions and asking for and sharing information across departments.

E4 plans to continue to expand and create new communities of practice, including through webinars, and the launch of an online platform to enable past training week participants to continue to share their experiences and ideas. Continuing to build and expand these communities of practice will remain a priority in Phase 2, including through the launch of a Southeast Asian webinar series.

Webinars and online training for wider dissemination

Webinars have proven to be an effective and low-cost method of building and expanding the communities of practice in some countries, as demonstrated by the large increases in attendance at, and interest in, the Mexican energy efficiency webinar series. E4 has already reached an audience of 2400, providing free country and sector-specific webinars. However webinars are not popular in all countries and attempts to replicate the Latin American experience in Asia have not yet been successful. E4 is also currently working on the development of a free online training course on energy efficiency indicators, based on the IEA Energy Efficiency Indicators manuals[14], to be released before the end of Phase 1. These courses will build capacity globally amongst energy efficiency policy makers and statisticians to improve energy efficiency indicators for analysis within countries, and for emerging economies to provide the IEA with better quality energy efficiency data for improved global analysis. Given the experience with developing the communities of practice in Phase I, IEA plans to facilitate structured, roll outs of the online training as part of an ongoing engagement strategy.

[13] A new IEA membership category created to include emerging economies as part of the globalisation of the IEA.
[14] Energy Efficiency Indicators: Essentials for Policy Making and Energy Efficiency Indicators : Fundamentals on Statistics

Multiple Benefits of energy efficiency

Sometimes governments constrain energy efficiency policy development out of fear of damaging their domestic industries when these industries actually seek stronger energy efficiency policies and policy certainty. For example, bringing the automobile industry together with the government in Indonesia revealed that industry wanted the government to do more on energy efficiency in order to stop the inefficient and costly practice of manufacturing different products for domestic and international markets. In other cases, weak standards intended to favour domestic manufacturers have led to dumping of low cost, inefficient products from other countries thus making it difficult for domestic manufacturers to compete. In Phase 2, IEA will aim to further cross-ministerial collaboration noting that our country focal points are always the Ministries of Energy. IEA also plans to do more work on quantifying the benefits of energy efficiency projects in terms of countries' strategic economic and social development priorities. This will build on the UJALA project, which effectively communicated the many benefits of energy efficiency in lighting in India for the government, electricity customers and lighting manufacturers.

Importance of experts

In Mexico, where there is a strong and long-term relationship between the IEA and the Ministry of Energy, the use of a long-term consultant (engaged by the IEA) has been highly effective and allows for a very smooth working relationship. This has proven to be mutually beneficial in helping provide direction and enhancing collaboration within the Ministry and other organisations on energy efficiency. Similarly having a secondee from the Indonesian Ministry of Energy and Mineral Resources at the IEA has been of great value to the work of E4 and the quality of energy analysis on Indonesia across the IEA. Significant improvements have been made to IEA's World Energy Outlook and Energy Technology Perspectives data and modelling assumptions, and having this secondee has enabled the development of a focus chapter on Indonesia for the Energy Efficiency Market Report 2017, providing deeper analysis, and elevating the importance of improving energy efficiency in Indonesia to a wider audience. In 2016, E4 involved a range of Chinese experts and institutions to support the development of a focus chapter and publication in Chinese on China's energy efficiency progress. Reinforcing relationships between the IEA and staff within Ministries of Energy enables long-term exchange of and improvements to the quality of data and analysis in both agencies.

While the scope and effectiveness of energy efficiency policy across the E4 Target countries varies significantly they have all been engaged in energy efficiency policy for many years, and in some cases decades. Senior officials from the target countries have made it very clear that they want to work with the global experts on energy efficiency, rather than development specialists or consultants with an interest in energy. When it comes to adapting policies to local circumstances they are in many instances already very well practised themselves on how to implement policy within their national contexts.

Finding local champions is essential

E4 has been most influential in countries where IEA had quickly engaged with partners who are strong and committed energy efficiency champions. Leveraging on long-term relationships between the IEA and the Ministries of Energy, within the target countries, has proven to be invaluable when initiating engagement and developing ongoing, productive relationships. For China, Indonesia, India, Mexico, and most recently Brazil, the existence of local champions in energy efficiency has been fundamental to the success of E4.

Building and maintaining interest in energy efficiency

When E4 commenced, not all target countries were at a stage where a high degree of engagement with IEA was possible. However, E4 offered training and capacity building through training weeks and webinars, and encouraged participation in regional and global topic-specific conversations about best practice. These low effort activities built interest and capacity over time and prepared the way for increased levels of engagement as was the case with Brazil who did not fully engage until 2016. Similarly the relevance of energy efficiency support varies over time and can vary in a country dependent on government processes and changes of senior personnel. For example we have experienced two changes in Minister that have affected the programme in one case accelerating activity and in another slowing it down. Continuing to engage with the mid-level and junior staff has enabled IEA to ramp up again quickly when the time is right.

Untapped demand for regional energy efficiency training events

The idea for the energy efficiency training weeks came about because in all the target countries, the energy efficiency champions are in high demand. It is essential that these people have adequate support and that there are succession strategies in place, otherwise, effective energy efficiency policy is too dependent on a small group of key individuals. The training weeks focus on training the next generation of policy makers and helping them develop a network of professional contacts with whom to engage as they continue their careers. Since the inaugural IEA Energy Efficiency in Emerging Economies Training Week in 2015, places have been in high demand and E4 has not been able to cater for this, despite expanding to deliver regional training courses in Singapore, Georgia and Brazil in 2017 in addition to the Paris event. Numerous requests to replicate this training week on national and regional levels have been received, and E4 will investigate the possibilities of delivering national-level training events in Phase 2 of the Programme.

Different partners have different needs and capacity for action

In the initial stages of the programme, IEA found that IEA had to tailor support very specifically to each country's needs and early attempts to repeat activities from one country to another were not successful. As a result, E4 has engaged with each of the Phase 1 target countries at different levels, from in-depth IEA country-specific analysis, to capacity building and training through the Energy Efficiency Training Weeks and online webinars. Collaboration with a country is dependent on a number of factors, including the capacity of the country focal point to work with E4, the domestic political situation and the support, or lack thereof, given to energy efficiency, the quality and availability of data, and the resource (financial and staff-time) constraints of E4 itself. For instance, progress on improving data, policy evaluation and capacity building of partner-country staff in Indonesia, China, India and Mexico has been steady throughout Phase 1. For Brazil, progress has increased considerably in the last two years of Phase 1 due to changes in political focus, and for South Africa, progress has slowed during the last two years of Phase 1 due to delays in the legislative process for the national energy efficiency strategy. This underlines the need for flexibility so that E4 can respond to changing priorities. Table 2 provides a summary of the level of involvement in each of the E4 target countries for Phase 1.

All these lessons and observations will be used to inform the development of Phase 2 work plans in the inception phase and beyond.

Table 1: E4 Phase 1 – Summary of Achievements

Context	Key areas of E4 activity	Key deliverables	Outcomes
Brazil			
Brazil has an extensive portfolio of successful energy efficiency programmes; however, since a peak in 2011, investments in energy efficiency have declined. After various preliminary engagements, significant work with E4 started in mid-2016, reflecting a renewed policy focus in Brazil.	Policy selection and development; developing the analytical and evidence base; and capacity building. Key partners are Ministry of Mines and Energy (MME); and Energy Research Enterprise (EPE). The latter is driving the developmental agenda. Other local partners include Instituto Clima e Sociedade (iCS)	Early phase activities include Brazil's participation in training weeks, and collaboration to produce a Brazil chapter in the 2015 Energy Efficiency Market Report. The renewed engagement in 2016 has included series of events organised to develop evidence data and ideas and to build knowledge and capacity, all in the context of the preparation of a new national energy efficiency strategy. Events include a national workshop on the role of energy efficiency in the decarbonisation and how it can support economic and social development; and a workshop on energy efficiency policies for Brazil to identify priority high-impact policies suited to the country context. Two webinars on specific energy efficiency topics, namely auctions, have taken place connecting with government experts from Portugal and Switzerland. 15 people have attended the Energy Efficiency Training Week from Brazil, and delegates have been supported to participate in Heavy-Duty Vehicles Standards workshop in Mexico and the 21st Century Standards and Labelling workshop at the IEA. Brazil also participated at DG level in the 2017 Global Energy Efficiency Conference, an indication of the growing relationship and engagement levels. Engagement is growing steadily and there is a good sense of focus on the main agenda: the EPE-led project to develop a national energy efficiency action plan. Work is also underway to develop a long term work plan of collaboration with MME and EPE.	Progress to date has been largely foundational, and will bear significant fruit in the development and adoption of a new 10-year strategy for energy efficiency by the Brazilian Government. Data and analysis has improved through for example the publication of a Brazil chapter in the market report. The core asset-building has been through local capacity and relationships. IEA has helped improve data sets and analysis as well as knowledge and understanding. There is much potential for growth in engagement, and the more general development of relationships between Brazil and the IEA will help to deliver this.
China			
China has put a major focus on energy efficiency in recent years and has made very strong progress in terms of both policy and its impacts. Collaboration focus has been on analytical base for policy development and on innovation.	Modelling and capacity building for long term impacts analysis and evaluation; and innovative business models for district heating. Key partners are NDRC, the national ministry responsible for energy efficiency, and ERI, its research agency. Also close collaboration with	IEA has participated in a number of China-based events, and also hosted several Paris-based events with China. Co-hosted first ever G20 Energy Efficiency Forum in Beijing in 2016. 22 people have attended the Energy Efficiency Training Week from China. Sponsored delegates have attended the Energy Efficiency, Buildings and Behaviour workshop at the IEA, present at the Energy Efficient Prosperity workshop at COP21, and attend the 21st Century Standards and Labelling workshop at the IEA. 8 ERI staff have also been trained in the TIMES modelling software in China. It is notable how wide the stakeholder group for China is, with many different ministries and agencies involved. This is helping build strong, wide reaching relationships.	New analysis, more detailed than ever, is now available and is being used by Chinese policy makers and also as an input into ongoing IEA work such as WEO and the Energy Efficiency Market Report. The IEA-China collaboration has been important in bringing global attention to the Chinese energy efficiency story and to offering lessons and detailed analysis to others. This is helping build China's international engagement

Context	Key areas of E4 activity	Key deliverables	Outcomes
	the private sector via the Energy Management Conservation Association.	IEA published first ever China-specific market report analysis, in Chinese, in September 2016. This is being widely read and cited. Chinese translations of the two major IEA publications on Energy Efficiency Indicators have been published, and China is also a key focus in the IEA's upcoming report on digitalisation of the energy system. A major plank of the IEA-China collaboration has been interaction between modellers in IEA and ERI, working together to build new China modules of the IEA's ETP model. This has been very successful in fostering exchange and capacity building while delivering solid tools to be used for analysis and decision making. This has represented a first phase of building knowledge and relationships, now moving on to more specific policy topics.	on energy efficiency, via IEA events such as the two recent Ministerial conferences, and through forums such as G20. Work on new business models for district heating is being used as an input by DEA for city-level pilot projects on waste heat in district heating.
Indonesia			
Economic growth is expected to drive large investment in new power generation, and energy efficiency is considered an opportunity to limit investment requirements. Indonesia has set a number of energy efficiency targets and its NDC also proposes energy efficiency as a pathway to achieving its emissions reduction target. However, policy delivery and implementation to date has not been strong, and political commitment is mixed.	Indonesia has highlighted the area of measurement and tracking progress on its goals as the key focus for collaboration. This includes evaluation of existing policy portfolio; long term evaluation planning and design; data and indicators; policy selection and development; and capacity building. Key partners have been Indonesian Ministry of Energy and Mineral Resources (MEMR); Danish Energy Agency Energy. Other partners have been Lawrence Berkeley National Laboratory (LBNL); Green Building Council Indonesia (GBCI); and Energy Efficiency Services Limited (EESL).	Collaboration commenced in 2015 with an internal workshop for MEMR and other related government departments on energy efficiency policies for appliances, building and industry in March 2015, attended by 40 people from ten agencies. This led to collaboration on an assessment of the impact of existing energy efficiency policies and building long-term evaluation plans; dimensions included impact assessment of existing programmes, data requirements and sources, design guidelines for building evaluation into new programmes and capacity building exercises, initial recommendations for policy enhancements. This was achieved through a series of 6 workshops over an 18 month period and served to build a very close and collaborative relationship with key Ministry officials. IEA hosted an Energy Efficient Prosperity forum at the Clean Energy Forum in Bali in 2016 – attended by more than 80 people, showcasing the wider social and economic benefits of energy efficiency policies for Indonesia. 27 people have attended the Energy Efficiency Training Week from Indonesia, one of the larger delegations, with very positive feedback and a sense of growing local capacity and community of practice. Indonesian delegates have also been funded to attend a Heavy-Duty Vehicle Standards workshop in India, IEA's Energy Efficiency Working Party meetings, energy efficiency policy evaluation workshop in China, International workshop on 21st Century Energy Efficiency Standards and Labelling workshop	The IEA's access to, and analysis of data on Indonesian energy use and energy efficiency has improved greatly, leading to better analysis and modelling. E4 has helped Indonesia evaluate how much of the energy efficiency policy target and the NDC targets will be met with current policies, and what policy improvements are required to make these targets. To achieve this, E4 is sharing best practice examples from around the world with Indonesian policy makers. The next stage would be to work on detailed design of enhanced policies. The presence of an MEMR secondee at the IEA office has been an important part of building up a closer working relationship. It may be appropriate that the next phase of this will be to place an IEA consultant in the MEMR team in Jakarta, similar to the Mexico model.

Context	Key areas of E4 activity	Key deliverables	Outcomes
		and the International Conference on Demand Side Energy Efficiency in 2016. E4 has also hosted a secondee from the Ministry of Energy and Mineral Resources since 2016. The new relationships, and better access to data, is allowing for the production of a special chapter on Indonesia for the 2017 Market Report. Energy efficiency data on Indonesia is greatly improved across the IEA including for the WEO and the Energy Data Centre. Other specific topics include ESCOs, with E4 facilitating exchange between India and Indonesia on the topic, the industrial sector and space cooling.	
Mexico			
Mexico is strongly committed to energy efficiency as part of wider energy reforms (including accession to the IEA). Keen to build data, methods and local capacity.	Data and indicators; municipal level energy efficiency; space cooling policy; building codes; and capacity building. Key partners have been SENER (energy ministry) along with CONUEE (national agency). Other partners include DEA, World Bank and GIZ.	IEA has held 17 policy webinars for Mexico on a range of topics, with more than 2600 participants. Participation has grown steadily from 50 for first webinar to now typically 350 or more. Feedback is very positive and wide range of stakeholders participate. IEA has supported and participated in two International Conferences on Energy Efficiency in Cities 2014 and 2016, with more than 200 participants and has supported Mexican delegates to attend a range of events, including IEA meetings on standby power, buildings and standards and labelling; the IEA Energy Efficiency Working Party, and a Heavy-Duty Vehicle Standards workshop in India, 19 people have attended the Energy Efficiency Training Week from Mexico. IEA's convening power is useful here to bring people from many countries together or to connect one country with another on a topic of shared interest. Publications and policy inputs include a review of energy data sources; inputs into national household energy survey; Space Cooling Framework published in November 2015; Roadmap for Building energy codes and Standards published November 2016; Mexico features in a number of IEA publications including Depth Policy Review; Mexico Energy Outlook, Energy Technology Perspectives 2016; and Energy Efficiency Market Report 2015 and 2016. The IEA benefits from a strong and long-term relationship with SENER, which has made the use of a long-term consultant in Mexico highly effective and allowed for a very smooth working relationship.	Mexico now has much firmer foundations for energy efficiency in terms of legislation, strategy and capacity. Concrete policy deliverables include the Long-term Energy Efficiency Strategy (24/02/2017); Energy efficiency targets set under the energy Transition Law (22/07/2017); Roadmap for Building Energy Codes and Standards (30/03/2017). The policy framework is now strong and so the focus will shift to detailed sectoral policy and to implementation. The webinars have built a large community of practice and, more than with any country, there is such a community now in a direct relationship with the IEA team, as is seen for instance in Mexico's very strong participation in the training weeks. This will be further strengthened through ongoing capacity building with a Mexico-based training week and also municipal level training. For building and space cooling, focus will be implementation and monitoring of the new policies.
India			

Context	Key areas of E4 activity	Key deliverables	Outcomes
India is strongly committed to energy efficiency and has implemented world leading programmes. Progress has been strongest in industry and buildings. Considerable potential remains and enhanced capacity and evidence will help to unlock that.	Collaboration with E4 has focused on measuring impacts and to demonstrating the value of energy efficiency in India, as well as strengthening international engagement and capacity building. Key partners have been: Bureau of Energy Efficiency (BEE); Energy Efficiency Services Limited (EESL); Niti Aayog; and The Energy Research Institute. Other partners have been World Bank and International Council on Clean Transportation (ICCT).	E4 collaboration commenced, at the request of BEE, with an Impact Assessment of Energy Efficiency Policies Workshop in October 2014. IEA's support on improving the assessment of the social and economic impacts of energy efficiency measures as well as tracking sector progress through indicators has been very well received, and was recently highlighted in senior discussions between India and IEA. This also led to a focus on heavy duty vehicles, again at India's request, and a specific international workshop in 2015, including officials from Indonesia, Thailand, Vietnam and Mexico. IEA also co-hosted an International Conference on Advancing the Global Transition to Energy Efficiency as the First Fuel in November 2015, attended by 60 government and private sector participants. 21 people have attended the Energy Efficiency Training Week from India. In addition, representatives have been funded to present at the annual Workshop on Greenhouse Gas Emission Trading organised by the IEA, International Emissions Trading Association (IETA), and Electric Power Research Institute (EPRI) in 2015, to attend the Bali Forum meeting in 2015, the Energy Efficiency Working Party meeting at the IEA, the International Workshop on Energy Efficiency Programme and Policy Evaluation in China, and BEE and CLASP India were also represented at the 21st Century Standards and Labelling Programmes in 2015. The IEA Energy Efficiency Prosperity Event at COP21 also showcased the work of the UJALA programme, resulting in the publication outlined below. The IEA also supported India's own energy efficiency event at COP21. IEA and EESL co-produced a case study on the Indian Government's domestic efficient lighting programme, published in February 2017, to showcase the multiple benefits of energy efficient lighting, and garnering international attention for India's success. IEA also published a special Energy Efficiency Outlook for India report in November 2016 to inform Indian policy makers, businesses and other stakeholders about the role of energy efficiency in the Indian energy sector.	E4 opened up Indian processes to best practice, which were drawn on when India developed their own manuals and methodologies. The development of detailed assessment methodologies has been influential on policy development, as has the review of appliance standards and labelling. The success of the heavy-duty vehicle workshop inspired the development of a similar workshop in Mexico in September 2015. Strategic issues and next areas of focus: investigate opportunities to deliver an energy efficiency training week for state and municipal governments in India. Explore options to develop a case study on energy efficiency water pumps in the agricultural sector, undertake a global industrial benchmarking exercise to support the expansion of the PAT programme and to deliver another heavy duty vehicles workshop with the Bureau of Energy Efficiency in India.
South Africa			
The Government of the Republic of South Africa through its Energy Efficiency Strategy and NDC has	Setting targets; tracking progress; policy design; and capacity building. Collaboration on policy development	Three workshops were organised to help improve the collection and analysis of energy data across sectors and organisations in South Africa across 2014/15 to support the National Energy Efficiency Strategy. More than 150 people participated. 10 people have attended	Through the sharing of global best practice by E4, South Africa has a greater awareness of energy efficiency policies being used across all sectors of

Context	Key areas of E4 activity	Key deliverables	Outcomes
expressed an interest in and commitment to improving energy efficiency. The focus of collaboration with South Africa has been on energy efficiency policy monitoring and target setting. A process is underway to develop a new medium policy strategy, although capacity constraints have been an issue.	and strategic planning. Key partners have been: South African Department of Energy. Other partners have been the Danish Energy Agency; Swiss Agency for Development and Cooperation; Danish Energy Management; and South African National Energy Development Institute (SANEDI).	the Energy Efficiency Training Weeks from South Africa. IEA supported delegates to present at the Energy Efficient Prosperity workshop at COP21 and to participate in the 21st Century Standards and Labelling Programmes at the IEA. A key focus has been to support the South African Department of Energy (DoE) in the development of their Post-2015 National Energy Efficiency Strategy (NEES). E4 identified issues in South African energy efficiency data availability and quality, and engaged consultants to investigate potential data sources and make recommendations on future data collection, resulting in the publication of four internal reports. In parallel with this process, the IEA World Energy Outlook (WEO) team, assisted with providing independent modelling on the opportunity for energy efficiency in South Africa which assisted with the targets set and the policies outlined in the NEES. Progress has been mixed due to changing political priorities and capacity limitations. The strategic focus for E4 has been to encourage international engagement, participation in capacity building activities, and exposure to learnings from other countries. More recently, momentum seems to be returning and new areas of work are now being discussed.	the economy. This is reflected in the NEES. E4 also proposed the energy efficient prosperity focus for the introduction of the NEES in order to attract wider scale support for the Strategy. The work of WEO provided South Africa with a greater level of confidence in the targets upon which the NEES is based, and it enabled South Africa to be separated from the wider African continent in WEO analysis and publications, allowing a greater level of in-depth country analysis to be conducted and published. Now discussing focus areas to support the implementation of the actions identified in the NEES, in particular for the industrial and building sectors.
Thailand			
Thailand's primary energy focus is on energy security, and E4 has focused on showing how energy efficiency can play a role in meeting Thailand's energy security goals.	E4's work has been less intensive in Thailand than in other countries. Main focus has been capacity building and encouraging international engagement. Key partners have been: Ministry of Energy's Department of Alternative Energy Development and Efficiency (DEDE); and Electricity Generating Authority of Thailand.	Events include presentation to the Ministry of Energy and other government agencies of findings of the Energy Efficiency Chapter of the IEA's Thailand Electricity Security Assessment (2016). 9 people have attended the Energy Efficiency Training Week from Thailand. Supported delegates to participate in the International Workshop on Energy Efficiency Programme and Policy Evaluation in China, and the 21st Century Standards and Labelling Programmes at the IEA. Supported delegates to participate in the 21st Century Standards and Labelling Programmes at the IEA and at the Energy Efficient Prosperity workshop at COP21. Publications and policy inputs: E4 engagement led to an Energy Efficiency Chapter in IEA's Thailand Electricity Security Assessment (2016) to improve the understanding of energy efficiency policies and their impact on electricity demand and resource planning. E4 has also provided advice to the Metropolitan Electricity Authority on delivering energy efficiency programmes, and advice on decomposition analysis and energy provider-	E4 work has led to a higher profile for energy efficiency in Thailand, stronger international engagement, and some capacity building. Energy efficiency has been successfully placed into the wider energy security debate. While Thailand will never be a major country for E4, there is potential for more collaboration on standards for appliances and energy efficiency to improve energy security.

Context	Key areas of E4 activity	Key deliverables	Outcomes
		delivered energy efficiency programmes.	
Ukraine			
Ukraine is committed to implementing energy efficiency measures to address national issues of energy security and to improve residential standards of living. Political support is strong. Not a main focus for E4.	Energy efficiency strategy and policy review and prioritization; and capacity building. Key partners have been: State Agency on Energy Efficiency and Energy Saving of Ukraine (SAEE). Other partners have been the European Commission; the European-Ukrainian Energy Agency; and the UK Foreign and Commonwealth Office.	Initial events include a webinar and workshop on energy efficiency priorities in Ukraine with government stakeholders and energy efficiency experts in 2014. This set the agenda for subsequent work. Several additional workshops on priority setting and implementation have been held, with the engagement of about 100 people in total. Delivered a 2016 workshop to follow up on the priorities set in 2015, under the EU4Energy Project. 17 people have attended the Energy Efficiency Training Week from Ukraine. IEA published the Energy Efficiency Policy Priorities for Ukraine in December 2015, identifying demand-side energy efficiency policy priorities for Ukraine in the buildings, appliances, lighting, equipment and industrial sectors. IEA has also reviewed and provided recommendations on the draft national buildings law, at the request of Ukraine. A good working relationship has been built up, albeit at a relatively low level of activity.	IEA's support has been important in helping Ukraine more firmly establish the place of energy efficiency in policy and to increase levels of activity. The IEA will continue to work with Ukraine in conjunction with the EU4Energy Project, which is facilitating policy exchange on energy efficiency in the Eastern European region. 2017 will also see the delivery of a regional Energy Efficiency Training Week in Georgia, in which Ukraine will be an important participant.
Global & Regional			
The scale and growth projections for the E4 countries make them of global significance for all energy and climate goals. They have an increasingly substantial role to play in the global energy system, particularly in terms of overall sustainability and climate change. In some cases, regional collaboration can be preferred by countries seeking engagement with neighbours and lessons of most relevance. Also, there are established	E4 has been central to the growing profile of energy efficiency at the IEA, including the establishment of a new Division, and to the wider strengthening of relationships with the key emerging economies. Global activities have centred on analysis of the potential and market for energy efficiency; tracking global progress; evaluating and promoting the multiple benefits of energy efficiency and the concept of energy efficient prosperity. More recently, E4 has been the starting point for building new global engagement on	Three editions of the Energy Efficiency in Emerging Economies training for policy makers have reached more than 320 participants from over 50 countries representing over half the world's energy consumption. There is a strong sense of forward progress in exchange and building a global community of practice. An online community platform is now being launched to foster communication among participants. This platform will connect more than 500 energy efficiency experts from across the world by end of 2017. IEA is now finalising the launch of a set of online training tools on Energy Efficiency Indicators based on the IEA's Energy Efficiency Indicators Manuals for statisticians and policymakers. The aim of this tool is to contribute to the global effort to track the progress of energy efficiency through Sustainable Energy for All. Other global activities include 21st Century Energy Efficiency Standards and Labelling Workshop held in December 2015 to explore the opportunities that information communication technologies (ICT) and network connectivity can bring in improving the development, implementation and evaluation of standards and labelling programmes. More	E4 is successfully creating a more skilled, more numerous global community of practice of energy efficiency policy makers who are better able to implement effective energy efficiency policy and measure its progress. Feedback from participants in the E4 Training Weeks has been overwhelmingly positive in terms of being able to learn firsthand from IEA's energy efficiency specialists, learning from best practice in other countries, building a community of practice (both within and between countries), and there have been numerous requests for regionally or country-specific training to be considered in the future. Global tracking is showing growth in energy efficiency

Context	Key areas of E4 activity	Key deliverables	Outcomes
regional trading blocks that have political and legal significance for issues such as trade, which creates opportunities for standards harmonisation and other collaborations.	energy efficiency policy advice and best practice exchange. Regional activities have mainly revolved around policy recommendations and capacity building. Some E4 activities are now being taken to regional levels, such as applying the Mexico webinar success to the South East Asia region.	than 60 people attended the workshop including speakers and participants from China, Brazil, Indonesia, Mexico, South Africa, Thailand and Ukraine. IEA also organised COP21 side event on energy efficient prosperity attended by more than 100 people and presentations delivered by speakers from 14 emerging economies and international organisations. The goal of the event was to showcase the wider social and economic benefits of energy efficiency policies across the world. COP has become a useful platform for fostering exchange among the key countries. E4 has also made many presentations at international conferences and events, including platforms such as G20 and the Clean Energy Ministerial G20. Key regional activities include the publication of Regional Energy Efficiency Policy Recommendations for Latin America and the Caribbean and Southeast Asia Energy Efficiency Policy Recommendations. In both cases, the publication was based on regional engagement including workshops bringing together policy makers from many countries. These publications have created momentum in many countries to strengthen the policy focus on energy efficiency. IEA has supported the ASEAN-SHINE Programme to harmonise energy efficiency standards for lighting, appliances and equipment in the region. IEA is currently part of the advisory committee. Other events include: Asian Clean Energy Forum 2017 – Deep Dive Workshop on Reducing the Costs of Achieving a Sustainable Energy Future, 60 participants. Regional Energy Efficiency Training Week in Singapore with more than 80 participants from 13 countries across Asia-Pacific. Energy efficiency strand in Energy Training for Latin America held in 2014 with more than 25 participants in the energy efficiency policy course.	policy and in energy efficiency impacts.

Annex B: Programme Support Mechanisms

IEA activities under E4 will be led by the IEA's energy efficiency experts (operating under the direction of senior management under the Energy Markets and Security Directorate - EMS), and working in tandem with other IEA experts, including the agency's country officers, its modelling experts, and its climate change specialists.

Activities under the Programme are intended to be carried out through a three-pronged approach:

1. Strategic direction provided through IEA management and senior management (including through consultations with the EMS directors and with other line managers outside EMS, notably with the Office of Global Energy Relations, responsible for coordinating country engagement);

2. Ongoing implementation directions and support provided by the E4 Programme Manager, operating under the supervision of the Head of the Energy Efficiency Division;

3. Execution of sub-projects by IEA experts, complemented as appropriate by external experts.

Core management structure

E4 management will be anchored at the IEA's office in Paris within the EMS Directorate. A full-time Programme Manager and Assistant Programme Manager will make up the core Programme Team. The team will be integrated with the Energy Efficiency Division and work closely with other experts from other IEA directorates.

IEA Experts

It is proposed that IEA expert involvement to support the implementation of E4 be based on identified needs. The Programme will require experts in energy efficiency, including in different sub-sectors, such as buildings, industry, utilities, appliances, and transport. E4 will also require knowledge of how energy systems operate (such as electricity systems). The IEA currently has expertise in all these areas, as reflected in its extensive work on: modelling, for example in the context of Energy Technology Perspectives (ETP), the World Energy Outlook (WEO), the policy pathways, the technology roadmaps); its work on electricity systems, oil/gas/coal/renewables market reports; and its ongoing advice to countries. It will also require different kinds of skills, including legal assistance (including potentially on substantive energy efficiency-related legal issues), and budgeting/personnel/finance support.

In carrying out E4, the IEA will draw on experts from within its Energy Efficiency Division, and across the Agency (see figure below). This includes energy efficiency and technology modelling experts from the Directorate of Sustainability, Technology and Outlooks.

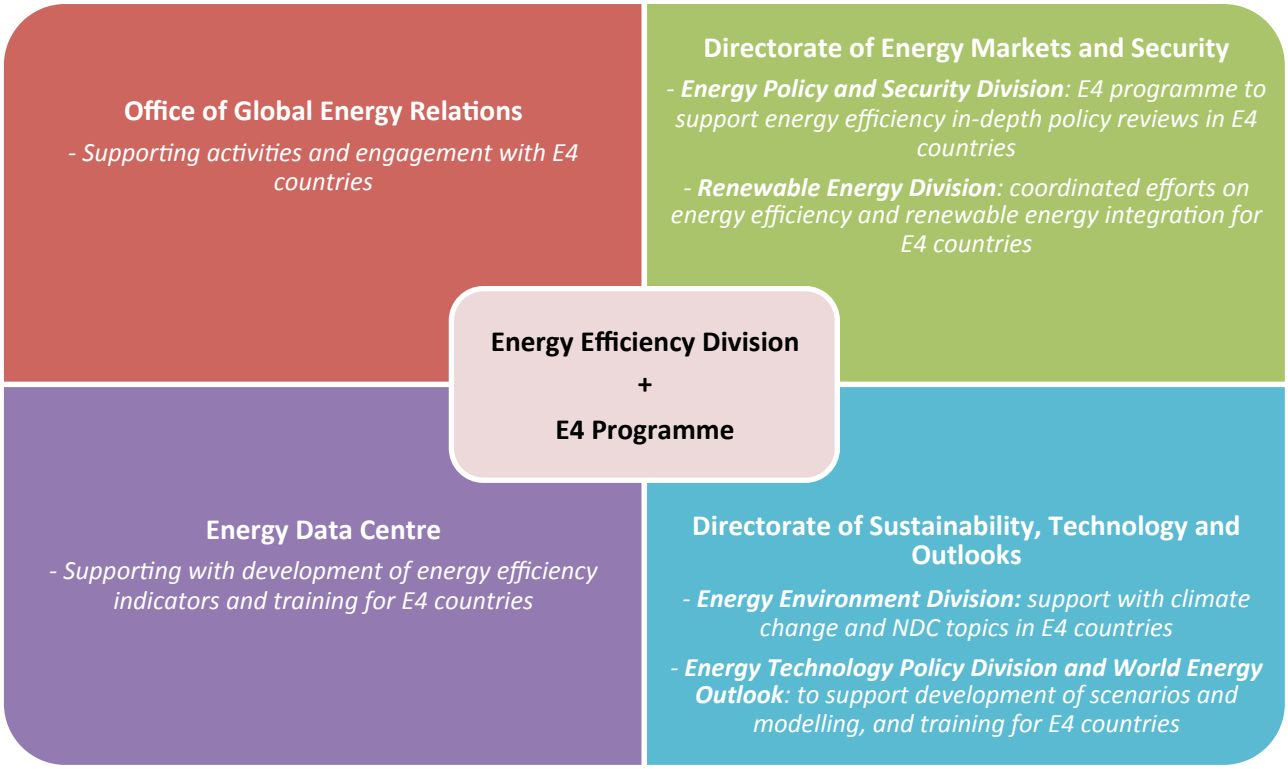
Execution of E4 will also require the involvement of IEA's country engagement experts working in the Office of Global Energy Relations, and also experts in the Energy Data Centre, the Economics and Investment Office and the Office of Legal Counsel. They will be called on to help with programme implementation, including to:

- Manage bilateral relationships
- Provide technical policy advice, including regarding design and implementation

- Conduct modelling and analysis
- Travel on mission to engagement countries
- Train engagement-country officials
- Review draft regulations, etc.

E4 will, in addition to the funding of the dedicated Programme Manager and Assistant Programme Manager described above, co-fund other IEA experts who will work in part on E4, but also on other IEA activities.

Figure 1: Summary of E4 Programme interaction with other IEA directorates and Divisions



External Experts

The IEA may also call on external experts to provide technical inputs, including in-country technical policy advice and embedded officials to work directly on Programme activities from within the government agencies/ administrations. The profile of the experts will vary depending on the activity, but is anticipated to include energy efficiency experts to complement IEA staff, experts with specific country or language skills, as well as experts with sub-specialties (e.g., specific industry expertise). These experts will be managed and supervised by the core IEA Programme team, and will work with IEA staff in executing an activity. If necessary, IEA will hire international and local experts in accordance with the OECD rules and regulations for procurement.

Annex C: Standards requirements for financial management capacity

Funding will be managed in accordance with OECD Financial Rules and Regulations and other relevant IEA policies and procedures. All activities will be undertaken in accordance with the OECD Code of Conduct and the Staff Regulations, Rules and Instructions applicable to Officials of the Organisation. As an international organisation, the OECD/IEA has a comprehensive control framework for income and expenditure. All expenditures related to this contribution will be recorded in the accounts of the OECD which follow generally accepted accounting principles. The OECD/IEA cannot authorise any audits other than those carried out by its duly appointed auditors under the Audit Architecture defined by the OECD Council, of which Denmark is a member.

The final substantive report to be prepared within six months of the end of the Programme will be accompanied by a final Financial Report showing expenditure by activity and category in line with the activities and categories of expenditure defined in the table below. This will be signed off by the OECD Head of Accounting. The annual financial reports will be specified and signed correspondingly.

Table 2: E4 Phase 2 - Sample Financial Report (DKK)

Expenditure Analysis (DKK)	**Project Budget 2018 – 2020**[15]	**Actual Spent 2018**
Global		
Staff and Staff-Related Costs: Official staff		
Staff and Staff-Related Costs: Temporary staff		
Intellectual Services		
Travel costs – temporary staff		
Travel costs – Non-staff/experts		
Event/Conference & Reception Costs		
Other operating expenditures (inc inter alia IT-related costs, printing & publications, translation costs)		
Total Global		
Regional		
Staff and Staff-Related Costs: Official staff		
Staff and Staff-Related Costs: Temporary staff		
Intellectual Services		
Travel costs – temporary staff		
Travel costs – Non-staff/experts		
Event/Conference & Reception Costs		
Other operating expenditures (inc inter alia IT-related costs, printing & publications, translation costs)		
Total Regional		
Country: Brazil		
Staff and Staff-Related Costs: Official staff		
Staff and Staff-Related Costs: Temporary staff		
Intellectual Services		
Travel costs – temporary staff		
Travel costs – Non-staff/experts		
Event/Conference & Reception Costs		
Other operating expenditures (inc inter alia IT-related costs, printing & publications, translation costs)		
Total country: Brazil		
Country: People's Republic of China		
Staff and Staff-Related Costs: Official staff		
Staff and Staff-Related Costs: Temporary staff		

[15] A detailed budget will be approved by MEUC based on the inception phase.

Intellectual Services Travel costs – temporary staff Travel costs – Non-staff/experts Event/Conference & Reception Costs Other operating expenditures (inc inter alia IT-related costs, printing & publications, translation costs)		
Total country: People's Republic of China		
Country: India Staff and Staff-Related Costs: Official staff Staff and Staff-Related Costs: Temporary staff Intellectual Services Travel costs – temporary staff Travel costs – Non-staff/experts Event/Conference & Reception Costs Other operating expenditures (inc inter alia IT-related costs, printing & publications, translation costs)		
Total country: India		
Country: Indonesia Staff and Staff-Related Costs: Official staff Staff and Staff-Related Costs: Temporary staff Intellectual Services Travel costs – temporary staff Travel costs – Non-staff/experts Event/Conference & Reception Costs Other operating expenditures (inc inter alia IT-related costs, printing & publications, translation costs)		
Total country: Indonesia		
Country: Mexico Staff and Staff-Related Costs: Official staff Staff and Staff-Related Costs: Temporary staff Intellectual Services Travel costs – temporary staff Travel costs – Non-staff/experts Event/Conference & Reception Costs Other operating expenditures (inc inter alia IT-related costs, printing & publications, translation costs)		
Total country: Mexico		
Country: South Africa Staff and Staff-Related Costs: Official staff Staff and Staff-Related Costs: Temporary staff Intellectual Services Travel costs – temporary staff Travel costs – Non-staff/experts Event/Conference & Reception Costs Other operating expenditures (inc inter alia IT-related costs, printing & publications, translation costs)		
Total country: South Africa		
Country: Thailand Staff and Staff-Related Costs: Official staff Staff and Staff-Related Costs: Temporary staff Intellectual Services Travel costs – temporary staff Travel costs – Non-staff/experts Event/Conference & Reception Costs Other operating expenditures (inc inter alia IT-related costs, printing & publications, translation costs)		
Total country: Thailand		
Country: Other Staff and Staff-Related Costs: Official staff		

Staff and Staff-Related Costs: Temporary staff Intellectual Services Travel costs – temporary staff Travel costs – Non-staff/experts Event/Conference & Reception Costs Other operating expenditures (inc inter alia IT-related costs, printing & publications, translation costs)		
Total country: Other		
VC Administration Charge		
TOTAL		

Annex D: Indicative activity reporting template

Annual activities plan and report - per output, per country/region/global				
GLOBAL / REGION / COUNTRY NAME				
Output / Activity [(1)] / Indicator	**Yearly Target**	**Realised Target**	**Next Year – Planned Target**	**Proposed Actions / Comments**
New or enhanced national strategies or targets are in place				
Activity 1				
Indicator 1				
Indicator 2				
Activity 2				
Indicator 1				
Indicator 2				
Policies and measures introduced or strengthened				
Activity 1				
Indicator 1				
Indicator 2				
Activity 2				
Indicator 1				
Indicator 2				
New or enhanced data sets, analyses or major outputs				
Activity 1				
Indicator 1				
Indicator 2				
Activity 2				

Annual activities plan and report - per output, per country/region/global				
GLOBAL / REGION / COUNTRY NAME				
Output / Activity [(1)] / Indicator	**Yearly Target**	**Realised Target**	**Next Year – Planned Target**	**Proposed Actions / Comments**
Indicator 1				
Indicator 2				
Capacity building and engagement				
Activity 1				
Indicator 1				
Indicator 2				
Activity 2				
Indicator 1				
Indicator 2				
Regional and inter-country engagements				
Activity 1				
Indicator 1				
Indicator 2				
Activity 2				
Indicator 1				
Indicator 2				

(1) Activities will only take into consideration: main deliverables, events, and significant products and actions; their presence in this report will be subject to progress and implementation phase within the period reported

Annex E: List of Supplementary Materials

List of supporting documents:

- Annual E4 Programme Progress Reports
- E4 Programme Country Overviews

Selected List of E4 Publications:

- District Heating Business Models and Policy Solutions: Unlocking the potential from low-grade industrial excess heat in China (internal only)
- Energy Efficiency Outlook for India - Sizing up the Opportunity
- Energy Efficiency Outlook for South Africa - Sizing up the Opportunity
- Energy Efficiency Policy Evaluation Frameworks for Mexico (internal only)
- Energy Efficiency Policy Recommendations for Ukraine
- Energy Efficiency Prosperity – Case Study of India's Domestic Lighting Programme
- IEA-SENER Webinar Series Reports
- Regional Energy Efficiency Policy Recommendations for Latin America and the Caribbean (English and Spanish)
- Regional Energy Efficiency Policy Recommendations: Southeast Asia Region
- Roadmap for Building Energy Codes and Standards in Mexico (English)
- Strategic Framework for Space Cooling and Enforcement of Building Energy Codes in Mexico (internal only)
- Strategy for Energy Efficient Cities (internal only)

Publications supported by E4 (inputs provided focused on E4 country analysis only):

- Energy Efficiency Market Report 2015
- Energy Efficiency Market Report 2016 (including the Special Report: Energy Efficiency in China)
- Energy Efficiency Market Report 2017 (will be published September 2017, including Special Report: Energy Efficiency in Indonesia)
- Energy Policies Beyond IEA Countries - Indonesia 2015
- Energy Policies Beyond IEA Countries - Mexico 2017
- Energy Technology Perspectives 2016
- World Energy Outlook India Energy Outlook 2015
- Policy Pathways: Accelerating Energy Efficiency in SMEs
- SEforAll Global Tracking Framework 2015
- SEforAll Global Tracking Framework 2017
- World Energy Outlook Special Report on Southeast Asia 2015

Translations supported by E4:

- Energy Efficiency Indicators: Essentials for Policy Making and Fundamentals on Statistics (Chinese)
- Energy Efficiency Indicators: Essentials for Policy Making and Fundamentals on Statistics (Spanish)

Table 3: Views and downloads of Energy Efficiency Publications

Publication	Number of downloads/views
Energy Efficiency Market Report	• 2016 – 25 135 (including 3 388 from China) • 2016 Chinese language report – 3 653 • 2015 – 53 309 (including 2 853 from India, 1 505 from Brazil) • 2015 Chinese language summary – 9 806 • 2015 French language summary – 624 • 2015 Spanish language summary – 1 425
Market Based Instruments for Energy Efficiency (2017)	4 720
Energy Efficiency Indicator Highlights (2016)	18 005
25 Energy Efficiency Policy Recommendations (2011)	English language version – 35 829 Arabic language version – 3 919
Energy Efficiency Policy Recommendations – regions	• Arab Southern and Eastern Mediterranean (SEMED) Region: English version 3 385, Arabic version 2 225, French version 980 • Southeast Asian Region – 1 870 • Latin America and the Caribbean – English 1 424, Spanish 3 296 • Ukraine – 2 315
Energy Efficiency Outlook for South Africa – Sizing up the opportunity	268
Energy Efficiency Indicators – Essentials for Policy Making	English version – 50 000 (est) Chinese version – 1 247 Russian version – 1 870 Spanish version – 12 926
Energy Efficiency Indicators – Fundamentals on Statistics	English version – 44 027 Chinese version – 1 503 Russian version – 2 851 Spanish version – 3 028
IEA Energy Efficiency Policies and Measures Database (PAMS)	114 690 views
IEA Building Energy Efficiency Policies (BEEP)	46 480 views

Annex F: Risk Management Matrix

Risk Factor	Likelihood	Impact	Mitigation approach	Justification for ratings
Contextual risks[16]				
Staff security and safety issues	Unlikely	Major	Careful risk management and security focus	Dealing with relatively stable countries and previous experiences have been positive
Institutional risks[17]				
IEA and the programme fails to deliver which will have spill-over reputational effects on Denmark as first-mover donor	Unlikely	Major	Denmark is full member of IEA and has strong and multiple engagements in monitoring the program; more donors; more donors are engaged in the program.	IEA has already close relations with target countries, ministries and agencies; Denmark's support to the E4 Phase 1 has been welcomed by the IEA Governing Board and is assessed as instrumental in building trust and bringing the major economies closer to IEA; more donor countries will be engaged in supporting the E4 Phase 2 and the Clean Energy Transition Programme
Resources wasted due to inefficiencies or misuse	Unlikely	Major	Maintain full financial management and reporting. Funding will be managed in accordance with OECD Financial Rules and Regulations and other relevant IEA policies and procedures.	Availability of highly skilled staff resources is adequate to ensure that this risk is unlikely. OECD financial management systems assessed trustworthy.
Programmatic Risks[18]				
Lack of access to supplementary funding through the transition package	Unlikely	Major	Phase 2 activities will be classified as tier one (reliant on Danish funding only) or tier 2 (reliant on Clean Energy Transitions Programme) in the county work plans. This will ensure that only secured funding is allocated to priority activities and will prevent overspending or under-delivery on priority activities.	The negotiations of some funding for the Clean Energy Transitions Programme negotiations will likely be completed before the inception phase of Phase 2 and development of the work plans. However if negotiations are not complete, the priority rankings of activities into two tiers will be drafted into the country work plans to enable future expansion should additional funding be secured

[16] Defined as 'risk of state failure, return to conflict, development failure, and humanitarian crisis. Factors over which external actors have limited control' (Danida Guideline to Risk Management, 2013)
[17] Defined as 'risk to the donor agency: security, fiduciary failure, reputational loss, domestic political damage etc.' (Danida Guideline to Risk Management, 2013)
[18] Defined at 'risk of failure to achieve aims and objectives. Risk of causing harm through engagements' (Danida Guideline to Risk Management, 2013)

				at a later date.
Change of overall government policy to move against a clean energy transition in a target country	Unlikely	Medium	Continued relationship building and engagement with decision-makers in target countries to provide analysis and advice to reduce likelihood of such a decision being made	Target countries have all expressed the willingness at senior levels to continue working with E4 to implement better energy efficiency policies. Should this risk materialise, reallocation of remaining funds for that country would occur in consultation with the Danish Government.
Lack of local capacity to deliver	Likely	Major	Maintain a focus on capacity building and support. Retain flexibility across the country activities portfolio to allow for changes in engagement.	Capacity of partner countries to engage at a detailed level is a major factor in shaping work programmes.
Low local prioritisation of energy efficiency makes progress difficult	Likely	Medium	Maintain flexibility across the country activities portfolio to allow for changes in engagement	Political prioritisations are prone to change, including degree of focus on climate change and sustainability
Inappropriate policies or programmes are delivered	Unlikely	Major	Provide high quality analysis and advice to promote good policy outcomes	Principle of 'demand led' programmes emphasises countries right to set priorities and make their policy decisions. Denmark (MEUC) and other IEA member countries will have oversight and can provide guidance and participate in making decisions on E4.
Programme does not influence policy outcomes	Unlikely	Major	Build on existing trust-based relationships, provide targeted analysis and data to support good decision making	Existing relationship and understanding of E4 Programme is already in place in all E4 countries.
Policy outcomes are socially regressive	Unlikely	Major	Socio-economic benefits of energy efficiency kept to the forefront of analysis and advice	Efficiency measures have social and economic implications, but with good design can be highly progressive and deliver equitable outcomes
IEA staff availability – E4 Programme, Energy Efficiency Division and IEA specialists	Likely	Minor	Maintain clear overall work plan for each year of the programme, and for each target country to align with staff availability.	IEA is a large organisation with a number of experts upon whom to draw.

Copenhagen, Updated DRAFT (15 March 2017)

UPDATED Concept Note: The IEA & Energy Transition Support

The concept in brief: Given the momentum to implement commitments undertaken at COP21 and the IEA's unparalleled, whole-of-energy expertise, the IEA has the potential to play a leading role in supporting and helping to accelerate sustainable energy policies in major emerging economies.

Within the current international energy and climate architecture, the IEA could provide essential support to countries whose energy policies will significantly impact the speed of, and prospects for, a global transition toward more sustainable energy use. Such a role would be a central means to implement the IEA's modernisation strategy – that is, becoming a truly global energy agency as well strengthening its role as a hub for clean energy.

The IEA has unparalleled energy efficiency, systems-integration, modelling, and technology expertise and has strong relationships built through expanding engagement with key emerging economies (China, India, Indonesia, Brazil, South Africa, and Mexico). Especially given recent successes like the E4 energy efficiency programme, the IEA is experiencing substantial interest from these major emerging economies to further scale-up its real-world policy guidance efforts.

Given the IEA's current resource constraints, however, these opportunities for the IEA to further help guide ambitious energy transition efforts by the world's major emerging economies will largely go unfulfilled. This proposal would support the consolidation and enhancement of IEA activities through a larger and more stable multi-year, voluntary contribution package which could draw on ODA-applicable climate finance, given the nature of the supported activities.

Specifically, we seek to gather a core group of countries to support a four-year programme with a total budget of [EUR 20-30 million]. Such a package could be first announced at the 2017 IEA Ministerial. Denmark has secured support for DKK 25 million (approximately EUR 3.4 million), and there are active conversations with around ten other governments and several foundations.

***

1. Unparalleled post-Paris opportunity and potential missing piece of global architecture

Rapid and sustainable transformation in the energy sector, the source of over two-thirds of greenhouse-gas emissions, is essential to reach the shared goals of the Paris Agreement. This transition is particularly urgent in developing countries, whose CO_2 emissions have tripled since 1990, and where population and GDP growth will continue to exert upward pressure on emissions. Embarking upon and successfully achieving an energy transition is complex, uncharted, and challenging for all countries, and particularly so for emerging economies facing significant socio-economic and governance constraints.

At COP21 governments from 196 countries agreed on the Paris Agreement. Key here will be the implementation of the submitted Nationally Determined Contributions (NDCs), a challenge which in many countries is given increasing domestic attention. The international institutional energy landscape is bound to adjust so as to underpin these domestically defined and enacted policy priorities. It is, however, an open question whether such institutional adjustments are relevant primarily at the UN level, in particular as regards to the world's leading emerging economies. These economies are at a particular stage, where the demand for sound energy policy analysis and advice often significantly outweighs the need for traditional financial transfers. Accordingly, an

international organization with the analytical excellence and credibility of the IEA is well placed to act as a key partner for those economies, building on the strong institutional ties already in place.

This transition is also taking place in the context of a changing international energy and climate architecture. Prior to COP21, the Danish and British governments together commissioned a study by the Overseas Development Institute (ODI) on implications for this architecture of a successful COP21 conference (Annex I). The study, finalised in the first half of 2016, concluded that there is a need to shift the locus of investment towards energy policy development, technical support, and wider activities that support implementation to organisations that are part of the domestic policy landscape. Similarly, the study concluded that there is a strong case for investing in longer-term institutional capacity and expertise to engage operationally on sustainable energy policy with e.g. key emerging economies.

The ODI study implies that the IEA's high-quality work on sustainable energy policy could be channelled to benefit key emerging economies and complement existing bilateral and multilateral efforts, given it can be:

- Closely linked with the provision of technical assistance;
- Coupled with more country-specific analysis and interaction;
- Directed towards a wider group of national stakeholders, beyond traditional government authorities; and
- Longer-term, and therefore able to build capacity and expertise in those entities whose decisions on energy policy will impact the direction of the country in question.

There is urgency in addressing these needs as key analytical frameworks and decisions are being made over the next few years in key emerging economies towards elaborating, implementing, and, ideally, strengthening, commitments undertaken at COP21. The IEA's analytic excellence, credibility, and strong institutional ties can be a particularly important asset.

2. The IEA's increasing focus on sustainable energy endorsed by Ministers in 2015

At the 2015 IEA Ministerial Meeting, Ministers supported a vision for a modernised Agency with a focus on three pillars: 1) opening the doors of the Agency to key emerging economies; 2) evolving the Agency's mandate on energy security; and 3) further strengthening the Agency's role as an international hub for clean energy.

Under the first pillar, the IEA has developed close co-operative working relationships with major emerging economies such as Brazil, China, India, Mexico and South Africa. Since 2015, China, Indonesia, Thailand, Singapore, and Morocco have activated Association status with the IEA.

Under the third pillar, Ministers in 2015 commended the IEA for its work supporting the energy transformation and acknowledged its leadership role in encouraging major energy consumers and producers to participate in the transformation of the world's energy system in a flexible and inclusive manner. Specifically, Ministers called upon the IEA to "… *continue to provide recommendations for enhancing the economic and environmental sustainably of the energy sector … to expand its efforts in tracking energy sector transformation … and to increase international collaboration in this area."*

The IEA Secretariat prepared a Note for the IEA Governing Board discussion on 7-8 December 2016 entitled, '*The Future of the IEA*: *Options for Enhancing the IEA's Role on Energy Transition*'

[IEA/GB(2016)76]. This Note elaborated the IEA's core strengths in relation to facilitating energy transitions, and outlined three options for how the IEA could further enhance its efforts.

During the Governing Board discussion, IEA Members were enthusiastic about the IEA increasing its efforts to help navigate the global energy transition in the most secure, cost-effective, and sustainable manner possible. There was broad support for the second option presented in the Note ("Continued Evolution") for the IEA to more fully leverage its strength to accelerate and guide energy transition, and an acknowledgement that this would have budgetary implications and require additional voluntary contributions.

The IEA has also been strengthening relationships and partnerships with a variety of other international organisations and efforts focussed on the global energy transition. For instance, the G20 is currently examining how to further improve energy efficiency efforts around the world. The IEA has been identified as a key hub for global energy efficiency efforts, and any additional funding or signals from the G20 could nicely complement efforts described further in this note. The IEA was also selected as the new host of the Clean Energy Ministerial, which further strengthens IEA's relationships with key emerging economies like China, India, Indonesia, Brazil, and others.

3. IEA energy transition efforts in emerging economies

The IEA has been increasingly working closely with several key emerging economies, for example, within the IEA's successful Energy Efficiency in Emerging Markets (E4) programme, Grid Integration of Variable Renewables Programme (GIVAR), and training and capacity building programme for data and statistics (~500 participants per year from 50 countries). For a fuller description of the IEA's current activities in this area, please refer to Annex II. In its engagements with key emerging economies in recent years (and especially after the Paris Agreement), the IEA has received an increasingly higher level of interest for greater collaboration on a range of analytical and policy issues, which it has struggled to satisfy due to lack of resources.

An enhanced and more sustainable programme going forward would enable the IEA to better leverage its core expertise, to take better advantage of these increasing opportunities with the world's key emerging economies, and to better take advantage of relationships across IEA divisions and units. This proposed programme is aimed at supporting enhanced analysis, modelling and multilateral exchange that would target key emerging economies, but it would also further improve IEA capabilities that help IEA Members and the broader global community.

In sum, this enhancement programme would: a) further leverage IEA's core strengths and capabilities in a disciplined manner; b) utilise IEA's all-of-energy expertise across all energy sectors and vectors of demand and supply; c) build upon IEA relationships and trust in key emerging economies (both inside and outside government); and d) complement other development efforts, including those undertaken bilaterally by IEA Members and multilaterally through multilateral development banks.

4. Elements of IEA energy transition package

Initial proposals for the elements of such a multi-year IEA energy transition package are outlined in Annex III. These proposals are only indicative, and will be elaborated further in consultation with participating donor countries.

The proposals primarily target the following six key emerging economies: China, India, Indonesia, South Africa, Brazil and Mexico. Some activities will or may also engage with additional countries, such as Morocco and Thailand (IEA Association countries) as well as Viet Nam and Ukraine (E4 participants). The data and statistics programme would have a broader reach, open to applicants from a range of countries, as well as via stronger online training programmes.

These proposed activities primarily aim to accelerate energy transition efforts in key emerging economies by:

- Strengthening training and capacity building, targeting improved ability to develop a sound, analytically rigorous evidence base for policy action (via statistics, indicators, energy modelling, and improved data analysis capabilities);

- Building more effective knowledge and information systems, as well as enabling environments, creating capacity for stronger policy action (via country-specific scenario development, modelling capacity, advice and support on policy development, and facilitating knowledge exchange as relevant to country needs);

- Building a more robust international energy and climate architecture, by complementing and facilitating implementation of other initiatives, supporting multilateral efforts to facilitate and enable NDC implementation, and by strengthening connections and collaboration between experts across countries and relevant global expertise; and

- Encouraging technology RDD&D and innovation, through specific technology policy support activities, which should encourage the promotion of sustainable energy technologies and related investments.

Given the close link between a sustainable energy transition and meeting GHG mitigation objectives, the above outcomes also would bolster these key countries as they develop, implement, and, ideally, further strengthen their NDCs under the Paris Agreement.

As can be seen in Annex III, the indicative proposals engage in four general types of activities and are envisaged as collaborative engagements between the IEA and the key emerging economies. As indicated, these efforts build directly upon experience with activities highlighted in Annex I, catering to expressed needs, such as on statistics training, modelling support, technology guidance, and energy systems integration. In addition, the indicative programmes are guided by specific priorities and lessons for the IEA drawn from current activities, such as:

- engaging as a broker and builder of relationships within and outside of government to facilitate more holistic and sustainable energy policy;
- developing and expanding more specific support tools, such as toolboxes for modelling, tailored policy guidance, statistical guides and manuals, and enhanced online training tools;
- working collaboratively to build energy modelling capacity with in-country research and technical teams, based on prior successful experiences through E4 programme in China;
- further strengthening the cross-agency delivery of relevant technical support programmes, building on those developed under E4;
- enabling a more holistic view of energy policy, and more efficient and effective implementation of policies for the energy transition that capture energy efficiency, renewable energy, climate change policy, and fossil fuel use;

- working with key countries to improve data and analysis that would also enable a better global understanding of energy transition challenges, in areas with significant knowledge gaps such as buildings, transport, industry, innovation and RD&D;
- facilitating country participation in Technology Collaboration Programmes (TCPs); and
- expanding country- and technology-specific roadmap activities, including via How2Guides.

IEA's past experience has found that outcomes are best achieved when programmes are fully aligned with the needs and priorities expressed by the partner emerging economies. This generally requires a certain amount of flexibility, with less emphasis on specific planned activities, and more emphasis on doing work that best delivers the outcome and impact. In some cases, circumstances in the partner countries can change and evolve rapidly, and existing activities need to evolve and be adjusted to most effectively deliver outcomes and to take full advantage of emerging opportunities.

5. Resource implications and role of climate finance

In order for the IEA to build on and further strengthen its engagement on such issues the Agency needs multi-year sustained resource commitments and needs to work increasingly on country-specific terms with a multitude of in-country stakeholders. Given the IEA's current resource constraints, such strengthening will not materialise for the Agency in the near term absent new funding via voluntary contributions from Members.

The kind of robust, multi-year effort envisioned in this programme would allow for a more efficient, cohesive, and systemic approach for IEA involvement with key emerging economies and has an added benefit of strengthening bonds more generally with these key partner countries. As such, it would significantly reinforce the IEA's modernisation efforts, including the opening up of the IEA within the Association framework.

Previous IEA efforts, including E4 (funded at EUR 6 million over four years, which runs out this year) and GIVAR, have been underpinned by ODA applicable climate finance. Building on the experiences of supporting IEA activities with ODA-eligible funding as Denmark, the UK, Norway and the European Commission, among others, have previously done, this IEA energy transition package for key emerging economies could seek voluntary contributions backed by climate finance. Of course, each participating Member can consider other sources of funding as well.

6. Current status of initiative and proposed way forward

With this updated note, we seek to gather a core group of countries interested in underpinning energy sustainability work within the IEA vis-à-vis key emerging economies whose energy sustainability efforts carry global significance. In light of the IEA's previous experience and activities with these major developing countries, the interest expressed for enhanced action, and the ability to scale-up activities and start new efforts, we envisage a four-year programme with a total estimated budget of [EUR 20-30 million] to ensure appropriate scope, critical mass, and longevity.

Denmark is already working to secure funding of DKK 25 million (approximately EUR 3.4 million) from its climate finance envelope to support such a programme. Active discussions are proceeding with ten additional countries as well as key foundations.

The December 2016 IEA Governing Board specifically endorsed a "Continued Evolution" option that is very much in line with this current proposal. IEA's senior leadership fully supports this effort and is committed to ensuring that administrative and programmatic procedures will satisfy quality

assurance and documentation requirements in line with the ODA nature of the finance, as per relevant OECD-DAC rules and guidelines.

Over the next few months, we hope to consolidate a core group of governments, achieve a critical mass of support, and further specify programme activities.

A launch announcement of such a package could be made at the November 2017 IEA Ministerial meeting, as well as highlighted at the 9th Clean Energy Ministerial meeting in 2018. Additional media opportunities could be explored as well.

Annex I: Extract of draft ODI report on "The Future of the Energy and Climate Architecture"

Extract of draft ODI report on "*The Future of the Energy and Climate Architecture*" Commissioned by the Danish Ministry of Energy, Utilities and Climate and the UK Department of Energy and Climate Change

The international energy and climate architecture has the potential to support national and private sector organisations to achieve emission reductions through changes in policies, financing, technologies and capacities. The ODI study considers how international institutions in the architecture are presently delivering on five major interlinked functions: 1) Political influence; 2) Energy policy development; 3) Finance; 4) Technical support; and 5) Implementation.

Some highlights from the study's conclusions:

Energy policy development refers to the role that institutions play in informing, strengthening and operationalising the reform of the policy, regulatory and governance environment that is conducive to the transition to low emission energy. Institutional functions in supporting energy policy development are very difficult to extricate from efforts to provide technical assistance to this end.

The importance of energy policy for realising required investment and implementation of clean energy in all countries is well recognised. International organisations, such as the IEA, IRENA and UNEP, have helped to advance understanding of both impediments to clean energy scale up, and possible solutions that will support a clean energy scale up. Provision of robust technical data and information to inform policy design are perceived as a particular strength of these organisations. However, while climate change is starting to inform energy and financing policy within developing countries much progress remains to be made.

In terms of further strengthening energy policy development in the international architecture, the ODI report is recommending the following:

- **Investing in information and policy research, particularly within developing countries:** Stakeholders placed high value on the provision of robust technical data and information to inform policy design from organisations such as the IEA, IRENA and UNEP in advancing understanding of both impediments to clean energy scale up, and possible solutions that will support a clean energy scale up. Continued investment in such data as a public good will be important going forward. Several national stakeholders stressed the need for international data providers and researchers to work in collaboration with local non-governmental organisations and independent research institutions, who can bring local context and knowledge to the work, and serve as interlocutors in the domestic policy and political process. Incentivising and supporting such collaborations will be important going forward.

- **Supporting the translation of new climate commitments into energy policy**: As an element of the work to link climate commitments to development and investment priorities, efforts will also be needed in many countries to create new policy, regulatory and governance frameworks that support realisation of energy related elements of INDCs, and associated objectives. There could be a case for supporting national processes within key countries through which key stakeholders can reflect on and support progress on this count.

- **Bringing technical assistance and policy development support closer to home:** International organisations churn out numerous tomes of varying degrees of quality and relevance to domestic implementation agendas. There is a need to shift the locus of investment in energy policy development, technical support, and wider activities that support implementation to national and

regional organisations that are part of the domestic policy landscape. Limits to how much policy change may be achieved by supporting institutions that can only work through the system if the system needs disruption. There is a strong case for investing in building up long term institutional capacity and expertise to engage operationally with energy policy, finance and operational decisions within key countries. Small sums of money spent on the right terms i.e. flexible funding to allow appropriately expert groups to be responsive, but accountable for delivery of progress, may have significant impact.

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For those members of the IEA who place high priority on the global engagement between the IEA and key Partner countries of the IEA (ie. the key emerging economies) as this engagement pertains to energy sustainability issues, the study would seem to have several strategic implications, such as:

- That the future energy and climate architecture after COP21 is dynamic, would benefit from change and is likely to bring sustainable energy policy closer to objectives and approaches applied e.g. in the provision of climate finance.
- That energy policy exchange and best practice, to have impact, is closely linked with the provision of technical assistance.
- That significantly more impact will be delivered if broader analytical work, the excellence of which is undisputed for the IEA, is coupled with more country-specific analysis and interaction.
- That such collaboration efforts need to be directed not just towards traditional government authorities but a wider group of national stakeholders.
- That such country collaboration and interaction would benefit from being longer-term as to build up capacity and expertise in those entities whose decisions on energy policy will impact the direction of the country in question.

Annex II: Overview of IEA activities providing solutions, analysis, and data for the global energy transition

International Energy Agency
Secure • Sustainable • Together
COP22
MARRAKECH
MOROCCO
7-18 November 2016

IEA goals for COP22

- Help to scale up and speed up the global clean energy transition.
- Accelerate sustainable energy access, particularly in Africa.
- Strengthen energy sector resilience to climate impacts.

IEA is the leading provider of SOLUTIONS, ANALYSIS and DATA for the global energy transition

Meeting the long-term climate objectives of the Paris Agreement requires urgently tackling energy-related greenhouse gas emissions.

Individually and collectively, countries need to define and implement policies for an accelerated clean energy transition that is enabled by real-world SOLUTIONS, supported by ANALYSIS, and built on DATA.

The IEA works with countries across the globe to implement climate-resilient decarbonisation pathways.

FIND OUT

How energy efficiency, renewables and other low-carbon energy solutions can promote sustainable development, improve energy security and achieve environmental goals.

SOLUTIONS **to accelerate the global clean energy transition**

The IEA provides countries with extensive policy guidance, leading in-depth reviews of national energy policies, including for non-IEA members.

Previous tailored policy analysis has targeted the power sector in sub-Saharan Africa, energy security in Thailand, the energy outlook for India, and energy sector issues in the People's Republic of China and Mexico.

Targeted workshops have supported policy development, whether regarding heavy-duty vehicle standards in India or renewable energy deployment in Southern and Eastern Africa.

Countries such as India, Indonesia, China and South Africa receive support for scaling-up energy efficiency through the *Energy Efficiency in Emerging Economies* (E4) programme. Through the EU4Energy project, support to improve data collection and indicator and policy development is delivered to several countries in Eastern Europe, Caucasus and Central Asia. The IEA also works with a range of partners, including State Grid Corporation of China, Nordic Energy Research and the Inter-American Development Bank, to examine the challenges and opportunities for increasing electricity interconnection among countries in key regions around the world.

The IEA also serves as a global hub of clean energy knowledge and best practice. It produces the most comprehensive global energy data, which supports specialised training for government officials and other stakeholders.

This includes energy statistics training in collecting and organising national-level energy data and online statistical training through webinars on data collection, validation and use. Focused on emerging economies, Energy Efficiency Training Week shares experience with planning, implementing and evaluating energy efficiency policies. The IEA offers training and support for energy modelling activities, including in South Africa, Chile, India, and China. In addition, the IEA carries out joint modelling exercises with different organisations, such as the Energy Research Institute in China and Nordic Energy Research.

The IEA also offers specialised capacity building by topic (e.g., bioenergy, buildings), country (e.g. Ukraine, India, Ethiopia) or region (e.g. Latin America, Southeast Asia, the Middle East and North Africa). See www.iea.org/workshops/ for examples of previous workshops.

PARTNERSHIPS AND COLLABORATION TO ESCALATE ACTION

The IEA manages the world's largest collaborative network of energy technology developers, open to participants from all countries. For over 40 years, Technology Collaboration Programmes (TCPs) have brought together experts from around the world, enabling governments and industries to lead innovation on a wide range of energy technologies.

There are currently 39 TCPs, each focusing on a different energy technology challenge. Over 6 000 experts worldwide are involved, representing nearly 300 public and private organisations in 51 countries.

The IEA now hosts the new Secretariat of the Clean Energy Ministerial (CEM), which seeks to accelerate the deployment of clean energy policies and technologies worldwide. The CEM combines the leadership of energy ministers with engagement by the private sector and other international experts to foster ambitious collaboration, the exchange of good practices and innovative solutions.

Rigorous ANALYSIS to support sound, cost-effective decision making

The path to a clean energy future will be specific to different countries, regions, sectors and contexts.

The IEA provides guidance on policies critical to the global clean energy transition, including renewables and their integration, carbon capture and storage (CCS), maintaining electricity security while decarbonising electricity generation, energy efficiency across different sectors, and the resilience of the energy sector.

These analyses can help decipher challenges and opportunities in specific policy areas and regions, whether on energy in Africa and Southeast Asia, energy and climate change, air pollution or transitioning to sustainable urban energy systems.

IEA energy modelling sheds light on long-term clean energy pathways, as well as the mitigation potentials and technologies to enable clean energy transitions. Developing different scenarios to examine future energy trends provides insights into how policy decisions and energy market developments can influence medium- to long-term emissions pathways. For example, sustainable urban energy pathways will be crucial to meet low-carbon ambitions; a variety of measures could limit urban energy demand while urban populations continue to grow.

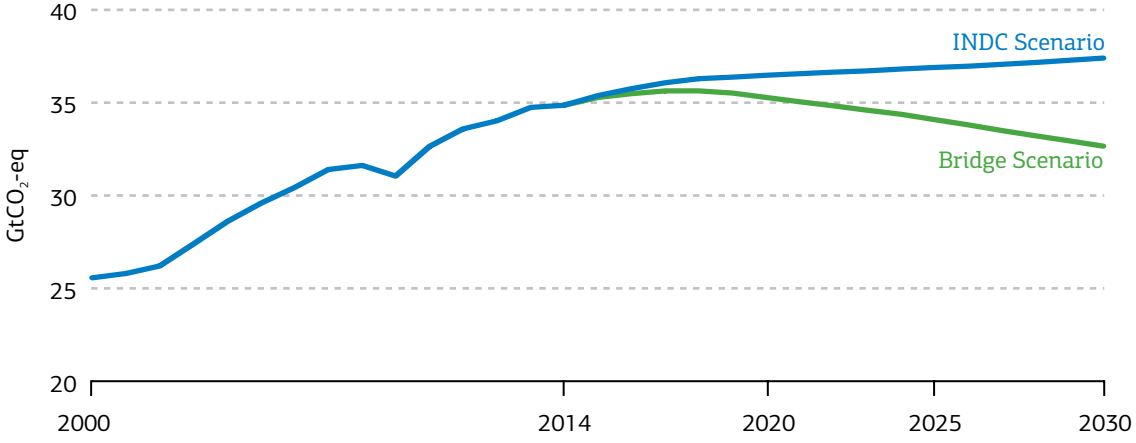
Energy systems analysis and modelling underscores the importance of short-term action for limiting global temperature rise. Thus, the IEA has identified key actions in a "Bridge scenario" that can peak global energy-related greenhouse gas (GHG) emissions at no net extra cost to the global economy.

The IEA has developed low-carbon energy technology roadmaps for 21 key low-carbon energy technologies. These roadmaps identify priority actions for governments, industry, financial partners and civil society for successful low-carbon energy technology development and deployment. Technology roadmaps have also been developed with individual countries that face specific challenges. The IEA is embarking on a new round of technology roadmaps to help guide countries, investors and companies to take full advantage of the clean energy research and development opportunities of the future.

DID YOU KNOW?

The IEA How2Guides provide guidance for countries seeking to develop their own technology roadmaps.

Key actions can peak global energy-related GHG emissions by 2020



Unparalleled energy DATA to plan, monitor and implement

The IEA uses its consolidated expertise in collecting statistics and developing indicators to track the global clean energy transition, with specific and detailed focus on energy efficiency; CO_2 emissions; energy balances; electricity; renewables; and energy prices and taxes.

The IEA supports improvements in energy data quality by sharing information on data collection practices and developing guidance manuals on energy statistics, research, development and deployment (RD&D) investment and energy efficiency indicators.

The IEA provides countries, businesses, and other stakeholders a range of resources, metrics, and tools focused on tracking deployment of clean energy technologies and investment in RD&D. Detailed statistics are integrated and utilised through industry, buildings and transport models.

With its work on global energy investment and the *Medium-Term Market Report* series, the IEA routinely assesses the state of current energy markets and the forecasts of their short- to medium-term development.

DID YOU KNOW?

The IEA statistics webpage offers a large selection of free data, short articles and tools to better understand what energy data to collect and why.

The IEA Policies and Measures Databases contain information on countries' policies and measures to address climate change mitigation.

ABOUT THE IEA

An autonomous intergovernmental organisation, the IEA works to ensure reliable, affordable and clean energy. The "4Es" encompass main areas of focus at the IEA: Energy security, Economic development, Environmental awareness and Engagement worldwide. At the heart of global dialogue on energy, the IEA builds strong working relationships with countries beyond its 29 members, including through an Association process, and houses 39 Technology Collaboration Programmes involving 6 000 researchers from 51 countries.

The IEA is principally funded by its member countries and the revenue it generates from data and publications. It is also funded by voluntary contributions from countries and other energy stakeholders, which support and strengthen various activities in the IEA work programme. The IEA also receives contributions in-kind, especially in the form of staff on loan.

Annex III: Illustrative overview of principal programme activities proposed under a fully-funded package

Programme Area	Energy efficiency – enhancing and expanding E4	RE and system integration	Data and statistics[i]	Policy guidance and modelling[ii]	Technology development and innovation[iii]
Overview	Building on the success of the four-year, EUR 6 million E4 programme, which expires in 2017, the new programme would fulfil unmet demand, including through expanded work with nine countries and new work on harmonising efficiency and renewable energy policies. The programme would work flexibly and responsively across IEA teams and with a range of country stakeholders.	Building on experience with the GIVAR programme, which received ODA funds of EUR 400,000 over two years, the new programme would go beyond case-studies and focus on in-country work and the development of practical tools. It would deliver full energy system coverage, analytic support, and work with various Technology Collaboration Programmes (TCPs), and complement other bilateral and multilateral investments.	Building on the Energy Data Centre's long-established track record on training and capacity building, which currently cannot meet the demand for assistance, the programme would expand training and capacity building activities, in-person and through innovative use of online tools, and use more in-country experts and expand work with partner organisations.	Building on distinct IEA strengths and existing relationships, the programme would systematically develop country- and region-specific analytical tools, expand collaboration with in-country modelling teams, and support long-term strategy development. The programme would encompass modelling, technology- and sector-specific analysis, real-world policy packages, and electricity system analyses.	Building on IEA's unique energy technology networks, notably the TCPs, convening and modelling capacities for roadmap development, and expertise on RD&D data and energy innovation, the programme would fill significant unmet demand for country- and technology-specific roadmaps, bolster TCPs, and fill gaps in understanding how innovation and R&D spending can support sustainable development.
Core Activities					
Training and capacity building	Data, indicators, modelling; range of in-country workshops	Data, indicators, modelling; workshops part of in-country component	Energy data, indicators, RD&D data; as needed to support other programmes	As per country need, including for specific sectors and technologies	RDD&D statistics; roadmap development; modelling
Technical collaboration and support	Enable holistic low-carbon energy development planning; help broker and build relationships across government; support knowledge development to implement ambitious efficiency efforts.	Toolbox for policy, including database of modelling parameters, criteria for power system modelling, and collection of best practices. In-country work will support analysis, dissemination and implementation, and build relationships.	Expand training activities in-country and online, via innovative e-learning activities; focus on data collection; development of manuals and guidance in multiple languages; stronger partnerships with partner agencies/organisations.	Work with country research institutes; support development modelling capabilities; host country experts and secondees within modelling teams; focus on 2050 pathways and air pollution.	How2Guides for countries to develop their own roadmaps in specific technology areas; facilitate participation in multilateral activities; support in-country identification of innovation needs and appropriate policies.

Programme Area	Energy efficiency – enhancing and expanding E4	RE and system integration	Data and statistics	Policy guidance and modelling	Technology development and innovation
Country level policy review and guidance	In specific sectors and areas, as per country needs; could include focus on urban growth, markets, and long-term planning; national-level efficiency strategy and assessments	Specific analysis, implementation and dissemination based on specific stakeholder engagement and identified country priorities, needs and interests	Country-specific training activities, resulting in specialised guidance	Country and regional ETP models; reviews of 2050 energy and climate outlook; transport, building, industry technology and policy analyses; specific electricity sector analysis	Energy technology policy and R&D spending; country- and technology-specific roadmaps
Plurilateral / multilateral policy dialogue (including TCPs, CEM)	Multilateral capacity building, convening, data & analysis	Collaboration with TCPs; cross-country workshops and training; regional workshops	Multilingual manuals and guidance; cross-country training; support for global tracking (SE4All, SDGs)	Support Paris Agreement through facilitating NDC development and planning, nationally and across sectors	Participation in TCPs and relevant CEM and Mission Innovation initiatives

[i] Built into Energy Data Centre activities, currently train ~500 people per year; the programme received ODA funds worth EUR 1.5M in 2011.
[ii] Currently, encompasses a range of activities that are ad-hoc, one-off reports or studies with individual countries. The programme would offer more systematic, longer-term and consistent support for a range of analytical activities, all of which are based on interests and priorities expressed by partner countries.
[iii] Currently, participation in TCPs can cost approximately EUR2-50 000 per year.

Annex 1: Summary of Appraisal Recommendations

Title of Programme	**Energy Efficiency in Emerging Economies (E4) Programme - Phase II**
File number/F2 reference	**2014-11614**
Appraisal report date	**1 September 2017**
Council for Development Policy meeting date	**26 October 2017**

Summary of possible recommendations not followed

N/A

Overall conclusions of the appraisal

The overall conclusion of the appraisal is positive and the support is recommended for approval provided the following recommendations are implemented prior to approval.

The AT concludes that:

- The E4 Phase I has delivered important results, but the achievements are not presented in the draft Programme Document (PD) for E4 Phase II in a sufficiently structured and analytical manner that facilitates overview.
- E4II is highly relevant in the global context with the increasing focus in the international community on energy efficiency as "the first fuel", growing concerns about energy security in fast growing emerging economies, and the importance of immediate action to safeguard climate goals.
- Energy Efficiency is an integral part of IEA's mandate and an explicit part of its key objectives. In the increasingly crowded international institutional architecture on sustainable energy IEA has a key role as a neutral and autonomous inter-governmental agency. IEA has a number of comparative advantages, but, within the E4II cooperation, these are not sufficiently clearly highlighted in the proposal in relation to what other actors are doing. In the AT's view IEA's comparative advantages include a focus on EE within the whole of the energy system, policy dialogue and related advocacy and advice; data analyses, energy statistics, and scenario work; convening power; high-rated training weeks and webinars.
- E4II is well aligned to IEA's mandate and Programme of Work and Budget (PWB).
- E4II is also well aligned to Danish development policies and priorities (The World 2030 strategy and the Guiding Principles for the Danish Climate Envelope) but gender and rights issues are not addressed.
- The draft E4II PD generally covers the relevant issues, but the information given needs to be further substantiated in several respects, as elaborated by the AT in the Appraisal Report.
- The budget status/remaining resources under E4I (including possibilities to carry-over funds into 2018) is unclear.
- There is current donor interest in supporting an energy transition support package for IEA that is expected to include energy efficiency. However, other donor support with implications for E4II is not yet addressed in the Draft E4II PD.

Recommendations by the appraisal team	**Follow up by the responsible unit**
Programme Level:	

Recommendation#1: IEA should elaborate its capacity development strategy to demonstrate how the combination of outreach via missions to partner countries, webinars, training weeks, conferences, support to communities of practice, secondments and placement of long-term consultants in-country, etc. effectively support E4II objectives and theory of change. The relative emphasis on work in-country vs. at headquarters level should also be addressed.	Agree. The recommendation isaddressed in the presentation of capacity development activities and theory of change in the revised PD (Section 7 on Delivery Model and Theory of change). The proposed balance between work in-country and at HQ is indicated in the overall budget and will be further elaborated and defined in the inception phase.
Thematic Programme Level:	
Recommendation #2: E4II should include an inception phase of 3 months to enable IEA i) to develop work plans for the target countries and HQ activities in close collaboration with country partners and ii) take account of developments in the Clean Energy Transitions Package and any continued EU-support; in case the transition package is approved ensure maximum coordination. The Inception Report should be approved by the Reference Group.	Agree. A three month inception phase is included in the E4-II program; an outline of what this phase will cover is included in the Programme Document (see Inception phase). An Inception Report including country work-programs and budgets will be produced for the Reference Group's review and MEUC approval
Engagement Level:	
Recommendation#3: IEA should revise the draft E4 Phase II Programme Document with particular focus on the following points: • Include a structured overview of E4I results and achievements and how the proposed E4II builds upon these – this should also be reflected in the results framework baselines for target countries. • More explicitly highlight IEA comparative strengths and advantages while identifying possible synergies, complementarities and cooperation with other development partners in each of the proposed E4II Components A-F. • More closely link the Theory of Change and Results Framework to demonstrate how the E4 II approach to demand orientation, work planning focuses on outcomes and outputs and the chosen support modalities lead to transformational change and sustainable impact at country level. • In specific terms, clarify the rationale for the balance between global versus bilateral interventions with emphasis on achievement of results at the country level. • Further specify the mandate and composition of the E4 II reference group, the frequency of its meetings, and the type of information required to enable it to effectively provide guidance in forward planning and serve as a relevant accountability mechanism for results. In this regard, IEA should prepare for further donor participation that may be expected under the Clean Energy Transitions Package. • Streamline E4 progress reporting to partner countries, the donor community and the wider world with a focus on concrete results, replicable lessons of good practice,	Agree. This recommendation is addressed in the revised PD: • A structured overview of activities and achievements is provided as Annex A and reflected in the theory of change in the revised PD. However, the result framework is not deemed to be the best place to reflect the past results and achievements. • The PD has been revised to more comprehensively identify IEA's key strengths and advantages, and outline opportunities for partnerships with other actors. • The 'Theory of change' and 'Delivery model' sections of the PD has been revised. In addition, country specific work programs will be established specifying activities, outputs and outcomes. • The PD has been revised to include such a rationale. • The PD has elaborated on the mandate and composition etc. of the E4 Reference • The E4-II reporting process will be streamlined and tailored to benefit both donor and partner countries. • The IEA will inform DK on scope and donor commitments on the proposed Clean Energy Transitions Package. • Gender and rights issues are addressed in the revised PD

and "impact stories". The proposed E4II communication and outreach plan should underline the importance of targeted communications to senior decision makers and a range of IEA's other key audiences. • Streamline the proposed budget structure and financial reporting to provide better transparency in resource allocation at HQ and country levels and efficient use of resources. • IEA should clarify the scope and donor commitments to the proposed Clean Energy Transitions Package and inform the E4II approval process accordingly. • Address gender and rights issues.	

I hereby confirm that the above-mentioned issues have been addressed properly as part of the appraisal and that the appraisal team has provided the recommendations stated above.

Signed in Copenhagen…… on the …1/9 2017…..……..……..….

Hans Hessel-Andersen,

Appraisal Team leader/TQS representative

I hereby confirm that the responsible unit has undertaken the follow-up activities stated above. In cases where recommendations have not been accepted, reasons for this are given either in the table or in the notes enclosed.

Signed in……Copenhagen…..….on the… 14/9 2017……..…

Henriette Ellermann-Kingombe

Head of MKL