



EVALUATION OF DANIDA ENERGY AND ENVIRONMENT COOPERATION IN SOUTHEAST ASIA

EVALUATION

November 2016



Evaluation of Danida Energy and Environment Cooperation in Southeast Asia

Evaluation Report



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We also wish to thank the members of the Evaluation Reference Group, for good discussions and constructive comments to our draft reports.

List of Abbreviations

ASEAN	Association of Southeast Asian Nations
CDM	Clean Development Mechanism
CETREE	Centre for Education and Training in Renewable Energy and Energy Efficiency (Malaysia)
DKK	Danish Kroner
EC	Energy Conservation
EE	Energy Efficiency
EEC	Energy and Environment Cooperation
EKF	Export Credit Agency
ESP	Environmental Support Programme
ESPS	Environmental Sector Programme Support
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIZ	Gesellschaft für Internationale Zusammenarbeit
GNI	Gross National Income
IFU	Investment Fund for Developing Countries
INDC	Intended Nationally Determined Contributions
LEO	Low Energy Office
MFA	Ministry of Foreign Affairs (of Denmark)
MW	Mega Watt
NGO	Non-Governmental Organisation
OECD/DAC	Organisation for Economic Cooperation and Development/Development Assistance Committee
RE	Renewable Energy
SEA	Strategic Environmental Assessment
SDG	Sustainable Development Goal
SME	Small- and Medium-sized Enterprises
ToC	Theory of Change
UNDP	United Nations Development Programme
USD	United States Dollars

Executive Summary

Introduction and approach

The purpose of this evaluation is to assess and document the experiences and results from Danish support to Energy and Environmental Cooperation (EEC) in Southeast Asia. The Danish assistance has included interventions in Malaysia and Thailand from 1994, in Vietnam, Laos and Cambodia from 1997, and in Indonesia from 2005. The evaluation covers the period from 2002 to 2016 and due to the overall thematic focus of this evaluation, only the interventions in Indonesia, Malaysia and Thailand are included^{1,2}. EEC interventions in Thailand and Malaysia were completed in 2008/2009 while they are still ongoing in Indonesia.

The evaluation focuses in particular on two selected thematic areas: energy efficiency (EE) and renewable energy (RE), both of which are covered by Danida's interventions in all three countries covered by the evaluation. An important aspect of the evaluation has been to assess and document experiences in relation to the effects from development cooperation on commercial collaboration with Denmark. In all three countries, engagement of Danish private sector actors is seen as an important part of the transition process from development cooperation to new forms of cooperation, and the lessons learned in this regard are considered of importance to inform other programmes under transition.

The evaluation serves both learning and accountability purposes, with an emphasis on learning aimed at: a) programmes and institutions involved in the same thematic areas as the ones evaluated; b) programmes that will undergo a phasing-out process; and c) general discussions about how to promote synergy between development and commercial cooperation.

The evaluation was undertaken in the period from January to October 2016 through a combination of desk study, key informant interviews as well as fieldwork missions to all three countries.

Main findings from the evaluation

Due to the high profile, timeliness and long-term presence of the EEC, Denmark gained a high level of legitimacy and trust with the partner governments in all three countries. This created a conducive environment, where a significant part of the outputs developed through the supported interventions were adopted into national policies and plans, and included among the specific tools and measures in energy and environment strategies and action plans. This built a strong relationship with the governments and other stakehold-

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- 1 Until 2001 activities in Malaysia and Thailand were under the Danish Cooperation for Environment and Development (Danced).
 - 2 Energy efficiency is also an issue in Vietnam, but the programme has already been evaluated and this evaluation draw on that work.

ers, and made Denmark a country that the governments today still turn to for advice on environment and energy issues.

Effects from Energy and Environmental Cooperation on national Energy Efficiency and Renewable Energy development

The expectations from the EEC was that the support provided to EE and RE would contribute to increased EE and increase the share of RE within the supported countries. The development in RE took off faster in Thailand than in Malaysia: In Thailand, the RE share (electricity) of total energy consumption increased from 0.5% in 2006 to 12% in 2014. While in Malaysia, the RE share (installed capacity) grew from 0.2% (53 MW) in 2009 to 0.8% (243 MW) in 2014. In relation to EE, the short-term decrease in the energy intensity of the economy has been more significant in Malaysia than in Thailand (in Malaysia, the energy intensity declined 12% in the period from 2002 to 2012, while it stayed at the same level in Thailand over the same period). In Indonesia, the assessment of development results from the EEC interventions is still premature, since the Danish development engagement was initiated later than in Thailand and Malaysia and is still ongoing.

The achievement of the short-term impacts has depended on the extent to which progress was made within a number of interrelated outcome areas and to what extent some key assumptions were fulfilled, mainly related to priorities, commitment and capacities of central and local governmental institutions. Both Malaysia and Thailand provide good examples of countries where Danish support has contributed to important achievements in the areas of EE and RE, and where a foundation for further impact within these areas has been established. There are good indications of sustainability, but this will have to materialise in a context, which is highly influenced by important internal factors, e.g. continued political support, opposition from vested interests, and external factors (such as prices of fossil fuels and renewable energy technologies).

While the EEC in Indonesia has made a significant contribution to the enabling environment for EE and RE through support to environmental laws and regulations (including Strategic Environmental Assessments), this has not resulted in increased EE and an increased share of RE. It is only recently that concrete steps have been taken to link the results of EE/RE demonstration projects with improved policies and strategies at national level. Implementation delays mean that it is still too early to pass judgement on the short-term impacts from these interventions. From Indonesia, there are examples that important “merits” from the EEC had been lost and Denmark not fully obtained the credit it deserved for contribution to important sector development initiatives. Instead, other development partners have taken up this “space” and used it as a platform for further cooperation, also commercially.

In Indonesia, the evaluation also found that current EEC interventions provide good potential for synergies with other development programmes, in particular the Democracy and Good Governance Programme. This potential had not been identified previously by the embassy, but initiatives have now been taken to ensure a closer coordination of interventions across the two programmes.

Influence on national policies and plans have been significant

According to policy-makers and key stakeholders, the EEC interventions in Malaysia and Thailand contributed to a changed political and institutional context in favour of EE and RE. A key reason for this is that the interventions began at a time when the need for

an increased focus on EE and RE became apparent for political decision-makers, while Denmark was well known for its capacity and experience, and the only development partner active in the field at the time. The interventions introduced a number of specific policies, action plans and instruments, which have been important for the countries' further implementation of national goals on sustainable development, climate change, environment, as well as EE and RE. The evaluation was able to identify a substantial number of such Danish 'footprints' in Malaysia, Thailand and Indonesia.

Knowledge and awareness raising was an important basis for decision-making

The Danish support has helped raise political attention and general awareness in Thailand and Malaysia, as well as in Indonesia. This has happened through capacity strengthening of governmental institutions, and by support to data collection, information and awareness-raising activities. In Thailand, policy and decision makers and implementers were very uncertain regarding the feasibility of generating significant shares of the total energy consumption from RE and whether it was at all possible to reach the relatively ambitious national targets. The combination of targeted studies and resource assessments, practical demonstrations of EE and RE solutions and study tours to Denmark for relevant management and staff (e.g. visit to Samsoe as a renewable energy island (wind farms, pig farms with biogas)) was mentioned by key stakeholders as a major contributing factor for convincing of decision makers and implementers of RE potentials, and for paving the way for a significant increase in Thailand's RE share within a relatively short period of time.

Institutional strengthening was important for continuity

In Malaysia and Thailand, the Danish interventions resulted in a number of new institutional structures that still play an important role today. In Malaysia, this includes the Sustainable Energy Development Agency. Its key role is to administer and manage the implementation of the feed-in tariff mechanism, which is mandated under the Renewable Energy Act 2011. The feed-in tariffs are currently a key driver for RE development in the country. In 2008, the Energy Commission's Unit for Energy Management was upgraded to a department, based on recommendation from the EEC. Most of the current staff in the department was trained through the EEC, including the director. In Thailand, institutional structures include the Energy Regulatory Commission and the Local Energy Planning Centre in the Ministry of Energy. The Energy Regulatory Commission is a Power Regulatory Body established in 2009 based on direct inspiration from Denmark having the aim of regulating the power market. The Local Energy Planning Centre was established as a direct follow-up on the Danish programme and continues to roll out local-level planning activities.

Several universities in Malaysia, Thailand and Indonesia have been supported through capacity development activities on sustainable energy during the EEC implementation. The evaluation noted the important role universities play as advisers to governments and the private sector. The capacity built in the local universities is thus important for the continued development of EE and RE in the recipient countries, and therefore also for the long-term impacts and sustainability of the Danish support. After the completion of the EEC, the availability of technically highly qualified people within the RE and EE area in Malaysia and Thailand has dropped remarkably largely as a consequence of a limited focus in the universities on these research areas.

Human capacity development has helped sustain impacts

The EEC clearly demonstrates the important potential of human resources development in sustaining impact over time. Several government staff in Malaysia, Thailand and Indonesia, trained during the EEC, have subsequently had a career path that has brought them into decision-making roles. Interestingly, some still see themselves as being “Danced/Danida alumni”. The fact that some of them over time have advanced in the governmental system and become influential decision-makers, is an important contributing factor to maintaining the conceptual thinking in national energy strategy and policy-making, which was introduced via the Danish EEC.

Demonstration projects had an impact as game changers

The Danish interventions have helped introduce specific designs and technologies in both Malaysia, Thailand and Indonesia, which still today play an important role as demonstration projects, and which have helped create awareness among public and private decision-makers about green energy technologies and systems. This includes support to low energy and zero-energy office buildings in Malaysia (the Low Energy Office Building, the Green Energy Office Building and the Diamond Building), which were inspirational for the creation of a Green Building Index and which also contributed to capacity building and information dissemination, e.g. towards foreign delegations, architects and engineers.

Likewise, the business-to-business partnerships created between Indonesian and Danish architects has been the focus on EE and green building design, resulting in the construction of the Gran Rubina high-rise complex in central Jakarta. There is now an increased demand – particularly in Jakarta – for EE design in new construction, and discussions are ongoing on moving from optional to mandatory green building design as part of the revision of the Green Building Regulations.

Effects from EEC on Danish companies

Danish companies and competencies have benefitted from different elements of the EEC interventions, and often from a combination of two or more of these elements. Below, the contribution from different EEC elements on the Danish commercial engagement in EE and RE in the three countries is discussed in more detail.

Effect from purchase of services or products related to implementation of EEC activities has been low

The evaluation findings show that – in the short-term – Danish consultancy companies have benefitted more than Danish manufacturing companies from the direct buying of services and products through the EEC. A number of small Danish consultancy companies were established in Malaysia and – to less extent – in Thailand during and after completion of the EEC, mainly in relation to energy efficient buildings, waste management (including waste-to-energy), biogas and wind power. These companies were established mainly by Danish consultants and advisors who had been involved with implementation of EEC activities. In Indonesia, where EEC implementation is still ongoing, it is still too early to assess the direct effect from the EEC on Danish companies. However, so far the effect seems to be limited. Danish manufacturing companies have only benefitted to a limited extent from EEC contracts. In general, the EE and RE funded activities have included limited provision of equipment, with the large majority being tendered and produced locally.

Effect from demonstration and branding of Danish technologies has been limited

In all three countries, the Danish support was appreciated for focusing more on knowledge transfer than on technology export. This included a number of demonstration events, including study tours to Denmark, for a large number of key national stakeholders, many from the government system. The practical demonstration of Danish technologies was supplemented by elaboration of relevant studies and assessments of potentials for different RE sources and EE initiatives. The spin-off for Danish companies from these activities has however been relatively limited so far. Only very recently, and mainly due to newly discovered potentials and incentives for wind energy projects in both Thailand and Indonesia, Denmark has started to become a more significant RE player in the region. In the area of biomass/biogas, the EEC included a large element of technology demonstration as did the Clean Development Mechanisms³ projects but the direct effect on Danish companies from these demonstrations have been minimal.

The phasing-out of EEC interventions in both Thailand and Malaysia left a sudden “vacuum” in the level of interaction and personal relationships between Danish advisors/consultants and management/staff from energy institutions in both countries. At the same time, technical studies and standards for EE and RE, developed with support from the EEC, gradually became outdated in the absence of sufficient follow-up. This resulted in a gradual change in priorities within the governmental institutions, from having a large degree of quality and technology orientation during the period of the EEC, to become more focused on the short-term price parameter when making investments. The gaps in technical knowledge and capacities that have occurred after completion of the EEC interventions in both Thailand and Malaysia, do not only relate to governmental institutions. The concerns also relate to the limited availability of relevant technical expertise among national experts, which is largely a consequence of limited focus in the universities on these research areas.

Effect from dissemination of values and attitudes and environmentally-friendly solutions has been positive

In both Thailand and Malaysia, there have been positive effects from EEC awareness raising activities on sustainable energy. In particular, the EEC supported activities at local levels have been important to address the scepticism of EE and RE technologies and convince local stakeholders of their potentials as reliable solutions for future energy planning. The dissemination and awareness activities have been important complementary elements to the technical demonstrations and institutional support, and have indirectly had a positive effect on Danish commercial activities. As regards Indonesia, it is still too early to assess the effect from these interventions on Danish commercial activities.

Effect from introduction of Danish knowhow and establishing networks has been important

An important comparative advantage of Danish companies in EE and RE is related to knowhow, including technical knowledge, design and process management and during the EEC this has been extensively promoted in all three countries. The long-term Danish engagement within key governmental institutions made it possible to develop inter-personal connections and relationships considered very important for companies for doing business in the region.

3 The CDM allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction credits, which can be counted towards meeting Kyoto targets.

Danish companies working with EE and RE in the region emphasized the importance of formal and informal network relations with other Danish companies in the region, in order to join efforts for lobbying and mutually supporting each other. This requires the presence of a ‘critical mass’ of Danish companies with continued interest and engagement in EE and RE development. This ‘scenario’ was only fulfilled in Malaysia, where a few large Danish manufacturing companies together with recently established small Danish consultancy firms with “roots” in the EEC have established different network relations.

Effects from Danish support to improvement of framework conditions lost momentum

In all three countries, the EEC has provided comprehensive support to the development of political preparedness, framework conditions and incentives to stimulate investment in RE and EE technologies. However, the evaluation findings also show that it takes time for these processes to develop from planning to the implementation stage, and that the effect on Danish companies from these efforts may only materialize some years after. This also relates to the character of especially larger RE projects, which may need some years of planning and development, before implementation starts.

With the closure of the EEC in Malaysia and Thailand in 2008/2009, and without a dedicated follow-up strategy, the opportunity to directly influence the development, by sustaining the outcomes, addressing the remaining barriers and strengthening implementation, became significantly reduced. The experiences from these two countries show that this resulted in a loss in momentum and even a series of missed opportunities⁴.

In addition, small- and medium-sized Danish manufacturing companies have found it difficult to comply with requirements from EKF to “create value for Denmark”, their businesses have been too small for IFU to become involved, and services offered by the Danish Trade Council have been considered relatively expensive, and not differentiating between larger and smaller companies. The companies find that these challenges have been particularly strong in relation to EE and RE projects, as these are considered having a relatively high risk in the financial markets.

Conclusions

The evaluation findings lead to the following main conclusions:

Conclusion 1 – Relevance: The relevance of the EE and RE supported interventions under the EEC has been high in view of national needs and priorities as well as in relation to Danish development priorities, commercial interest and key competencies. The Danish support has been an important driver for placing EE and RE higher on the political agenda in all three countries. At a time where national policymakers and the population in general were looking for solutions, the experience and contribution from Denmark on the potentials of EE and RE was critical. At the same time, Danish EE and RE competencies and technologies were meant to have a large export potential and are priority areas in Danish development assistance.

4 The EEC in Indonesia appears to be gearing up to avoid that a similar situation occurs there.

Conclusion 2 – Danish Companies: So far, the EEC interventions, together with other Danish business instruments, have only had a limited effect on Danish commercial engagements in the three countries. Mainly smaller Danish consultancy companies have benefitted in the short-term while Danish manufacturing companies (mainly within wind power and biogas/biomass/waste-to-energy) are only more recently starting to benefit indirectly from improved national framework conditions, which have roots in the EEC support. Considering the great potential for Danish commercial interests in relation to EE and RE in the region, there is a clear indication of “missed opportunities” after the development cooperation came to an end in both Thailand and Malaysia.

Conclusion 3 – Transition: In Malaysia and Thailand, no effective transition process was planned when the cooperation shifted character from being mainly focused on development cooperation to becoming mainly focused on commercial cooperation. In Indonesia, the recent initiative, with the contracting of a Danish Growth Advisor and the Danish Energy Agency, presents a new form of targeted Danish bilateral sector cooperation which may become important to ensure continued impacts on EE/RE policy and market development.

Conclusion 4 – Development Results: The EEC interventions have contributed to important progress towards achievement of planned development results within key areas for EE and RE development in the three countries. The development results are most visible in Malaysia and Thailand, where EEC interventions were completed several years ago. The evaluation findings clearly show that it takes time for institutional development processes to develop from the planning to the implementation stage, and to ensure commitment and support in the political and legislative system as well as among various energy stakeholders and consumers. In general, the results from the EEC are not well-documented and in Indonesia the evaluation found that Denmark had not fully obtained the credit it deserved for contribution to important sector development initiatives. Instead, other development partners had taken up this “space” and used it as a platform for further cooperation, also commercially.

Conclusion 5 – Capacity and Technology Development: Although evidence from both Thailand and Malaysia shows some continuation and follow-up on the EEC support to strengthening of EE and RE institutional frameworks, serious gaps have developed in EE/RE technical and research capacities after the completion of the EEC interventions. From a commercial perspective, the lack of sufficient national technical expertise and knowledge has, as a consequence, privileged a focus on price rather than quality, which has resulted in import to the local markets of EE/RE products and services based on cheap technologies (often coming from China) at the cost of more expensive, but higher technical quality, products and services from countries such as Denmark.

Conclusion 6 – Networking and Local Private Sector: Establishing of business partnerships with local private sector actors have been important for Danish companies involved with EE and RE activities in the region. Smaller as well as larger Danish companies depend on local private sector Partners/agents/suppliers to develop, operate and market their EE/RE business activities. Danish companies emphasize the importance of formal and informal network relations with other Danish companies, in order to join efforts for lobbying and mutually supporting each other.

Conclusion 7 – Regionalisation and Coherence: Coordination and transfer of learning and experiences has taken place mainly ad hoc across the EEC interventions in Thailand,

Malaysia and Indonesia. This is in contrast to the reality faced by Danish companies involved with EE and RE activities in the Southeast Asian region. They largely operate from a regional perspective, where learning, experiences – and to some extent also partners – are transferred across countries. In Indonesia, the coherence and potential synergies between EEC and other sector programmes (e.g. governance) were not thoroughly considered until very recently.

Conclusion 8 – Danish Business Support Instruments: Danish business support instruments, such as the trade council services, investments with IFU, export credits through EKF as well as the ad hoc support provided directly by the embassies provide an important leverage for Danish companies with the ambition to develop business in the Southeast Asian countries. However, while investments remain critical issues for all companies, the particular needs and abilities to benefit from the different instruments vary considerably.

Recommendations

The findings and conclusions from the evaluation lead to the following strategic and operational recommendations:

Strategic Recommendations (to the Danish Ministry of Foreign Affairs (MFA))

Strategic Recommendation 1: In order to mitigate the risk of critical “capacity gaps” upon completion of development programmes, it is recommended that the MFA considers how targeted support mechanisms, such as cooperation and partnerships on research and capacity development within specialised technological areas as well as an extended and more flexible role of the embassies, may be used as a strategic tool in the transition process from development to commercial cooperation.

Strategic Recommendation 2: It is recommended that the MFA gradually develop a business support approach that is better aligned to Danish companies’ strategic commercial engagements, which often take point of departure in a “regional” rather than a “national” perspective. An important innovation could be posting of a “regional” commercial counsellor at an embassy with a particular strategic importance in the region. It could also include introduction of more effective mechanisms for coordination and sharing of learning and experiences from commercial activities across countries within the same region.

Strategic Recommendation 3: The Danish business support instruments should be developed with a more specific view to reflecting differences in needs, abilities and risk taking of Danish companies in the specific markets. In particular, more tailor-made products should be developed for the smaller and medium-sized companies, to better reflect the realities of these companies in terms of financing and production processes⁵.

5 It is acknowledged that a number of adjustments of the Danish business instruments have taken place recently and that this process is still ongoing. The “Export Start Programme” initiative from the MFA, which now includes possibility for a 35% subsidised counselling on work hours from the Trade Council for smaller enterprises, is an example of a recent adjustment, which is in line with this recommendation.

Strategic Recommendation 4: The MFA should consider including a mandatory “transitional phase” during the last 1-2 phases of development programme implementation, in particular within countries and sectors where the development programmes would be expected to create opportunities for Danish commercial cooperation. The Danida “Guidance Note on Country Exit from Bilateral Development Cooperation” (March 2015) needs to become more operational and opportunity driven and an increased level of flexibility for the embassies should be introduced in terms of budget and resource allocations. The evaluation experiences from Thailand, Malaysia and Indonesia show that policies and business incentives often change with relatively short notice and it is important that the embassies have both the tools and abilities to assist Danish companies effectively during the transition period.

Operational Recommendations (to Danish embassies)

Operational Recommendation 1: The embassies should more explicitly consider how Danish-funded interventions in other sectors (e.g. governance) could become complementary and supportive to facilitate Danish commercial engagements within targeted thematic areas in countries where potentials for Danish commercial cooperation have been identified (such as e.g. EE and RE in Southeast Asia). The Country Programme Guidelines may provide a better platform for this and hence for creation of better results in the future but it needs to be considered already from the preparatory programming phases.

Operational Recommendation 2: The embassies should introduce a more effective system for documentation and uptake of learning and experiences across different programme phases, and across different sectors. It would be useful, if such a system could also include learning and experiences from the links between development cooperation and commercial cooperation. The Project/Programme completion reports could be used more proactively as a tool especially if they become more forward-looking.

Operational Recommendation 3: Country programme formulations should more explicitly include guidance and clarity on how – and to what extent – development and sector cooperation could be expected to lead to commercial cooperation within a particular development engagement. A more specific definition of targets (short- and medium-term), indicators and specific support measures will be required.

Operational Recommendation 4: The Danish embassies should consider how the Strategic Sector Cooperation (“Partnering with Denmark”) could be used as a strategic vehicle for linking up different kind of partnerships and agreements to strengthen the Danish commercial engagement within a particular sector and to facilitate and encourage networking initiatives among Danish commercial actors in the country and/or region. This could include different types of private-public partnerships (e.g. for research cooperation at local universities) as well as more explicit provision of support to maintain focus on critical systemic issues and institutional relationships within the countries, as support to Danish commercial potentials. In this way, the Strategic Sector Cooperation could become an important facility in countries where a transition between development cooperation and commercial cooperation is taking place.

The evaluation findings from both Thailand and Malaysia have clearly demonstrated the importance of continuing the bilateral relationships after the completion of development cooperation interventions as well as to keep momentum and follow-up on those strategically important institutional and capacity development areas, which were supported through the development interventions.

1 Introduction

1.1 Objectives, scope and focus of the evaluation

Danida's evaluation department has commissioned Nordic Consulting Group A/S and Orbicon A/S to undertake an external evaluation of its Energy and Environment Cooperation (EEC) in Southeast Asia in order to assess the results and to provide recommendations for the future.⁶

In Southeast Asia, the Danish environmental assistance has included interventions in Malaysia and Thailand from 1994, in Vietnam, Laos and Cambodia from 1997, and in Indonesia from 2005. Due to the overall thematic focus of this evaluation, only the interventions in Indonesia, Malaysia and Thailand are included⁷⁸. The evaluation covers the period from 2002 to 2006.

The evaluation serves both learning and accountability purposes, with an emphasis on learning aimed at: a) programmes and institutions involved in the same thematic areas as the ones evaluated; b) programmes that will undergo a phasing-out process; and c) general discussions about how to promote synergy between development and commercial cooperation.

Firstly, the evaluation makes use of a thematic approach to *assess and document learning and experience from Danida support in relation to specific energy and environment related topics*. Focus is on two selected thematic areas, energy efficiency (EE) and renewable energy (RE), both of which are covered by Danida's interventions in all three countries.

Secondly, the evaluation *assesses and documents the experience in relation to the effects on commercial collaboration with Denmark*. To a varying degree, the interventions have been designed to bring in Danish competences and engage the (Danish) private sector. In the three countries, engagement of Danish private sector actors is seen as an important part of the transition process from development cooperation to new forms of cooperation, and the lessons learned in this regard may serve other programmes under transition.

The evaluation methodology involves desk study, key informant interviews as well as fieldwork activities in all three countries.

6 The evaluation team from NCG and Orbicon comprises: Carsten Schwensen (Team Leader), Dolf Noppen, Rene Karottki and Marie-Louise Appelquist. The Terms of Reference (ToR) are included in Annex A.

7 Until 2001 activities in Malaysia and Thailand were under the Danish Cooperation for Environment and Development (Danced).

8 Energy efficiency is also an issue in Vietnam, but the programme has already been evaluated and this evaluation draw on that work.

1.2 Overview of the evaluation report

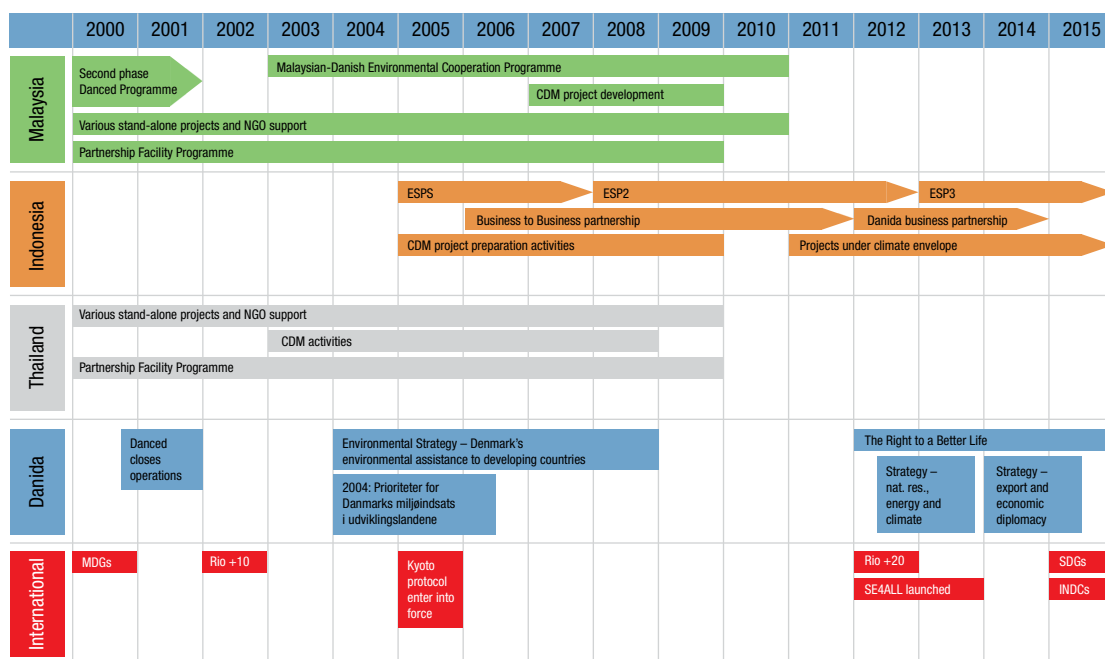
The evaluation report is structured as follows: Chapter 2 includes an overview of the EEC in Thailand, Malaysia and Indonesia and Chapter 3 presents the evaluation approach and methodology. Chapters 4-6 present the evaluation findings as these relate to the Evaluation Questions, which are presented in Chapter 3. Chapter 7 contains the conclusions and recommendations from the evaluation.

2 The Danish Environment and Energy Cooperation in Southeast Asia

As a follow-up on the 1992 Rio Conference on Environment and Development, Denmark established a separate funding mechanism for environmental support to developing countries. This “Environmental and Disaster Relief Facility” (from 1998 “Environment, Peace and Stability Facility”) was administered in part by the Danish Ministry of Environment and Energy (Danced) and in part by the Danish Ministry of Foreign Affairs (Danida). In 2001, the administrative responsibility for the facility was placed fully in the Danish Ministry of Foreign Affairs (MFA). The Danced activities were transferred to Danida, and the Danced ‘brand’ was discontinued.

Figure 2.1 below illustrates the timing of the different EEC interventions in Indonesia, Malaysia and Thailand since 2000. Important milestones in relation to Danida strategies and international conventions on environment, energy and climate change are also illustrated as these events may have influenced both planning, implementation and continuation of the supported activities. It is also worth noting that the EEC interventions in Malaysia and Thailand were not complemented by Danish-funded interventions within other sectors. In Indonesia, Danida has supported programmes on democracy and governance, which has created opportunities for synergies across the sectorial programmes⁹.

Figure 2.1: Timeline



9 With a GNI per capita of USD 3,630, Indonesia is on the OECD/DAC list of aid recipients in the lower middle-income country category, whereas Malaysia and Thailand today are both in the upper middle-income group of countries. This enables Indonesia to continue to participate in more of Danida's development and business-oriented programmes.

Figure 2.1 also indicates some of the Danida main business-oriented instruments implemented in the three countries (see Annex F) for a more detailed presentation of the various business instruments/programmes that Danida has applied over the years in Indonesia, Malaysia and Thailand). The business-oriented programmes have aimed at matching Danish companies with local companies with the overall aim of technology transfer, job creation and increased growth. The Investment Fund for Developing Countries (IFU) has also been involved in activities in all three countries¹⁰. In addition to these programmes, the MFA has Trade Council staff placed at many embassies, including Indonesia, Malaysia and Thailand¹¹.

The following sections present a brief description of the EEC interventions covered by this evaluation (see Annex D for a more detailed specification of the EEC interventions covered).

2.1 Thai-Danish cooperation

The Thai-Danish cooperation on environment and sustainable development was implemented in the period 1994-2009. The last phase of support during the 2004-2009 period was seen as the exit phase; this phase focused on sustainable energy, urban environmental management and natural resource management. Decentralisation and community participation was emphasized in all interventions.

The interventions were primarily project-based and included preparation and initiation of a number of projects under the Clean Development Mechanism (CDM)¹². Danida's Partnership Facility supported business-to-business partnerships between Denmark and Thailand, mainly with projects focused on environment and climate-related sectors. Lastly, the interventions included cooperation with research institutions and civil society.

Energy-related activities were implemented in cooperation with the Thai Ministry of Energy, mainly the Department of Alternative Energy Development and Efficiency. The total budget for the sustainable energy activities was approximately DKK 55 million in the period 2001-2009.

Overall, the energy activities aimed at developing coherent enabling strategies, legislation and regulation, while at the same time strengthening the capacity of national as well as decentralised agencies to manage the energy sector in accordance with the National Energy Strategy. This included the promotion of RE and EE, as well as strengthening national and regional energy planning capacity, and introduction of skills training required to assess local energy resources. Among specific activities implemented were:

- i) Regional and provincial energy planning, including the development and adoption

10 IFU invests together with Danish companies in developing countries and emerging markets through loans, share capital and guarantees, and provides technical and financial advisory services.

11 The Danish Trade Council is the export and investment organisation within the MFA and Trade Council staff provides advisory services, conducts market analysis and applies a range of different tools in order to promote Danish business interests abroad.

12 The CDM allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction credits, which can be counted towards meeting Kyoto targets.

of a coherent framework for regional energy planning by the Ministry of Energy, and the development of regional energy plans; ii) EE promotion strategy for industries and buildings, including design, implementation and monitoring of a subsidy programme for EE; iii) Building energy code, including studies on EE in buildings and adjustments to building energy code for new buildings, and; iv) Promotion of RE technologies, including resource assessments, tools, reports and workshops to promote various forms of RE.

University staff and NGOs participated in capacity building activities on regional energy planning, including socio-economic studies and energy consumption modelling. This included cooperation between the Thai NGO 'Appropriate Technology Association' and the Danish NGO 'Organisation for Renewable Energy' on local level energy planning and capacity building.

The Partnership Facility was operational during 2003-2009, and included cooperation projects on a number of energy activities, such as reduction of losses in electricity distribution, low energy housing, photovoltaic pumping systems, solar water heaters, and biogas from agricultural and industrial waste. The support from Danida included contributions to partner identification visits, feasibility studies, demonstration units and the implementation of projects. The Danish interventions supported the strengthening of the Thai capacity to benefit from CDM. Apart from building the capacity of the CDM secretariat, this led to the development of a number of CDM projects with Denmark, which mostly involved the use of RE, including projects on biomass power plants, biogas from wastewater and wind energy.

2.2 Malaysian-Danish cooperation

The Danish environmental assistance to Malaysia was initiated in 1994 when Danced and the Government of Malaysia signed a cooperation agreement. After a first phase of cooperation (1994-1998) and a second phase (1999-2001), the programme was transferred to Danida in 2001. A third phase, aligned to the eighth Malaysian Plan (2001-2005) (the national five-year development plans), was implemented in the period 2003-2010. The third phase was seen as an exit phase of the programme, which was completed in 2010.

The overall objective of the third phase was that the Malaysian goals on natural resources and environment would be attained. In addition, the activities should reflect the framework of the climate change mitigation ambitions of both Malaysia and Denmark. It comprised the following five thematic components: i) environmental planning and strategy; ii) RE and EE; iii) solid waste management; iv) environmentally hazardous substances; and v) biodiversity. In addition to the government-to-government cooperation, the programme included cooperation with the private sector, research institutions and civil society. The total budget for all three phases was DKK 600 million. The budget for the third phase was approximately DKK 110 million.

The energy component was implemented in cooperation with the Economic Planning Unit in the Prime Minister's Office, the Ministry for Energy, Green Technology and Water, and the Energy Commission. The primary aims of the energy activities were to raise the attention to EE and RE in national development plans, to improve integrated resource planning across the energy sector and to enhance the capability of both the

public and the private sector. This included incentive structures, regulatory measures and tools, and stronger institutions.

More specifically, the cooperation provided inputs on EE and RE to the Malaysia Development Plans; supported regulations to promote EE and Demand Side Management; energy labelling of industrial motors and household appliances; increased attention to EE in building design, including design of a Low Energy Office building (the “LEO” building) as a model for Malaysia’s building sector; and training and awareness activities on EE and RE, primarily through the Centre for Education and Training in Renewable Energy and Energy Efficiency (CETREE).

The programme was supplemented by a business-to-business Partnership Facility, which inter alia supported projects on reducing energy use for lighting, energy conservation, co-generation of heat and electricity from palm oil and wood waste, and methane capture from landfills.

On CDM, the programme supported the strengthening of the Malaysian capacity to benefit from CDM by building the capacity of a CDM secretariat and by supporting formulation of projects. This led to the development of 15 CDM projects with Denmark, which mostly involved the use of RE, including biogas and landfill gas. Several of these projects were related to the palm oil industry and, in particular, biogas for wastewater treatment. Lastly, Danida supported the Centre for Environment, Technology and Development Malaysia (an NGO) with demonstration and awareness activities on sustainable energy solutions for urban households.

2.3 Indonesian-Danish cooperation

The EEC cooperation with Indonesia started from 2005, with the approval of the Environmental Sector Programme Support (ESPS) (2005-2007). The ESPS was followed by a second phase covering the period from 2008-2012, as well as a third phase (ESP3) which started implementation in 2013. ESP3 is scheduled to be completed in 2018 and forms part of the phasing out of the Danish development assistance.

In parallel to the sector programmes, Denmark has focused on strengthening business and trade links between Denmark and Indonesia through other programmes that forms part of the official development assistance of Denmark, including the Business-to-Business Programme and Danish Business Partnerships. A number of other engagements have also been used for the same purpose including visits by Danish business delegations, active engagement of the Trade Council staff for commercial advisory services, investments through IFU, etc. Activities funded under the “Climate envelope” fall under ESP 3 Component 3: “Climate Change Mitigation through Natural Resource Management”¹³.

The ESPS (2005-2007) had a total budget of DKK 90 million. The main focus was on capacity development for environmental management, including support to development

13 Activities funded under the “Climate envelope” are covered by the “Evaluation of Denmark’s Climate Change Funding to Developing Countries” (2015) and will not be covered explicitly by this evaluation.

of legal frameworks for a responsive environmental management process based on the principle of subsidiarity. ESPS was aligned to Indonesia's decentralisation programme and policies, and supported government decentralisation initiatives seeking to incorporate environmental management issues into their approaches and activities. This included developing of guidelines at national, provincial and district levels for Strategic Environmental Assessments (SEAs) and Environmental Impact Assessments (EIAs).

The SEA approach brought to the fore not only the importance of integrating environment with development, but also positioning SEA's in the decision-making hierarchy and building public engagement for improved governance in environment and energy. The acceptance of the need for public engagement within the context of the increased focus on decentralisation in Indonesia, and within the context of Indonesian environmental legislation, has provided the basis for an approach to EE and RE decision-making. This approach examines various scenarios (including a no-change "business-as-usual" scenario), where scenarios are not based on top-down blueprints but on broad engagement in decision-making.

Phase 2 of the Environmental Support Programme, ESP 2 (2008-2012), had a total budget of DKK 220 million. The overall objective was "*Sustainable Environmental Management in Support of Livelihoods in Indonesia*", thus emphasizing the link between poverty reduction and sustainable environmental management. The ESP 2 support covered three specific components: i) Support to public sector institutions to strengthen capacity and establish environmental and energy management tools and systems, ii) EE in construction and use of large buildings, and iii) Support to decentralised natural resource management and RE. In parallel, a number of Business-to-Business projects were initiated. They included development of sustainable building design and standards for EE for future building projects, capacity building for CDM project design, and developing software-based emission monitoring systems.

The third phase of the Environmental Support Programme, ESP 3 (2013-2017/18), with a budget of DKK 270 million, is still ongoing. This is the final phase of environmental support to Indonesia through Danish development assistance, and it therefore also outlines an exit strategy. ESP 3 maintains energy as a focal area by supporting the implementation of policies related to EE, RE and Energy Conservation. While some support is provided at the national level, the largest proportion is allocated to the decentralised levels, including demonstration activities in the province of Central Java, where a number of pilot demonstration projects are under implementation. Thus, ESP 3 continues to support the decentralisation process in Indonesia, with an increased focus on obtaining concrete results on the ground.

At the national level, the current support focuses on the establishment of a Clearing House (now called LINTAS) for EE, RE and Energy Conservation as a one-stop information hub used by developers, investors, private companies and the public in general. In addition to ESP 3, the Danish development cooperation with Indonesia includes Danida Business Partnership projects and a programme on Democracy and Good Governance.

Recently, the MFA and the Indonesian Government have initiated a Strategic Sector Cooperation in the energy sector, including provision of an Energy Counsellor (Growth Advisor) and technical support from the Danish Energy Agency. As development assistance starts to transition into a more commercial relationship, the Danish-Indonesian

Strategic Sector Cooperation focussing on clean energy, renewable energy and energy efficiency is seen as a logical continuation of Denmark's involvement with environment and energy in Indonesia. The Strategic Sector Cooperation is a government to government cooperation which involves the Danish Ministry of Energy, Utilities and Climate, through the Danish Energy Agency, partnering with the Indonesian Ministry of Energy and Mineral Resources, through the National Energy Council. The cooperation is anchored by an energy counsellor seconded by the Danish Energy Agency to the Danish embassy. The final years of ESP3 overlap with the start of the Strategic Sector Cooperation (2016-2018), and ESP3 unallocated funds will be used to support the transition. The three areas under the Strategic Sector Cooperation where the Danish experience and lessons learned will be used in the Indonesian context are: scenario analysis and energy planning; renewable energy integration; and energy efficiency.

3 Approach and Methodology

3.1 Overall approach

Country programme evaluations vs. thematic focus

The interventions covered by this evaluation include five main thematic areas: environmental management and planning; energy planning; energy efficiency; renewable energy; and waste management¹⁴. From these five areas, the evaluation focusses mainly on interventions related to energy efficiency and renewable energy, which form part of the EEC interventions in all three countries, therefore allowing for cross-analysis.

In relation to EE, the focus is mainly on buildings, and in relation to RE focus is mainly on biomass/biogas and wind energy. The support provided to Environmental Management and Planning and Energy Planning is included in the analysis to the extent that this support has contributed to strengthening the enabling environment with regards to EE and RE interventions¹⁵. Waste management is included only in relation to waste-to-energy.

The rationale used for the thematic selection (EE and RE) has been:

- EE and RE are key focus areas and priorities in national development plans in all three countries
- EE and RE are key focus areas in current and past strategies for Danish development assistance
- EE and RE are areas with comparatively strong Danish competencies and expertise
- EE and RE are considered areas with a strong commercial potential (export) for Danish companies

Based on this thematic focus, the evaluation team has selected a list of EEC interventions to be included in this evaluation (see Annex D).

Danish competencies and commercial interests

The evaluation also assesses the value-added on Danish commercial interests/competencies from the EEC interventions as well as the synergies between the two. This assessment mainly focuses on actual/potential engagement of Danish companies in EE and RE activities in the three countries¹⁶. The links between trade and development have got more importance in Danish policies and strategies in the past 10 years. In a forward-looking learning perspective, it is therefore relevant to consider which interventions have

14 Activities related to natural resource management in the three countries are not part of this evaluation.

15 The evaluation team is aware that there may be elements of Environmental Management and Energy Planning of importance beyond EE and RE.

16 This include Danish companies that do not necessarily have an explicit focus on EE and RE, but are delivering services/products to these areas as part of their portfolio.

worked well and less well in this respect, and whether these have been intentional/explicit or unintentional/implicit. The evaluation also includes examples from Danish private sector engagement within other EEC intervention areas (e.g. waste management) when such examples are considered useful and of relevance, also for EE and RE. The evaluation assesses the effect on Danish companies from different elements of the EEC interventions:

- From direct buying of services or products related to implementation of EEC activities
- From demonstration of Danish technologies and branding of Denmark and Danish products
- From dissemination of values and attitudes and environmentally-friendly solutions
- From introduction of Danish knowhow and establishing of networks within specific sectors
- From support to changing of framework conditions in the partner country that could help to stimulate incentives and/or remove constraints for demand of Danish competencies and products.

The evaluation team has assessed to what extent these different elements have been practised as part of the EEC interventions in order to better understand how effective they have been for promotion of Danish competencies and commercial interests.

Contribution analysis

In general, it has not been possible for the evaluation to carry out attribution analysis of the EEC interventions through this evaluation. Instead, focus has been on assessment of the *contribution effects* from the EEC interventions, in particular the wider achievements (sector development and Danish commercial engagement) related to EE and RE. The contribution analysis has mainly been applicable to the interventions in Malaysia and Thailand where EEC interventions were completed more than five years ago.

Evaluation questions

The evaluation intends to answer eight specific evaluation questions (EQs):

EQ 1 (Chapter 4): What was/is the relevance of Danida's Environment and Energy Cooperation (EEC) in relation to the thematic areas of EE and RE in Southeast Asia (national context and Danish development policy objectives/longer term commercial cooperation)?

EQ 2 (Chapter 5): Which specific factors in relation to programme design and in the implementation process have influenced efficiency of the programmes (will mainly be pursued in relation to Indonesia)?

EQ 3 (Chapter 7): What have been/are the mechanisms through which Danish companies/competences have become/are becoming engaged in EE/RE related activities in the three countries and what are the realised/potential direct or indirect effects of this?

EQ 4 (Chapter 7): Has engagement of the local private sector in the EEC activities been important for involvement of Danish companies and competencies?

EQ 5 (Chapter 5): What are the development results of the EEC interventions based on the (envisaged) outcomes in relation to EE and RE (mainly Malaysia and Thailand)?

EQ 6 (Chapter 6 and 7): To what extent has/is the EEC been/being successful in facilitating a transition from aid to commercial cooperation in the area of EE/RE in the countries?

EQ 7 (Chapter 6): To what extent have certain contextual factors (political, institutional, economic) been important for achievement of impact from the interventions in relation to the area of EE/RE?

EQ 8 (Chapter 5): What has been the sustainability and the wider, transformational impact of the EEC supported interventions related to the area of EE/RE (mainly for Malaysia and Thailand)?

For each of the eight EQs, specific working hypothesis, judgement criteria, indicators and sources of verification have been developed by the evaluation team in order to structure the response to each question (see Evaluation Matrix in Annex C). The specific methods used to answer the EQs are further described in the methodology section below.

Analytical Framework

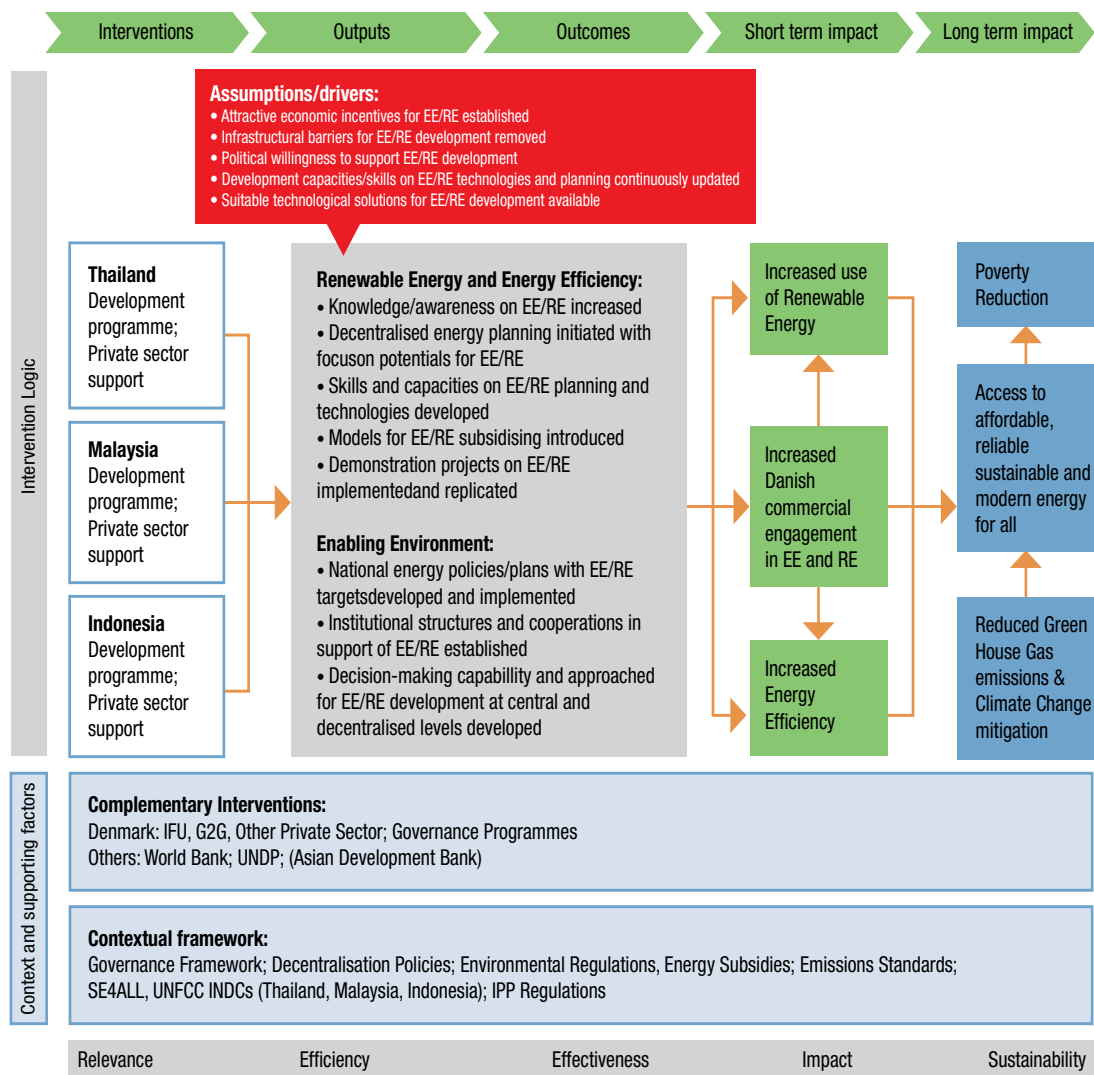
The overall approach applied by the evaluation team is theory-based, using a mixed-methods approach, although main emphasis has been on qualitative methods. The Evaluation Matrix has been used to guide the data collection and analysis process as well as to test and verify hypothesis linked to the EQs (Annex C).

Theory of Change

Figure 3.1 presents the Theory of Change (ToC) developed by the evaluation team for the EEC interventions related to the thematic areas of EE and RE, including the support to the enabling environment (environmental management and planning and energy planning) and the commercial cooperation. The ToC links directly to the EQs and the OECD/DAC evaluation criteria and is used by the evaluation team as an analytical framework to test the intervention logic of the EEC interventions.

The analysis in the following sections will follow this structure and further unpack the boxes in the ToC. In particular, the role and importance of key assumptions and drivers for obtaining of outcomes and short-term impacts will be discussed. The Danish commercial aspects have not been an explicit element in the development programme interventions but have been supported through other instruments.

The analysis will be used to assess the extent to which it can be assumed that the EEC interventions have contributed to particular outcomes and short-term impacts, including in relation to the Danish commercial engagement, as illustrated in the ToC.

Figure 3.1: Theory of Change

3.2 Methodology

Methods for collection of data and information

Document review

The evaluation has made a careful review of EEC related documentation. Other Danida evaluations have also been important sources of information for this evaluation (in particular, "Evaluation of the Business-to-Business Programme" (2014), "Evaluation of the Danish Climate Change Funding" (2015) and "Evaluation of the Danish Environmental Assistance in Southeast Asia" (2003)). In addition, the evaluation team has drawn on the Evaluation of the Danish Public Private Partnership Programme (2008), the Joint Scandinavian Evaluation of Support to Capacity Development (2015) as well as on "Synergies between Danish Development Cooperation and Commercial Activities in Vietnam (Evaluation Study, 2015/1)".

Key Stakeholder Interviews

The evaluation has conducted a large number of key stakeholder interviews including management and staff from MFA and the Danish embassies in the three countries, and

representatives from Danish business associations and selected Danish companies (see Annex B). These interviews have been useful to expand the team's understanding of the EEC interventions from a historic and contextual perspective, as well as to get a better sense of the current situation and development within the supported thematic areas, also in relation to Danish commercial interests. Semi-structured interview guides were used to ensure that similar kind of data and information would be gathered from the interviews.

Focus Group Discussions

In some cases, the evaluation has made use of group discussions to provide context and depth to the analysis of the EEC interventions and to capture views and opinions from a larger group of beneficiaries. During the country visits, the evaluation team conducted focus group discussions, mainly during visits to decentralised/local areas within the three countries. Semi-structured 'checklists' were used for these discussions to ensure that relevant data and information was collected from the sessions.

Indicators and data assessment

Due to data limitations related to the specific EEC interventions, the evaluation team has included multiple data sources to complement and supplement the EEC data sources at country level. The following main data and data sources are applied by the evaluation:

- Energy data and statistics provided by ministries of energy and other energy related institutions.
- Energy data and statistics available from International Energy Agencies.
- Data from programme/project completion reports.
- Data provided by key stakeholders interviewed.

Approach to identification and assessment of relevant Danish companies

The evaluation went through a comprehensive process of identifying Danish companies that have operated/operate in one or more of the three countries and deliver services/products within the field of energy efficiency and renewable energy. The aim has been to identify pathways and leverage by Danida in the promotion of Danish commercial interests, whether intentional or unintentional, e.g. if Danida's focus on low-energy buildings in the EEC interventions have paved the way for certain Danish suppliers and service providers; or if demonstration of Danish technology through pilot projects have increased the interest in Danish technologies in general.

The following multi-step approach to identify the key players and hence the most relevant companies to contact have been applied:

1. Updated lists of Danish companies were provided from the Danish embassies and used by the evaluation to identify companies with potential deliveries to the EE and RE areas.
2. Records from the Danish Trade Council of Danish companies requesting their services (e.g. to identify a suitable local commercial partner or for a market assessment) have been used by the evaluation to identify Danish companies with potential commercial interest in the EE and RE areas in (at least) one of the three countries. Focus has been on the lists from 2010 and onwards.

3. Video-conferences and meetings (preparatory mission) with embassy staff and key informant interviews with MFA staff and other informants (in Copenhagen and through Skype) have been used to enquire about key commercial players.
4. Meetings with the Danish Confederation of Danish Industries, the Danish Federation of Small- and Medium-Sized Enterprises and IFU have been used to identify relevant companies as well as to discuss pathways and obstacles for Danish companies to engage in these markets and sectors.
5. During the preparatory visit to the three countries, meetings with key informants also pointed to relevant companies.

The evaluation has distinguished between SMEs and larger Danish companies in the analysis, as well as between different types of deliverables (especially between consultancy services/advice and manufacturing).

Based on the above-mentioned approach, the evaluation team prepared a list of 30 Danish companies to be covered by the evaluation. Three of these companies did not want to be part of the evaluation, mainly due to constraints on human resources. There has been a broad representation of all types (SMEs/large companies and advisory services/manufacturers) among the key informants (see Annex F for an overview of companies approached, their engagement in the three countries, and whether they were interviewed). The interviews with the company representatives focused on their actual/potential future engagement in the region, the mechanisms leading to their commercial engagement, the drivers and barriers for market entry, the importance of local private sector partners, as well as the role/importance of Danish business instruments and activities.

Country missions

Country missions have been carried out in all three countries: two-week missions to Malaysia and Indonesia and a one-week mission to Thailand. The missions included implementation of the various data collection methods mentioned above and meetings with a number of key stakeholders (see Annex B).

4 Relevance of the Environment and Energy Cooperation Interventions

This chapter discusses the relevance of the EEC interventions, with a particular view to EE and RE as well as the way these have been focused, in relation to both national priorities and needs in partner countries, as well as in relation to Danish development policy and Danish key competencies and commercial interests.

4.1 The national context

Denmark was among the first development partners to support EE and RE in Thailand, Malaysia and Indonesia, with a strong focus on creating awareness, and introducing incentives and tools in support of EE and RE development. The EEC activities placed EE and RE on the national agendas for future energy planning and implementation.

In both Thailand and Malaysia, Danida ‘inherited’ a number of projects, partners and focus areas from DANCED who had a different way of formulating projects and working with partners, and also a different focus from Danida’s objectives on long-term development impact. On that backdrop, Danida’s formulation of objectives that relate to poverty reduction and sustainable development in their projects and programmes has ensured the continued relevance of the engagement in these countries. The fieldwork showed relevant complementarity of many of the engagements, including the different projects and initiatives in Thailand, which to some degree has resembled a programmatic approach.

In Indonesia, the support to the environment sector was only initiated in 2005 and was formulated as a sector programme from the outset. Even though the components of the programmes might not always be truly coherent and sometimes resemble large projects, it has been a structured way to engage with Indonesian institutions, and has also ensured good overall coordination with the partners in the different ministries and institutions, which has increased the interventions’ relevance.

Thailand

In Thailand, the National Energy Policy Committee was established in 1992, under the National Energy Policy Council Act, with the responsibility for managing the energy sector in Thailand, including granting energy operating licenses and issuing energy pricing regulations. The Bureau of Energy was established as part of the government structure in 2001 and, in 2002, was upgraded to become the Ministry of Energy, pursuant to the Restructuring of Government Organisation Act. At that time, Denmark was the only active development partner in the field of EE and RE, providing important early support, which helped the government develop the initial policies and activities in the sector.

According to key stakeholders involved with energy planning in Thailand up to 2003-2004, the continued Danish support to EE and RE became increasingly relevant to the country around that time. After a decrease in GDP (constant prices) in both 1997 and 1998, the Thai economy made a recovery from 1999 and had an average annual GDP growth rate of 4% from 1999 to 2002. In the same period, energy costs increased from 11% to 14% of GDP. Various incidents at the beginning of 2003 underlined the

importance of energy security and its impact on the competitiveness of the country. Due to conflicts in international oil producing countries, Thailand had faced a high risk of oil supply disruption and price volatility to a degree where the government had to introduce oil price stabilisation measures in order to alleviate the impacts of oil price hikes on the economic development as well as on domestic consumers.

This increase in energy consumption combined with Thailand's high dependency on imported energy made the Danish focus on the RE/EE agenda highly relevant. It became clear that domestic energy reserves would not be able to adequately accommodate the increasing demand of the country due to its increasing economic growth. Hence, Thailand had to depend largely on imported energy, which was both risky and costly.

In August 2003, the Ministry of Energy called for a national workshop on "Energy Strategy for Competitiveness", with participation of senior officials from related ministries and private sector representatives. The objective was to determine strategic approaches in the energy sector to increase energy security and to enhance the country's competitiveness. Based on the workshop proceedings, specific strategies for the energy sector were developed and presented in the "Thai Energy Strategy for Competitiveness". The Danish-supported Promotion of Renewable Energy Technologies project (the "PRET" project) became re-oriented to fall in line with this strategy and, more particularly, to support the development of an Action Plan for Renewable Power for Thailand to reach sub-targets of the strategy.

The Danish support to EE and RE in Thailand was initiated by Danced and carried on by Danida at a time where Danish support became instrumental in moving energy higher on the national agenda. In parallel, Denmark provided much relevant capacity building within these areas.

Malaysia

In Malaysia, neither EE nor RE were high on the political agenda before 2000. For decades, Malaysia had been an important oil and gas producer and exporter, and energy supply was not an important issue. The evolving energy policy was mainly driven by the energy suppliers. Moreover, for a few decades, the country enjoyed rapid economic growth and entrepreneurs were more interested in increasing their production than in reducing their energy use as the energy prices were subsidised and therefore did not constitute an economic burden.

However, over the past two decades, this situation has gradually changed and, in 2014, Malaysia shifted from being a net exporter to a net importer of oil. Moreover, the Malaysian Government is becoming increasingly involved in international environmental initiatives that may push a 'greener' energy policy. The Government's emphasis on EE is also a reflection of the commitment by Malaysia to Articles 4 and 12 of the United Nations Framework Convention for Climate Change to prepare a national greenhouse gas inventory of sources and sinks; to review and update the assessment of vulnerability to climate change and assess adaptation needs and to prepare its initial National Communications to the Conference of Parties (COP). Furthermore, Malaysia signed the Kyoto Protocol in 1999. In combination with a general push for industrialisation, and moving up the income ladder, the increased international recognition may also provide the drive towards attaching greater weight to a more sustainable supply and use of energy for Malaysia.

- The Government of Malaysia has expressed a wish to strengthen the efforts towards EE, which was in line with the Danish engagements – also in respect of the increased political attention to energy sector planning. The Seventh Malaysia Plan (1996-2000) underlined EE as an area of concern, which was followed up in the Eighth Malaysia Plan (2001-2005) where the fuel diversification policy was broadened from focusing on oil, gas, coal and hydro to also include renewables as 'the fifth fuel' of national significance. The Danced project supported the development of a strategy for RE as a fifth fuel. Today, Malaysia is implementing its 11th National Plan and both EE and RE are still reflected and integrated under the heading of 'green growth'.

In view of these developments in Malaysia, the Danish support to promote and implement EE and RE in the country was highly relevant and timely to further support the ongoing trend/efforts in the country within these areas, providing a more solid foundation for future development and up-scaling of EE and RE potentials.

Indonesia

- The EE/RE issues have become increasingly important over the past 10 years in Indonesia with new initiatives and policies passed which relate to environment, climate change and natural resource management. This includes focus on Greenhouse Gas Emissions Reduction, and the passing of environmental legislation. Indonesia has also undertaken the development of clean energy sources as a national policy directive. Collectively, these policies will put Indonesia on the path to de-carbonization.
- At the end of 2014, Indonesia introduced major reforms to its fossil fuel subsidies, removing subsidies to gasoline (except for distribution costs outside of the central islands of Java, Bali and Madura) and introducing a "fixed" subsidy for diesel.
- Indonesia's commitment to a low carbon future outlines enhanced actions by having put in place the necessary enabling environment for the 2015-2019 period, and laying the foundation for more ambitious goals beyond 2020. The seminal Indonesian Environmental Protection and Management Law (No. 32 of 2009) secures the legal framework to support enhanced action and strategies, including embarking on a mixed energy use policy, to serve as enabling conditions for long-term policy until 2020 and beyond. These commitments are cemented into Indonesia's intended nationally determined contribution declaration at the COP 21, committing to an unconditional reduction of 26% of its greenhouse gas emissions by 2020.
- Since 2005, Denmark has become a valued partner in the environment and energy sector in Indonesia and has built up a trustworthy relationship with national and local government partners, non-state actors and academia. This manifested itself during the preparation of the Indonesian Environmental Protection and Management (Law 32 of 2009) and capacity building in the whole sector. In addition, the specific focus on Support to the Implementation of Energy Efficiency, Energy Conservation and Renewable Energy Policies (Component 2 of ESP2, 2008-2012) reinforced the implementation of EE and RE through: strengthening the national government's ability to provide sound, timely and appropriate technical/policy advice in EE and RE. This provides a basis for future cooperation in energy and

environment for partners in the private sector, as the development programme transitions into a more commercial relationship.

4.2 Danish policies and strategies

The Strategy for Denmark's environmental assistance to developing countries (2004-2008) is the most central policy document from Danida in relation to environment and energy in the early period under evaluation. It kick-started the formulation of special environmental assistance to Indonesia building on the experience from the ongoing programmes in Malaysia and Thailand.

While the Danish strategy does not specifically mention RE, it refers to 'sustainable energy' as one of three core areas for the special environmental assistance (the other two are urban and industrial environment and management of natural resources). Sustainable energy typically has two building blocks namely EE and RE; i.e. two of the core areas of the assistance in all three countries. In the strategy, interventions with focus on environmentally-friendly and efficient methods for production and use of energy are highlighted, such as introduction of new and sustainable energy sources and support to construction of energy-efficient buildings.

The link between environmental assistance and the climate agenda is also spelled out in the strategy, which includes a focus on identification and development of CDM projects that can help developing countries to transition to cleaner technology and reduction in emission of greenhouse gasses. Another important cross-cutting dimension in the strategy is development of institutional and organisational capacity as integral parts of the programmes. Lastly, the strategy also emphasises the importance of the private sector in environmental efforts and use of cleaner energy. Capacity development and technology transfer through cleaner technologies is relevant both in sector programmes and through private partnerships. All in all, as will be clear from the following chapters, which elaborate on the development results, the EEC interventions in the three countries are deemed to be highly relevant in light of the priorities laid down in the Danish environmental strategy.

In 2013, a new strategic framework for natural resources, energy and climate was published¹⁷ which gave an important signal of renewed Danish commitment to work in the energy sector and to emphasize the links between energy and climate change. Since 2010, earmarked funds have been committed from the Climate Envelope to activities in a number of countries, including non-priority countries. As part of this strategy, Denmark continues its focus on EE and RE.

In a broader sense, the *Danish priorities* for environmental assistance have, among other factors, focused on the necessity for long-term engagement and broader sector programmes in order to ensure better impact (Priorities 2004). This has been reflected differently in the three countries. While the support to Thailand mainly consisted of stand-alone projects (financed by different types of budget lines: CDM, Partnership Facility Programme, general assistance), the cooperation in Malaysia built on a combina-

17 Greener World for All (the NEC strategy).

tion of stand-alone projects supplemented by, from 2003, a sector-wide environmental programme.

As regards other instruments, in Indonesia the Business-to-Business Programme was only available for projects within environment, and in Thailand and Malaysia the Partnership Facility Programme was focused on the energy and environment sectors. This has promoted opportunities for creation of synergies between the sector programmes and Danida's business instruments, which has also increased the relevance of these engagements. The integrated approach and synergies between different initiatives has ensured a common denominator in the work in the three countries, and the specific focus on EE and RE has indeed been relevant.

In 2007, the MFA launched a strategy for Asia (Denmark in Asia – Opportunities for the Future) with a number of priority areas, one of which was energy. The strategy underlines the continued relevance of the programmes under evaluation: *“To avoid energy shortages impeding growth and development, and to limit pollution, including impact on the climate, there is an urgent need to develop alternative forms of energy – preferably sustainable energy – and to ensure that energy efficiency is considerably increased as fast as possible”* (p. 6).

Danish competencies

It is a general view, that the Danish private sector presents some comparative strengths within the technical fields of RE, EE and environmental technologies – Denmark is a world leader in this area. In light of this, the decision to focus on energy and environmental cooperation in the three countries has been very relevant in relation to Danish key competences. This also includes the different business instruments and the CDM cooperation, which have provided opportunities for direct engagement by Danish companies.

In the above-mentioned Asia strategy from 2007, the specific Danish competencies within the fields of environment and energy was also a key theme; how to put Danish competencies into play on the Asian markets with the aim of securing adequate and stable energy supplies at reasonable prices for the recipient countries while, at the same time, promoting Danish exports. Pilot- and demonstration projects through the Danish programmes have been one way of trying to put Danish technology on display, and the business programmes have also specifically targeted Danish companies and assisted them in their efforts to penetrate these markets.

The different instruments have, directly or indirectly, targeted different types of Danish actors; and both SMEs and larger companies have been relevant to engagement partners, as have both manufacturing companies and companies offering consulting and advisory services. In all three countries, commercial advisors at the Danish embassies have arranged export promotion and delegation visits for Danish companies, as well as study tours for local companies to Denmark. In general, the link between development and commercial activities has been very relevant in an attempt to engage Danish key competencies and transfer of these to the recipient countries.

5 Development Results from the Environment and Energy Cooperation Interventions

In both Thailand and Malaysia, where the Danish development engagement has been completed for several years, it is possible now to assess development results from the supported interventions. In these two countries, national governments and other key stakeholders see the important role played by Denmark as a result of its long presence, experience, and approach. As an example, the fact that Danish aid was not tied to the use of Danish technologies made Denmark more credible as a development partner. National governments and other stakeholders appreciated that Denmark was focusing broadly on technology transfer rather than only on more narrow technology export.

Due to the high profile, timeliness and long-term presence of the EEC, Denmark gained a high level of legitimacy and trust with the partner governments. This created a conducive environment, where a significant part of the outputs developed through the supported interventions were adopted in national policies and plans, and included among the specific tools and measures in energy and environment strategies and action plans. This built a strong relationship with the governments and other stakeholders, and made Denmark a country that the governments today still turn to for advice on EE and RE issues.

In Indonesia, development results from the EEC interventions are still premature, since the Danish development engagement was initiated later than in Thailand and Malaysia and is still ongoing.

The discussions of development results in this chapter will thus be focused mainly on selected EEC interventions in Thailand and Malaysia, which have had a particular focus on EE and RE and a significant volume (budget wise). Results from other, broader EEC interventions (see Annex D) in Thailand, Malaysia, as well as emerging results from the EEC interventions in Indonesia, are included in the discussions where appropriate. Annex D summarises key achievements from these selected EEC interventions in view of both development and immediate objectives and indicators.

5.1 Achievement of key outcomes

The outcomes from the EEC interventions related to EE and RE focus on the following (see also ToC):

- National policies and plans – the influence on energy policies and plans to increase priorities to EE and RE.
- Knowledge and awareness – how access to data and other information has improved public and private decision making, and helped increase public awareness on EE and RE.

- Institutional strengthening – how the interventions helped the governments to set up institutional frameworks, which were required to implement EE and RE interventions and ensure continuity.
- Human capacity development – how training helped introducing and maintaining new concepts on EE and RE.
- Demonstration projects – how demonstrating specific solutions on the ground helped convincing policy makers and private companies on the feasibility of EE and RE technologies.

The extent to which EEC interventions have contributed to development within each of these particular outcome focus areas and what the key drivers have been is discussed below.

Influence on national policies and plans have been significant

According to policy-makers and key stakeholders, the EEC interventions in Malaysia and Thailand contributed to a changed political and institutional context in favour of EE and RE. A key reason for this is that the interventions began at a time where the need for an increased focus on EE and RE became apparent for political decision-makers, while Denmark was well known for its capacity and experience, and the only development partner active in the field at the time. The interventions introduced a number of specific policies, action plans and instruments, which have been important for the countries' further implementation of national goals on sustainable development, climate change, environment, as well as EE and RE. The evaluation was able to identify a substantial number of such Danish 'footprints' in Malaysia, Thailand and Indonesia.

The 11th Malaysia Plan (2016-2020) includes EE and RE in relation to green growth. Among the initiatives mentioned, which were originally introduced by the Danish programme, are energy-efficient retrofits of government buildings, grants for energy auditing of commercial buildings, efforts on demand side management using the 'ESCO model'¹⁸, green certification of buildings, energy labelling, capacity building and resource assessment of RE (including wind) and a 7.8% RE power target for 2020 for the Peninsular and the Sabah State, up from today's level of less than 1%. The 11th Plan provides a framework for the implementation of current energy plans and policies, where the concepts from the Danish programme are notable, such as the 2012 Energy Efficiency Act, the 2016 Energy Efficiency Action Plan, the 2010 Renewable Energy Policy and Action Plan and the 2011 Renewable Energy Act.

In Thailand, the Energy Efficiency Development Plan 2015-2036 includes a number of incentives, which were developed with support from the Danish programme. This included a revolving fund for EE projects and a subsidy scheme for investing in EE equipment, based on a Danish model, and the Building Energy Code, which was finally approved in 2009. Stakeholders consider the Building Energy Code as a major result from the Danish support to EE, even though it is still only enforced in new public buildings.

18 ESCO is an abbreviation for a commercial or non-profit *energy service company* or *energy savings company* providing a broad range of energy solutions including designs and implementation of energy savings projects.

It is widely recognized by policymakers and key stakeholders that the Danish interventions kick-started the RE agenda in Thailand and provided the foundation for a rapid expansion. The Alternative Energy Development Plan 2015-2036 sets a target of 30% of RE in total energy consumption by 2036. A key element is the adder/feed-in tariff system¹⁹, which was originally a recommendation from the Danish interventions. Today, the adder/feed-in tariff is considered by stakeholders as the single most important factor to explain the rapid growth of RE in Thailand. The concept of decentralised energy planning was introduced through the Danish interventions. It was in line with the general decentralisation policies in Thailand at the time, and contributed to a change in the hitherto centralised energy planning paradigm. The concept is now integrated in national energy policy as an essential tool for energy planning and monitoring.

In Indonesia, Danish support was instrumental in the passing of enabling environmental legislation, namely the Law No 32 of 2009 on Environmental Protection and Management, and in the development of the Strategic Environmental Assessment guidelines and regulations. The Danish Strategic Energy Sector Cooperation provides the opportunity for maintaining momentum on the cooperation within the energy sector, and for the continuation of Danish-Indonesian collaboration after the phasing-out of the development programme.

Most stakeholders recognize that even though key policies and instruments are in place, enforcement is lagging behind, and there are still important barriers to overcome. One example is the Building Energy Codes in Malaysia and Thailand that are still not fully enforced, e.g. in private buildings. Among the reasons for the partial enforcement is the lack of coordination between ministries, which may again be traced back to a limited political will and opposition from vested interest in the building sector.

Knowledge and awareness was an important basis for decision-making

The Danish support has helped raise political attention and general awareness in Thailand and Malaysia, as well as in Indonesia. This has happened through capacity strengthening of the government, and by support to data collection, information and awareness-raising activities. In Thailand, policy and decision makers and implementers were very uncertain regarding the feasibility of generating significant shares of the total energy consumption from RE and whether it was at all possible to reach the relatively ambitious national targets. The combination of targeted studies and resource assessments, practical demonstrations of EE and RE solutions and study tours to Denmark for relevant management and staff (e.g. visit to Samsøe as a renewable energy island, wind farms, pig farms with biogas) are mentioned by key stakeholders as a major contributing factor in convincing decision makers and implementers of the potential and options, and for paving the way for Thailand's significant increase of the RE share within a relatively short period of time.

The Malaysian national information centre on RE, EE and green technology – CETREE – was established with support from the EEC. After completion of the EEC project in 2004, CETREE continued its activities based on support from the government, the national power utility and the private sector. Today, CETREE is very active and has

19 The adder is a rate on top of the wholesale price of electricity, paid to renewable energy producers under a Power Purchase Agreement (PPA). The adder is now progressively replaced by a Feed-in Tariff, which pays a fixed amount per kWh during the lifetime of the PPA.

trained more than 7,000 primary and 2,000 secondary school teachers, NGO and private sector staff, as well as Certified Energy Managers that through their work have reached 35% non-technical energy savings in hospitals and private buildings. CETREE still makes reference to the Danish support by including the Danida logo in its presentation material.

Lack of reliable data on the EE and RE potential in Thailand was a major barrier for decision making and implementation. The EEC support was important for improved collection, use and presentation of energy data in Thailand, specifically as regards the RE sector. This includes support and facilitation to the preparation of the “Thailand Energy Outlook 2030” from 2008, based on two-three years of preparatory work. Recently, the Government followed up on this by opening the Thailand Energy Information Centre in 2016, together with the International Energy Agency, “to consolidate high-quality, accurate and comprehensive energy information” for better national energy policy making. The previous Danish supported work is indirectly recognised by the International Energy Agency, which noted that Thailand’s energy data are already “among the best in Southeast Asia”.

The evaluation notes that in Malaysia and Thailand, the phasing-out of the EEC left management and staff from the involved ministries and related energy institutions with a gap in terms of continuous updating of measures to implement the EE/RE policies, technical knowledge and capacities. Various stakeholders, including Danish companies, noted these gaps in the governments’ capacity to plan and execute interventions. In Thailand, many technical studies and standards developed with support from the EEC are now outdated.

In Indonesia, ESP3 information activities are mainly centred on the Renewable Energy and Energy Conservation Clearing House (called LINTAS), which opened in 2016 as a one-stop-shop for information, and as a vehicle for maintaining focus and providing inputs to government and energy-sector stakeholders.

Case box 1: LINTAS – the Clearing House for Energy Efficiency (Indonesia)

The Clearing House for Energy Efficiency was included in both ESP2 and ESP3. It was established to “provide the best information available on energy efficiency and stimulate increases in energy efficiency” and was originally seen as an ESP2 intervention likely to be successful. However, the Clearing House was too strongly linked to the external contractor, without sufficient anchorage within the Indonesian counterpart (Ministry of Energy and Mineral Resources: DG Renewable Energy and Energy Conservation). Despite efforts to resolve legal ownership of the low-energy office and to develop a transitional plan subsequent to the withdrawal of the external contractor on contract completion, the intervention ended unsuccessfully. Given the importance of the EE/RE, the Clearing House was continued under ESP3 but needed to start from scratch, as the failure of a successful exit strategy resulted in closure of the first Clearing House. The new Clearing House is located in the Directorate General of New Renewable Energy and Energy Conservation within Ministry of Energy and Mineral Resources and features new (energy efficient) office facilities paid for by the Programme, and with a website under development. However, key for the sustainability of the Clearing House includes the assignment of ministry staff and inclusion in the ministry’s budget.

The tasks of the Clearing House will be: (a) to provide high quality RE and EC information; and (b) actively initiate, develop and support cooperation between major RE and EC stakeholders with the overall goal of increasing the use of RE and EC in Indonesia. This includes support from other development partners, not just Danida, where, for example, UNDP has already agreed to put all relevant studies onto the website, and there is potential coherence with EU waste-to-energy outputs. Issues which still need to be resolved include how to develop the Clearing House as a business unit to support long-term sustainability (with clients paying for services); and how to develop the hub as a two-way communication forum, open to both visitors to the office as well as opening virtual doors, through the website, to clients based outside Jakarta.

The Clearing House was formally opened during the field phase of the EEC evaluation – in April 2016 – leaving until end 2018 to implement the donor exit strategy and to ensure that sustainability has been assured.

The new Clearing House is a reorganisation and re-establishment of the Energy Clearing House set-up under ESP2. In order to ensure both future sustainability and wider impact, running costs will need to be included in the national budget and its status will need to be formalised through an official government regulation. This, however, remains to be done.

Institutional strengthening was important for continuity

In Malaysia and Thailand, the Danish interventions resulted in a number of new institutional structures that still play an important role today.

In Malaysia, this includes the Sustainable Energy Development Agency. Its key role is to administer and manage the implementation of the feed-in tariff mechanism, which is mandated under the Renewable Energy Act 2011. The feed-in tariffs are currently a key driver for RE development in the country. In 2008, the Energy Commission’s Unit for Energy Management was upgraded to a department, based on recommendation from the

EEC. Most of the current staff in the department were trained through the EEC, including the Director.

In Thailand, institutional structures include the Energy Regulatory Commission and the Local Energy Planning Centre in the Ministry of Energy. The Energy Regulatory Commission is a Power Regulatory Body established in 2009 based on direct inspiration from Denmark having the aim of regulating the power market. The Local Energy Planning Centre was established as a direct follow-up on the Danish programme and continues to roll out local-level planning activities.

Case box 2: Decentralised Energy Planning (Thailand)

The Danish support to concepts and methods for regional and local energy planning contributed significantly to a change in the energy planning in Thailand, by complementing the hitherto centralised energy planning paradigm. The local energy planning approach is now widely exercised (although still not fully applied) all over Thailand and results from the projects have been integrated in national energy policy as essential tools for energy planning and monitoring. During the phasing-out of Danida support, a Local Energy Planning unit was established within the Ministry of Energy with the specific purpose to carry on with local energy planning activities (through government funding) initiated by the Danish-funded project. Still today, the unit employs four experts from the Danida project, which ensure a continuation of the principles and models. After project completion, a large number of districts all over the country received training. Experience however showed that resources were spread too thinly to become effective. To ensure better impact in the future, the government will focus on provincial "clusters" (covering two-four districts), and only a limited number of good practice districts will be supported.

For some of these bodies, the wider impact depends on impartiality and independence from vested interests. One of the challenges reported by stakeholders is that power regulatory bodies have not become fully independent, e.g. from the power utilities.

Several universities were involved in capacity development activities on sustainable energy and have managed to develop an important business/consultancy function within this field, in particular for the governments. In Malaysia, the University Sains Malaysia still hosts the CETREE information and training centre, established 15 years ago under the Danish programme. CETREE has a very active cooperation with both government and private stakeholders in the sustainable energy field. Other universities across the country, such as Universiti Teknologi Malaysia, Universiti Teknologi MARA and Universiti Kebangsaan Malaysia, were trained in energy planning. In Thailand, the Chiang Mai University received capacity building within the areas of biomass/biogas, the Prince of Songkla University on biodiesel, and the Chulalongkorn University on local energy planning. Chulalongkorn University was involved in the Regional Energy Planning project, mainly through the Appropriate Technology Association.

The evaluation noted the important role universities play as advisers to governments and the private sector. The capacity built in the local universities is thus important for the continued development of EE and RE in the recipient countries, and therefore also for the long-term impacts and sustainability of the Danish support. The limited availability

of relevant technical expertise on RE among national experts is largely a consequence of a limited focus in the universities on these research areas.

Human capacity development has helped sustain impacts

The EEC clearly demonstrates the important potential of human resources development in sustaining impact over time. Several government staff in Malaysia, Thailand and Indonesia, trained during the EEC, have subsequently had a career path that has brought them into decision-making roles. Interestingly, some still see themselves as being “Danced/Danida alumni”. The fact that some of them over time have advanced in the governmental system and become influential decision-makers, is an important contributing factor to maintaining the conceptual thinking in national energy strategy and policy-making, which was introduced via the Danish EEC.

Several Thai energy experts involved in the EEC interventions highlighted the important role of the training activities in Denmark, organised by the Danida Fellowship Centre. This provides a good example of productive synergies between different Danida instruments. In the current Indonesia programme, staff training has already shown to be beneficial for continuity, e.g. by staff trained under the first phases of the ESP subsequently being involved in the formulation of the ESP 3 programme.

Demonstration projects had an impact as game changers

The Danish interventions have helped introduce specific designs and technologies in both Malaysia, Thailand and Indonesia, which still today play an important role as demonstration projects, and which have helped create awareness among public and private decision-makers about green energy technologies and systems.

This includes support to low energy and zero-energy office buildings in Malaysia (the Low Energy Office (LEO) Building, the Green Energy Office (GEO) Building and the Diamond Building), which were inspirational for the creation of the Green Building Index and building EE demands into the voluntary building code (see case box below), and which also contributed to capacity building and information dissemination, e.g. towards foreign delegations, architects and engineers.

Likewise, a result of business-to-business partnerships created between Indonesian and Danish architects has been the focus on EE and green building design, resulting in the construction of the Gran Rubina high-rise complex in central Jakarta. There is now an increased demand – certainly in Jakarta – for EE design in new construction, and discussions are ongoing on moving from optional to mandatory green building design as part of the revision of the Green Building Regulations.

Case box 3: Energy Efficiency in Buildings (Malaysia)

The support to Energy Efficiency in buildings in Malaysia led to construction of a number of low energy and 0-energy buildings, which still have a significant impact. The Low Energy Office (LEO) Building was designed around 2001 with support from the Danish Programme, as a first demonstration of energy efficient office buildings. It had less than half the energy consumption compared to similar buildings, and a pay-back time of the additional investment of only three years. The energy efficient design was further developed by the same Danish experts (now working through their own Malaysian company formed in 2005) in the Green Energy Office (GEO) Building from 2007 (supported by UNDP/GEF and others) and the Diamond Building from 2010, which reduced the energy consumption to 1/3. The three buildings were inspirational for the creation of the Green Building Index 2009 and for the Unified Building Bye Laws, which puts energy efficiency demands into the voluntary building code MS 1525. Still today, they stand as important landmarks in Malaysia for energy efficient building design. A spin-off of the Danish-designed buildings has also been seen in Indonesia and Singapore.

Another example is landfill gas and biogas plants on palm oil mills in Malaysia and Thailand, introduced via CDM projects. Even it was not intended as a demonstration project one of the biogas plants installed on an oil palm mill in Malaysia had an important demonstration effect by convincing other palm oil producers about the feasibility of this technology, leading to a significant increase in the use of biogas technology and a decision by the government to make biogas mandatory on all palm oil mills by 2020.

Finally, ESP 3 in Indonesia includes pilot projects in Central Java, which are in the last planning stages before implementation (August 2016). They include, e.g. landfill gas and renewable energy systems. For Indonesia, the challenge is not only to get these projects implemented at the local level, but also to maintain focus on translating the results into wider implementation and upscaling. The focus on Central Java came as a result of the realisation that a geographical focus would bring with it a better poverty focus, be able to deliver specific lessons from the pilot projects, and lead to better sustainability and clearer results. It was assumed that a geographical focus would allow outcomes and impacts of programme activities to be more visible and tangible – and hence easier to scale-up.

Continuity is partly ensured by other development partners

Even though none of the EEC intervention areas were fully ‘taken over’ by other donors in Malaysia and Thailand after the completion, some development partners have continued to support intervention areas that were initiated through the Danish-supported interventions.

In Thailand, GIZ continued the support to energy efficiency in industries and the development of the energy efficiency plan 2036. Currently, GIZ supports an updating of the Building Energy Code and local energy projects, based on the local-level planning structure, introduced by the Danish interventions. GIZ, in particular, supports solar energy in “good practice” districts.

DFID has supported the energy data centre, energy and greenhouse gas emission models, the National Power Development Plan, training of energy efficiency ESCOs, and an International Energy Agency study on energy security

The current Asian Development Bank (ADB) country strategy for Thailand (up to 2016) supports private sector investors in renewable energy, such as biomass, biogas, and waste-to-energy, to attract additional commercial financing. Energy efficiency is addressed through partnerships with commercial banks for risk sharing in industrial energy-efficiency projects, and promotion of energy service and management companies. In addition, the ADB supports policy, regulatory, and institutional reforms aimed at creating an enabling environment for a low-carbon economy. It also supports the Provincial Solar Power Project (approved 2012), which intends to demonstrate the viability of a large-scale private sector solar project. So far the project has installed and is operating two sites with a combined capacity of 50 MW.

Within its portfolio for the Climate Investment Funds, the ADB supports the Private Sector Renewable Energy Programme (with particular focus on the development of utility-scale solar, wind and waste-to-energy power generation projects) and the International Finance Cooperation supports the Sustainable Energy Finance Program (approved 2010), which aims to strengthen local banking and leasing sectors to finance, and the Renewable Energy Accelerator Program (approved 2011), promoting private sector investment.

In Malaysia, UNDP continues the work on energy efficiency in the building sector, which was initiated under the Danish programme, mainly through the Building Sector Energy Project (2011-2016). The current UNDP manager, who was formerly employed by the Danish programme, clearly recognizes the links. UNDP will continue their support through new programmes, such as the Green Technology Application for Low Carbon Cities project (2016-2019) and the Integrated Solid Waste Management Program (2017).

UNIDO (with GEF funding) supports the Industrial Energy Efficiency for the Malaysian Manufacturing Sector (2011-2016), with a focus on promotion of energy efficiency through: a regulatory framework; awareness amongst SMEs and larger industries; training of energy management experts from the public and private sectors; and providing access to technical and financial assistance for energy efficiency projects.

In the ongoing EEC interventions in Indonesia, Denmark still plays the role as lead donor, and may thus be able to influence the direction other development partners will take after the envisaged Danish phase-out in 2018. This work illustrates the coherence within the Danida programme in Indonesia, where the three main support programmes (Environment; Business; and Governance) work to support each other, and with the work of other development partners in the sector. Here it is worth mentioning the work being carried out by the International Institute for Sustainable Development/Global Subsidies Initiative who are working with the main policy-level players in Indonesia on Fuel Subsidy Reforms. Their work contributes to levelling the playing field and making it easier for EE/RE to increase their role in the energy market. The Institute received core funding from Denmark until 2015, which was cut after policy realignment in Denmark.

In Indonesia, cooperation and coherence between the Danish embassy, the World Bank and UNDP on fuel subsidies, on championing green growth principles, on increasing the

share of RE in the country's energy mix and reducing greenhouse gas emissions – while retaining Denmark's overall poverty focus – provide for a strong partnership also at the macro-policy level. The important role played by Denmark is seen as being the result of its long presence in Indonesia, as well as being one of the first development partners to work with environment and energy.

Building on the EEC interventions, Denmark is still considered to be in a good position for government-to-government cooperation and commercial involvement in Thailand and Malaysia, depending on Danish priorities and which instruments will be available for future cooperation in the Southeast Asian region. In Indonesia, the EEC is still in operation, and it is too early to identify the wider impacts. The learning from Malaysia and Thailand will however be useful for the planned phase-out in Indonesia to include measures, which maintain some momentum and help sustain achieved impacts.

5.2 Achievements of short-term impacts

As illustrated in the ToC (Figure 3.1), the expectations from the EEC was that the support provided to EE and RE through the EEC interventions would contribute to increased EE and increase the share of RE (short-term impact).

The development in RE took off faster in Thailand than in Malaysia. In Thailand, the RE share (electricity) of total energy consumption increased from 0.5% in 2006 to 12% in 2014. According to the current energy planning in Thailand, the target is to reach a share of 30% by 2036. In Malaysia, the RE installed capacity grew from 0.2% (53 MW) in 2009 to 0.8% (243 MW) in 2014. The target in Malaysia is to reach a RE share of 17% by 2030.

In relation to EE, the short-term impact on the energy intensity of the economy has been more significant in Malaysia than in Thailand. In Malaysia, the energy intensity declined from 0.26 in 2002 to 0.23 in 2012, while it stayed at the same level (0.22) in Thailand over the same period.

The achievement of the short-term impacts has depended on the extent to which progress was made within a number of interrelated outcome areas and to what extent some key assumptions were fulfilled, mainly related to priorities, commitment and capacities of central and local governmental institutions.

Even though there was a loss in momentum after the closure of the EEC in Malaysia and Thailand, both countries provide good examples of countries where Danish support has contributed to important achievements in the areas of EE and RE, and where a foundation for further impact within these areas has been established. There are good indications of sustainability, but this will have to materialise in a context, which is highly influenced by important internal factors, e.g. continued political support, opposition from vested interests, and external factors (such as prices of fossil fuels and renewable energy technologies).

While the EEC in Indonesia has made a significant contribution to the enabling environment for EE and RE through support to environmental laws and regulations (including Strategic Environmental Assessments), this has not resulted in increased EE and an increased share of RE. It is only recently that concrete steps have been taken to

link the results of EE/RE demonstration projects with improved policies and strategies at national level. Implementation delays mean that it is still too early to pass judgement on the short-term impacts from these interventions. In addition, from Indonesia, there are examples that important “merits” from the EEC had been lost and Denmark not fully obtained the credit it deserved for contribution to important sector development initiatives. Instead, other development partners have taken up this “space” and used it as a platform for further cooperation, also commercially.

5.3 Programmatic design and contextual factors

While the EEC interventions in both Thailand and Malaysia were mainly project-based, the ESP’s in Indonesia present an ambitious attempt to provide a coherent and programmatic set-up. The evaluation findings show however, that programme interventions in Indonesia have been faced by a number of challenges.

The ESP 2 was particularly criticized for being overly ambitious with many outputs that could not be delivered in the time available²⁰. Outputs were therefore altered several times during the programme implementation period. In addition, performance of the implementation of Component 2²¹ had been criticized as unsatisfactory²² referring in particular to the lack of monitoring framework and the under-spent budget. In an effort to disburse, new activities were proposed under this output focusing broadly on capacity development²³. As a result of the programme set-up, there was little connection between the ESP2/Component 2 programme unit and the rest of the programme. This meant that, at the end of ESP2, with EE/RE activities not being fully integrated into Indonesian institutions, there was a break relating to EE/RE activities following the closing of the programme unit. It was not until ESP3 got properly underway that these activities could be picked up again. The Energy Efficiency Clearing House – described in the Indonesia Case Study (above) – is one example of an output which needed to restart virtually from scratch.

Many of the lessons learned from the Indonesia ESP2 related to programme design were incorporated into the planning for ESP3, particularly as regards the coordination between the three components which now functioned more as a programme instead of three separate components, and agreement on a geographical focus (Central Java). Nevertheless, ESP3 remains a challenging programme with many implementing partners and complex implementation arrangements. As a result of significant delays, and low disbursement amounts, a number of interventions (some of the Central Java pilot projects) have been cancelled as being unachievable in the time remaining even after programme extension as it was judged that legal and institutional issues, including issues around land, would not be resolved in time.

20 ESP Phase II Indonesia. Lessons Learned Study (May 2011).

21 Component 2 was contracted out to a Danish consultancy company following an EU tender.

22 Danida: 2010 Annual Review.

23 These activities were approved by a Component Steering Committee: “Presumably keen to spend the money but hardly assured of these activities’ coherence with the overall programme objectives (ESP Phase II Indonesia. Lessons Learned Study (May 2011)).

The examples from Indonesia illustrate that there is a danger that a focus on achievement of specific outputs at pre-determined times, can result in pressure to disburse funds too quickly, or create new outputs simply to meet disbursement targets. While it is important to remain flexible during implementation, it is also important to hold on to the long-term objectives in particular the contribution to poverty reduction, and that (as regards EE/RE interventions) alignment with emission reductions and climate change targets should not be done at the expense of the poor²⁴. ESP2 was criticized for focusing too much on disbursement and for changing outputs to achieve disbursement targets rather than maintaining focus on programme objectives.

The Indonesia ESP3 has been able to tackle some of these challenges. Firstly, by cancelling interventions that cannot realistically be achieved as a result of a set of circumstances beyond the control of the programme and, in parallel, continuing to focus on entrenching common guidelines for SEAs in Indonesia while retaining the overall development focus of the programme. Secondly, by linking RE/EE outputs with a geographical focus (Central Java) in order to both achieve results, learn from these results, and use the results to influence policy and disseminate knowledge (with the Clearing House at national level being seen as one of the dissemination tools). And thirdly, by planning for transition between ESP3 to the Strategic Energy Sector Cooperation. As discussed in Section 6.3 below, no transitional phases between the development programme and private sector support programmes were implemented in Thailand and Malaysia, resulting in missed opportunities for sustaining achievements.

Taking Indonesia as an example, but also relevant in Malaysia, subsidies within the energy sector have constituted a major barrier to EE and RE development, although fossil fuel subsidy reforms in these countries are slowly starting to make a difference. The fact that, in Indonesia, there are two ministries dealing with the national electricity provider remains a challenge. Formally it falls under the Ministry of State Owned Enterprises (and is, therefore, supposed to make a profit) while technically falling under the Ministry of Energy and Mineral Resources. The obligation to make a profit tends to favour a continued focus on coal rather than searching for RE and EE alternatives.

Thus, in Indonesia, the coal industry and the State Electricity Provider continue to lobby against the removal of (fuel and energy) subsidies, which has a direct impact on the economic viability of EE/RE. The evaluation found a similar situation in Malaysia (with interests from the fossil fuel sector opposing efforts to promote EE/RE).

As evident from this, the enabling environment is an important factor in implementation – both as part of the development programme but also as a factor when moving into trade and business into which the development programme is transitioning. For (Danish) private companies to transition into and operate within such an environment, requires local knowledge. All three countries are ranked relatively low on the Transparency International Corruption Perception Index, Indonesia with the lowest ranking of the three countries²⁵. This in itself is a pointer towards the challenges of doing business in the country. To tap into the region's enormous potential for EE and RE, long-term national presence, legitimacy and knowledge provided by the Danish embassies on how to advise

24 ESP Phase II Indonesia. Lessons Learned Study (May 2011).

25 <http://www.transparency.org/cpi2015#results-table>. Indonesia figures as number 88 out of 168 countries, Thailand is number 76 and Malaysia is number 54; while Denmark is ranked as number 1.

and how to operate in the market is required. This applies also to Danish companies if they are to be successful in doing business in all three countries covered by the evaluation.

The current interventions in Indonesia provide an example that synergies are possible between the development programmes (the Environmental Support Programme and the Democracy and Good Governance Programme), and the embassy's work in the commercial sector through the Trade Council and the Strategic Sector Cooperation in Energy. Additional coherence within the sector is provided through the work of the International Institute for Sustainable Development (which works with Government of Indonesia on fuel subsidies and, until recently, received core funding from Danida) and the collaborative research project IPOINTS between the Copenhagen Business School and Bogor University (on the Palm Oil Industry), as well as visits by the Danish Royal Family²⁶ and Danish government ministers.

26 The State visit by HRH the Queen of Denmark included 65 Danish companies exploring the Indonesian market. This visit has been credited by a number of partners as having provided a platform for initiating cooperation between Danish and Indonesian private sector companies

6 Key Danish Competencies and Commercial Interests – Effects and Potentials

6.1 Effects from EEC on Danish companies

As illustrated in the ToC, Danish companies and competencies have potentially benefited from different elements of the EEC interventions, and often from a combination of two or more of these elements. Below, the contribution from different EEC elements on the Danish commercial engagement in EE and RE within the three countries is discussed in more detail.

Effect from purchase of services or products related to implementation of EEC activities

The evaluation findings show that – in the short-term – Danish consultancy companies have benefitted more than Danish manufacturing companies from the direct buying of services and products through the EEC. This effect is most notable in Malaysia, where more than a handful of smaller Danish-owned consultancy companies were established during or upon completion of EEC interventions. This was mainly in relation to energy efficient buildings, waste management (including waste-to-energy) and biogas. These companies were established by Danish consultants and advisors who were contracted to work with implementation of EEC programme activities. The continued business activities of these consultants/advisors in the country must therefore be considered a direct effect resulting from the EEC interventions. The consultants benefitted from the momentum created by EEC interventions during, and at the end of, the programme's lifetime for, in particular, EE and also from the recognition of the Danish “brand” in Malaysia. They also benefitted from the high-level contacts in ministries and other key institutions obtained through their own direct involvement with the EEC interventions.

A similar situation is found in Thailand where a small number of small Danish consultancy companies were established during and after completion of the EEC, although not to the same extent as in Malaysia. These companies are focused mainly on biogas and wind energy; with the latter evolving after the completion of the EEC. In Indonesia, it is still too early to assess the direct effect on Danish companies. However, so far the effect seems to be limited.

Danish manufacturing companies have only benefitted to a limited extent from EEC contracts. In general, the EE and RE funded activities have included limited provision of equipment, with the large majority being tendered and produced locally.

Effects from demonstration and branding of Danish technologies

There was a strong consensus among the key national stakeholders interviewed, that Denmark was appreciated for focusing more on knowledge transfer than on technology export. This included a number of demonstration events, including study tours to Denmark, for a large number of key national stakeholders, many from the government system. The practical demonstration of Danish technologies was supplemented by elaboration of relevant studies and assessments of potentials for different RE sources and EE initiatives.

The experience from both Thailand and Malaysia shows, however, that the spin-off for Danish companies has so far been relatively limited, especially considering the strategic importance of the EEC interventions within these areas. This is despite the fact that the share of RE has increased significantly in Thailand, and that Malaysia is also slowly getting on the same path. Only very recently, and mainly due to newly discovered potentials and incentives for wind energy projects in both Thailand and Indonesia (see below), Denmark has started to become a more significant RE player in the region.

In the area of biomass/biogas, the EEC included a large element of technology demonstration as did the CDM projects but the direct effect on Danish companies from these demonstrations have been minimal. In Thailand, where biogas production boomed from 2007, a few small Danish companies, specialised in niche production of biogas plants did benefit, but these companies have developed their business in Thailand through partnerships with other international companies and not directly from the EEC demonstrations.

As mentioned above, in Malaysia some small Danish consultancy firms have benefitted from the EE demonstrations in buildings. There has also been a demonstration effect benefitting Danish companies from the hazardous waste incinerator plant Kualiti Alam, established with considerable support from the EEC and based on a Danish design (similar to 'Kommunekemi')²⁷. As an additional spin-off to RE, Kualiti Alam will now install a 3.4 MW power unit to produce electricity from waste and sell surplus power to the grid, due to the more attractive feed-in-tariffs. Furthermore, the owner of Kualiti Alam, CENVIRO, has entered into a partnership with a Danish energy company on a new technology to produce biogas from solid waste. Finally, it should also be noted that the large Danish-owned company United Plantations in Malaysia (supported through the Danish CDM projects) has played a leading role in demonstrating biogas technology in the palm oil sector, also with use of inputs from Danish suppliers.

Interviews with key stakeholders in Denmark, Thailand and Malaysia pointed to some key explanations for the limited spin-off effects from demonstrations of Danish technology. The phasing-out of interventions following the completion of the EEC left a sudden "vacuum" in the level of interaction and personal relationships between Danish advisors/consultants and management/staff from energy institutions in both countries. This allowed other partner countries more "space" to lobby for their EE and RE technologies and products within the government systems. In addition to this, the technical studies and standards for EE and RE, developed with support from the EEC, gradually became outdated in the absence of sufficient follow-up.

Taken together, this resulted in a gradual change in priorities within the governmental institutions, from having a large degree of quality and technology orientation during the period of the EEC, to become much more focused on the short-term price parameter when making investments. According to key national stakeholders, this shift has contributed to an easier access to the markets of cheaper and lower quality EE and RE products (often produced in China) compared to the relatively more expensive products from countries like Denmark with higher technical standards and quality.

27 "Kommunekemi" was established in 1971 as the first Danish treatment plants for hazardous waste.

In Thailand, this is exemplified by the current situation on biogas development; the government is mainly encouraging the construction of new biogas plants instead of providing incentives for technology improvements at existing plants (which are considered by experts to have a much higher production potential). Danish companies with key competencies in the fields of biomass/biogas, have tried to enter the biogas market in Thailand but have found it very difficult to compete with cheaper regionally and nationally produced equipment. For economic reasons (price competition) and to ensure adaption to local standards/conditions, Danish companies prefer to have (standardized) equipment produced locally, when this can be done with an adequate level of quality. Equipment for biogas production is mainly produced locally. Only very specialised equipment (e.g. electrical control systems and blowers) is produced in DK.

The government in Thailand did not, until a few years ago, consider wind power as a high potential RE source. The government's view was influenced by the conclusions from a German-funded study that showed limited potential for wind power in the country. However, an assessment carried out by large wind power companies themselves using their own wind mapping techniques, came to a completely different conclusion. This study concluded that the potential for wind power, in particular low-wind turbines, was high in Thailand. The total potential for wind energy in Thailand has now been estimated at more than 14,000 MW²⁸.

The gaps in technical knowledge and capacities that have occurred after completion of the EEC interventions in both Thailand and Malaysia, do not only relate to governmental institutions. The concerns also relate to the limited availability of relevant technical expertise among national experts, which is largely a consequence of limited focus in the universities on these research areas. Danish companies, in particular those with RE portfolio/pipelines in one or more of the three countries, are highly concerned about these knowledge and capacity gaps, which threaten to undermine their business opportunities in the region. A few of these Danish companies even express willingness to contribute financially and technically to career/curricula development within national universities to deal with these challenges.

In Indonesia, the Central Java pilot projects may have the potential to become a springboard for more interventions in RE and EE both in Central Java and elsewhere in Indonesia, which may provide commercial opportunities for Danish companies. Given the experience from Thailand and Malaysia, there seems to be a need for timely planning of the up-scaling of results from the pilots, both within and outside Central Java. The Clearing House (also an Indonesia ESP3 output, see Case Study above) could have the potential to become a repository of such lessons learned.

Effect from dissemination of values and attitudes and environmentally-friendly solutions

The evaluation finds that in both Thailand and Malaysia, the EEC interventions have had an important and sustained impact from awareness raising activities on sustainable energy. In particular, the EEC supported activities at local levels have been important to address the scepticism of EE and RE technologies and convince local stakeholders of their potentials as reliable solutions for future energy planning.

28 Department of Alternative Energy Development and Efficiency, 2010.

The dissemination and awareness activities have been important complementary elements to the technical demonstrations and institutional support, and have indirectly had a positive effect on Danish commercial activities. As regards Indonesia, it is still too early to say.

Effect from introduction of Danish knowhow and establishing of networks

Interviews with key stakeholders in both Denmark and Southeast Asia revealed that an important comparative advantage of Danish companies in EE and RE is related to knowhow, including technical knowledge, design and process management. During the EEC, Danish knowhow on EE and RE has been extensively promoted in all three countries. At the same time, the long-term Danish engagement within key governmental institutions made it possible to develop inter-personal connections and relationships that are considered very important for companies that would like to do business in the region.

The Danish companies that work with EE and RE in the region emphasized the importance of formal and informal network relations with other Danish companies in the region, in order to join efforts for lobbying and mutually supporting each other. This requires the presence, within the region or active in the region, of a ‘critical mass’ of Danish companies with continued interest and engagement in EE and RE development.

The evaluation only found this ‘scenario’ fulfilled in Malaysia, where a few large Danish manufacturing companies, together with recently established small Danish consultancy firms with “roots” in the EEC, have established different network relations. In 2008, at the completion of the EEC, these companies formed the “Strategic Green Alliance” in order to improve awareness of, mainly, energy efficiency in buildings with use of existing technology, demonstrating the economic viability. The Alliance specifically seeks to create awareness of the capability of its member companies in Malaysia and, through collaboration, create opportunities for environmentally and economically sustainable solutions to the challenges of the country. Recently, the Strategic Green Alliance members have been linked to the EU Malaysia Chamber of Commerce and Industry, which provides a more powerful platform for lobbying and for provision of strategic input to the national EE and RE agenda (e.g. commenting on draft legislation). These Danish companies are also members of the Malaysian-Danish Business Council (where the Danish ambassador is also a board member).

Occasionally, some of the Danish companies in Malaysia join efforts and work together, e.g. on supplying components to each other’s projects and joint tendering. In particular, Danish companies have been pioneering and leading energy efficiency projects in new and existing buildings, in part through an ESCO modality, where different Danish suppliers have been involved.

Danish SMEs are much more dependent on an effective support system (e.g. the embassy) to make business in the region. Larger Danish companies are better capable of organising events to bring in Danish key experts, etc., on their own. Although they most often are not “big enough” to have offices in each and every country in the region, and therefore still rely on the embassies for support and facilitation into the local market.

Effect from support to changing of framework conditions

In all three countries, the EEC has provided comprehensive support to the development of political preparedness, framework conditions and incentives to stimulate investment in RE and EE technologies. The evaluation findings show that it takes time for these pro-

cesses to develop from planning to the implementation stage, and that the effect on Danish companies from these efforts may only materialize some years after. This also relates to the character of especially larger RE projects, which may need some years of planning and development, before implementation starts. In addition, specific impediments in the enabling environment in the three countries have made it difficult for Danish companies to break into these markets. This concerns subsidies on electricity tariffs which makes it less attractive to invest in energy saving installations, and the relatively low oil prices on the world market, which makes the shift to RE (and EE) less critical.

The recent developments in the wind energy sector in Thailand provides a good example of this. In 2010, the total installed capacity of wind energy in the country was only 6 MW. This increased to 225 MW in 2014²⁹ with a target of 3,000 MW by 2036³⁰. National and Danish interviewees with particular knowledge of the wind energy sector in Thailand estimate that 30-40% of the input to wind farm projects in Thailand comes from Danish-owned companies, including a number of Danish sub-suppliers. None of the major Danish companies involved with wind energy development activities in Thailand have benefitted directly from the EEC interventions, since their activities were initiated after completion of the EEC. On the other hand, according to some of the major Danish companies involved in these wind development activities, they have based their business operations in Thailand on an assessment of various factors, which include political willingness, existing framework conditions, and the incentive structure. Since these areas have been extensively supported through the EEC, it seems fair to conclude that the EEC has provided an important indirect contribution to the current Danish business activities in relation to wind energy development.

Biogas development is another RE area that has benefitted from the EEC support to improvement of national framework conditions. In addition to the incentive structure, biogas plant development has also benefitted from environmental regulations supported through the EEC, e.g. in relation to discharge of wastewater at palm oil plantations and requirements to establishment of biogas plants. Together with other supporting initiatives, like the CDM and the environmental fund in Thailand, the EEC support to the regulatory framework is considered a major contribution to the development of biogas plants in both Thailand and Malaysia, although this has not had any particular impact on Danish companies.

In Malaysia, on RE, there is still little involvement by Danish companies. The development of RE in Malaysia was boosted by the Renewable Energy Act from 2011 which introduced feed-in tariffs, power purchase agreements and a renewable energy fund, financed via a levy on electricity. The RE installed capacity grew from 53 MW in 2009 to 243 MW in 2014.

An area with high potential for Danish export was EE in buildings, where a number of Danish companies have key competencies (insulation, district heating/cooling, energy-windows, pumps etc.). The EEC in both Thailand and Malaysia has provided comprehensive support to development of framework conditions in support of EE initiatives (e.g. the Building Energy Code in Thailand). However, enforcement has been an issue and has thus so far limited the Danish commercial involvement.

29 Thailand Alternative Energy Situation, 2014.

30 Thailand Alternative Energy Development Plan, 2015-2036.

6.2 The role and importance of cooperation with the local private sector

In all three countries, small and large companies alike emphasise the importance of identifying local agents/suppliers/partnerships as a crucial factor for successful entry to the national markets. In these relationships, the partners emphasise the importance of establishing clearly defined win-win situations at an early stage if the engagement is to succeed in the long run (e.g. there may be a need to balance costs, between international (e.g. Danish) costs and national costs). Likewise, it is necessary to identify the need for local knowledge (of administration issues, regulations, issues around land, etc.). This further emphasises the need for identifying comparative advantages/roles in the partnership. A related factor is trust in the partnership, which is something that is built up over time.

The evaluation has found that the link between the local private sector and Danish companies/company owners was most well developed in Malaysia. Several Danish-Malay partnerships have been established as well as some Malaysian companies with Danish co-ownership (often Danish consultants who were previously involved with the Danish-funded EE/RE interventions).

According to interviews conducted by the evaluation, a number of Danish companies have prepared “pipelines” and are “lining up” to enter the Indonesian EE and RE market, seeing the potential for expansion in the medium to long term. Some of these companies are currently implementing (similar) activities in Thailand and/or Malaysia and are waiting for the right time to enter the Indonesian market, which is seen, by Danish consultants and companies, as a “difficult” country to establish EE and RE business in, although the future potential is considered to be high. In this way, the majority of the interviewed Danish consultants and companies considered Malaysia (and to some extent also Thailand) as a “test” of their operations in the region, while they wait for the right moment to enter the Indonesian market. The Danish EE and RE business development that takes place, or may take place in the near future, should therefore also to some extent be considered an effect of the implemented EEC activities in Thailand and Malaysia.

Most of the interviewed Danish company representatives considered Thailand, Malaysia and Indonesia to be a regional market, where learning and experiences to some extent can be transferred across the three countries. Several of the Danish companies with EE and/or RE activities in the region have therefore established a regional representation office in one of the three countries (notably Malaysia), but with activities, or plans to do activities in the near future, in one or more of the other countries in the region as well. Some of the larger Danish companies had established regional head offices in Singapore, where some key financial institutions are also present.

6.3 The transition process – from development cooperation to commercial cooperation

What the particular experiences from Thailand and Malaysia show is that there comes a drop in momentum, and even a series of missed opportunities, when development cooperation is not followed up by initiatives, which capture the goodwill created by the development programme cooperation. The EEC in Indonesia appears to be gearing up

to avoid that a similar situation occurs there. This is all the more important for Danish commercial interests as Indonesia is considered to be one of the countries in Southeast Asia with the largest EE and RE potential. Given that there is a period of overlap between the closing of the EEC and the full transition to commercial cooperation, the Danish embassy is taking steps to link the two in order to ensure that what is being built under the EEC is not lost when the development programme closes.

With the closure of the EEC in Malaysia and Thailand in 2008/2009, and without a dedicated follow-up strategy, the opportunity to directly influence the development, by sustaining the outcomes, addressing the remaining barriers and strengthening implementation, became significantly reduced. In this process, lack of coherence and coordination of government policies proved to become a barrier for achieving the full impacts of the EEC, e.g. where different elements of the energy policy (e.g. electricity, transport, oil and gas, renewable energy) were handled by different government agencies.

In Indonesia, the Development Programme is in its final phase. Simultaneously, the Danish embassy continues to expand its efforts on trade cooperation, with the embassy's commercial section assisting Danish companies in their export activities, sales efforts, business set-up and promotion in Indonesia. In parallel, a Strategic Sector Cooperation has been initiated in the energy sector to build further on the experience of the three ESPs with focus on RE and EE. An important part of the Strategic Energy Sector Cooperation is the provision of a full-time Growth Advisor/Energy Counsellor from the Danish Energy Agency to work with the Ministry of Energy for a three-year period. This provides potential for maintaining momentum on (new) technology knowledge/development within the energy sector/energy institutions (e.g. bringing in Danish experts and competencies, both with technology expertise but also with energy systems experience). The extra capacity at the Danish embassy in the energy sector, that specifically focus on systemic energy thinking (i.e. how to integrate different energy technologies within a holistic system), is likely to become an important catalyst as development cooperation moves towards a more commercial focus. The success of this initiative will be built on the foundations of the long-term engagement of Denmark in Indonesia, the long experience within the environment sector, and now also the energy sector, and the Danida-supported capacity building efforts over a long period of time within the Indonesian administration.

6.4 Other Danish business instruments

Several Danish companies, both large and relatively smaller companies, also regularly make use of services offered by the Trade Council on a commercial basis. These services are considered relevant and important in order to obtain knowledge of the national markets and, in particular, as “door openers” to the relevant levels and persons in larger national companies and in the government system. Even relatively large Danish companies do not consider themselves as big enough players on the markets to dare to go all the way and establish offices in all countries in the region. Here the Trade Council services become of high relevance. That being said, a number of smaller Danish companies found that the fee rates charged by the Trade Council were too high compared to the general cost level in the country and also in relation to the differences in what smaller companies can afford vis-a-vis larger companies.

Several Danish companies point to the importance of being ‘backed by the coat of arms’ of the Danish MFA when they enter these new markets and establish new relationships, especially in a context where the business culture can be more formal. In addition, the importance of government-to-government relations, and of discussions and exchanges within the relevant sectors, is pointed to as being key to the ease of entrance for Danish companies into the market. The Danish brand-name in energy and environmental technology is strong both in terms of quality products and in terms of strategic and political focus, but there is a strong need for continuous and targeted lobbying at the authority/governmental level.

Other Danish business instruments, such as investments with IFU and export credits through the Export Credit Agency (EKF), engage especially the larger Danish companies, who find these instruments both useful and important as “selling points”, since funding remains a crucial issue for the type of investments they make. Some smaller Danish companies found it difficult to comply with EKF requirements, in particular the requirement that a certain percentage of the deliverables should be produced in Denmark, since most of their equipment is produced locally or regionally (e.g. in China) in order to become competitive in the local markets.

For some, mainly smaller Danish companies, the support granted through Danida’s different business programmes has been instrumental for them to enter the EE and RE markets in the three countries. CDM projects, Business-to-Business and Partnership Facility projects are mentioned as having had this kick-starting effect. However, based on information provided from the large number of stakeholder interviews conducted by the evaluation, the majority of the projects that were established as part of these programmes have not been sustained. There are different reasons for this (e.g. the market for CO₂ credits has not developed as expected, price incentives for shifting to energy efficient technologies was never realised, troubles with identification of the right local partner, etc.).

The Danish CDM project support seems to have been more beneficial to Danish consultancy companies than to Danish producers of equipment and technologies. A number of Danish consultants have been greatly involved and performed key technical advisory roles in relation to CDM projects. This has allowed some of them to establish a niche in these countries that is unlikely to have happened without the Danish CDM engagement.

A particular challenge for Danish private companies, mentioned by several informants, is the lack of turn-key suppliers in Denmark. Smaller Danish companies often need to enter the markets either as sub-supplies to larger Danish players or by teaming up with local companies. The latter require sufficient time for building of trust between the partners, which in the end becomes an issue of availability of resources for investment in the relationship vis-à-vis potential return on such investments. Without relatively attractive grant schemes, many smaller players are not able to undertake such ‘risky’ investments.

7 Conclusions and Recommendations

7.1 Conclusions

Conclusion 1 – Relevance

The relevance of the EE and RE supported interventions under the EEC has been high in view of national needs and priorities as well as in relation to Danish development priorities, commercial interest and key competencies. The Danish support has been an important driver for placing EE and RE higher on the political agenda in all three countries.

The implementation of the EE and RE related activities occurred at a time with growing concerns about energy security, increasing dependency on energy imports and dwindling domestic fossil fuels resources. Adding to this were the increased commitments to the climate change agenda in the United Nations Framework Convention for Climate Change negotiations, and at the national level by e.g. by taking steps to reduce Greenhouse Gas emissions. In a situation where national policymakers and the population in general were looking for solutions, the experience and contribution from Denmark on the potentials of EE and RE was critical. At the same time, Danish EE and RE competencies and technologies were meant to have a large export potential and are priority areas in Danish development assistance.

Conclusion 2 – Danish Companies

So far, the EEC interventions, together with other Danish business instruments, have only had a limited effect on Danish commercial engagements in the three countries. Mainly smaller Danish consultancy companies have benefitted in the short-term while Danish manufacturing companies (mainly within wind power and biogas/biomass/waste-to-energy) are only more recently starting to benefit indirectly from improved national framework conditions, which have roots in the EEC support.

Although Danish EE and RE technologies, concepts and models in general are considered of high quality and the Danish “brand” is highly valued by relevant national authorities and other key stakeholders in the three countries, Danish manufacturing companies, in particular SMEs, find it very difficult to compete in the markets. Considering the great potential for Danish commercial interests in relation to EE and RE in the region, there is a clear indication of “missed opportunities” after the development cooperation came to an end in, both Thailand and Malaysia.

Conclusion 3 – Transition

In Malaysia and Thailand, no effective transition process was planned when the cooperation shifted character from being mainly focused on development cooperation to becoming mainly focused on commercial cooperation. In Indonesia, the Danish embassy has benefitted from better options and initiatives to plan for the transition, although this was not explicitly taken into account when the programme was formulated but was added towards the end.

In terms of resources, staffing and competencies the Danish embassies in Malaysia and Thailand were left with very little possibility to facilitate a smooth transitional process,

which resulted in loss of momentum and engagement in the area of EE and RE. In Indonesia, the recent initiative, with the contracting of a Danish Growth Advisor and the Danish Energy Agency, presents a new form of targeted Danish bilateral sector cooperation, which may become important to ensure continued impacts on EE/RE policy and market development.

Conclusion 4 – Development Results

The EEC interventions have contributed to important progress towards achievement of planned development results within key areas for EE and RE development in the three countries. The development results are most visible in Malaysia and Thailand, where EEC interventions were completed several years ago.

The evaluation findings clearly show that it takes time for institutional development processes to develop from the planning to the implementation stage, and to ensure commitment and support in the political and legislative system as well as among various energy stakeholders and consumers. In general, the results from the EEC are not well-documented and in Indonesia the evaluation found that Denmark had not fully obtained the credit it deserved for contribution to important sector development initiatives. Instead, other development partners had taken up this “space” and used it as a platform for further cooperation, also commercially.

Conclusion 5 – Capacity and Technology Development

Although evidence from both Thailand and Malaysia shows some continuation and follow-up on the EEC support to strengthening of EE and RE institutional frameworks serious gaps have developed in EE/RE technical and research capacities after the completion of the EEC interventions. This is partly explained by changing political interests and priorities within the partner countries and partly by limited engagement in EE and RE research within local universities. This has been insufficient to provide effective support to governmental institutions and the private sector in these areas.

From a commercial perspective, the lack of sufficient national technical expertise and knowledge has, as a consequence, privileged a focus on price rather than quality, which has resulted in import to the local markets of EE/RE products and services based on cheap technologies (often coming from China) at the cost of more expensive, but higher technical quality, products and services from countries such as Denmark.

Conclusion 6 – Networking and Local Private Sector

Establishing of business partnerships with local private sector actors have been important for Danish companies involved with EE and RE activities in the region. Smaller as well as larger Danish companies depend on local private sector partners/agents/suppliers to develop, operate and market their EE/RE business activities. In addition, Danish companies emphasize the importance of formal and informal network relations with other Danish companies, in order to join efforts for lobbying and mutually supporting each other.

Conclusion 7 – Regionalisation and Coherence

Coordination and transfer of learning and experiences has taken place mainly ad hoc across the EEC interventions in Thailand, Malaysia and Indonesia. This is in contrast to the reality faced by Danish companies involved with EE and RE activities in the Southeast Asian region. They largely operate from a regional perspective, where learning, experiences – and to some extent also partners – are transferred across countries. In Indo-

nesia, the coherence and potential synergies between EEC and other sector programmes (e.g. governance) were not thoroughly considered until very recently.

Conclusion 8 – Danish Business Support Instruments

Danish business support instruments, such as the trade council services, investments with IFU, export credits through EKF as well as the ad hoc support provided directly by the embassies provide an important leverage for Danish companies with the ambition to develop business in the Southeast Asian countries. However, while investments remain critical issues for all companies, the particular needs and abilities to benefit from the different instruments vary considerably.

In particular, small- and medium-sized Danish manufacturing companies have found it difficult to comply with requirements from EKF to “create value for Denmark”, their businesses have been too small for IFU to become involved, and services offered by the Danish Trade Council have been considered relatively expensive, and not differentiating between larger and smaller companies. The companies find that these challenges have been particularly strong in relation to EE and RE projects, as these are considered having a relatively high risk in the financial markets.

7.2 Recommendations

Strategic Recommendations (to the MFA):

Strategic Recommendation 1: In order to mitigate the risk of critical “capacity gaps” upon completion of development programmes, it is recommended that the MFA consider how targeted support mechanisms, such as cooperation and partnerships on research and capacity development within specialised technological areas as well as an extended and more flexible role of the embassies, may be used as a strategic tool in the transition process from development to commercial cooperation.

This may include a larger and different role for Danish embassies in relation to planning and implementation of tailor-made research and capacity development activities as well as possible partnerships with (larger) Danish companies for funding of particular interventions (e.g. PhD/Master studies at local universities). National researchers/universities are strategically important because they advise governments and the private sector and it would seem obvious to link up such activities with the recently implemented Strategic Sector Cooperation initiatives. The embassies will need access to funds/a flexible budget in the year’s following the development programmes’ phasing out to become able to react to sudden opportunities for strategic sector support as well as to be able to continue in the role as a preferred and trusted partner/advisor to key government/sector institutions, and not only as a business provider.

Strategic Recommendation 2: It is recommended that the MFA gradually develop a business support approach that is better aligned to Danish companies’ strategic commercial engagements, which often take point of departure in a “regional” rather than a “national” perspective. An important innovation could be posting of a “regional” commercial counsellor at an embassy with a particular strategic importance in the region. It could also include introduction of more effective mechanisms for coordination and sharing of learning and experiences from commercial activities across countries within the same region.

Although some interaction already takes place among Trade Council staff placed at the different embassies in the Southeast Asian region, the experience of the Danish companies is still that the support they are offered is largely limited to the country where the particular Trade Council advisor is posted. There is a strong demand for the MFA to adopt a more explicit regional commercial focus compared to the current country-by-country focus.

Strategic Recommendation 3: The Danish business support instruments should be developed with a more specific view to reflecting differences in needs, abilities and risk taking of Danish companies in the specific markets. In particular, more tailor-made products should be developed for the smaller- and medium-sized companies, to better reflect the realities of these companies in terms of financing and production processes³¹.

Despite the adjustments being made by the MFA to the existing business support instruments, there still seems to be need for a better streamlining of these instruments to the changes that are taken place in terms of demand for production and service deliveries from Danish companies to e.g. the Southeast Asian markets for EE/RE and how the “value-added” for the Danish economy should be measured within this context.

Strategic Recommendation 4: The MFA should consider including a mandatory “transitional phase” during the last 1-2 phases of development programme implementation, in particular within countries and sectors where the development programmes would be expected to create opportunities for Danish commercial cooperation, such as in the case of RE and EE in Thailand, Malaysia and Indonesia.

In the Danida “Guidance Note on Country Exit from Bilateral Development Cooperation” (March 2015) it is already acknowledged that transformation processes from development to commercial cooperation often require more time to materialise (e.g. in Vietnam, the transformation of Denmark’s bilateral relations was conducted through a process of about eight years). The guidance needs, however, to become more operational and should include an increased level of flexibility for the embassies to be opportunity driven in terms of budget and resource allocations. The evaluation experiences from Thailand, Malaysia and Indonesia show that policies and business incentives often change with relatively short notice and it is important that the embassies have both the tools and abilities to assist Danish companies effectively during the transition period.

Operational Recommendations (to Danish embassies)

Operational Recommendation 1: The embassies should more explicitly consider how Danish-funded interventions in other sectors (e.g. governance) could become complementary and supportive to facilitate Danish commercial engagements within targeted thematic areas in countries where potentials for Danish commercial cooperation have been identified (such as e.g. EE and RE in Southeast Asia).

31 It is acknowledged that a number of adjustments of the Danish business instruments have taken place recently and that this process is still ongoing. The “Export Start Programme” initiative from the MFA, which now includes possibility for a 35% subsidised counselling on work hours from the Trade Council for smaller enterprises, is an example of a recent adjustment, which is in line with this recommendation.

As an example, in Indonesia the support provided to Transparency International through the Danida-funded Governance Programme is used to fund a governance project within the national electricity provider, which is at the same time a key player in relation to regulation and approval of applications for RE projects (through the ESP). The opportunity to coordinate these initiatives across the two programmes has only been picked up recently by the embassy, but could have been done more strategically at an earlier stage. The Country Programme Guidelines may provide a better platform for this and hence for creation of better results in the future but it needs to be considered already from the preparatory programming phases.

Operational Recommendation 2: The embassies should introduce a more effective system for documentation and uptake of learning and experiences across different programme phases, and across different sectors. It would be useful, if such a system could also include learning and experiences from the links between development cooperation and commercial cooperation. The Project/Programme completion reports could be used more proactively as a tool especially if they become more forward-looking.

Operational Recommendation 3: Country programme formulations should more explicitly include guidance and clarity on how – and to what extent – development and sector cooperation could be expected to lead to commercial cooperation within a particular development engagement. A more specific definition of targets (short- and medium-term), indicators and specific support measures will be required.

Operational Recommendation 4: The Danish embassies should consider how the Strategic Sector Cooperation (“Partnering with Denmark”) could be used as a strategic vehicle for linking up different kind of partnerships and agreements to strengthen the Danish commercial engagement within a particular sector and to facilitate and encourage networking initiatives among Danish commercial actors in the country and/or region.

This could include different types of private-public partnerships (e.g. for research cooperation at local universities) as well as more explicit provision of support to maintain focus on critical systemic issues and institutional relationships within the countries, as support to Danish commercial potentials. In this way, the Strategic Sector Cooperation could become an important facility in countries where a transition between development cooperation and commercial cooperation is taking place.

The evaluation findings from both Thailand and Malaysia have clearly demonstrated the importance of continuing the bilateral relationships after the completion of development cooperation interventions as well as to keep momentum and follow-up on strategically important institutional and capacity development areas, supported through the development interventions.

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EVALUATION OF DANIDA ENERGY AND ENVIRONMENT CO-OPERATION IN SOUTHEAST ASIA
