



**MINISTRY OF FOREIGN AFFAIRS
OF DENMARK**
Danida

MAY 2021

EVALUATION OF DANISH FUNDING FOR CLIMATE CHANGE MITIGATION IN DEVELOPING COUNTRIES





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ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
AFOLU	Agriculture, forestry and other land uses (= LULUCF)
AWFP	Assela Wind Farm Project (in Ethiopia)
AWPGE	Accelerating Wind Power Generation in Ethiopia
BAU	Business as usual
BLU	Badan layanan umum (Indonesian for 'public service agency')
BMU	Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (Germany)
BPDLH	Badan Pengelola Dana Lingkungan Hidup (Indonesian for 'Environment Fund Management Agency')
CBNRM	Community-based natural resource management
CCROM	Centre for Climate Risk and Opportunity Management (Indonesia)
CE	[Danish] Climate Envelope
CETP	Clean Energy Transition Programme
CIF	Climate Investment Funds
CISU	Civil Samfund i Udvikling [(Danish) Civil Society in Development (Fund)]
CoViD	Coronavirus (SARS-Cov-2) disease
CRFL	Climate-Resilient Forest Livelihoods (project, in Ethiopia)
CRGE	Climate Resilient Green Economy
CSO	Civil-society organisation
CSIR	Council for Scientific and Industrial Research (of South Africa)
Danida	Danish international development assistance (originally 'agency')
DBF	Danish Business Finance
DCCC	Danish Council on Climate Change
DCIF	Danish Climate Investment Fund
DEA	Danish Energy Agency
DEPA	Danish Environment Protection Agency
DEPP	Danish Energy Partnership Programme
DEVCO	Directorate-General for International Cooperation and Development (of the EC)
DHS	Department of Human Settlements (of South Africa)
DIIS	Danish Institute for International Studies
DKK	Danish Krone (plural Kroner)
DMRE	Department of Mineral Resources and Energy (of South Africa)
DoE	Department of Energy (of South Africa)
DOF	Dansk Ornitologisk Forening (Danish Ornithological Society, BirdLife Denmark)
DSHRF	Danish (sometimes 'Danida') Support for Harapan Rain Forest (Indonesia)
DSIF	Danida Sustainable Infrastructure Finance
DTU	Danish Technical University
EC	European Commission
EE	Energy efficiency (including energy conservation measures, such as insulation)
E4P	Energy Efficiency in Emerging Economies Programme
EFCCC	Environment, Forest, and Climate Change Commission (of Ethiopia)
ERC	Ecosystem Restoration Concession
ESDM	Dinas Energi Sumber Daya dan Mineral (Indonesian for 'MEMR service office' at local level)

ESMAP	Energy Sector Management Assistance Programme
ESP	Environmental Support Programme
EU	European Union
EVM	Erhvervsministeriet (Ministry of Industry, Business and Financial Affairs of Denmark)
FSC	Forest Stewardship Council
GATE	Greening Agricultural Transformation in Ethiopia
GCF	Green Climate Fund
GDP	Gross domestic product
GtCO ₂ e	Gigatonne (billion tonnes) of carbon dioxide equivalent
GGGI	Global Green Growth Institute
GHG	Greenhouse gas
GoE	Government of Ethiopia
GoI	Government of Indonesia
GoSA	Government of South Africa
GoVN	Government of Vietnam
IADB	Inter-American Development Bank
IBRD	International Bank for Reconstruction and Development (World Bank Group)
ICRAF	World Agroforestry Centre
IEA	International Energy Agency
IEU	Independent Evaluation Unit (of the GCF)
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation (World Bank Group)
IFI	International financial institution (including regional development banks)
IFU	Investment Fund for Developing Countries
IIP	IFU Investment partners
INDC	Intended Nationally Determined Contribution (presented to UNFCCC before the Paris Agreement)
IØ	Industrial Fund for Central and Eastern Europe
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
IPPU	Industrial Processes and Product Use
IRENA	International Renewable Energy Agency
IWGIA	International Work Group for Indigenous Affairs
KEFM	Klima-, Energi og Forsyningsministeriet (see MCEU)
KLHK	Kementerian Lingkungan Hidup dan Kehutanan (Ministry of Environment and Forestry, Indonesia)
KPI	Key Performance Indicator
LAMA-I	Locally Appropriate Mitigation Actions in Indonesia
LCD	Low-carbon development
LCEE	Low-Carbon Transition in the Energy Efficiency Sector
LDC	Least Developed Country (UN classification)
LGA	Local Grant Authority (of Danish embassies)
LTA	Long-term adviser
LULUCF	Land use, land-use change and forestry (= AFOLU)
MCEB	Klima-, Energi og Bygningsministeriet (see MCEU)
MCEU	Ministry of Climate, Energy and Utilities (or Supply) of Denmark (formerly MCEB) (see KEFM)
MCF	Multilateral climate fund
MEFCC	Ministry of Environment, Forestry and Climate Change (of Ethiopia)
MEMR	Ministry of Energy and Mineral Resources (of Indonesia)
MFA	Ministry of Foreign Affairs of Denmark
MFEC	Ministry of Finance and Economic Cooperation (of Ethiopia)
MKL	Department for Multilateral Cooperation & Climate Change (MFA Denmark)

ABBREVIATIONS AND ACRONYMS

MoFAF	Ministry of Food, Agriculture and Fisheries (Ministeriet for Fødevarer, Landbrug og Fiskeri, of Denmark)
MoE	Ministry of Environment (of Denmark)
MoFA	Ministry of Foreign Affairs (of Vietnam)
MoHA	Ministry of Home Affairs (of Indonesia)
MRV	Monitoring, reporting and verification
NAO	National Audit Office
NDC	Nationally Determined Contribution (presented after the Paris Agreement)
NDCP	Nationally Determined Contribution Partnership
NGO	Non-governmental organisation
NTB	Nusa Tenggara Barat (West Nusa Tenggara, an Indonesian province)
NTP-RCC	National Target Programme to Respond to Climate Change (of Vietnam)
OECD	Organisation for Economic Cooperation and Development
P4G	Partnering for Green Growth and the Global Goals 2030
PLN	Perusahaan Listrik Negara (State Electricity Company, Indonesia)
PPP	Purchasing-power parity
RDE	Royal Danish Embassy
RE	Renewable energy
REDD+	Reducing (GHG) emissions from deforestation and (forest) degradation, with internationally-agreed forestry, biodiversity and social safeguards
REDS	Renewable Energy Development Strategy (Vietnam)
REEEP	Renewable Energy & Energy Efficiency Partnership
REIPPP	Renewable Energy Independent Power Producers [Procurement] Programme (South Africa)
REKI (PT)	(Perseroan Terbatas) Restorasi Ekosistem Indonesia
REWS	Renewable Energy Water Supply (project, Mekong Delta, Vietnam)
RISØ/DTU	National Laboratory for Sustainable Energy, Danish Technical University
RSF	REDD+ Support Facility
RSPB	Royal Society for the Protection of Birds (UK)
SANEDI	South African National Energy Development Institute
SANERI	South African National Energy Research Institute
SAWEA	South African Wind Energy Association
SCIP	Strategic Climate Institutions Programme (in Ethiopia)
SDG	Sustainable Development Goal
SEAfrica	Sustainable Energy Africa (a consulting NGO)
SEFA	Sustainable Energy Fund for Africa
SESC	Strategic Energy Sector Cooperation (Ethiopia-Denmark)
SFM	Sustainable forest management
SII	Sustainable Islands Initiative
ΣDKK	Total (symbolised by 'sigma') Danish Kroner
SME	Small and medium-sized enterprise
SSC	Strategic Sector Cooperation
TA	Technical assistance
TAS	Technical Advisory Services (Danida)
ToR	Terms of Reference
tCO ₂ e	Tonne of carbon dioxide equivalent
tCO ₂ edmv	Dated mitigation value of each tCO ₂ e
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VNEEP	Vietnam National Energy Efficiency Program
VS	Verdens Skove (Forests of the World)
WASA	Wind Atlas of South Africa
WRI	World Resources Institute

EXECUTIVE SUMMARY

Content and methods

Effectiveness concerns achieving intended results, and mitigation results are those that reduce net greenhouse gas (GHG) emissions. Of special interest are strategic changes to systems whose characteristics determine emissions over time. Taken together, these describe 'strategic mitigation effectiveness', the assessment of which is the main aim of this evaluation. It focuses on Danish efforts in developing countries in the period 2013-2019 and was commissioned by the Ministry of Foreign Affairs of Denmark (MFA).

The evaluation uses a theory of change based approach to seek causal mechanisms, and to explore how they work under what conditions. It seeks to identify patterns and trends among many projects and programmes, and its treatment of detail is therefore different from that of a project-level evaluation. Its findings rest on evidence from studies of 4-8 projects and programmes in each of four MFA-selected focal countries, namely Ethiopia, Indonesia, South Africa and Vietnam. Because of the CoViD pandemic, the evaluation was largely desk based, but findings were validated and enhanced by national consultants working in the focal countries, and through remote interviews. Data were supplemented by soliciting mitigation case reports from 35 Danish embassies.

The evaluation also draws evidence from desk studies and interviews targeting seven MFA-selected partner institutions, namely the Green Climate Fund (GCF), the Energy Sector Management Assistance Programme of the World Bank (ESMAP), the International Energy Agency (IEA), the Investment Fund for Developing Countries (IFU), the Sustainable Energy Fund for Africa (SEFA), Verdens Skove (VS), and the Nationally Determined Contribution Partnership (NDCP). The Danish Energy Agency (DEA) was also studied because of its key role in energy sector partnerships around the world. Again, the treatment of detail is different from that of an evaluation focused on any one institution, being more macro-level and comparative in approach.

Evidence is organised by design and performance topic and annexed to the appended country studies. Other annexes contain details on the partner institutions and relevant contextual analysis and commentary. Evidence, analyses and conclusions were tested in dialogue with institutions represented in the Evaluation Reference Group (ERG) and are presented as answers to four evaluation questions (EQs). The conclusions are further informed by other studies that reported in late 2020 and early 2021, including those on climate change adaptation and by the Danish Council on Climate Change (DCCC) and National Audit Office (NAO). Recommendations are framed in the context both of Denmark's long-term climate strategy, and of a global consensus in support of high-ambition mitigation efforts, including potential net zero emission goals by mid-century.

Answering Evaluation Question 1: Mitigation effectiveness

Three key approaches to strategic mitigation are technological, ecological and capacity building, based respectively on promoting clean energy, nature-based solutions, and institutional abilities to perform modelling, planning, policy development and regulatory tasks. Key conclusions point to the primary importance of alignment with strong, stable and rational government policies; adaptive agility in the face of changing circumstances and institutional priorities; trusting those who have reliable knowledge and skills; and the political economy and political ecology analyses needed to identify policies worth aligning with, changes that must be adapted to, and groups worth relying upon.

Evidence from all evaluated interventions led the whole mitigation portfolio to be rated 'moderate/good' for design and performance, higher on average than in previous studies of global (non-Danish) aid portfolios, and about the same as in an earlier study of a Danish country programme. At country level, the interventions divided into groups: by design as 'very good' in Argentina, Ethiopia, Indonesia and Vietnam, 'moderate' in Myanmar, and 'weak' in South Africa; and by actual or anticipated mitigation effectiveness as 'very good' in Argentina, Myanmar and Vietnam, 'moderate' in Ethiopia, and 'weak' in South Africa. Reasons for consistently high performance in Vietnam included alignment with strong and stable policy, and synergy with specific practical initiatives by government; those for consistently low performance in South Africa included unstable features of policy and political economy in the evaluation period.

A total of 13 interventions (i.e. projects, phases, components) were particularly noteworthy from the viewpoint of strategic mitigation effectiveness. Some were small breakthrough projects that depended on local circumstances and opportunities, while the strongest evidence of strategic mitigation effects was associated with programmatic activity. This is probably because knowledge of local conditions, contacts and close relationships with decision makers lead to better targeting and stronger influence. In the energy sector, highest performance was evident from engagements that met well-defined information and technical needs.

In terms of quantifying emission reductions, among the institutions surveyed Verdens Skove and GCF have long sought to do so in their work, and IEA, IFU and SEFA started to do so more recently. Among interventions in the focal countries there were mixed findings, but in general there was less baselining or monitoring of predicted or actual emission reductions than might have been expected. In terms of building the capacity of institutions to perform better at modelling, forecasting, regulating and developing policy and other tasks relevant to strategic mitigation, the findings are also mixed but more nuanced. In the evaluation evidence, variations on the phrase 'did not include institutional capacity assessments, gap analyses, individual skills assessments, or ways to monitor changes in capacity and skills' were frequent. Since this is both important and easily correctable it is among the most useful findings going forward.

The Climate Envelope (CE) was used to deliver a small share of all Danish mitigation-relevant public investment in developing countries, the volume of which is determined by drivers other than climate change. No evidence was found that projects funded through this channel differed consistently from those funded in other ways. The CE did have a strong effect, however, in enabling the DEA to emerge as an important actor in providing energy-sector support to developing countries, and in encouraging a programmatic approach rather than being limited to particular technical issues. The result is that DEA's partnerships involve supporting governments in becoming 'choice aware' in many areas of energy sector reform and development. Facilitating economy-wide political and system change is a demanding task, however, and is likely best done in a fully integrated way led by the Danish representation in each country.

The Strategic Sector Cooperation (SSC) Initiative is an important attempt to rationalise support for coherent and systemic change. Funded outside the CE, it was represented in the evaluation sample by six SSC interventions. Of the five that could be assessed (in Argentina, Ethiopia and Indonesia), design scores were high and strong performance was anticipated, but because they started recently, they could not be fully assessed except in Indonesia where performance was good. These are positive signs, and it seems likely that in seeking holistic responses to systemic challenges the SSC modality has been breaking ground in an area that will be productive for mitigation efforts in future.

Finally, it was found that the information system maintained by MFA on international mitigation projects and programmes falls far short of those that are published online by several global climate funds (e.g. the GCF) and is not adequate to support reporting of, or analysis and learning from, the results of Danish mitigation efforts. A more effective management information system with learning and referencing capability is needed, the value of which would increase over time.

Answering Evaluation Question 2: NDC responsiveness

In general terms, Nationally Determined Contributions (NDCs) articulate government thinking that is already embedded in policy. They tend not to be presented in actionable or bankable form, and few if any new promises are made that are not already considered feasible. Moreover, all are hedged by governments reserving the right to amend the details as needed, often according to their development partners' willingness to spend. These patterns are seen in the NDCs of the countries included in this evaluation. This is all to be expected, since the NDCs are markers in an experimentalist process of learning and peer competition, prepared by governments that are cautious about making pledges and may be reluctant to act on a common threat for which they do not feel responsible.

The result is that the NDCs state a general goal of reducing the rate of increase of GHG emissions, or capping them in absolute terms, to which Denmark subscribes, and list various sectoral measures designed to achieve that goal,

among which Denmark chooses to support only some. This is similar to the position on the Sustainable Development Goals (SDGs), which donors and governments divide up and advance selectively. The outcome is that there is usually strong alignment between Danish activities in a country and some of its NDC priorities.

Of the focal countries, Indonesia and Vietnam intend to reduce the rate of growth of their emissions so as to achieve significant reductions relative to future scenarios. In Vietnam this implies a near-doubling of absolute emissions; but in Indonesia it could mean an absolute decline, depending on success in bringing deforestation and land degradation under control, and in meeting renewable energy targets. Ethiopia and South Africa propose to cap their emissions, Ethiopia at the current level and South Africa at a plateau rather higher than at present before declining. All goals depend on intricate networks of change in many sectors at once (Ethiopia, Vietnam), or complex and contingent changes in currently-dominant emission sectors (electricity generation in South Africa; the land use and forestry sector in Indonesia).

On encouraging and enabling countries to express higher mitigation ambitions in their NDCs, as noted above there is a global move towards net zero emission commitments by mid-century, which developing countries may wish to join. To do so, governments may need studies, demonstration projects and policy discussions to assure themselves that higher ambitions are feasible and not harmful to their own interests. Denmark can help by validating the idea of higher ambition through policy dialogue, and by offering technical assistance and other support for the necessary research, modelling and consensus building.

Answering Evaluation Question 3: Transformational change

Transformation implies multiple connected changes that result in more sustainable relationships among people and between people and nature. To induce it requires concentration of informed insight and design effort, appropriate technical input, trust and influence, adequate resources, and sustained consistent purpose. Danish interventions often seem under-resourced relative to this ambition but can be effective if they coincide with trends created by other actors or influences. In these cases, small investments can induce major changes, putting a premium on understanding underlying trends and their causes during the identification and design of interventions.

Several cases were found where Denmark was helping to build potentially transformative mitigation-relevant outcomes, often with the support of institutional partners. Three involved community-based forest management (two in Indonesia, one in Bolivia, and a fourth possible in Myanmar), two involved wind power integration (in South Africa and Vietnam), one involved complementary and cumulative interventions in a small island (Lombok in Indonesia), and one was possible through a city twinning project.

Together they show that progress can be dramatic if empowered communities wish to manage ecosystems sustainably, if a government seeks to overcome specific technical challenges for the clear benefit of those to whom it is accountable, or if institutions recognise and value what each can contribute, but only if the new ideas on offer make good ecological and economic sense. In addition, there was a cluster of partnerships where Danish engagement has been responsible, in collaboration with like-minded stakeholders, for lifting or shifting a major institution onto a new and more mitigation-relevant path, including SEFA since 2011, IEA since 2015, and ESMAP since 2016.

Answering Evaluation Question 4: Lessons learned

Lessons learned from the projects and programmes are highlighted under EQ1. Here the emphasis is on more strategic findings. On capacity building, the evaluation took the view that it must be specifically designed-for if it is to be effective, since to build capacity requires: an agreed assessment of defined weaknesses of all kinds; an agreed plan to correct those weaknesses, with goals and indicators for their achievement; and efforts to implement the plan with adequate resources competently deployed. It concerns the development both of managerial systems and of competencies among staff members, along with the hardware and software that they use in their work. It is therefore a process and cannot be separated from the quality of the partnership between the institutions involved.

Two effective ways to build capacity are: by embedding long-term advisers who can transfer knowledge to colleagues over time, while also acting as portals for engagement with external stakeholders; and by concentrating multiple sources of new knowledge in a small social system energised by a local priority, including demonstration projects, participatory studies, and knowledge exchange with other places and peoples. Strong partnerships provide a supportive context for either. Successful examples were found in the evaluated portfolio, but as noted above key steps in planning for capacity building and monitoring progress were sometimes missing.

Several kinds of relationships with institutional partners were seen in the evaluated portfolio. These ranged from persistent alignment of interests that allowed the shaping of certain policies (e.g. GCF), through sustained influence that allowed incremental leverage of resources towards Danish priorities (e.g. SEFA, ESMAP, IEA), to the full delegation of aims and resources for particular complex purposes (e.g. Verdens Skove in 2008 to 2015). The relationships with IFU and DEA were rather different, since MFA has decision-making responsibility for some IFU operations, and DEA is an agency of MCEU which together with MFA is a managing partner of the CE itself.

Among the institutions reviewed, the distribution of support reflects a strong orientation to the energy sector, where recent Danish efforts have been focused. The GCF is the only multilateral institution and Verdens Skove the only civil society partner strongly promoting ecological mitigation, where past Danish efforts have shown emission savings at large scale. None support south-south-

north linkage activities, which have particular strengths in terms of knowledge sharing. A general conclusion reached by the evaluation is that there is scope for the capabilities and interests of each institution to be more deliberately matched to Danish mitigation priorities, which would depend on prior definition of Danish aims and preferred means. Opportunities were also noted for Denmark to focus on key strategic issues, such as working with ESMAP to help countries model and plan their transitions to net zero outcomes, and with IEA to support the testing of sectors against objective standards on emission reduction, so as to provide assurance that national policies will actually deliver net zero outcomes.

Conclusions

The distribution of strategic effectiveness in the evaluated portfolio draws attention to particular Danish strengths: in facilitating the clean energy transition; in encouraging low-carbon development through institutional, sectoral and subnational planning and demonstrations on energy, waste, environmental management, etc.; and in conserving and restoring high carbon-density ecosystems through nature-based solutions involving local institutions, communities and participatory ecosystem management. The latter strength has tended to be neglected in recent Danish development cooperation, and the utility of restoring this complementary element to the Danish mitigation programme is perhaps the single most significant conclusion of this evaluation.

Some 'no-regrets' mitigation activities along one or more of these lines are likely to be necessary in all partner developing countries, and these will often match observed Danish strengths. All are important to meeting needs within the global climate change response, since: scores of governments hope to decarbonise their energy systems; hundreds of subnational institutions and territories would benefit from low-carbon development plans and help with their implementation; and hundreds of millions of hectares of high carbon-density ecosystems exist and require protection and restoration.

Considered in terms of the global climate agenda, most of these needs must be met promptly if there is to be a chance of reaching over-arching temperature, adaptation and biodiversity goals. Denmark alone can only contribute to meeting some of them, however, whether globally or within each partner country. They feature in the NDCs where priority is usually given to one or more of them, depending inter alia on how the major GHG sources and sinks are distributed in the economies and territories of the individual country.

A balanced Danish mitigation strategy should therefore allow for informed choices on which NDC priorities to address in each partner country, and for an effective response to each chosen element. This response would sometimes be done bilaterally, but more often and more importantly in collaboration with other actors. The real leverage and impact of Danish mitigation efforts will come from demonstrating practical and innovative solutions that can be understood, adapted, replicated and scaled up, from thought-leadership and influence among like-minded actors, and from cooperative investment through multilateral institutions.

Recommendations

The recommendations assume the following desirable norms and outcomes.

- Danish actions will be done in dialogue with the developing country concerned in each case and in collaboration with other development partners and international institutions that possess relevant knowledge.
- Current efforts by MFA and MCEU to strengthen knowledge management in the climate response for accountability and learning purposes continue and will effectively meet the information needs of the Danish public and government.
- The strategic objectives of Danish mitigation efforts will guide the choice of international partner institutions for collaborative support, whether through core, thematic and project funding, staff secondments, rosters of experts, or technical input to negotiations.

These three measures are all necessary to a small but influential donor in a complex and uncertain strategic environment, where progress at scale against pressing biophysical challenges and deadlines can only occur through partnership. Thus, it will always be necessary to seek cooperation with bilateral, multilateral, non-profit and for-profit partners where opportunities exist for knowledge sharing, added value, co-benefits and transformative impact.

The following findings and implications have arisen from the evaluation and are stated as general requirements rather than formal recommendations.

- The 'mainstreaming' of climate mitigation concerns is essential, meaning the routine informed consideration of climate response consequences in all decisions surrounding development activities and investments.
- A 'whole of government' (or even a 'whole of society') approach is necessary to mobilise adequate and effective sustained investment in mitigation efforts, both within Denmark and as a desirable role of partner countries.
- There is an implicit need for systematic knowledge sharing with all partners involved in any way with Danish mitigation efforts, including staff who take over responsibilities for each initiative during routine turnovers.
- Programmatic approaches, supported by long-term relationships and good understanding of their political economy and political ecology contexts, are generally to be preferred on the grounds of strategic effectiveness to isolated, brief or stand-alone interventions.
- Valuable experimental or 'target of opportunity' investments can nevertheless break new ground or create new opportunities and can often best be identified and explored by embassies using their Local Grant Authority funds.
- A complex and ambitious mitigation portfolio requires adequate resources to meet its advisory, managerial and material needs, the allocation of which must therefore be assured.

- Adequately-funded research is needed to reduce uncertainties around predicting the consequences of mitigation policies and actions and improving knowledge management to support the climate response.

Further to these general points, the evaluation makes two specific recommendations, respectively focused on:

- supporting partner countries in defining more complete and effective mitigation programmes of action, which can then be articulated within more ambitious NDCs; and
- strengthening the design of all mitigation interventions so they more clearly explain what they expect to achieve in mitigation terms, and how they will document progress towards their mitigation goals.

Recommendation 1. Denmark and its expert partner institutions should support each of its partner governments in identifying its most mitigation-relevant sectors, regions and systems, in becoming fully choice-aware in each of them, in developing options for reducing net emissions in all of them, in selecting the most effective mitigation options, and in planning and resourcing actions in line with those options.

Rationale. Countries vary in how GHG emissions and opportunities to reduce them are distributed, and these may lie in the energy, land-use or another sector, or dispersed across many sectors, or concentrated in different subnational regions, or located within systems of protected areas or other special zones. Support for sectoral and subnational initiatives can contribute to achieving national mitigation goals, and the latter may even depend upon the success of such initiatives. Thus, effective national mitigation programming requires a fine-grained approach with sensitivity to political economy and other factors. This requires planners and decision makers to have access to organised cross-disciplinary knowledge from diverse sources.

Implementation. Guidelines and technical specifications for the necessary analyses will need to be developed, and officials of national and local government and embassy staff will need to be trained in their use. Potential actors in developing and delivering these could include MFA, MCEU and MoE, including embassies supported by Sector Counsellors and other staff, in consultation with national and local government, and with input from other development partners and knowledge-holders including international institutional partners and Danish NGOs, think tanks and academia.

Recommendation 2. Denmark should require that every proposed mitigation action, regardless of its funding source: describes its anticipated mitigation effects; specifies how baseline conditions relevant to mitigation will be described; defines expected mitigation outcomes and criteria and indicators for assessing progress towards them; and provides a full account of arrangements for monitoring and reporting progress towards those outcomes.

Rationale. Effective mitigation requires large emission reductions to be obtained quickly, cost-effectively and with the best possible balance between co-benefits and co-costs. To do this reliably, investments must be chosen for these specific outcomes, and to support selection all costs and benefits must be identified, considered and compared with alternatives in advance. Some actions are designed to build capacity and choice-awareness, however, which can only be measured indicatively, while some co-benefits cannot be measured at all. Thus, qualitative and/or quantitative means would be used as appropriate in each case. Research can help reduce uncertainty, but for learning and accountability purposes outcomes must be monitored against baselines and milestones.

Implementation. Guidelines and knowledge resources will be needed to support improved project design and description in line with this requirement. Potential actors in developing these could include MFA, MCEU and MoE, in consultation with other actors and knowledge-holders including international institutional partners and Danish NGOs, think tanks and academia.

1. INTRODUCTION

Human impacts are known to be breaching global sustainability boundaries and activating very dangerous tipping points in Arctic, equatorial and oceanic systems. This applies to climate change (IPCC, 2014, 2018, 2019a, 2019b, 2022 in prep.), which is now recognised as an emergency¹, and also to various severe pressures on the web of life as a whole (IPBES, 2019; UNEP, 2019; CBD, 2020; Guterres, 2020; UNDP, 2020). The need is therefore to prioritise immediacy and potency in reducing and reversing net greenhouse gas (GHG) emissions, while also maximising co-benefits in the form of contributions to adaptation², ecosystem services, environmental and livelihood security, biodiversity conservation, human rights and the Sustainable Development Goals (SDGs).

This is a forward-looking evaluation of Danish efforts to mitigate climate change by supporting developing countries in reducing their net greenhouse gas (GHG) emissions. It aims to identify and explain their strengths and weaknesses in contributing to the overall mitigation agenda and Denmark's sustainable development priorities, and to make use of the findings in defining a more complete and effective approach for Denmark to take. The Terms of Reference (ToR, Annex A) have therefore been followed closely by the evaluation team (Annex B). The methods are presented in **Chapter 2**, which largely relies on the description in the Inception Report but includes a section on assessing strategic mitigation effectiveness to clarify this aspect of the methodology. Key findings are then presented as follows:

- in **Chapter 3**, on the institutional architecture and budgetary commitments that have been supporting the Danish climate response;
- in **Chapter 4**, on interventions in the focal countries of Ethiopia, Indonesia, South Africa and Vietnam, including supplementary materials from the Royal Danish Embassies (RDEs) in Argentina, Myanmar and elsewhere;
- in **Chapter 5**, on the mitigation effectiveness of Danish support for a selection of partner institutions³; and
- in **Chapter 6**, in answering the evaluation questions (EQs).

1 By 14 March 2021, binding climate emergency declarations had been issued in 1,904 jurisdictions in 34 countries, including 15 national governments (<https://climateemergencydeclaration.org/category/news/>). Neither the Danish national government nor any Danish local government had yet made such a declaration.

2 The subject of adaptation is addressed in a parallel evaluation of Danish experience (PEMConsult & ODI, 2020), and also in a recent analysis by Caldecott (2021).

3 The Green Climate Fund (GCF), the World Bank's Energy Sector Management Assistance Programme (ESMAP), the International Energy Agency (IEA), the Danish government's Investment Fund for Developing Countries (IFU), the African Development Bank's (AfDB's) Sustainable Energy for Africa Facility (SEFA), the Danish NGO Verdens Skove (VS), the NDC Partnership (NDCP), and the Danish Energy Agency (DEA).

As explained in the methods, all findings are based on evidence presented in annexes. Annexes are also used for collateral findings: on portfolio financing (Annex C), on the utility of ecological mitigation options (Annex D), and on potential ways to assess and compare the cost-effectiveness of different mitigation investments under conditions of time-bound urgency (Annex E). The report ends in **Chapter 7**, which draws on the findings in Chapters 3-5 and their strategic context. It responds to the Danish government's long-term climate strategy (MFA & MCEU, 2020a). This calls for a new and greener development policy to replace *The World 2030* (Danida, 2017), and this is now being developed.

Meanwhile, the strategy's priorities include renewable energy and energy efficiency (RE/EE), which Denmark has been promoting strongly and in depth, but also the intention "to raise ambitions and accelerate action via international cooperation, agreements and measures to achieve synergies across efforts involving agriculture, deforestation, water and air quality, land use, biodiversity, sustainable production and consumption, circular economy, nature-based solutions and marine environments." (MFA & MCEU, 2020a: 12). The evaluation therefore leads towards conclusions on how best to balance these multiple aims in principle, and recommendations on how to do so in practice.

2. METHODS

2.1 Methods of data collection

The methods used to gather evidence are mostly as described in the Inception Report, all oriented to the initial evaluation matrix containing lines of enquiry, sources of information and foreseen outputs (Annex F), and involving as they did:

- **a meta-analysis of the documentary record** (to check for and where possible fill gaps);
- **an analysis of the mitigation portfolio 2013 to 2018** (Annex C), to describe funding commitments by *time period* (2013-2015 vs. 2016-2018, separated by an important watershed in international law, government policy and political direction), *pathway* (bilateral vs. multilateral support), *channel* (use of the Climate Envelope), *main objective* and *geographical spread*;
- **a study of bilateral interventions in four focal countries**, involving desk study by the core team (based in Scotland, England and Denmark), using a review format which was updated after the Inception Report into the form presented in Annex G, followed by involvement of country teams of national experts to add contextual knowledge and to conduct site visits and local interviews (as explained in more detail in Annex a of Annex H), and an input by the Nationally Determined Contribution (NDC) specialist to explore the relationship between interventions and NDCs; and
- **a study of institutional relationships** by the core team (focused on four – GCF, IEA, ESMAP and Verdens Skove – in the ToR, three added later by agreement with the client – IFU, SEFA and NDCP, the latter involving input by the NDC specialist – and an eighth, DEA, which warranted close examination because of its key role in Danish mitigation efforts), all involving desk reviews and interviews (Annexes L-S).

An **additional method** involved extending the survey of mitigation interventions to 35 RDEs and other missions, in which the ambassador and deputy were asked to identify and provide details on the best examples of mitigation-relevant action within their spheres. Sixteen responses were received, some of which suggested that mitigation was interpreted as meaning only investments in RE/EE development. In several countries, RDEs acknowledged on-going Danish energy partnerships implemented by the DEA (e.g. in México, Egypt and India). The survey also yielded supplementary material on EU engagement (via the mission in Brussels), and on the 'GreenTogether' initiative of the RDE in Singapore (www.greendkinsea.com), which is interesting because it offers a shared platform across all sectors related to mitigation technologies. Two 'best practice' projects were identified as well, on city twinning between Argentina

and Denmark from the RDE in Buenos Aires (Annex T), and on mangrove conservation in Myanmar from the RDE in Yangon (Annex U).

2.2 Methods of analysis and presentation

The analysis of data was also as described in the Inception Report. Evidence from documents and interviews for each intervention was organised in the cells of the review format (Annex G) to facilitate extraction according to various topics of interest. These included purpose and relevance, design quality (i.e. the plausibility of the theory of change and its explanation), direct and indirect mitigation effectiveness, GHG emission reductions, impact, sustainability, efficiency, capacity building issues, baseline and monitoring arrangements, and unintended consequences. Some key aspects of design and performance were scored 1 to 7 (1 = worst, 7 = best) to represent judgements supported by the evidence, for use as a summary to highlight strengths and weaknesses, and to allow comparisons between and within portfolios.

This therefore takes a theory of change based evaluation approach known as 'realism', which seeks to identify underlying causal mechanisms and explore how they work under what conditions, thus offering a way to make sense of projects in 'high causal density' environments like those examined here (Bourse *et al.*, 2014; Miyaguchi & Uitto, 2015). It has been used in previous evaluations of Finnish, Swiss and Danish programmes (Caldecott *et al.*, 2010, 2012 a-c, 2014, 2017, 2019). The theory of change approach is also used at a macro level in LTSI (2015: 25-27) and by the Ministry of Foreign Affairs (MFA) and Ministry of Climate, Energy and Utilities (MCEU; MFA & MCEU 2016: 4-5), and this is discussed further in Chapter 6. The final evaluation matrix is based on all findings and analysis and is given in Annex V.

2.3 Assessing 'strategic mitigation effectiveness'

Effectiveness comes from achieving intended results, which in mitigation terms means reducing net GHG emissions. Strategic changes to whole systems that lead to sustainable emission reductions are particularly desirable. These considerations, taken together, describe 'strategic mitigation effectiveness'. Assessing this in relation to Danish efforts in developing countries is the main aim of this evaluation⁴. Three key kinds of change that might influence emissions are those in technology, ecology, and capacity, as defined in Annex G. The first two are straightforward, being direct and often measurable, but the third is indirect and its effects can be described mainly through proxies, such as the ability of key national and other institutions to describe and use alternative scenarios (through 'choice awareness' and modelling), to choose between options through policy development, and to influence the future through planning and regulation.

4 In terms of definition, it is immaterial whether any of these results occur directly or indirectly, quickly or slowly, in large or small amounts, with or without co-benefits, and at high or low cost-effectiveness, but in practice these factors matter a very great deal and are considered throughout the evaluation.

METHODS

Technological change is typically very predictable in terms of its effect on GHG emissions, and the impacts are often instantaneous (through new insulation or switching on new equipment) and cumulative (through operation and maintenance). Ecological change is more varied in terms of process and effect, since it depends on complex alterations in carbon release and absorption by living systems, which can be quick-acting (e.g. avoided deforestation) or slower (e.g. forest regeneration). These are uncertain since they depend on human choices, and are therefore influenced by governance, culture and economic incentives, among other factors. Finally, the capacity to do things better is the key to all progress, and the ability to perform the tasks that lead to reduced emissions is the key to medium- and longer-term mitigation solutions.

All three kinds of change are governed and assessed according to their own general rules. Thus, in principle, technological change requires design, engineering, procurement, construction, operation and maintenance. Ecological change requires knowledge of how living systems work and how people interact with and depend on them, with what consequences and how these things can be altered. And capacity building requires the skills of individuals and institutions to be assessed against new tasks that need to be performed, and any gaps identified to be corrected through the exchange of knowledge. These rules therefore give rise to indicators of design and performance.

Cautious, informed reasoning within those rules can be used to identify factors that are most likely to yield mitigation-relevant change in all three areas, and this is how evidence was compiled in this evaluation and presented in Annexes H-U. It is used to support judgements on effectiveness, which are represented by design and performance scores as explained in Annex G. Here two points should be made. First, that this was not a detailed, project-level evaluation, and because of the CoViD pandemic neither was it supported by the depth of field work that would usually be needed to understand interventions even at a 'macro' level. And second, that the scores are meaningful only to the extent that they represent the evidence and are useful only to the extent that they draw attention to strengths and weaknesses and summarise patterns as numbers rather than as paragraphs of text.

The numbered scores and the attention to tCO₂e emission units might give the impression that the 'McNamara Fallacy'⁵ is being resurrected, with only changes that are measurable in tCO₂e being considered real and important. This is certainly not the case, but the *appearance* of an excessive focus on quantification is heightened by the frequent use of tCO₂e as a unit of measurement. This is explained by the context of climate change, which is driven by the accumulation of GHGs in the air, and this is universally measured in tCO₂e. The annual rate of net GHG emission now exceeds 50 gigatonnes (billion tonnes) of CO₂e (50 GtCO₂e).

5 Named for Robert S. McNamara, US Secretary of Defence (1961-1968) and President of the World Bank (1968-1981), whose idea was to make planning easier by assuming that whatever can be measured easily should be measured, and that whatever cannot be measured easily should be disregarded. This line of thinking encourages a focus on metrics that distract from efforts to understand complex systems (Caldecott, 2017).

Climate science still has uncertainties, but not in the general nature of the climate danger or its scale and imminence. Where it is uncertain, all we can do is apply precautionary principles and seek 'no-regrets' changes, by taking actions to minimise catastrophic risk and maximise the protection of other things that we value (i.e. co-benefits). Thus, we know that changes measurable in tCO₂e are needed, both *at scale* (hence in megatonnes MtCO₂e, or GtCO₂e) and *quickly* (therefore in dated mitigation value, hence in tCO₂edmv – see Annex E; also UNEP, 2020). But we also know that it takes time to achieve large-scale changes, and that shifting the trajectory of the global economic system onto a zero net emission pathway is a decades-long project. Therefore, we need multiple things to happen, starting now and with short-, medium- and long-term effects, some measurable and some not, and all of them vital.

A final point should be made on the implications of effectiveness scores, since some reviewers questioned the fact that small projects might score the same as large ones. While a weighting could have been applied, for example by multiplying the score by its quantitative impact where known (or some preferred but arbitrary number where not), this would have prevented lessons being learned on what works and how in different circumstances, and what might be replicated or scaled up for greater effects in the future.

An example of why this would have been misleading lies in the case of Denmark's wind industry, which is ranked globally only 15th by installed capacity (6.1 gigawatts in 2019, smaller than Scotland's, a tenth of Germany's) in *quantitative* terms, yet is still considered of interest to the world in *qualitative* ones.

The scoring used here, therefore, is designed to highlight points of interest for further consideration: whether and how to scale up and replicate, and the potential gains available from doing so, while bearing in mind that some things cannot be amplified but *can* be replicated (e.g. community-based forest conservation). In short, we remain in an experimental phase of responding to the climate emergency. This phase will certainly last until the issue is resolved of whether or not we will face a total climate breakdown in this century. The evaluation was developing ways to gather, organise and understand information as it went along, so it was part of this experimental process and seeks to draw attention to lines of enquiry that may be more productive in future⁶.

6 Illustrating continuing uncertainty over how to evaluate climate response programmes is the call by Sweden's Expert Group for Aid Studies for proposals to evaluate the 2009-2012 Climate Change Initiative of the Swedish Government (EBA, 2018). Here it was specified that "Tenderers are given an open mandate regarding the design of the analytical framework, methodological approach, delimitations and evaluation model to fulfil the objective and overall aim with the study. ... We hope that this open task will be attractive and encourage innovation in submitted proposals." (p. 4).

3. CONTEXT AND MAIN FEATURES OF THE MITIGATION PORTFOLIO

3.1 Institutional architecture for mitigation purposes

High levels of concern over climate change extend from the Danish people, who are among the most climate-aware in Europe⁷, to the Folketing (Parliament), which has repeatedly passed laws in favour of stronger climate action⁸. Support for the United Nations Framework Convention on Climate Change (UNFCCC) and Paris Agreement has long prevailed in government policy. There was a waning of official enthusiasm for environmental causes in the mid-2010s, but the long-term direction has been towards participation in the climate response, internally in terms of reducing energy sector emissions, building on a strong tradition of using renewable energy (RE), especially wind power, and externally through its cooperation with developing countries.

The latter is traditionally an area under the MFA ('Danida'), which has promoted many actions with mitigation significance, including avoided deforestation, RE in rural development, and urban pollution control. But in the lead-up to the UNFCCC Conference of the Parties (CoP) 15/2009 in Copenhagen, the Danish government chose to make a clearer statement of intent by establishing the Climate Envelope, through which to channel funds for adaptation and mitigation in developing countries. An integrated climate response was sought, in which the RE and energy efficiency (EE) themes would combine with both adaptation (i.e. lands, waters, forests, disasters, etc.) and mitigation (i.e. RE/EE and all other sectoral GHG sources and sinks).

The themes were represented by the predecessor of the MCEU with the support of the DEA, and by MFA, with the two ministries each being made responsible for developing proposals for half the Climate Envelope funds. These are reviewed jointly and are subject to final approval by MFA and its Minister. In May 2014, the inter-ministerial External Grants Committee asked MFA to prepare a strategic framework to guide selection. An evaluation of Danish climate funding also concluded that there was "no clear overarching strategy to guide funding prioritisation or guidance on the desired balance of theme, modality or geography" (LTSI, 2015: 57). The Guiding Principles for the Climate Envelope were duly prepared (MFA & MCEU, 2016), and key features of these are summarised in Box 3.1.

7 In April 2019, 83% of 1,019 interviewed Danes thought that climate change was a very serious problem (EU average 79%), up by 5% since 2017; and 47% considered climate change to be the single most serious problem facing the world (EU average 23%), up by 18% since 2017 (https://ec.europa.eu/clima/sites/clima/files/support/docs/dk_climate_2019_en.pdf).

8 www.climatechangenews.com/2019/12/06/denmark-adopts-climate-law-cut-emissions-70-2030/; <https://ens.dk/en/our-responsibilities/wind-power/energy-islands>.

Box 3.1: Guiding Principles for the Danish Climate Envelope

Overall framework. This is provided by agreements under the UNFCCC, so the eligible activities and outputs map directly onto the Rio Climate Markers for mitigation and their later equivalents for adaptation, with the aims of supporting more effective policies and planning, promoting climate solutions through more effective markets and investments, and building more robust international architecture. Project design and selection is to be guided by the following two sets of principles.

Principles for design and selection. The first group of principles aims to secure the overall shape of the Climate Envelope, by giving priority to logic, alignment, evidence, balance between mitigation and adaptation, focal country targeting, long-term planning with continuity, and balance between multilateral and bilateral activities. Concerning the latter, the Guiding Principles state that Denmark will continue to use a combination of multilateral and bilateral support channels for Climate Envelope interventions and will support the Green Climate Fund and a limited number of the multilateral climate funds.

Principles for project effectiveness. The second group of principles is focused on project effectiveness. These give priority: (a) to working from Denmark's particular strengths (which are seen as lying mainly in the water and energy sectors, including RE, energy planning, EE and reform of policy frameworks); (b) to leverage of private finance and innovation; and (c) to transformation through actions that yield irreversible systemic changes and scaling to the national level. Other aims are also mentioned, including coherence with other initiatives, an anti-poverty orientation, and contributing added value in the context of the Paris Agreement.

Monitoring framework. The Guiding Principles mandated the use of the monitoring framework developed by the GCF, on the grounds that it was "likely to emerge as an international standard for the selection of climate indicators and their methodologies" (page 8), but gave no further details. They did however identify three core indicators that apply to all projects funded through the Climate Envelope, one of them for adaptive resilience-building (i.e. the number of people affected), one for financial leverage effects (i.e. the amount of extra spending induced), and the third was that GHG emission reductions achieved must be reported quantitatively and expressed in tCO₂e, although it was not then possible reliably to measure changes in net GHG emissions (ΔEn). It was also noted that the core indicators need not be used if they are not appropriate to the specific action, and that "this will typically apply to projects focusing on policy reforms, institutional frameworks and capacity building". A footnote explains that this exception "applies regardless of the further development of the GCF indicators applicable for same type of projects."

Sources: LTSI (2015); MFA & MCEU (2016); UKG (2018); Rentschler et al. (2020).

Changes are underway in the institutional architecture of the mitigation response (see Chapter 7), and as noted in Chapter 1 a new development cooperation policy is being developed. This is likely to prioritise the climate response, but in light of the long-term climate strategy (MFA & MCEU, 2020a) it is also likely to recognise that this must include protecting forests, waters, lands and biodiversity, while seeking cross-sectoral sustainability and nature-based solutions. Meanwhile, the Ministry of Environment (MoE)⁹ was separated from the Ministry of Food, Agriculture and Fisheries (MoFAF) in November 2020. It remains engaged with MoFAF and is active with other ministries, including MFA, MCEU and the Ministry of Industry, Business and Financial Affairs (EVM), in mitigation-relevant initiatives that include action plans on deforestation and promoting sustainable and low-emission value chains for imported agricultural commodities. According to multiple interviewees, all these institutions are seeking a comprehensive, whole-government, all-sector mitigation approach in line with the new long-term climate strategy. Taken together, these developments suggest that the future Danish climate response is likely to seek mitigation in various ways that also value adaptation and other co-benefits wherever they can be found and is therefore also likely to comprise an increasingly diversified and ecological approach.

3.2 Strategic Sector Cooperation

The evolution of Danish development assistance overseas is a complex and dynamic process, with many 'moving parts' (actors, institutions, interests, policies, laws, budget-lines, etc.). An important attempt to rationalise support for coherent and systemic change is the Strategic Sector Cooperation (SSC) Initiative. This has its origins in a 'Growth Package' in the 2015 Finance Act with budget lines for SSC partnerships and projects, and for 'Growth Counsellors' (later renamed 'Sector Counsellors') to be stationed in Danish embassies. An SSC Secretariat (MYNSEK) was set up in the MFA and issued a series of guidelines on how SSC should be done, most recently DAIC (2020).

The SSC Initiative aims to support peer-to-peer cooperation for capacity building between public authorities in Denmark and partner countries, ultimately to improve the framework conditions of the SDGs. Its main objective is to mobilise partnerships in sectors where Denmark has strong expertise and technology. It also has two additional objectives: to strengthen bilateral relations; and, in the longer-term, to facilitate transfer of Danish expertise and technologies on commercial terms.

9 The MoE is the parent ministry of the Danish Environmental Protection Agency (DEPA), which has a key role with MFA in five strategic sector cooperation (SSC) programmes, in China, India and South Africa on water, and in Indonesia and Kenya on waste and the circular economy. Several of these feature in the focal countries of the evaluation (see Chapter 4 and Annex I for Indonesia, and Annex J for South Africa).

PEMconsult (2020) described an 'SSC budget envelope', which in 2015-18 spent about DKK 70 million annually (increased to DKK 145 million in 2019) to fund Sector Counsellors at Danish embassies and the SSC. The first 20 SSC projects were launched in 2015, and by 2021 there were 41 projects in 18 countries involving at least 14 Danish public authorities and 38 Sector Counsellors. Of these projects, up to 15 seemed relevant to climate mitigation in the technological, ecological and/or capacity building senses used here. Eight of them were being managed by MCEU/DEA, two by MoE/DEPA, one jointly by MCEU and MoE, two by Aarhus Municipality and two by the City of Copenhagen. Some of these were examined by this evaluation: one on city twinning in Argentina (Annex T), one on the energy sector in Ethiopia (Annex H), three, on energy, circular economy and waste management, in Indonesia (Annex I), and one on offshore wind that was just beginning in Vietnam (Annex K). Of the five that could be assessed (in Argentina, Ethiopia and Indonesia), mean design scores reported in Section 4.3 were 'good' (at 5.2), and high performance was anticipated but could not be fully assessed except in Indonesia, where it was also 'good' (at 4.7).

These are positive signs, and a number of key factors underpinning positive results were identified by PEMconsult (2020), including: targeting sectors with strong Danish expertise and reputation; adapting to local circumstances and being flexible in responding to changing needs and risks; focusing on specific and scalable interventions while remaining sensitive to local demand and adaptation; formulating projects using analyses of alternative cooperation options based on local demand and available Danish expertise; and selecting countries and sectors based on assessments of local settings. It concluded that middle-income countries may be best suited to SSC due to their strong policy, fiscal and governance frameworks, absorption capacities, and the relevance of Danish solutions, and if SSC is done in low-income countries, it should be set within a more comprehensive aid arrangement such as a country programme¹⁰.

Relevant to the latter points, in the whole SSC portfolio the only least-developed country involved is Ethiopia; all the rest lie in the broad category of middle-income countries. The 2020 evaluation also stressed the need for an SSC-wide Theory of Change, for documenting good practices, and for ways to ensure that project designs and progress reports relate to national priorities and the SDGs. These observations are consistent with findings in the relevant annexes of this evaluation, and it seems likely that in seeking holistic responses to systemic challenges the SSC modality has been breaking ground in an area that will prove productive for mitigation efforts in future.

10 This concept can be broadened slightly to include engagements with subnational territories, where multiple comprehensive and mutually-supportive interventions can be focused. This would allow more fragile countries to be supported through subnational engagements where low-carbon development innovations can be trialled effectively, and from which new ideas and economic relationships can spread nationally.

3.3 Key features of the mitigation portfolio

Coverage and data sources

The time period of interest to this evaluation is not clearly fixed in the ToR (Annex A) but focuses on 2013-2019, and the project and programme reviews considered earlier and later matters as needed to understand and anticipate events. The portfolio review is more tightly focused on 2013-2018 (Annex C), reflecting the fact that an earlier evaluation (LTSI, 2015) covered expenditure up to 2012, and in response to the data available from MFA. Unlike the 2015 evaluation, which focused on the Climate Envelope, this review seeks patterns across the whole mitigation-relevant portfolio.

The available data were commitments to spend, supplied by the MFA in November 2020 (but not independently verified), and totalling DKK 6.087 billion in 2013-2018 (cf a total of DKK 2.868 billion for all climate-relevant expenditure in 2002-2012, in LTSI, 2015). The dataset builds on a summary prepared by the Danish Institute for International Studies (DIIS) in collaboration with the UNEP-DTU Partnership (Pedersen et al., 2019), which was extensively re-worked in the present evaluation using internal MFA information systems. The analysis is financial since the dataset does not identify project activity and being based on commitments it cannot provide insights into impact.

There are also issues of a more general nature with the management of information surrounding climate-relevant and mitigation-relevant expenditure. This has been subject to recent inspection by Denmark's National Audit Office (NAO)¹¹, which found it unsatisfactory that MFA and MCEU "have not sufficiently ensured an accurate statement of how much money Denmark spends on climate aid to developing countries and has not sufficiently targeted climate aid at creating the greatest possible effect". This echoes NGO criticism of how climate action expenditure is classified in the Danish aid system, which is seen as insufficiently granular to be useful (Appelt & Dejgaard, 2017). The NAO also found that climate aid has been overestimated in country programmes and NGO initiatives where climate is not a main purpose, but only one of several purposes. Based on these findings, the Danish Council on Climate Change (DCCC) called for greater accuracy in reporting climate assistance, both financially and in terms of the results of previous efforts in relation to climate status and climate projections.

Against this background of data uncertainty, the approach used here is to consider that the period 2013-2018 spans a mid-point marked by three significant events, any of which might have influenced mitigation commitments by Denmark: (a) at the global level, the Paris Agreement was signed at UNFCCC CoP 21 in December 2015, galvanising the international climate response; (b) at the domestic level, in June 2015 a government was elected whose development strategy gave reduced prominence to environmental and climate change issues;

11 *Rigsrevisionen: Climate assistance to developing countries*. NAO report to the Folketing with the State Auditors' remarks, January 2021, cited in the Danish Council on Climate Change's background note on global climate action to the 2021 status report (<https://klimaraadet.dk/en/nyheder/new-report-assesses-governments-climate-effort-and-provides-recommendations-how-meet-70>).

and (c) at the technical level, a new strategic framework for spending Danish climate funds arose from the 2015 evaluation and 2016 publication of the Guiding Principles for the Climate Envelope.

With 31 December 2015 as the 'watershed' between two eras marked by all three changes, therefore, the dataset was summarised as a whole and also in two three-year periods: 2013-2015 and 2016-2018, which were then compared. The following section summarises the key findings on funding commitments to mitigation made by Denmark in these periods.

Levels and patterns among commitments

Level of commitment. Total commitments in 2016-2018 were much lower than in 2013-2015, which is significant in light of the Paris Agreement. This was partly an artefact of a relatively small portfolio being affected by some exceptionally large commitments in one period but not in another. Several such examples are known, both within and outside the survey period, including those to Uganda, the GCF, and Ethiopia. But it also reflected a significant overall cutback in development assistance (including the Climate Envelope) at the end of 2015, with a 0.7% of GDP target replacing previous and higher levels of ambition and public financial resource allocation¹².

Bilateral and civil society partnerships. Most commitments were made through the bilateral government-to-government channel, but a large number of other commitments were also made to various institutions¹³. All were affected by the overall decline in mitigation commitments noted above, with the total volume declining most drastically among those to Danish civil society and non-governmental organisations (CSOs, NGOs). The latter is a particularly important change, since the expertise of Danish CSO/NGOs and their implementation partners is an important resource especially for mitigation in land use, land-use change and forestry (LULUCF or AFOLU) sector (see the Verdens Skove example in Section 5.7 and Annex Q).

The role of the Climate Envelope. Most mitigation funding came from outside the Climate Envelope, where the Guiding Principles were not necessarily applied and MCEU may have been unsighted. There was no evidence that projects funded through the Climate Envelope differed consistently from those funded in other ways.

12 Official Development Assistance (ODA) amounted to 0.85% of Danish Gross National Income (GNI, i.e. GDP adjusted for external debt) in 2013 (Caldecott, 2017). The profound effect of a small GNI cutback in aid is illustrated by the massive cuts in aid operations required by the UK's adjustment of ODA from 0.7% to 0.5% of GNI in 2021.

13 There is uncertainty in the classification of some of these, but in recent years they included around 20 international institutions (IUCN, GCF, 3GF, UNEP-DTU, World Bank/ESMAP, Clean Air Coalition, GGGI, GWP, IEA, NAMA facility, WRI, C40 Cities, 'CSR recipient', GCPF, IADB, IIED, OECD/CIF, OECD/WEF, UNEP, UN-REDD, WMO, and World Bank/WRI), 13 Danish CSO/NGOs (Danish Church Aid, Oxfam/IBIS Global, Red Barnet (Save the Children Denmark), Verdens Skove, 92 Group (Climate Action Network International), CISU, IWGIA, WWF/Caritas, Danmission, IUCN, JCLEC, Max Havelaar (Fairtrade), and Transparency International) and four other institutions (CSR Facility, IFU, Vedvarende energi, and Opportunity Africa 2014).

Mitigation focus. At least half of the mitigation portfolio was formed of development initiatives that had multiple aims. This reflects the fact that most commitments reported as mitigation-relevant lie in the development cooperation portfolio managed by MFA.

Distribution among countries. Over the whole six-year period, approximately two-thirds of bilateral mitigation commitments were made to least-developed countries (LDCs). This finding was strongly influenced by large commitments to a small number of LDCs, but the number of countries supported did not change much (21 in 2013-2015 and 22 in 2016-2018). This continuing wide geographical spread in mitigation effort seems to run counter to the 2016 Guiding Principles, which sought to focus mitigation activities in emerging economies. There were also signs of a shift in implementing partners over time, away from Danish CSOs and to multilateral agencies.

Multilateral partnerships:

- **Multilateral climate funds (MCFs).** There were two major commitments in the survey period: one in the first half, which was an unearmarked contribution of DKK 400 million to the GCF, and one in the second half, which was a contribution to the Strategic Climate Fund of the Clean Investment Funds (CIF), earmarked for a Clean Energy Investment Mobilisation Technical Assistance Facility. Another contribution of DKK 800 million was promised to the GCF in 2019 and approved by the Council for Development Policy in February 2021.
- **International Financial Institutions (IFIs).** Mitigation contributions mainly targeted the World Bank Group (International Bank for Reconstruction and Development, IBRD and International Finance Corporation, IFC, including World Bank programmes such as ESMAP), with limited support to the regional development banks other than the Inter-American Development Bank (IADB).
- **United Nations (UN) system.** Relatively small contributions mainly targeted the UN Development Programme (UNDP) and the UN Environment Programme (UNEP).
- **European Union (EU).** In 2013-2018, the Directorate-General for International Cooperation and Development of the European Commission (EC, DEVCO) committed the equivalent of around DKK 3.4 billion to climate mitigation actions through a range of funding channels, to an extent using some of Denmark's unearmarked contributions to the EC budget with which to do so. In an EU context, any small country with good ideas can exert disproportionate influence, so Denmark has the opportunity to amplify the effect of its mitigation actions by tapping into a broader EU consensus on mitigation.
- **Others.** Significant commitments were made to new (e.g. the Global Green Growth Institute, GGGI) and established (Organisation for Economic Cooperation and Development, OECD, and IEA) international actors working on knowledge sharing and capacity building associated with mitigation.

4. MAIN FINDINGS ON INTERVENTIONS IN THE FOCAL COUNTRIES

4.1 Special circumstances of the focal countries

This section focuses on bilateral mitigation interventions in four countries that were chosen by MFA for special attention by the evaluation. It does not cover interventions by MCFs, IFIs and other multilateral actors, although GCF investments in the four countries are listed in Section 5.2. The four countries varied greatly in many ways that are relevant to their profiles as contributors of GHG emissions and in how those emissions might be curbed (Table 4.1)

TABLE 4.1:
2016 GHG EMISSION DATA FOR
THE FOUR FOCAL COUNTRIES PLUS DENMARK

Emissions (units)	Denmark	Ethiopia	Indonesia	South Africa	Vietnam
Total national (MtCO ₂ e)	51.4	190.1	2,228.9	522.1	319.9
Total per person (tCO ₂ e)	5.9	0.3	7.04	7.48	2.07
Land-use/forestry (MtCO ₂ e)	minus 1.1	23.1	1,360.0	1.1	minus 20.1
Electricity & heat (MtCO ₂ e)	13.8	0.0	206.6	279.9	73.9
Agriculture (MtCO ₂ e)	10.5	109.5	190.2	29.6	71.1
Transport (MtCO ₂ e)	11.8	5.3	134.5	55.4	36.9
Waste (MtCO ₂ e)	0.9	4.7	129.5	24.0	19.9
Manufacture/construction (MtCO ₂ e)	3.5	3.7	84.2	50.3	62.4
Industry (MtCO ₂ e)	1.8	3.5	33.8	20.4	34.1
Fugitive emissions (MtCO ₂ e)	0.3	0.0	33.3	2.7	20.1
Other fuel combustion (MtCO ₂ e)	2.2	37.8	30.1	12.7	4.3
Buildings (MtCO ₂ e)	2.8	1.1	23.1	21.2	12.3
Aviation/shipping (MtCO ₂ e)	4.9	1.4	3.6	13.8	5.0
Energy intensity (kWh/GDP in 2011PPP USD)	0.76	0.44	0.76	2.27	1.50
Carbon intensity (kg/kWh)	0.19	0.02	0.28	0.33	0.21
GDP per person (% change since 1990)	38.2	165.4	141.9	26.8	324.8
Consumption emissions per person (% change since 1990)	minus 17.3	155.0	172.8	6.9	530.1
Production emissions per person (% change since 1990)	minus 41.7	129.4	166.4	minus 4.5	526.2

Source: <https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions>.

MAIN FINDINGS ON INTERVENTIONS IN THE FOCAL COUNTRIES

Ethiopia (1.1 million sq. km), is a landlocked, mountainous and by UN classification an LDC, partly in the Horn of Africa. It is among the world's most climate-vulnerable countries, yet it is also among the least polluting large nations with annual GHG emissions of only about 190 MtCO₂e (0.3 tCO₂e per person). Its large rural sector and reliance on low-emission hydroelectricity mean that land-based emissions dominate, through agriculture and forestry practices and use of fuel-wood. These factors imply that many Ethiopian stakeholders will tend to see mitigation as a lower priority than adaptation, and to expect that if mitigation actions are taken, they should promote adaptation as well. With these immediate public priorities, a climate response portfolio in Ethiopia might be expected to focus on strengthening systems against weather-related stresses, including climate-smart land-use options for rural people, and energy options to meet increasing demand from renewable sources while reducing over-dependence on hydroelectricity and fuel-wood. The global and long-term perspectives are rather different, however, since a large country seeking a middle-income future may become a large GHG source unless low-carbon systems are built into its economy from early on.

Indonesia is an equatorial archipelagic nation and the largest of the focal countries, with 1.9 million sq. km of land in Sumatra, Borneo, Java, Sulawesi, New Guinea and at least 17,000 smaller islands, all of immense biological and cultural richness. Its economic development has long been accompanied by land-use changes and coal-fired electricity generation that have made the country the world's sixth-largest source of GHG emissions. These total over 2,200 MtCO₂e annually (7.0 tCO₂e per person), with 70% from the LULUCF sector although this varies with droughts and fires in damaged, drained and increasingly fire-prone ecosystems. Since 2009, Indonesian policy has been to reduce the rate of increase of these emissions, leading to reductions relative to future 'business as usual' (BAU) scenarios, but also resulting in tensions with powerful land, forest and coal interests.

South Africa is a large (1.2 million sq. km) country with a vast range of climate types and considerable vulnerability to drought. Despite a recent (ca 1994) transition to democracy it retains persistent extreme wealth inequality. It has a significant level of industrialisation and GHG emissions at 522 MtCO₂e (7.5 tCO₂e per person) in 2016 were ranked around 15th in the world. Most (84%) continue to come from the energy sector, most (60%) of these are from electricity generation, and most (88%) electricity comes from burning coal, so the main mitigation opportunities lie in the energy sector. The country is committed to an emission peak and plateau in 2025 to 2035 and decline thereafter and has been developing various plans and strategies to put this into effect. Factors that constrain mitigation strategy include a legacy of coal-based energy systems with which powerful interests remain aligned, and upon which much employment still depends.

Vietnam is a medium-sized (0.33 million sq. km) but ecologically very diverse country along the eastern fringe of mainland South-east Asia. It has shown sustained economic growth with GDP rising by almost 325% in 1990 to 2016, when its GHG emissions reached 320 MtCO₂e (2.1 tCO₂e per person). These are expected to more than double to 682 MtCO₂e in 2030, even after being reduced

by national and international mitigation efforts in line with its 2020 NDC. They are evenly spread among multiple sectors, so the Government of Vietnam (GoVN) mitigation strategy seeks systemic change through many sectoral and sub-sectoral targets, in order to reduce the rate of increase in national emissions and hence reductions relative to future BAU scenarios. Uniquely among the focal countries, its land-use sector was a significant net sink as a result of forest plantation development. Diverse programmes of public exhortation, regulations and targets for private and state-owned businesses, and planning requirements for provincial governments, are all set and supervised by the state.

There are advantages and disadvantages to studying such disparate examples. The advantages lie in the opportunity to sample Danish interventions shaped by very different circumstances, and as described in Section 2.1 the enquiry was broadened by asking RDEs to report on mitigation actions in their own spheres, resulting in some useful additional examples. The disadvantages lie in a reduced focus compared with a study on a more limited theme. This was compensated to some extent by interviews with institutional knowledge holders but is inevitably influenced by the choice of focal countries, which miss out some of the major targets of DEA collaborations (e.g. China, India, México).

Findings from the four focal countries are summarised in the following sub-sections. It should first be noted, however, that the economies and societies of these countries have changed dramatically in recent years and continue to do so. This is particularly the case in Ethiopia, Indonesia and Vietnam, where GDP per person increased in the range 140-325% in 1990-2016, with corresponding growth in GHG emissions per person (Table 4.1). Many factors contribute to this, including alterations to land use, urbanisation, and the techniques, technologies and material demands of manufacture, architecture, infrastructure, power generation and energy use. A consequence is a shifting pattern of GHG emissions by location and economic sector. The accurate prediction of such changes then becomes vital for planning, modelling and programming in support of low-carbon alternatives. This in turn relies on reliable forecasting, which is a challenge in dynamic circumstances with limited knowledge. Robust planning assumptions and a strong preference for 'no regrets' measures¹⁴ can then be more useful than an excessive reliance on unreliable quantitative projections.

14 Examples of such measures include building choice awareness in planning institutions, encouraging RE, promoting forest conservation, and discouraging the use of coal as an energy source.

4.2 Purpose and relevance

Table 4.2 lists approaches and themes taken by the various projects and components of Danish mitigation interventions reviewed in the four focal countries plus Argentina and Myanmar.

- Those primarily concerned with **helping local people to manage ecosystems** for net emission reductions, either by preventing their release through degradation or by encouraging their absorption through regeneration, are described as taking an 'ecological' mitigation (or 'ecomitigation') approach¹⁵ (often also referred to as 'nature-based solutions').
- Those that focused on promoting **learning, thinking and setting priorities** through policies and plans are described as taking an 'enabling' approach¹⁶.
- And the majority that principally sought to **promote RE or EE** are described as taking a 'technological' approach¹⁷.

In the four focal countries, the Danish mitigation portfolios were all aligned with the relevant sectoral priorities expressed in each country's NDC, and all contributed to one or more of the SDGs (see Section 6.2).

15 Inception Report definition: "protecting or enhancing GHG sinks and reservoirs through forest protection, avoided deforestation, SFM, reforestation, restoration of disturbed ecosystems (including soils through organic farming), rehabilitation of ... marine and coastal ecosystems, wetlands, wilderness areas and other ecosystems".

16 Inception Report definition: "integrating mitigation concerns and priorities within development processes ... mitigation-related policy and economic analysis and instruments, low-carbon development strategies and plans, mitigation-related legislation, and mitigation needs surveys and assessments ... strengthening of regulatory frameworks related to mitigation, including those to discourage GHG emissions and to remove barriers to or encourage, through fiscal, economic, legal and other incentives, investment in reducing GHG emissions."

17 Inception Report definition: "reducing or stabilising GHG emissions ... through application of new and renewable forms of energy, measures to improve the EE of existing generators, machines and equipment, or demand-side management."

**TABLE 4.2:
APPROACHES AND THEMES OF
EVALUATED MITIGATION INTERVENTIONS**

Approach	Theme	Cases evaluated by project/component
Ecological	Climate-smart agriculture	GATE 1 and GATE 2 in Ethiopia.
Ecological	Community-based forestry	GATE 2 and CRFL in Ethiopia; ESP 2/3, ESP 3/3, and Mbeliling 1 & 2 in Indonesia; Coastal forests (IMCF) in Myanmar.
Enabling	City twinning	Sustainable Urban Development in Argentina.
Enabling	National LCD planning	SCIP in Ethiopia.
Enabling	Sub-national LCD planning	ESP 2/1, ESP 3/1 and ESP 3/3 in Indonesia.
Enabling	Energy policy	SESC in Ethiopia; ESP 2/2, ESP 3/2 and SSC Energy 1 & 2 in Indonesia; DEPP 'I'/1 and DEPP II/1 in South Africa; LCEE 1/2, DEPP II/1 and DEPP II/3 in Vietnam.
Technological	RE wind generation	AWPGE 1 and AWPGE in Ethiopia; WASA 1 and DEPP 'I'/2 in South Africa.
Technological	RE wind integration	AWPGE 2 in Ethiopia; DEPP 'I'/3 and DEPP II/2 in South Africa; DEPP II/2 in Vietnam.
Technological	Energy efficiency	ESP 2/2, ESP 3/2 and SSC Energy 1 & 2 in Indonesia; EE Housing and Smart Meters in South Africa; VNEEP, LCEE 1/1 and LCEE 1/2 in Vietnam.
Technological	RE various	ESP 2/2, ESP 3/2 and SSC Energy 1 & 2 in Indonesia.
Technological	Waste management	SSC Environment and SII in Indonesia.
Technological	RE solar	REWS in Vietnam

AWFP = Assela Wind Farm Project; AWPGE = Accelerating Wind Power Generation in Ethiopia; CRFL = Climate Resilient Forest Livelihoods; EE = energy efficiency; ESP = Environmental Support Programme; GATE = Greening Agricultural Transformation in Ethiopia; IMCF = Improved Management of Coastal Forests; LCD = low-carbon development; LCEE = Low-Carbon Transition in the Energy Efficiency Sector; REWS = Renewable Energy Water Supply; SCIP = Strategic Climate Institutions Programme; SII = Sustainable Islands Initiative; SESC = Strategic Energy Sector Cooperation; SSC = Strategic Sector Cooperation; WASA = Wind Atlas for South Africa; DEPP = Danish Energy Partnership Programme; VNEEP = Vietnam National Energy Efficiency Program.

Sources: Annex H (Ethiopia), I (Indonesia), J (South Africa), K (Vietnam), T (Argentina), and U (Myanmar).

4.3 Design and performance

Design and performance by theme

Within the approaches listed in Table 4.2 there are a limited number of key themes, of which the safe integration of wind power to national grids and community-based forestry stand out in three countries each. These represent two strategic approaches that may well be among those with most to contribute to mitigation in future – suggesting that Danish efforts are largely on the right track. Several others are also notable as ways to make a difference in various circumstances, including whole-economy low-carbon development (LCD) planning, waste management, and city twinning. Others that targeted national energy policy were found to be too unfocused to be able to highlight any particular influence (in Indonesia), or were inhibited by political economy factors (in South Africa), or were too early in their implementation to assess (in Ethiopia), but in Vietnam they synergised strongly with specific practical initiatives by GoVN and raised average performance significantly in this area.

Table 4.3 summarises the design and actual or anticipated performance scores awarded to the various projects and components, as explained in the country study annexes, averaged according to the themes identified in Table 4.2. Only those with both a design and at least an anticipated performance score are included. Of these, high mitigation performance was expected in the city twinning intervention (a single instance outlier) and detected in the community-based forestry interventions (both supported by good design), while all the others had moderate performance even though some (national LCD planning and RE) had good designs, and others (energy policy and energy efficiency) had fewer good ones.

**TABLE 4.3:
DESIGN QUALITY AND PERFORMANCE FOR
MITIGATION INTERVENTIONS**

Theme (n)	Mean scores across intervention themes	
	Design quality	Mitigation performance
City twinning (1)	7.0	6.0
Community-based forestry (6)	4.8	5.0
Energy policy (5)	3.4	4.4
RE wind integration (8)	4.4	4.1
National LCD planning (1)	5.0	4.0
RE various (7)	4.7	4.0
Climate-smart agriculture (1)	4.0	4.0
Sub-national LCD planning (3)	4.0	4.0
Energy efficiency (7)	3.6	4.0

Scores: 7 = perfect; 6 = excellent; 5 = good; 4 = moderate; 3 = weak; 2 = very weak; 1 = extremely weak.

Sources: Annex H (Ethiopia), I (Indonesia), J (South Africa), K (Vietnam), T (Argentina), and U (Myanmar).

Design and performance by country and intervention

In more detail, Table 4.4 summarises the key features of the interventions in each focal country.

- In **Ethiopia** and **Vietnam** there was a single organising policy by government (Climate Resilient Green Economy, CRGE, and the National Target Programme to Respond to Climate Change, NTP-RCC, respectively) that covered all sectors and both adaptation and mitigation, to which the Danish interventions responded and into which most of them fitted.
- In **Indonesia** there was less coherence between an evolving government commitment to give most attention to the major sources of GHG emissions in the forest and land sector (to which the Danish programme responded only in part, and largely through non-governmental channels), and Danish efforts to bring about progress in the energy sector, which was hard to do because of policy uncertainty and weak incentives, and later in the waste sector, which may prove easier.
- In **South Africa**, the smaller Danish portfolio failed to navigate political economy difficulties that reduced its effectiveness in some areas, but parts that focused on knowledge management to promote wind energy investment and on integrating the resulting electricity feed into the grid were more effective.

MAIN FINDINGS ON INTERVENTIONS IN THE FOCAL COUNTRIES

**TABLE 4.4:
KEY FEATURES OF MITIGATION INTERVENTIONS IN
THE FOUR FOCAL COUNTRIES**

Ethiopia – total evaluated budget (ΣDKK) = DKK 999.8 million	
SCIP	2012-2016 (0.5% of ΣDKK). This influenced institutional change and left some important legacies, while also teaching lessons on devolved approaches to climate action.
GATE	2014-2018 (17.8% of ΣDKK). This was an innovative and moderately effective thematic programme that aimed to promote climate-smart farming through the Agricultural Transformation Agency, which worked well, and also, with more difficulty, to help the CRGE Facility mainstream agriculture and forestry initiatives.
AWPGE	2017-2021 (3.5% of ΣDKK). This is an ambitious wind-energy project to enable the energy system to accommodate an increased share of RE, which made good progress on wind energy assessment, but much slower progress on technical system integration and market transformation.
CRFL	2018-2023 (4.5% of ΣDKK). This is a participatory forest management and livelihood project that is working with a sub-national administration.
AWFP	2020-2025 (72.7% of ΣDKK). This is a recently-begun wind-farm project with the state-owned electricity company Ethiopian Electric Power that is being financed jointly by a commercial and a concessional lender and a Danish grant.
SESC	2020-2023 (1.0% of ΣDKK). This is an energy sector SSC programme between the DEA and several Ethiopian institutions, aiming to support development of Ethiopia's capacity to undertake long-term energy modelling and planning.
Indonesia – total evaluated budget (ΣDKK) = DKK 629.4 million.	
ESP phases 1-3	2005-2018 (92.2% of ΣDKK). This was the main vehicle for Danish-Indonesian energy and environment cooperation through its eight successive components (ESP 1/1-2, ESP 2/1-3, ESP 3/1-3) engaged with environmental impact and circular economy/low-emission development planning (ESP 1/2, ESP 2/1 and ESP 3/1), energy sector mitigation (ESP 2/2 and ESP 3/2), and local empowerment and ecological mitigation (ESP 2/3 and ESP 3/3). In all cases the best immediate results were obtained at provincial, district and community level, but there was also slow, cumulative progress and influence at national level. Some ESP initiatives were associated with game-changing initiatives in ESP 3/3 (the nationwide Ecosystem Restoration Concession network resulting in part from the Harapan project in Sumatra and, the sub-national LCD planning project LAMA-I) and the stand-alone Mbeliling project in Flores (2007-2015, 2.7% of ΣDKK) , all undertaken with highly-motivated partners (e.g. NGOs and ICRAF) that were well embedded in Indonesia.
SSCs	ESP 3 was followed by SSC Energy 1 and 2 (2016-2021, 2.5% of ΣDKK), SSC Environment (2018-2022, 1.6% of ΣDKK) and the Sustainable Island Initiative (2020-2023, 1.1% of ΣDKK), showing increasing signs of strong effectiveness, particularly in Lombok.
South Africa – total evaluated budget (ΣDKK) = DKK 82.35 million.	
<p>After an early experiment with feed-in tariffs (FITs) in 2009-2010, the focus switched to the competitive auctioning of power production contracts with the national supplier Eskom, through the Renewable Energy Independent Power Producers [Procurement] Programme (REIPPP). This induced an explosive growth in RE investment, helped by two Danish contributions:</p> <p>WASA 1 (2009-2012, 12.1% of ΣDKK), which pioneered wind resource mapping, helped stimulate interest in wind-based FIT projects, later informed bidders in the early REIPPP auctions, and helped consolidate the credibility of South African wind investments and national skills base; and</p> <p>the TA to Eskom component of DEPP 'I' & II (2013-2020, 15.7% of ΣDKK), which focused on resolving technical difficulties involved in integrating variable RE electricity flows into the national grid.</p> <p>Other Danish-supported efforts were much less effective:</p> <p>the EE housing project (2003-2018, 16.6% of ΣDKK), which contributed almost nothing to mitigation;</p> <p>the smart meter project (2012-2014, 0.6% of ΣDKK), which was later cancelled; and</p> <p>the TA to DoE/DMRE component of the DEPP 'I' & II (2013-2020, 35.6% of ΣDKK), to support policy development to promote the introduction of EE and RE technologies.</p>	

Vietnam - total evaluated budget (ΣDKK) = DKK 260.1 million.	
VNEEP	2009-2013 (64.6% of ΣDKK). In this, Denmark contributed part of the budget of a much larger and long-term GoVN programme with high overall mitigation effectiveness.
LCEE	2013-2017 (25.0% of ΣDKK). In this, GoVN agreed that some of Denmark's extra support to VNEEP would allow measures to promote EE in SMEs and buildings at provincial level to occur sooner, and/or with more Danish technical input, and/or with greater availability of investment finance, than they would otherwise have done. This focusing of support on a sub-sector of special interest worked well, and with clear Danish attributability. Because LCEE grew out of VNEEP but also gave rise to DEPP II (and was therefore renamed DEPP 'I'), it can be seen as a bridge towards a more direct bilateral engagement.
DEPP II	2017-2020 (8.7% of ΣDKK). In this, Denmark built on parts of LCEE to create a niche for itself in advising the Ministry of Industry and Trade on energy sector planning, integrating RE into the grid, and promoting EE in industry. These had significant impacts on energy policy, for example through Resolution 55 on the orientation of the national energy development strategy until 2030, with a vision to 2045, particularly since Vietnam was developing its wind industry rapidly and in urgent need of technical advice on safe integration of wind power.
REWS	2011-2014 (1.7% of ΣDKK). In this, an embassy-to-province grant was used in a small but innovative effort to promote solar-powered water pumping technology at communities in the Mekong Delta, in hope of influencing government procurement policy and for educational purposes. This was sound and attributable, and showed how useful an embassy small grant mechanism can be but was later eclipsed by social and technological changes in the project area.

Sources: Annex H (Ethiopia), I (Indonesia), J (South Africa), K (Vietnam).

Another way of looking at this distribution of effort is through the macro-scale allocations of the evaluated budgets.

- In **Ethiopia**, the Danish commitment was dominated by a single grant of DKK 727.3 million to subsidise the partly-commercial Assela wind-farm project. This represents 37% of all Danish mitigation grants (DKK 1.972 billion) to all four focal countries over two decades. The issue of whether this should have been included in the portfolio for evaluation is addressed in Section 5.5.
- In **Indonesia**, the three ESP phases at DKK 580 million in total came closest to the AWWP in scale of investment, and at 92% of ΣDKK were even more dominant in the national portfolio. The ESPs stretched over 13 years and supported many useful interventions, some of them very influential, while spinning off initiatives that show signs of having real impact, especially at provincial level.
- In **Vietnam**, the portfolio was dominated by EE investments that were totally (VNEEP at 65% ΣDKK) or very strongly (LCEE 25% of ΣDKK) aligned and coherent with GoVN priorities. The LCEE was also used as a bridge to a new kind of relationship, in which Denmark would have more influence in a key ministry, and DEA would be available to help in the emerging GoVN policy priority of integrating wind energy into the grid, driven by massive investment in off-shore wind.
- In **South Africa**, there was no dominant investment, the largest being TA at DoE/DMRE at less than 36% of ΣDKK, which was among the least effective. There were two other fragmentary and failed investments but also two that were highly appropriate, technically, commercially and in terms of coherence with Government of South Africa (GoSA) mitigation policy.

MAIN FINDINGS ON INTERVENTIONS IN THE FOCAL COUNTRIES

Design and performance scores given to interventions (projects, phases, components) in Ethiopia, Indonesia, South Africa and Vietnam are given in Tables 4.5 to 4.8 respectively. The equivalent scores for one intervention each in Argentina and Myanmar are given in Tables 4.9 and 4.10 respectively. A summary of equivalent scores for all interventions in all six countries is given in Table 4.11, which indicates that the design and performance scores for the whole sampled Danish mitigation portfolio averaged out at 4.3, which is better than 'moderate', higher than the 3.5 mean score for 50 diverse non-Danish aid programmes analysed by Caldecott (2017), and only marginally lower than the mean score of 4.4 recorded for 48 interventions in several sectors¹⁸ in the Danish country programme in Nepal (Caldecott *et al.*, 2017). Thus, the whole portfolio was found to be designed and implemented to higher than global standards and about as well as would be expected of a set of Danish interventions.

One point about portfolio-level analysis of performance, however, is that there is no enterprise in which results are always consistently good or bad. This is why investment funds manage "baskets of companies, technologies, sectors, etc., as a way to maximize gain and mitigate risk" (H. Jack Ruitenbeek, pers. comm.). Evaluations should always expect a range of design and performance scores across all their dimensions. Rather than 'rewarding success and punishing failure', therefore, in principle the management response to such findings should be to reward learning in situations of uncertainty.

Macro-level comparisons are less useful than detailed indicators for each intervention, or the patterns that emerge from different themes (see above) and countries. For country differences, the interventions divided into groups as follows: by design score Argentina, Ethiopia, Indonesia and Vietnam (very good), Myanmar (moderate) and South Africa (weak); and by mitigation effectiveness score Argentina, Myanmar and Vietnam (very good), Ethiopia (moderate) and South Africa (weak). Reasons for consistently high performance in Vietnam and the consistently low performance in South Africa have already been given¹⁹, and the interventions in Argentina and Myanmar are discussed briefly along with other noteworthy projects in the next section.

18 I.e. peace, rights and governance, education, renewable energy, urban/ industrial environment, renewable natural resource management, dairy development.

19 I.e. in Vietnam, strong and stable policy, synergy with specific practical initiatives by GoVN; and in South Africa, unstable policy and political economy in the key period.

**TABLE 4.5:
DESIGN AND PERFORMANCE SCORES FOR
MITIGATION INTERVENTIONS IN ETHIOPIA**

Intervention	Design	Impact	Effective-ness	Effi-ciency	Mean
SCIP	5	3	4	4	4.0
GATE	4	4	4	4	4.0
AWPGE (Engagement 1)	6	3	5	6	5.0
AWPGE (Engagement 2)	3	2	2	3	2.5
CRFL	4	-	-	-	-
AWFP	6	-	-	-	-
SESC	5	-	-	-	-
Mean	4.7	3.0	3.8	4.2	-

Scores: 7 = perfect; 6 = excellent; 5 = good; 4 = moderate; 3 = weak; 2 = very weak; 1 = extremely weak.

Source: Annex H (Ethiopia).

**TABLE 4.6:
DESIGN AND PERFORMANCE SCORES FOR
MITIGATION INTERVENTIONS IN INDONESIA**

Intervention	Design	Impact	Effective-ness	Effi-ciency	Mean
ESP 2/1 circular economy	4	4	3	4	3.8
ESP 2/2 energy sector	2	4	3	4	3.3
ESP 2/3 ecomitigation	4	4	3	4	3.8
ESP 3/1 LCD planning	5	3	3	4	3.8
ESP 3/1 circular economy	5	4	5	4	4.5
ESP 3/2 energy sector	5	4	4	4	4.3
ESP 3/3 LCD planning	4	6	6	4	5.0
ESP 3/3 ecomitigation	5	6	6	4	5.3
Mbeliling 1 ecomitigation	6	6	5	4	5.3
Mbeliling 2 ecomitigation	6	6	6	6	6.0
SSC Energy 1 national	5	4	3	5	4.3
SSC Energy 1 Lombok	5	6	5	5	5.3
SSC Energy 2 national	5	4	3	5	4.3
SSC Energy 2 Lombok	5	6	5	5	5.3
SSC Environment	4	-	-	5	4.5
Sustainable Islands	5	-	-	-	5.0
Mean	4.7	4.8	4.3	4.8	-

Scores: 7 = perfect; 6 = excellent; 5 = good; 4 = moderate; 3 = weak; 2 = very weak; 1 = extremely weak.

Source: Annex I (Indonesia).

**TABLE 4.7:
DESIGN AND PERFORMANCE SCORES FOR
MITIGATION INTERVENTIONS IN SOUTH AFRICA**

Intervention	Design	Impact	Effectiveness	Efficiency	Mean
EE housing	1	2	1	1	1.3
Smart metering	1	1	1	2	1.3
WASA 1	5	5	5	5	5.0
DEPP 'I'	3	4	3	3	3.3
DEPP II DMRE	3	2	1	2	2.0
DEPP II Eskom	3	5	4.5	5	4.4
Mean	2.7	3.2	2.6	3.0	-

Scores: 7 = perfect; 6 = excellent; 5 = good; 4 = moderate; 3 = weak; 2 = very weak; 1 = extremely weak.

Source: Annex J (South Africa).

**TABLE 4.8:
DESIGN AND PERFORMANCE SCORES FOR
MITIGATION INTERVENTIONS IN VIETNAM**

Intervention	Design	Impact	Effectiveness	Efficiency	Mean
VNEEP	6	5	6	4	5.3
LCEE/DEPP 'I'	5	6	6	6	5.8
DEPP II	4	5	6	5	5.0
REWS	6	6	5	6	5.8
Mean	5.3	5.5	5.8	5.3	-

Scores: 7 = perfect; 6 = excellent; 5 = good; 4 = moderate; 3 = weak; 2 = very weak; 1 = extremely weak.

Source: Annex K (Vietnam).

**TABLE 4.9:
DESIGN AND PERFORMANCE SCORES FOR
A MITIGATION INTERVENTION IN ARGENTINA**

Intervention	Design	Impact	Effectiveness	Efficiency	Mean
City twinning	7	-	6	-	6.5
Mean	7.0	-	6.0	-	-

Scores: 7 = perfect; 6 = excellent; 5 = good; 4 = moderate; 3 = weak; 2 = very weak; 1 = extremely weak.

Source: Annex T (Cooperation between Buenos Aires and Copenhagen).

**TABLE 4.10:
DESIGN AND PERFORMANCE SCORES FOR
A MITIGATION INTERVENTION IN MYANMAR**

Intervention	Design	Impact	Effectiveness	Efficiency	Mean
Coastal forests	4	-	6	-	5.0
Mean	4.0	-	6.0	-	-

Scores: 7 = perfect; 6 = excellent; 5 = good; 4 = moderate; 3 = weak; 2 = very weak; 1 = extremely weak.

Source: Annex U (Mangrove conservation in Myanmar).

**TABLE 4.11:
DESIGN AND PERFORMANCE SCORES FOR MITIGATION INTERVEN-
TIONS IN SIX COUNTRIES**

Intervention	Design	Impact	Effectiveness	Efficiency	Mean
All (n)	156 (35)	117 (28)	125.5 (30)	122 (29)	4.3
Mean	4.5	4.2	4.2	4.2	-

Scores: 7 = perfect; 6 = excellent; 5 = good; 4 = moderate; 3 = weak; 2 = very weak; 1 = extremely weak.

Sources: Annex H (Ethiopia), I (Indonesia), J (South Africa), K (Vietnam), T (Argentina), and U (Myanmar).

4.4 Noteworthy projects

Interventions that score in the extremes, whether high or low, are sources of lessons worth learning. But very weak projects tend to have obvious failings and the three worst in this sample, all in South Africa, have already been explained (see also Annex J). High-scoring, good-to-excellent interventions are more interesting. Some individual interventions stand out even in a preliminary desk study as being likely to score highly for design and performance, and five such were identified in the Inception Report. Their selection was thought likely to be biased towards an innovative and flexible response to targets of opportunity, however, which would tend to favour smaller projects.

Larger interventions have other challenges, with more ‘moving parts’ and more things to go wrong but may induce bigger changes. Box 4.1 profiles all 13 interventions that had a score for actual or anticipated mitigation effectiveness and/or a mean score for all features including effectiveness of at least 5.0 (‘good’) but omitting those with only a design score or with no actual or anticipated effectiveness score. Two of the best (based on design and anticipated effectiveness) were not among those included in the evaluation originally, being in Argentina and Myanmar, and they also added a city twinning and a mangrove ecomitigation theme that would not otherwise have been picked up.

Box 4.1:

Interventions with high actual or expected mitigation effectiveness scores

Argentina: City twinning (# 2020-14777, Sustainable Urban Development), Score 6 (anticipated). The twinning project for Copenhagen and Buenos Aires is based on stakeholders in both cities recognising each other's value in the three 'tracks' of the project: (a) EE in public buildings, (b) flood-risk management through socially- and ecologically-aware urban design, and (c) wastewater management for EE and energy capture through biogas and sludge combustion. It has clear ownership by the city authorities of Buenos Aires and addresses clear problems that can be solved locally. It is based on the transfer of technology and systems of proven excellence from Danish companies and the City of Copenhagen. It realistically envisions deliverables within three years to demonstrate cost savings, quality of life improvements and GHG emission reductions. The project started in 2020 but it has good potential for direct and indirect mitigation effectiveness, and strong replication potential.

Indonesia: ESP 3/3 LCD planning (#104.Indonesien.1.MFS.5, LAMA-I 15.6), Score 6. *Inception report note, confirmed by further study and multiple interviewees:* "This CE project focused on mainstreaming the consideration of mitigation priorities within national and local government development analyses and plans. Working with a consortium of technical institutions, it developed networks, knowledge and tools with which to improve participatory low-emissions development planning at district level in Papua and Sumatra, with potential leverage effects in many other provinces across Indonesia."

Indonesia: ESP 3/3 ecomitigation (#104.Indonesien.1.MFS.5, Harapan 13-6), Score 6. *Inception report note, confirmed by further study and multiple interviewees:* "This CE project in Indonesia focused on two Ecosystem Restoration Concessions (ERCs) in Sumatra, supporting efforts by NGOs with local people and governments to stabilise land use and enable regeneration in a forested landscape of high value for biodiversity, ecosystem services and carbon storage. It deferred emission of 10-15 million tCO₂e and pioneered an ERC system that potentially conserved hundreds of millions of tCO₂e more." A proposed road to facilitate coal export now threatens to reverse some avoided deforestation gains in the Harapan area (see map in Annex I), and to undermine the ERC system which depends upon legal guarantees of ecosystem security. It sharply accentuates the policy conflict between business as usual in Indonesia and the promises of successive Indonesian governments. But whatever happens now, the several million tCO₂e not released over the last 20 years at Harapan have been subtracted from the greenhouse effect, and Harapan will remain an effective ecomitigation investment and model.

Myanmar: Coastal forests, mangrove protection (# none), Score 6 (anticipated). The project is clearly designed, with conceptual and practical strengths, but some questionable assumptions may jeopardise the start. If communities can be motivated to participate fully, and to relax pressure on the mangrove for daily needs (e.g. fuel wood) quickly enough, the project would likely contribute over several years very significantly to increasing the environmental and livelihood security of local communities. If all goes well, at least 8,000 ha of mangrove forests will have come under protection by communities and the Forest Department, within which further degradation will be prevented and natural/assisted regeneration will be underway. By so doing, it could conserve (at a rate of over 1,000 t/ha) and sequester (at a rate of about 5 t/ha/yr) significant amounts of carbon. The key point is that carbon capture and storage within regrowing mangroves is rewarded so quickly and so visibly by enhanced fisheries productivity and environmental security that it offers an easily replicable (and even self-replicating) model for nature-based mitigation with adaptation and other co-benefits.

Vietnam: VNEEP (#5104.Vietnam.820: Vietnam National Energy Efficiency Program), Score 6. The main outputs of the VNEEP, which was designed and implemented by GoVN, were to include: a complete legal framework on EE and conservation; legal obligations and technical and managerial guidance to encourage and enable businesses to develop better EE models and to improve, upgrade and optimise the technology they use for energy saving and efficiency; and enhanced public awareness on EE and its integration into the national education system. Assessing effectiveness of the Danish contribution is hard because no separate or specific indicators were established or monitored, but it is likely to have helped get VNEEP off to a good start and might be able to claim a significant share of the 2011 to 2015 energy savings (several million tCO₂e), and some on-going impact and sustainability.

Vietnam: LCEE/DEPP 'I' (#104.Vietnam.820/2015-53518: Low carbon transition in the energy efficiency sector), Score 6. The LCEE project appears to be model case of bringing multiple convergent lines of applied knowledge, research, financial incentives, and technical assistance to bear in a sustained way on complex sectoral circumstances in order to induce systematic directional change. The challenge in such an approach is to sustain a balanced and focused input for long enough to make the change irreversible, which requires consistent policy support by all concerned for an extended period. These favourable conditions seemed to have been in place throughout the (extended) implementation period (2013-2017).

Vietnam: DEPP II (#Vietnam 2017-18831 DEA Partnership Programme), Score 6. This was designed to address weaknesses in policy, regulation, local implementation, capacity to integrate RE and incentives to promote RE and EE, using a flexible mix of policy dialogue, short-term TA, and supervised on-the-job and other training. The programme has helped Vietnam in various

ways, including forecasting RE sources for power plants and power system regulators. Recommendations on methodology, development of data sets, calculation tools and procedures, and a roadmap to amend the grid regulations to be implemented in the following years were all appreciated by GoVN stakeholders, as were TA inputs on the legal framework, management processes and tools, and training. The congruence of Vietnam's policy intentions with Danish expertise is likely to be moving the system in the right direction.

Indonesia: Mbeliling 1 & 2 ecomitigation (#104.N.445.b.2), Score 5.5. *Inception report note confirmed by further study and multiple interviewees:* "This focused on a weakly-protected forest in western Flores, supporting NGOs in efforts with local people and governments to stabilise land use and enable regeneration in a forested landscape of high value for biodiversity, ecosystem services and carbon storage. It deferred emission of 5-10 million tCO₂e, and was exemplary in building local understanding of, responsibility for, and ability to maintain ecosystems and livelihoods." Recovery and regeneration of the forest in the Mbeliling area was confirmed by remote imagery and detailed land-use and ecosystem mapping in 2006 and 2018 (Annex I).

Ethiopia: AWPGE Engagement 1: wind resource assessment (# 2016-9613: Accelerating Wind Power Generation in Ethiopia), Score 5.0. This erected wind masts to measure wind speed, with the data used to train staff and publish in a wind atlas to support wind power investments. It was designed by ESMAP and the documentation is comprehensive with a clear theory of change, risk assessment, links with broader engagements in the sector, and with clear management structures and proven reporting lines. Based on experience from other countries (e.g. South Africa/WASA 1), completion of the wind atlas is likely to contribute to increased interest in establishment of wind farms.

Indonesia: ESP 3/1 circular economy (#104.Indonesien.1.MFS.5), Score 5.0. This was indirectly relevant to Indonesian policy on improving the regulation of development planning to achieve clearer understanding of development choices in relation to their environmental consequences. Significant progress on strategic environmental assessment was reported at national level. A benign impact can be anticipated from promoting a more thoughtful approach to development, and supplying validation, skills and knowledge to encourage the mainstreaming of environmental awareness in thinking and planning. These are all early enabling measures for the design of a more sustainable economic system, which has strategic significance for the direction of travel of Indonesia and the goals of Danish interventions.

Indonesia: SSC Energy 1 & 2 Lombok (#2015-26760 & 2015-56019, Strategic Sector Cooperation on Clean Energy, Renewable Energy and Energy Efficiency), Score 5.0. The work in Lombok had reached the prefeasibility stage, in which specific technologies are considered for use in specific contexts. The *Lombok Energy Outlook 2030* had compared four scenarios in order to identify the most cost-efficient way forward for the power sector in Lombok. This showed that Lombok could achieve 58% RE by 2030, and the prefeasibility studies examined specific options for doing so, leading to a focus on biomass, solar PV, wind and waste incineration, with solar and wind the most economically viable projects but with significant co-benefits for incineration and biomass. Mitigation performance was expected to increase in Lombok from a 2016 to 2019 baseline of nil, but anticipated leverage and multiplier effects could not be estimated. The work also allowed the Sustainable Islands in Indonesia (SII) project to be developed with SSC Environment.

South Africa: WASA 1 (# 104.Sydafrika.76, Wind Atlas for South Africa), Score 5.0. *Identified in Inception Report.* Influenced by rapid growth in wind power investment in SA in 2008 to 2020, the desk study hypothesised a causal relationship with WASA. This was tested in depth and the actual relationship between events was found to be more complex than originally thought. Interviews revealed: that most wind energy developers had located their own sites for REIPPP round 1 auctions which occurred before the WASA 1 atlas had been published in full (although potential investors might have been aware of the WASA data stream well before then); but also, that local (and some international) wind developers used WASA to verify their own long-term wind energy assessments and, in later auction rounds, were steered to new areas with good wind resources. WASA probably also had unquantifiable effects on the financial credibility of wind investments, but the successful outcome of efforts to promote wind investments in SA ultimately depended on the REIPPP auction system. Thus, only some of the rapid progress in the sector is attributable to WASA.

Vietnam: REWS (# 104.Vietnam.30.m.137, Renewable Energy Water Supply, Mekong Delta), Score 5.0. *Identified in Inception Report.* The desk study found that the project demonstrated small-scale solar and wind technology for pumping community water, that it included monitoring of GHG emission savings, that the design and implementation arrangements were exemplary, the costs low, and the efficiency, impact and sustainability all high, and that it had strong replication potential. The field team found that the project had been implemented successfully with public support as water was delivered with less effort and cost than before, and many of the advantages of solar power remain despite improved access to grid power at low cost. Privatisation of water supplies and associated GoVN policy and incentives that effectively ended the use of groundwater had changed the project's context.

Sources: Annex H (Ethiopia), I (Indonesia), J (South Africa), K (Vietnam), T (Argentina), and U (Myanmar).

5. MAIN FINDINGS ON INSTITUTIONAL RELATIONSHIPS

5.1 Diverse roles in Danish mitigation strategy

Denmark often uses international organisations, CSO/NGOs and other actors for intervention delivery, in addition to government ministries and agencies. There are likely to be several reasons for this, notably:

- to harness the skills, interests, motivations and mandates of actors outside MFA in order to add value to the total aid programme;
- to off-load responsibility for some of the detailed decision-making (and therefore risk) involved in complex development circumstances;
- to fulfil various political mandates and pledges to support institutions that enhance Denmark's diplomatic influence; and
- to meet public expectations of support for popular causes.

Where budget allocations are made to institutions that have a mandate to involve themselves in the climate response, then they must be considered part of Denmark's mitigation portfolio and the performance of the recipients as mitigation actors is relevant. The following sub-sections describe a sample of the institutions that meet these criteria, and that are considered by MFA to be particularly significant actors in this field. The key role of the DEA was mentioned in Chapter 3 and is summarised further here based on Annex S.

5.2 The Green Climate Fund

The GCF is governed by a Board on which Denmark has a shared seat, held jointly with the Netherlands and Luxembourg (Annex L). The Danish Board member is drawn from the MFA and is advised by an official from MCEU, thus offering a means of coordination between the two ministries. The GCF secretariat is located in South Korea, where it has over 220 staff. By December 2020, the GCF had supported the development of 159 projects, with USD 7.3 billion of funding committed²⁰, of which Denmark had contributed DKK 400 million in 2014 and committed a further DKK 800 million in 2019 for 2020-2022. The second commitment was justified in part by the expectation that GCF investments would have resulted in emission reductions of more than 4.9 GtCO₂e by 2023 (Danida, 2021).

20 <https://www.greenclimate.fund/projects/dashboard>.

Among the GCF projects, 52 are labelled as mitigation interventions, with an additional 40 'cross-cutting' projects that have both adaptation and mitigation objectives. All GCF mitigation investment projects aim to have an impact within one or more of the following four 'results areas': energy; AFOLU; buildings, cities, industries and appliances; and transport. Seven mitigation projects aim to have an impact across two or more of these results areas, the remaining projects only one. Most projects support low-emission energy access and power generation, but since the 2019 Board's approval of a results-based REDD+ payment to Brazil²¹, there has been an increase in forest conservation projects, often involving similar REDD+ results-based payments.

There are six approved GCF mitigation projects that affect the four focal countries (Table 5.1), and these are characterised by:

- **large-scale funding:** the smallest GCF financial contribution is USD 25 million, with several projects receiving approximately USD 100 million of GCF resources;
- **co-financing:** all GCF projects bring in significant additional external finance to support project actions;
- **diversity of funding:** a range of financial instruments are used, including grant finance, concessional lending, equity and financial guarantees;
- **long-time horizons:** projects have expected project lifespans of ten to 20 years; and
- **private-sector involvement:** all implementing partners are either development or commercial banks, reflecting the potential role of the private sector in mitigation actions.

These characteristics set the GCF portfolio apart from the Danish bilateral programme and offer various potential added values. Like all GCF mitigation investment projects, those in the focal countries were required at preparation stage to estimate the carbon emissions to be avoided²². This is almost never done in Danish bilateral projects, and monitoring of emission effects is also rare among the projects reviewed.

21 <https://news.mongabay.com/2019/03/brazil-to-receive-first-ever-results-based-redd-payment-but-concerns-remain/>

22 In addition to its investment projects, the GCF operates a Readiness and Preparatory Support Programme that aims to build country capacity to access and programme GCF finance effectively. Support provided under this programme does not include the measurement of GHG baselines, recognising that support for strengthening the measurement of GHG emissions is delivered through the Paris Agreement's Capacity-Building Initiative for Transparency (<https://www.thegef.org/topics/capacity-building-initiative-transparency-cbit>).

TABLE 5.1: GCF-FINANCED PROJECTS AFFECTING THE FOUR FOCAL COUNTRIES

GCF name & number	GCF finance & co-finance (USD million)	MtCO ₂ e avoided	USD/tCO ₂ e implied
Universal Green Energy Access Programme (FP027), Sub-Saharan Africa	1.6 (grant) + 78.4 (equity) + 221.6 (co-finance) = 301.6 (total)	50.6	6.0
Arbaro Fund – Sustainable Forestry (FP128), Sub-Saharan Africa (part)	25.0 (equity) + 175.0 (co-finance) = 200.0 (total)	20.0	10.0
Indonesia Geothermal Resource Risk Mitigation Project (FP083)	92.5 (grant) + 7.5 (loan) + 310.0 (co-finance) = 410.0 (total)	112.2	3.7
Climate Investor One (FP099), Indonesia (part)	100.0 (grant) + 721.5 (co-finance) = 821.5 (total)	53.7	15.3
Embedded Generation Investment Programme (FP106), South Africa	100.0 (loan) + 437.0 (co-finance) = 537.0 (total)	14.1	37.3
Scaling up Energy Efficiency for Industrial Enterprises (FP071), Viet Nam	11.3 (grant) + 75.0 (guarantee) + 410.9 (co-finance) = 497.2 (total)	120.0	4.1

Source: <https://www.greenclimate.fund/projects>, accessed 25 August 2020.

As an operating entity of the Financial Mechanism of the UNFCCC, the GCF has a key role in facilitating implementation of the NDCs through which developing countries often express a need for funding beyond their own resources. The total of all such estimated needs amounts to some USD 1.2 trillion annually, of which only about 21% is being met from current public and private sources (IEU, 2019: 189). Even allowing for some over-reporting of estimated need, it is clear that the GCF remains small in terms of the total volume of mitigation finance required, and this helps explain a strong interest in using GCF funds to leverage private mitigation investment wherever possible.

Denmark made an early decision to support the creation of the GCF and has been a constant supporter. Opportunities for political influence come from Denmark's seat on the GCF Board, aided further through collaboration with the like-minded Netherlands and Luxembourg, and often amplified by common positions with the Nordic group (the four Scandinavian countries plus Finland) and other developed countries.

5.3 The Energy Sector Management Assistance Programme

Since 2005, Denmark has provided support to the operations and targeted programmes of the World Bank's Energy Sector Management Assistance Programme (ESMAP; Annex M). By 2017, its total allocation of DKK 208 million comprised DKK 10 million per year in 2005-2013, plus DKK 29.5 million per year in 2014-2017, or about 12.6% of ESMAP's disbursements over that period. Part of Denmark's contribution in the last six years has been in the form of a Junior Professional Officer (JPO) and after that a secondment, both providing access to Danish experience on energy efficiency.

Since 2016 there has been rapid growth in ESMAP's engagement and effectiveness in shaping World Bank investments in favour of RE investments, including geothermal (especially through risk mitigation), offshore wind, solar power and energy storage. There is now also an active focus on mitigation impacts, including the monitoring and reporting of GHG emission savings. By ensuring that each investment is pre-approved as being in line with policy on reducing GHG emissions, and then tracking and reporting their effects, ESMAP now has four years' data showing rapid growth in RE generation capacity and some emission savings. The latter are erratic due to major variance in hydroelectricity generation and changes within the huge Chinese economy. ESMAP does not have specific emission targets for its portfolio, but this reporting of emission savings suggests increasing awareness of 'lifetime MtCO₂e' measurement which should facilitate decision-making that accelerates decarbonisation.

There are two main sources of mitigation effectiveness open to ESMAP, which come from the opportunity to sharpen (through special technical focus) and amplify (through supportive policy dialogue) the World Bank Group's impact in the areas of RE and EE as part of its general climate response, and to invest in specific projects that might be expected to contribute to reduced net GHG emissions. Both areas involve working with partner governments in support of their efforts to put the ambitions expressed in their NDCs into practice through specific programmes of investment.

These effects are very likely to exist at a scale, and the 12.6% of ESMAP's funding contributed by Denmark has certainly contributed to them. Interviewees offered two main ways to assess this contribution:

- First, in terms of **size of contribution**, Denmark is a significant donor and so can claim an equally significant share of ESMAP's impact.
- Second, in terms of **extent of influence**, Denmark is an active member of the ESMAP Consultative Group and has had a 'moderate-to-strong' influence on ESMAP's business planning and strategic priorities. On some issues, Denmark has helped shape decisions – for example against further ESMAP support for gas-to-power investment; it has also been a significant

advocate of energy access (SDG 7) investments, it played a key role in the Climate Action Summit, and its representative has had an influential role in deliberations on climate, gender, and fossil-fuel subsidy reform.

Thus, in conclusion, Denmark has made an important and valued technical and financial contribution to ESMAP's ability to advance the clean energy transition globally through its convening power and influence as a World Bank partnership²³. As the world moves quickly, under new conditions of near consensus among major nations, towards a global 'net zero emission' commitment pathway, the need is to build on and accelerate progress in all areas of the transition. Ways for Denmark to respond to this opportunity with maximum cost-effectiveness exist and should be explored further.

5.4 The International Energy Agency

The International Energy Agency (IEA) was established under the auspices of the OECD in 1974, during the 1973-1974 oil price crisis. It was founded by OECD members that included Denmark (Annex N). Its initial purpose was to help shield members from the effects of oil-price volatility, but it later deepened its collaboration with other countries through an association programme. As it has grown and reflecting more diverse interests of its members and changing international priorities, the IEA has become an international forum for energy co-operation on issues such as security of supply, long-term policy, information transparency, energy efficiency, sustainability, research and development, technology collaboration, and international energy relations.

Danish support to the IEA comes through the Climate Envelope and is coordinated by MCEU. Along with all other IEA members, Denmark sits on the Governing Board, the main decision-making body, where it is represented by MCEU. The Board meets four times a year to provide strategic and political guidance and to deliver on the mandates given by the IEA Ministerial meeting that takes place every two years and in which the Minister of MCEU participates. In addition, DEA represents Denmark in some of the various IEA Committees and Working Parties.

As well as two smaller activities (the IEA-China Energy Cooperation Centre and the Clean Energy Ministerial Secretariat, each of which received DKK 7 million in 2016-2019), Danish support targets the Clean Energy Transition Programme (CETP), and within it the flagship Energy Efficiency in Emerging Economies Programme (E4P) and several wind and solar initiatives in emerging economies.

Efforts since about 2013 by some of its members, especially Denmark, the UK and the Netherlands, resulted in IEA shifting its focus from oil, and in 2015 (under a new Executive Director) it accepted new priorities oriented towards a broader view on energy supply, demand and technologies, a wider global

23 ESMAP partners include Austria, Canada, Denmark, the European Commission, Germany, the Netherlands, Norway, Sweden, Switzerland, Spain, the UK, and the Rockefeller and Climate Works foundations (<https://esmap.org/donors>)

engagement, and a clearer focus on clean energy. This coincided with the Paris Agreement, and since then IEA has increasingly engaged with developing and emerging-market countries by providing technical support and training through programmes on energy planning and storage, integration of RE, and EE policy development. In recent years, it has also focused on environmental protection and the climate change response. It still has a major role in energy security, including through stock-piling, but now also through improvements to trade, efficiency, transparency, and diversification of inputs from RE.

Interviewees responded to criticisms by NGOs and others that the IEA had reacted too slowly to the Paris Agreement, by noting that IEA only undertakes analyses requested by its members. This tends to conceal rapid progress, but most IEA member states now aspire to achieving net-zero emissions by 2050, and interviewees observed that if countries were to seek assurance that their policies will deliver net zero, then IEA could provide that assurance by testing sector by sector against objective standards and conditionally certifying the result. This could be extremely helpful in promoting the clean energy transition, and interviewees stressed that IEA stands ready to respond to such requests from its members, an opportunity to which Denmark could respond.

The IEA's work, particularly CETP, is in line with Denmark's strategic priorities and with the aims of SDG 7 and SDG 13. Going forward, IEA interviewees stressed that there is now a critical mass of policy support among its members for all measures through which to reach net zero emission targets, including the clean energy transition. The IEA is responding to this, for example through their close partnership with the UK as president of the UNFCCC CoP 26 in Glasgow. There is a need for greater engagement by all members, however, and untapped potential for IEA to coordinate among the countries and internationally. Thus, there seems ample scope for Denmark to work with IEA members and the agency itself to induce further rapid change.

5.5 The Investment Fund for Developing Countries

The Investment Fund for Developing Countries (IFU) was established by the Danish government in 1967, and in 2019 had DKK 4.2 billion in equity from the Danish national bank guaranteed by the state (Annex O). It offers two types of investments: direct investments in project companies in the form of share capital and loans; and indirect investments in private equity funds (up to 20% of portfolio value), which act as fund managers and invest in projects on behalf of IFU and other partners. In 2018, the Danish SDG Investment Fund was launched as a public-private partnership between the government, IFU and institutional investors (mostly pension funds). The Danish Climate Investment Fund (DCIF) was a precursor to the SDG Investment Fund, but solely focused on climate relevant investments.

In addition, Danida Sustainable Infrastructure Finance (DSIF) was set up by the Danish Government in 1993 to offer financing on favourable terms to developing countries for 'sustainable infrastructure' projects that would not otherwise be commercially viable. Since September 2017 it has been managed

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on behalf of MFA by a team inside IFU, but the strategic framework and the authority to allocate funds to individual projects remains with the MFA. DSIF had several previous names, most recently and until January 2020 Danida Business Finance (DBF). A DBF (now DSIF) grant is mentioned in Section 4.3, in relation to the Assela Wind Farm Project (AWFP) in Ethiopia. There the point was made that the size of the DSIF grant to AWFP made it extremely prominent within the mitigation portfolio.

DSIF financing is not part of the climate response, however, being earmarked for infrastructure and resourced in different ways, so the AWFP should probably have been excluded from this evaluation at inception. The evaluation reached this conclusion even though the project was designed to overcome a barrier to investment in energy diversification without excessive GHG emissions, which is fully in line with the goal of enabling countries to meet their energy needs in low-emission ways. But AWFP does represent a theme in overall Danish mitigation-relevant investment, regardless of funding source, so it can be used to explore the relative mitigation value and cost-effectiveness of different kinds of investment (see Annex E).

Returning to the IFU itself, its Sustainability and Impact Report (IFU, 2019: 8-9), based on its sustainability and climate policies, confirms the following commitments and key performance indicators (KPIs) in support of relevant SDGs:

- For SDG 7 (clean energy), "Increasing the share of climate-relevant projects like renewable energy, energy efficiency and climate adaptation to at least 40 per cent of IFU's portfolio by 2030" with the two KPIs of (a) "Installed capacity of renewable energy sources and expected GHG savings during lifetime", and (b) "Share of direct investments that have measures to reduce energy consumption."
- For SDG 13 (climate action), "mobilising climate-relevant private investments to support developing countries' transformation to low-carbon and climate-resilient pathways by leveraging substantial financing to mitigation and adaptation projects", with the KPI of "Number of contracted climate investments."

These commitments would be expected to be leveraging significant mitigation impact, and an evaluation (MFA, 2019a) found that IFU investments had contributed to mitigation, but without specific baselines, targets, measurements and value-for-money calculations these effects could not be quantified. Interviews in October 2020 confirmed that IFU is increasingly investing resources in the design phase of its investments, so as to ascertain direct GHG emissions and sustainable benefits, while also undertaking holistic analyses to guide sustainability and impact efforts. Approval processes now include presentation of full baselines including GHG emissions, and implementation phases will include monitoring of impact and outcomes.

This is made necessary partly by international standards that require large companies to measure their emissions, and the lessons from IFU's attempts to comply with those standards may be relevant to other public mitigation actions. The evaluation concluded that IFU is building a capacity to consider, analyse,

predict and prioritise its investments in line with climate emergency priorities. It therefore has the potential to make a valuable contribution to meeting climate mitigation ambitions.

5.6 The Sustainable Energy Fund for Africa

SEFA was set up at the AfDB in 2011, in response to findings of the Danish-initiated Africa Commission (Annex P). It offers grants, interest-free and concessional loans, and arrangements for equity participation. The initial Danish contribution was DKK 300 million for five years (2011-2016), to provide technical assistance and concessional finance for renewable energy projects, including some that were too small to attract AfDB loans, but which could attract the interest of a private equity fund, with the additional aim of achieving 'proof of concept'. By the end of the first Danish input, having attracted multi-donor support, SEFA had 45 projects in 25 African countries. An external review in 2018 found *inter alia*: that by supporting project preparation in fragile states, SEFA was filling a crucial gap in facilitating private investment for countries that would otherwise have no access to this; and that SEFA preferentially directed enabling support to green mini-grids, which are considered to be the most feasible approach to delivering progress on SDG 7. But it also found that EE projects were under-represented in the portfolio, and that the multi-donor agreement lacked a results framework.

By 2019, SEFA had donor commitments of USD 126 million and a portfolio of 60 active projects for a total of almost 700 MW in new RE capacity with over USD 1.7 billion invested. It had also been re-constituted as a Special Fund ('SEFA 2.0') and had begun a 10-year strategy to attain SDG 7 throughout sub-Saharan Africa, with a new Danish commitment of DKK 300 million over three years (2019-2022) from the CE. It now has three focal areas: (a) *green mini-grids*, to accelerate energy access, (b) *green baseload*, to increase the penetration of renewables, and (c) *energy efficiency*, to optimize energy systems and reduce energy intensity. The AfDB has robust tools for estimating GHG emissions, and these are now expected to be used routinely since emission reductions are one of four core indicators of SEFA 2.0 investment performance. Thus, SEFA is a case where Danish leadership led to a mitigation-relevant effort that far exceeds the reach of one bilateral donor. It can be seen as a model for Danish engagement in which a sustained commitment creates opportunities to build a durable coalition of development actors that can have impact at a regional scale.

5.7 Verdens Skove

The *raison d'être* of Verdens Skove (VS) is to prevent damage to forest ecosystems and harm to forest-dependent peoples (Annex Q). Evaluations of VS in 2015 and 2018 confirmed its credentials as a capable, experienced and professional NGO with a well thought-out theory of change, a dedicated and motivated staff, and a strong membership in Denmark. Interviews drew attention to the following highlights of VS' work with indigenous peoples in Latin America:

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- **On indigenous territories and avoided deforestation**, the parts of the Bolivian Amazon where indigenous territories received community land titles with Danida's and VS's help are often now green islands in a sea of new soya plantations. This, supported by other evidence from Perú and Brazil, strongly suggests that indigenous territories are the *only* effective governance mechanism able to withstand deforestation under modern conditions in the Amazon. Emissions avoided by Danish-funded land titling here are thought to equate to about 4 Gt of carbon in biomass and 80 Mt of carbon absorbed annually (Theilade, 2020).
- **On indigenous territories and co-benefits**, actions that benefit indigenous peoples are likely to have a disproportionate effect on relieving poverty, since they comprise 6% of the world's population but 15% of the world's poorest people. Also, secure indigenous territories are at least as effective as national parks at protecting biodiversity and natural forests²⁴. Interviewees made the point that biodiversity, forests, indigenous interests, poverty and climate change mitigation are inseparable, and that global mitigation targets cannot be met without halting tropical **deforestation**.
- **On promoting indigenous territorial security**, opportunities for this have grown with ubiquitous smart-phones and the availability of satellite-assisted georeferencing, surveillance and carbon density mapping to support community planning and monitoring. The combination of highly-motivated and networked indigenous communities, new technology, modest financial support per unit area²⁵, and technical cooperation with NGOs and universities to document impact and support informed dialogue can be very effective in resisting deforestation pressures.

Annex D presents evidence that mature tropical forests contain large amounts of carbon (usually in the 100-1,000 tC/ha range), that they absorb several tC/ha/year during regrowth after disturbance, and that avoiding deforestation can be a very cost-effective way to prevent the release of GHGs at scale, often with immediate effect, and with abundant co-benefits. This supports the VS approach that sees mitigation as a co-benefit of protecting indigenous land rights, forest biodiversity and livelihoods. The evidence suggests that the long-term indigenous partnerships through which VS works, and its community-based conservation, education and empowerment projects in tropical forest areas are strong sources of mitigation effectiveness. Thus, VS and its allies among indigenous associations and in the academic and NGO communities have much to offer the sustainable development and climate response agendas.

24 For examples, see: Nepstad *et al.* (2006); Porter-Bolland *et al.* (2012); Schleicher *et al.* (2017).

25 A cost of about USD 0.26/ha/year for two years is reported for community monitoring of the 500,000 ha Prey Lang Wildlife Sanctuary in Cambodia (Theilade *et al.*, in press), and a cost of about USD 1.00/ha/year is reported for effective community protection of 6,200 hectares of forest in the Monteverde indigenous territory of Bolivia by Bosques del Mundo (2019); these reports are consistent with reports of local communities mounting very effective forest monitoring and protection activities with very modest levels of external support in many countries (e.g. Danielsen *et al.*, 2013; Brofeldt *et al.*, 2015, 2018).

5.8 The NDC Partnership

The NDCP was launched at UNFCCC CoP 22/2016 in Marrakech by a coalition of countries, institutions, and non-state actors, led by Germany and Morocco (Annex R). Denmark joined and contributed DKK 5 million in 2016-2018, DKK 9 million in 2018-2020, and DKK 35 million in 2020-2022 (Danida, 2020). The latter contribution was justified on grounds that include shared priorities, opportunities for Danish climate diplomacy to encourage governments to increase the ambition of their NDCs, and the potential for promoting a 'whole of government' and 'whole of society' approach to NDC enhancement. A Danish secondment to the NDCP Support Unit, using earmarked funding, was proposed in Danida (2020) to facilitate such synergies.

Now with 180 members and providing mainly web-based advisory services in more than 50 countries, the NDCP has the twin goals of accelerating the implementation of NDCs and of raising their ambition. Its work is facilitated by about 20 technical staff at an NDCP Support Unit which has branches at two host institutions: the World Resources Institute (WRI) in Washington, DC, and the UNFCCC Secretariat in Bonn, Germany. It is guided by a Steering Committee which comprises *ex officio* members of UN Climate Change and WRI, representatives of developed and developing nations and international institutions, and is currently co-chaired by Costa Rica and the Netherlands.

5.9 The Danish Energy Agency

The DEA was established in 1976, in response to the 1973 to 1974 oil crisis, and mandated to work with Danish research institutions in finding ways to diversify the energy sector (Annex S). In addition to North Sea oil and gas development, this had the effect of stimulating research and development on RE, and also the exploration of commercial and other opportunities in the areas of energy efficiency in buildings, homes and industry, and district heating, resulting in much innovation and the growth of a large export industry based on relevant applications and specialist knowledge. The possession of such expertise generates significant export earnings and puts Denmark at an advantage in a world that is now urgently investing in RE technologies. This in turn has encouraged the idea that Denmark should focus on promoting RE/EE as its primary contribution to GHG emission reductions worldwide.

The DEA is a specialist agency under MCEU and has diverse responsibilities, which include tasks linked to energy production, supply and use, including the economic optimisation of water, waste and telecommunications utilities, as well as for Danish efforts to reduce carbon emissions. As the technical agency responsible for orchestrating the Danish energy transition on behalf of government, DEA and its growing staff of more than 500 is the key knowledge holder in this area. It has an important role in offering its energy sector expertise to other countries, in association with other technical institutions in Denmark, such as Energinet and RISØ/DTU.

MAIN FINDINGS ON INSTITUTIONAL RELATIONSHIPS

By 2008, when the Climate Envelope was established, the DEA had already developed a capacity for international engagement by offering a broad array of technical services including negotiation support and on feed-in pricing, energy statistics, and publications, maps and analyses. DEA continued this international theme, first through stand-alone projects and then a portfolio of 3-5 year country programmes that are now packaged as DEPPs, of which the latest version is the 2020-2025 DEPP III in China, Vietnam, South Africa and México (MFA & MCEU, 2020b), and a similar programme (IndoDEPP) in Indonesia (MFA *et al.*, 2020). These later initiatives are beyond the evaluation's scope.

DEA is now responsible for 16 partnerships with high-, middle- and low-income countries. These responded to requests by the governments concerned, usually made because they saw value in one or other kind of RE that suited their national circumstances (e.g. onshore wind in Ethiopia, offshore wind in India, district heating in Turkey). It was stressed by DEA interviewees that it is not possible to advise a country on any of these in isolation, without also addressing issues across the energy sector, including policy, law, markets, finance, capacity building and technology. The result is that DEA's partnerships involve supporting governments in becoming 'choice aware' in many areas of energy sector reform and development. Facilitating economy-wide political and system change is a demanding task, however, and is likely best done in a fully integrated way led by the Danish representation each country, which *inter alia* has responsibility for understanding the political economy of the systems that are being targeted.

It is noted that the parts of the evaluated budget under DEA management were a small share of the total budget in all the focal countries apart from South Africa (Section 4.3b). This geographic and time sample is of course unrepresentative of the full and growing scope of DEA partnerships worldwide. It is also noted that the DEA-managed SSC interventions tended to perform relatively well (Section 3.2). Furthermore, the DEPP III programme document (MFA & MCEU, 2020b) expresses a more sophisticated awareness than is seen in earlier materials of issues such as how to deliver and assess capacity building, and the need for inception phases to ensure adequate adjustment to local conditions. DEA interviewees emphasised that this responds to lessons learned from past engagements and the recommendations of past reviews (such as MFA, 2019b).

6. ANSWERING THE EVALUATION QUESTIONS

6.1 Evaluation Question 1: Mitigation effectiveness

Documenting emission reductions

EQ1 asks for an assessment of the main results of Danish mitigation funding. Insights on mitigation effectiveness rely on evidence that supports the conclusions and summary scores presented in Chapter 4, which offers a large volume of detail but few simple messages. Among them are the primary importance of alignment with strong, stable and rational government policies; adaptive agility in the face of changing circumstances and institutional priorities; trusting those who have reliable knowledge and skills in the relevant context; and the political economy and political ecology²⁶ analyses needed to identify policies worth aligning with, changes that must be adapted to, and groups worth relying upon.

As described in Section 2.3 and elsewhere, evidence on mitigation effectiveness was sought through signs of 'technological', 'ecological' and 'capacity building' change that were likely to lead to reduced GHG emissions. The first two were expected to be more likely to result directly in emission reductions, while the last is inherently more indirect. Evidence of quantitative emission reductions is summarised in Table 6.1, and that for mitigation-relevant capacity change is summarised in Table 6.2. Both reveal patchy design and performance when judged against the purpose of reducing GHG emissions at some point in the short-, medium- or long-term future.

26 Political economy concerns relationships between political and economic processes, and the distribution of power and wealth. Political ecology concerns relationships between ecological and social processes, and the distribution of environmental costs and benefits. Both also concern processes of change and resistance to change, and hence historical and cultural patterns within each society.

**TABLE 6.1:
EVIDENCE FOR GHG REDUCTIONS ATTRIBUTABLE TO PROJECTS IN THE FOCAL COUNTRIES**

Intervention	Evidence for attributable GHG emission reductions
Ethiopia:	
SCIP (2012-2016)	None plausibly documented.
GATE (2014-2018)	2018 report claims 0.025 MtCO ₂ e sequestered by agriculture but with unclear attribution to Danish support. No baseline or monitoring for forestry mitigation.
AWPGE (2017-2020)	No baseline or monitoring.
CRFL (2018-2023)	No baseline on carbon stocks. Too early for monitoring.
AWFP (2020-2025)	Predicted mitigation effect: 175,890 tCO ₂ annually at full operation.
SESC (2020-2023)	None estimated.
Indonesia:	
ESP 1 & 2 (2005-2012)	None sought or documented.
ESP 3 (2013-2018)	ESP 3/1: none sought or documented. ESP 3/2: some expected in Central Java from pilot RE projects. ESP 3/3: avoided deforestation effect (10-15 MtCO ₂ e) ascribed to the Harapan project; major indirect effects anticipated through ERC system; significant LCD effects from LAMA-I.
Mbeliling (2007-2015)	Ground and remote baselining and monitoring (2006 vs 2018) of ecosystem extent and integrity confirmed avoided deforestation and reversed degradation, equivalent to securing 5-10 MtCO ₂ e plus regeneration absorption and numerous social, economic and biodiversity co-benefits.
SSC Energy 1 & 2 (2016-2021)	None at national level, some expected in Lombok from pilot RE projects.
SSC Environment (2018-2022)	Some potential, but the programme was just starting out.
Sustainable Island Initiative (2020-2023)	Waste and RE-related emission targets, but no baseline and monitoring arrangements. Significant potential, but the programme was just starting out.
South Africa:	
EE housing project (2003-2018)	No monitoring of any possible saving in GHG emissions.
Smart meter project (2012-2014)	No delivery and project cancelled.
WASA 1 (2009-2012).	A significant contribution to wind RE development but GHG emission reductions were not estimated, predictively modelled or tracked.
DEPP 'I' & II (2013-2020)	Raised the profile of SA as a wind energy location, and built Eskom capacity to integrate RE, but no emission consequences were estimated.
Vietnam:	
VNEEP (2009-2013)	Direct effectiveness is estimated at almost 12 million tonnes of oil equivalent (ca 38 MtCO ₂ e), and a Danish claim of some share of this is plausible.
LCEE/DEPP 'I' (2013-2017)	A total of 63 EE investment projects received loan guarantees or awards, with avoided emissions of over 230,000 tCO ₂ . Another 90 or so EE investment projects were indirectly attributable to LCEE, with each USD invested estimated to have saved about 0.17 tonnes (170 kg) of CO ₂ emissions.
DEPP II (2017-2020)	The design includes as an impact indicator the number of tCO ₂ e reduced, but no baseline or monitoring arrangements are described.
REWS (2011-2014)	The intention was to document emission reductions for educational use, but these could only have been small and there was no evidence that it was done.

Sources: Relevant annexes in Annex H (Ethiopia), I (Indonesia), J (South Africa) and K (Vietnam).

Among the institutions surveyed, Verdens Skove and GCF have long sought to document the GHG emission reductions associated with their work, and IEA, IFU and SEFA started to do so more recently. Among the interventions in the focal countries, however, and even in the energy sector where quantification might be expected, there has been little baselining or monitoring of predicted or actual emission reductions.

Documenting capacity building effects

Turning to the issue of 'capacity building' – in this context, enabling institutions in complex transitional processes to do better at modelling, forecasting, regulating and developing policy relevant to strategic mitigation – the findings are again mixed (Table 6.2). There are some noteworthy interventions in Indonesia and Vietnam that are also listed in Box 4.1, but variations on the phrase "did not include institutional capacity assessments, gap analyses, individual skills assessments, or ways to monitor changes in capacity and skills" often occur. Since this is both important and easily correctable it is among the most useful findings going forward. It is also clear, however, from Table 6.2 and other sources (e.g. Annexes C and K), that later SSC and DEPP III interventions seem to have learned and are applying these lessons.

**TABLE 6.2:
EVIDENCE FOR MITIGATION-RELEVANT 'CAPACITY BUILDING'
ATTRIBUTABLE TO PROJECTS IN THE FOCAL COUNTRIES**

Intervention	Evidence for attributable mitigation-relevant capacity building effects
Ethiopia:	
SCIP (2012-2016)	(a) "While there have been measurable changes in capacity, there remains a serious gap in the government capacity." (b) Some of SCIP supported projects included baseline studies (e.g. projects implemented by two national NGOs)." (c) "In all the SCIP sub-projects a lack of time inhibited capacity transfer, sustainability and influence." (d) "The EFCCC benefited from SCIP support to develop the capacity of climate change negotiators for the country."
GATE (2014-2018)	(a) "There is a plan to undertake the baseline assessment which requires an additional five months and to improve the skill gap on MRV, [but] the planned training was not organized and delivered due to lack of an earmarked budget ... According to the CRGE Facility, the skills gap on MRV ... also existed at the EFCCC." (b) "The attempt to engage EFCCC as a key stakeholder during the development of the GHG accounting framework was not successful [and its] development appears to have been constrained by a lack of communication between government agencies."
AWPGE (2017-2020)	"There were no institutional capacity assessments, gap analyses, individual skills assessments, or ways to monitor changes in capacity and skills."
CRFL (2018-2023)	"[A reason to expect sustainability is that] results include activities that enhance the capacities of local government entities and communities as well as regional and federal entities".
AWFP (2020-2025)	"Certification of staff training during construction (to allow for transferability to other employment) was not planned but is being considered by IFU and embassy."
SESC (2020-2023)	"The project document lacks an institutional capacity assessment, individual skills assessments, a capacity gap analysis or capacity goals, and nor does it include staff development plans. All these tasks are part of the inception work during the first half of 2020, however, for which results were not available to the evaluation. The capacity building online training modules have started."

ANSWERING THE EVALUATION QUESTIONS

Indonesia:	
ESP 1 & 2 (2005-2012)	"Enabling measures have been put in place through Components 1 and 2 that could exert growing influence over an extended period, albeit inhibited by patchy government interest and a corporate reluctance to adopt new approaches."
ESP 3 (2013-2018)	Component 2: "Capacity development was presented to be a 'learning by doing' approach, to be integrated into each pilot/demonstration activity on a case-by-case basis. Effective knowledge transfer is an important element of the component support strategy; this includes both horizontally (across local governments within the target provinces) and vertically (upwards to national level). Irrespective of approach, capacity building must be managed and monitored in order to generate a conscious internally-reflected process leading to changed action. Absence of reflective monitoring workshops or reports leaves little evidence for this evaluation to comment on the outcome." Component 3: (a) 'LAMA-I was evidently highly effective in mainstreaming the mandatory consideration of mitigation priorities within national and local government development analyses and plans, and in building capacity and developing the networks, knowledge and tools with which to do so.' (b) "An important if unintended result of the Harapan project is that it is now seen as a centre for learning about conflict resolution and management practices. This results from the success of PT. REKI and Burung Indonesia in addressing encroachment through trust building and government recognition for social forestry managed by indigenous communities and transmigrant community groups. In its role in alliance with nine other ERCs in the Ecosystem Restoration Working Group, it has also been influential in shifting KLHK policy towards the licensing of multi-purpose forest functions including protection and sustainable forests resource production, and away from a conventional timber concession model."
Mbeliling (2007-2015)	(a) "The project was fundamentally about good governance and paid exemplary attention to GESI. All appropriate elements of a potentially-effective CBNRM process-project were designed for and put in place, but ... the fact that the project area is unconflicted has been remarked on; in many places, years of conflict resolution and consensus building would be needed before anything else can be done. Another point is that even in this project there was a weakness in mobilising full government support." (b) "The West Manggarai District Government also constitutes a recipient of benefits, especially associated with policy recommendations or programs generated by the project, as well as from capacity building for government staff."
SSC Energy 1 & 2 (2016-2021)	(a) "Interviews suggested improved energy planning capacity of the provincial government as a result of energy planning modelling training and involvement in the development of Lombok Energy Outlook, and ongoing process of development of the Lombok energy technology catalogue. There is reporting of a number of workshops on what seem to be relevant subject matters and interviews confirmed that the participants appreciated the training. There is no clarity if the capacity is now in place, what capacities have improved or are lacking." (b) "The overall effectiveness of the national-level partnership is certainly weaker than in Lombok, but a small advisory partnership with central institutions in a large and complex country is bound to work slowly. SSC Energy 2 is the latter part of an engagement on EE and RE dating back to 2007, during which both EE and RE have improved (slightly) in Indonesia but attributing these changes to ESP or SSC Energy is not possible."
SSC Environment (2018-2022)	(a) "Interviews in 2020 confirmed that the following activities took place: (a) workshop on waste management as part of capacity building and knowledge sharing; (b) discussion on SSC Environment program activities in Lombok that narrowed down to masterplan of waste management in NTB province and pre-feasibility study on Waste Management for Lombok. It is easy to see how this could add up to making a difference over time, but impacts are potential at present." (b) "Perhaps on the understanding (in an Indonesian context) that 'capacity building' means training, interviewees stressed the importance of not only capacity building, but also assistance in on-the-ground projects that aimed at real emission reductions."
Sustainable Island Initiative (2020-2023)	"Local government sees high relevance of the partnership with DEA and DEPA in assisting the local government with capacity building in improving knowledge and skills. Belmorel modelling and Technology catalogue were mentioned as useful for them. Lombok Energy Outlook was mentioned as a useful learning process. Almost all of the capacity building activities were conducted by consultants and experts assigned by the Embassy (DEA and DEPA team), including the Pre-Feasibility study to develop the biomass (rice bran) based power generation and waste to energy (WtE) model. Reports suggest significant capacity building effects."

South Africa:	
EE housing project (2003-2018)	"There was no attempt to build capacity among installers of solar water heaters, the designers of houses or the regulators of house construction."
Smart meter project (2012-2014)	"The project was stopped before it could produce any results and no capacity building actions were implemented."
WASA 1 (2009-2012).	"There is ample evidence of sustained knowledge sharing between RISØ-DTU and South African institutions. The project also contributed to building capacity among local private developers and investors."
DEPP 'I' & II (2013-2020)	(a) There was no evidence of an assessment of institutional weaknesses, of plans to address them, or of the outcomes of training or other measures to correct them." (b) "Component 2 seems to have enhanced collaboration between South African and Danish wind research institutions." (c) "As with DEPP ['I'], there is no evidence of DMRE institutional weakness assessments or agreed capacity transition plans at institutional or individual level in DEPP II."
Vietnam:	
VNEEP (2009-2013)	"The nationwide EE network described by MFA (2011a: 6) implies a major capacity building need, and since the same source observes that 'Both components also comply with the priority of capacity building of Vietnamese human resources' (p. 5), it can perhaps be assumed that capacity building was adequate to meet GoVN expectations and requirements, even though the same source also remarks (p. 8) that weak capacity among GoVN bodies is still a widespread problem. Interviews provided no information to change these statements."
LCEE/DEPP 'I' (2013-2017)	"The capacity building process seems well conceived and delivered, but its value in terms of impact would depend upon an assessment of legacy effects, and without baselines, targets and monitoring of capacity change it is hard to justify excellence."
DEPP II (2017-2020)	"Interviews described TA training and internships as very practical and useful in the areas of wind and solar power modelling and managing the Vietnamese power system in the context of sky-rocketing growth in RE resources. Efforts were made to ensure that short-term missions were requested by the partner institution and that staff were available to work with the Danish partners."
REWS (2011-2014)	"Demonstration and education effects seem to have been warmly responded to by villagers at 99 communes in 13 provinces. Interviews confirmed that all systems are still working indicating that operation and maintenance training has been sufficient to secure sustainability. To excel the capacity building could have been linked with National Trainings and integrated into a national curriculum thus ensuring a long-term capacity in country to further develop maintenance of the pumps."

Sources: Relevant annexes in Annexes H (Ethiopia), I (Indonesia), J (South Africa) and K (Vietnam).

Strategic effectiveness and the Climate Envelope

It is notable that the strongest evidence of GHG emission reduction effects at a strategic level, whether in 'technological', 'ecological' or 'capacity building' terms, seem to be associated with programmatic activity: the ESP phase 1-3 and SSC series in Indonesia and the VNEEP-LCEE series in Vietnam (and possibly the GATE-CRFL series in Ethiopia). This case is strengthened by recognising that some high-performing projects only received Danish support *because* of the existence of a national programme (e.g. Harapan/ERC, Mbeliling and LAMA-I in Indonesia, LCEE in Vietnam). This is probably because knowledge of local conditions, contacts and close relationships with decision makers lead to better targeting and stronger influence, amplified by the growth of skills and choice awareness among partners. In the energy sector, evidence for highest performance was seen in the more specific and focused engagements, such as the wind atlases in South Africa and Ethiopia, grid integration in South Africa and Vietnam, EE investments in Vietnam, RE pilots in Indonesia, and district-level actions in Indonesia.

Finally, the impact of the Climate Envelope on mitigation effectiveness is a topic of interest here in three ways: first, in whether it changed the purpose or volume of mitigation funds allocated; second, in whether it affected the institutional architecture of mitigation action by Denmark; and third, in whether changes to purpose, volume or architecture had any effect on the design or performance of mitigation actions. The answers to these questions follow.

- **No**, the existence of the Climate Envelope made no difference to the overall volume of mitigation spending, the total of which was more than halved for reasons of political priority during the evaluation period, and most of which in any case occurs outside the Envelope.
- **Yes**, although the Climate Envelope monitoring framework was neglected, and mitigation funding declined, its existence changed the architecture of the mitigation response, as intended, by enabling increased involvement of the MCEU/DEA in overseas aid activities in the energy sector (see Section 5.9).
- **Yes**, the expansion of DEA's partnerships with developing countries within its thematic areas of modelling/planning, framework conditions for RE, and integration of RE and EE, all of which have connections to policy, law, markets, finance, capacity building and technology (Section 5.9), places great demands upon DEA's capacity to deliver on the resulting expectations.

6.2 Evaluation Question 2: NDC responsiveness

EQ2 asks primarily for an assessment of how responsive the Danish portfolio has been to the mitigation aims and needs defined by developing countries in their NDCs. This can only be answered for the sample of focal countries. It can first be observed in general terms that the NDCs articulate and consolidate the thinking of governments that is typically already embedded in government policy. They tend not to be presented in actionable or bankable form (as also noted by IEA and ESMAP interviewees), and few if any new promises are made that are not already considered feasible. Moreover, all are hedged by governments reserving the right to amend the details as needed, often according to their development partners' willingness to spend.

This is all to be expected, since the NDCs are markers in an experimentalist process of learning and peer competition, prepared by governments that are cautious about making pledges and may be resistant to calls to do more against a common threat for which they do not feel responsible. The result is that the NDCs state a general goal of reducing the rate of increase of GHG emissions, or capping them in absolute terms, to which Denmark subscribes, and list various sectoral measures designed to achieve that goal, among which Denmark chooses to support some of them more than others. This is similar to the position on the SDGs, which donors and governments divide up and advance selectively. The outcome, again as might be expected since assessing relevance is the first step in project design and approval, is that there is usually strong alignment between Danish activities in a country and some of its NDC priorities.

However, there is also the more forward-looking issue of encouraging and enabling countries to articulate much greater levels of mitigation ambition within their NDCs. Here there is the context of a global move towards zero net carbon emission commitments (see Sections 5.3 on ESMAP, 5.4 on IEA, 5.8 on NDCP, etc.), which developing countries may wish to join or do their best to contribute to. The logic above suggests that this requires governments to undertake the studies and policy discussions needed to assure themselves that higher ambitions are feasible and not harmful to their own interests. Denmark can help by validating the expectation of higher ambition in policy dialogue, and offering TA and support for the research, modelling and consensus building necessary to raising ambitions as high, as quickly, and as practicably as possible.

EQ2 also asks whether support has targeted countries with significant emissions and the ambition to greatly reduce them. The national emissions of the four focal countries in 2016 rank as 6th (Indonesia), 16th (South Africa), 27th (Vietnam) and 38th (Ethiopia) in the world, although other targets among Denmark's mitigation efforts, which were not closely examined, include DEPP arrangements with China (1st), India (3rd) and México (12th). Across the countries that received support from Denmark for climate mitigation actions in 2013-2018, there are a number of cases where significant commitments were made in countries with limited current emissions (and likely limited emission reduction potential). These include Afghanistan, Burkina Faso, Kenya, Mali and Uganda. Where Danish mitigation support is provided in such situations, the expected co-benefits need to be clearly demonstrated in the prior justification to commit mitigation funding.

Of the focal countries in this evaluation, Indonesia and Vietnam intend to reduce the rate of growth of their emissions so as to achieve significant reductions relative to future BAU scenarios; in Vietnam this implies a near-doubling of absolute emissions, but in Indonesia it could represent an absolute decline, albeit one that depends upon success in bringing deforestation and land degradation under control, plus meeting RE targets, both of which are uncertain at present. Meanwhile, Ethiopia and South Africa are proposing to cap their national emissions, Ethiopia at the current level and South Africa at a plateau rather higher than at present before declining. All of these aims are hedged, and all depend on intricate networks of change in several sectors at once (agriculture, forestry and domestic wood fuel in Ethiopia; electricity, agriculture, transport, buildings and industry in Vietnam), or complex and contingent changes in dominant sectors (electricity in South Africa, LULUCF in Indonesia).

EQ2 further enquires whether the focus on RE and EE in the Climate Envelope should be changed or expanded in favour of other ways to reduce net emissions. This invites consideration of:

- (a) the chief way in which the CE has had a practical effect, which is to encourage and enable the DEA to establish very quickly ambitious energy sector partnerships with other countries; and
- (b) alternative or additional strategies that might add mitigation effectiveness to the whole portfolio if endorsed by the CE (and other policy levers) and properly implemented.

On the first issue, the DEA's defined scope of work is within the four thematic areas of modelling/planning, framework conditions for RE, and integration of RE and EE. These are broad and strategic enough to have put DEA into a new role vis à vis other national governments. Thus, DEA partnerships with 16 countries that generate over 60% of global GHG emissions, and that enable policy dialogue, are a hugely important resource for mitigation influence. They put Denmark in an exceptional position to offer useful technical support to other countries that wish to decarbonise their economies by rapidly expanding their RE supply and EE capacity. Specific strengths and weaknesses were found in the past portfolio, with indications of improvement in later interventions.

On the second issue, successful Danish efforts to avoid deforestation and encourage ecosystem regeneration with the participation of local and/or indigenous communities have a long history and a distinguished record of achievement in reducing emissions quickly, while generating abundant co-benefits in the form of biodiversity, water, adaptation and environmental security. The value and potential of such nature-based solutions in mitigation (and adaptation) investment is well recognised, along with the scale of need and opportunity in this area^{27,28,29}. Including the conservation of high carbon-density ecosystems as a priority of the CE would therefore be appropriate. But this should be supported by greater 'choice awareness' among options for allocating investments, using realistic models that give proper attention to the amount, timing and cost of alternative ways to deliver mitigation value delivery and co-benefits.

The evaluation found few cases where project activity had leveraged direct private investment, the Assela Wind Farm Project in Ethiopia, the IFU portfolio and the city-twinning project with Argentina being exceptions. At the

multilateral level, SEFA, GCF and ESMAP are involved in raising private capital for mitigation investments. The Danish mitigation portfolio as a whole is able to tap into highly specialised financial instruments, including subsidy mechanisms, that can help attract private investors to mitigation projects in low-income developing countries. This continues to be an area that warrants collective action by Danish agencies, provided that caution is used to ensure that public subsidies are truly necessary in each case, in view of the changing global investment

27 "The big picture: 2 billion ha of degraded land (800 M ha of forest), affecting 3 billion people and costing USD 300 billion annually. Need to restore 300-400 M ha to keep global warming to <2°C" (www.forestlivelivelihoods.org/wp-content/uploads/2016/12/Harrison_Rhett_P.pdf).

28 "The Bonn Challenge is a global effort to restore 350 million hectares by 2030. With Cameroon's commitment, the Challenge has reached over 148 million hectares pledged in total. Deforestation and land degradation are among the biggest contributors to GHG emissions globally, and the Bonn Challenge pledge brings Cameroon closer to its national goal of cutting carbon emissions by 32% by 2035." (www.environmentnigeria.com/cameroon-restore-12m-hectares-forest-congo-basin/).

29 "We show that natural climate solutions (NCS) can provide over one-third of the cost-effective climate mitigation needed between now and 2030 to stabilize warming to below 2 °C. Alongside aggressive fossil fuel emissions reductions, NCS offer a powerful set of options for nations to deliver on the Paris Climate Agreement while improving soil productivity, cleaning our air and water, and maintaining biodiversity." (www.pnas.org/content/114/44/11645).

environment (e.g. in favour of RE), and to ensure that mitigation funds are used in the best possible way for mitigation purposes.

6.3 Evaluation Question 3: Transformational change

EQ3 asks: (a) to assess the extent to which Danish mitigation funding has contributed to 'global' or 'green' transformational change and the SDGs, in ways consistent with Danish comparative advantages, and using opportunities to influence global agendas for climate action; (b) to explore the choice of partner institutions involved in Danish mitigation action; (c) to examine and if necessary propose improvements to the theory of change for mitigation actions as developed in 2015 to 2016; and (d) to seek options beyond business as usual for contributing to global transformational change.

The Inception Report explored what 'transformational change' might mean in principle and to the people who designed and implemented Danish mitigation actions in the focal countries and partner institutions. It touched on the ideas of: *energy transition* (i.e. "transformation of the global energy sector from fossil-based to zero-carbon by the second half of this century"³⁰), *energy-plus transition*, which acknowledges that energy is only part of the mitigation picture, so the energy transition is only one objective of mitigation funding; and *green growth*, which is an aim descended from the idea of sustainable development. It allows for economic growth in ways somewhere between 'careful conventional growth' and 'system-wide paradigm shift', the latter based on wholly new technologies, exchange relationships, and economic tools. Some who commented on the draft report took the additional view that to qualify as transformative, changes must occur at whole-country scale or beyond, rather than in a subnational region.

The evaluation took transformation to mean induced change in economic and ecological factors in an area, at whatever scale is meaningful in context, so that a more sustainable relationship arises among people and between people and nature. To transform a complex system (such as a country, province or district) even in this way, however, requires a particular concentration of informed insight and design effort, appropriate technical input, trust and influence, adequate resources relative to the tasks at hand, and consistent purpose sustained over time³¹. Danish interventions often seem under-resourced relative

30 www.irena.org/energytransition, a schedule pre-dating awareness of mid-century global tipping points

31 This approach is consistent with Recommendation 5 of the adaptation study (PEMconsult & ODI, 2020), which calls for a programmatic approach to transformation, informed by the political economy context and working with international partners, civil society, the private sector and local government.

to the ambition of achieving transformative change³². As a result they seldom achieve it except where Danish interests happen to coincide with a deeper direction of travel and therefore push at a barrier that had already been partly opened by other actors or influences. In these cases, small investments can induce remarkably significant change, putting a premium on understanding underlying trends and their causes during the processes of intervention identification and design.

Several cases were found where Danish interventions were helping to build potentially transformative mitigation-relevant outcomes, often with the support of institutional partners. These focus on:

- the Harapan story in Sumatra since 2008 (Box 4.1) and the linked ERC story in the outer islands of Indonesia (Annex I³³);
- the Mbeliling story since 2007 in Flores, Indonesia (Box 4.1; Annex I³⁴);
- the linked SSC Energy 2, SSC Environment and SII stories in Lombok, Indonesia (Box 4.1; Annex I);
- the wind RE/integration story since 2009 in South Africa (Box 4.1; Annex J);
- the wind RE/integration story since 2017 in Vietnam (Annex K and DEA, 2020);
- the Danida/Verdens Skove indigenous territories-based avoided deforestation story since 2008 in Bolivia (Section 5.7 and Annex Q); and
- a cluster of partnerships where Danish engagement has been responsible, in collaboration with like-minded stakeholders, for lifting or shifting a major institution onto a new and more mitigation-relevant path, including ESMAP since 2016, IEA since 2015 and SEFA since 2011 (Sections 5.3, 5.4 and 5.6 and Annexes M, N and P respectively).

32 See page 14 of the adaptation study (PEMconsult & ODI, 2020): "Making a significant contribution to the transformation towards a climate resilient economy has been challenging to achieve with the resources available to Denmark. Such change is highly dependent on committed national and local leadership in partner countries. The most promising potential for transformation appears when Denmark has adopted a programmatic approach that responds to national incentives."

33 See also: www.cbd.int/doc/meetings/ecr/cbwecr-2014-04/other/cbwecr-2014-04-presentation-day2-06-en.pdf; www.forestlivelihoods.org/wp-content/uploads/2016/12/Harrison_Rhett_P.pdf. It is recognised that the Harapan project itself is now threatened by factors beyond its control, as is the whole ERC system, but there are nevertheless grounds for appreciating past successes, hoping for better days, and learning useful lessons

34 See also: www.birdlife.org/worldwide/news/rural-housewives-mother-guards-forest; www.birdlife.org/worldwide/news/indonesias-sustainable-candlenut-farms-lighting-candle-innovation.

In a year or two it might also be possible to tell good contribution stories for the Buenos Aires/Copenhagen city twinning project, and also the mangrove conservation project in Myanmar (Box 4.1 and Annexes T and U respectively), if the 2021 military coup and subsequent disturbances in Myanmar do not derail the process.

Transformations require a number of things to come together in the right way. These always include good ideas, local leadership and appropriate technologies, but often also credible and prestigious international advocacy, effective governance and participation, and financial resources. Any one or a combination of these might be limiting, and where financing and international advocacy are the constraints, the involvement of multilateral actors can be extremely helpful. The evaluation has highlighted Danish contributions to multilateral or multisectoral actors that have the capacity to add great value by inducing action at scale. They include several of those described in Chapter 5 (e.g. GCF, ESMAP, IEA, SEFA, IFU), but others are engaged in mitigation-relevant programmes in the World Bank and other IFIs and have not been captured in this evaluation.

Two EQ3 supplementary questions are not addressed above: on options beyond business as usual³⁵ for contributing to global transformational change; and on possible modification of the theory of change for mitigation actions. All following text should be considered as addressing the first, which is both strategic and open-ended, while Table 6.3 highlights some additional factors that might be added to the overall 'change pathway'³⁶, described by LTSI (2015), in light of the findings of this evaluation.

35 The latest Emissions Gap Report claims that "the term 'BAU' has fallen out of favour because the idea of 'business as usual' in century-long socioeconomic projections is hard to fathom." (UNEP, 2020: ix).

36 The Climate Envelope uses a 'theory of change' based on assumptions, activities/ outputs, outcomes, impacts and goal. This differs from the 'theory of change' approach used in Annexes H-K, which is based on a clear statement of expectation supported by a chain of causality comprising plausible assumptions and strong links between them. To avoid confusion, the idea of a simple 'change pathway' is used here.

TABLE 6.3: COMPARING THE 2015 AND 2021 CHANGE PATHWAY ASSUMPTIONS

Strategic assumptions	2015 Evaluation (LTSI, 2015)	This evaluation (2021), as to the left plus:
Principles of Danish climate change support:	<ul style="list-style-type: none"> Provides a clear and coherent strategic framework that allows for smart partner selection and activity programming. Promotes activities that have a clear demand among partners and end beneficiaries, based on consultation, co-development. Targets its funds at activities that support the international agenda on climate change, whilst ensuring that they are new and additional. Has effective procurement and programming processes that result in efficient transition from design to implementation. Uses its institutional and budget structures to disburse funds and technical assistance in a timely manner. 	<ul style="list-style-type: none"> Responds to UN leadership in recognising the urgent need for transformative mitigation action and the need to promote a 'global net zero by mid-century' pathway. Values a balanced and integrated portfolio of interventions that collectively demonstrate short-, medium- and long-term advantages for mitigation, adaptation and co-benefits, and systemic preference for earlier and larger mitigation effects over later and smaller ones. Develops and applies techniques for assessing and comparing cost-effectiveness of climate investments holistically, so that mitigation, adaptation and all co-benefits can all be factored into decisions within a balanced aid portfolio.
Activities to Outputs	<ul style="list-style-type: none"> Managed and resourced in an efficient way. Uses logframes, indicators, targets and results frameworks to monitor and manage project outputs. Builds relationships with relevant stakeholders to facilitate project implementation and uptake. Effectively exploits synergies with other Danish structures and programmes (e.g. Global/Poverty Frame, country programmes). 	<ul style="list-style-type: none"> Uses Theory of Change-based design for all interventions by clearly stating expectations (at evaluation tested for clarity using logic and language), supported by a chain of causality comprising transparent assumptions (at evaluation tested for plausibility using reason and knowledge) and strong links between them (at evaluation tested using evidence and inference). Makes decisions on mitigation investments that are 'choice aware' in terms of balance between early and later gains, the kind, scale and likely beneficiaries of co-benefits, and the overall cost-effectiveness of climate impact.
Outputs to Outcomes	<ul style="list-style-type: none"> Successfully mobilises external finance, technology and expertise to support delivery (both Danish and non-Danish). Supports wider Danish development assistance aims and seeks to find synergies with relevant programmes and structures. Selects the most effective interventions to achieve outcomes, using theory of change processes and feedback loops. Delivers outcomes that can be attributed to Danish inputs at a level higher than its pro-rata share of finance. Is able to achieve transformative change that delivers longer term outcomes once project funding is disbursed. Uses diplomacy to influence the wider policy and financing debate among donors, IFIs and national governments. Builds the evidence base for demonstrating the potential for effective action. Impacts the lives of beneficiaries beyond those directly engaged by the programme portfolio. Uses ex-post monitoring and on-going situational analysis to assess wider impacts. 	<ul style="list-style-type: none"> Adopts an explicit commitment to participatory planning, partnership and capacity building with stakeholders. Stresses training of embassy staff and collaborating personnel in standardised, climate/biodiversity design principles and priorities. Defines transformative change in terms of relationships between people and between people and nature. Makes an explicit commitment to baselining and monitoring effects on GHG emissions and all co-benefits identified by knowledge holders and by stakeholders (including a 'citizen science' approach). Makes an explicit commitment to baselining and monitoring effects on capacity building and institutional enablement with respect to tasks needed for the climate response, including sectoral and whole-economy modelling, scenario building, knowledge management, planning, policy development and regulatory design. Makes an explicit commitment to networking and knowledge sharing among stakeholder groups within and between developing countries.
Outcomes to Goal	<p>Developing countries achieve low carbon, climate resilient and socially inclusive growth (LTSI, 2015).</p> <p>Developing countries achieve low-carbon, climate resilient development and are able to implement the Paris Agreement (MFA & MCEU, 2016).</p>	<p>Mid-century climate breakdown is postponed to buy time for other mitigation strategies to take effect and for adaptation efforts to preserve SDG values against climate chaos, while preserving as much as possible of biological and human cultural diversity as resources for the future.</p>

6.4 Evaluation Question 4: Lessons learned

Lessons learned from projects and programmes

A number of lessons can be gleaned from the project and programme experience in the focal countries and elsewhere. While none will hold true in all circumstances, they can provide useful hints for those considering whether and how to invest in mitigation. One is that strategic success is most likely to come from alignment with strong, sustained and rational government policies (e.g. CRGE in Ethiopia, NTP-RCC, VNEEP and wind power in Vietnam, REDD+ in Indonesia, REIPPP in South Africa). Understanding the policy environment and its vulnerability to political interference requires sensitivity to complex political economy factors.

In the same way, there needs to be an agility to adapt to changing circumstances and institutional priorities, and hence a need to understand the causes of change. And it can also be very helpful to be able to identify and trust people or groups that have credible knowledge and capacity in the particular environment concerned. Several of the more effective interventions in Indonesia were planned and implemented by highly-motivated people who understood local ecology and society, and how the two fitted together. The quality of all these kinds of understanding can make a great difference to the rate of progress and eventual outcomes, and in practice often comes down to the capacity of Sector Counsellors and other staff of the embassies and the Danish institutions upon which they can call for advice.

Finally, the portfolio review (Chapter 3) was based on financial commitments to mitigation actions, and these were not explicitly linked to project activity. The information system maintained by MFA on international climate mitigation project and programme activity falls far short of those that are published online by several global climate funds (e.g. the GCF) and is not adequate to support reporting of, or analysis and learning from, the results of Danish mitigation efforts. A more effective management information system with learning and referencing capability is needed, the value of which would increase through maintenance and use over time.

Lessons learned from institutional relationships

Several kinds of institutional relationship are found among the examples reviewed here, which blend into each other, so the following categories are rather arbitrary.

- **Acquaintance** describes those where support is rationalised by diplomacy, public relations, and a general sense of common purpose. This could apply to a great number of potential arrangements in which MFA simply adds its name to a list of donors, and many presumably lie among the institutions that were not identified for review here.
- **Involvement** describes relationships where there is a persistent alignment of interests ranging from moderate (e.g. **NDCP**) to strong (e.g. **GCF**), and

where at the stronger end of the range Denmark's participation in board meetings and networking with like-minded countries allows the shaping of certain policies (e.g. in the case of GCF and its indigenous peoples policy).

- **Leverage** describes arrangements where there is an ambition to harness the organisation's own contacts and machinery to amplify effects beyond what the donor could achieve on its own. Here Denmark's leadership role and/or strong financial support guarantees the harnessing of the organisations' own capacity to mobilise incremental responses among their own clients. These include **SEFA**, **ESMAP** and **IEA**, but also **IFU**, in which MFA has influence as a major donor to several managed funds and controlling powers with respect to at least one of them. In such cases the relationship allows far more resources to be spent on MFA priorities than it could arrange on its own.
- **Partnership**, being marked by the partners exchanging diverse resources (money, influence, ideas, support, policies, capabilities, etc.) in a transparent, intimate and fully conscious way over an extended period, in order for both to become better at doing what they both want to do. The only unquestioned case of such a partnership in this sample is that with **Verdens Skove** in 2008 to 2015.

The relationship with **DEA**, being a technical arm of a Danish ministry, is unique and cannot easily be fitted into this scheme. It is also confounded by the role of DEA being an agency of one of the managing partners of the Climate Envelope itself. In any case, none of these different kinds of relationship are necessarily 'better' in all ways or for all purposes than the others. The pertinent question is not 'which is best?', but rather 'what would help ramp up Danish mitigation efforts most effectively and most quickly?' Here it would make most sense first to decide what exactly Denmark is aiming to achieve and by what preferred means.

Thus, in general terms, Denmark might decide to focus its mitigation funding on A and B, which could be anything, but a realistic choice might have A standing for 'building capacity for choice awareness in mitigation strategies', and B for 'conserving high carbon-density ecosystems' (or something more specific in each case, like 'integrating wind power', or 'conserving tropical forests' in partner countries). Having defined A and B, Denmark would be in a stronger position to target the institutions where it has most influence, leverage and control, and to guide resources to where they should be going according to its own analysis and settled policy.

There are also opportunities for Denmark to focus on issues where collaboration with intergovernmental institutions might be strategically vital. These could include, for example, working with ESMAP to help countries model and plan their transitions to net zero outcomes, and with IEA to support the testing of sectors against objective standards on emission reduction, so as to provide assurance that national policies will actually deliver net zero outcomes. These suggestions arose from recent ESMAP and IEA sources,

showing how the 'global net zero' idea is rapidly gaining traction at an international level.

Meanwhile it may also be useful to consider how the institutions evaluated already match the approaches and themes of the mitigation interventions reviewed here. This is done in Table 6.4, from which can be seen:

- that the distribution of support is strongly oriented to the energy sector;
- that among those supported, the GCF is the only multilateral institution and VS the only civil partner that are strongly promoting ecological mitigation;
- that several institutions support both technology and enabling approaches; and
- that none of the institutions support the kind of south-south-north linkage represented by the SSC Buenos Aires/Copenhagen city cooperation project.

TABLE 6.4: MATCHING MITIGATION APPROACHES AND THEMES WITH INSTITUTIONAL PARTNERS

Mitigation approach/ theme	GCF	ESMAP	SEFA	VS	NDCP	DEA	IFU	IEA
Ecological/climate-smart agriculture	✓			✓				
Ecological/community-based forestry	✓			✓				
Enabling/national LCD planning		✓			✓	✓		✓
Enabling/sub-national LCD planning	✓	✓		✓	✓	✓		
Enabling/energy policy		✓	✓			✓		✓
Enabling/city twinning								
Technological/RE solar	✓	✓	✓			✓	✓	✓
Technological/RE wind generation	✓	✓	✓			✓	✓	✓
Technological/RE wind integration	✓					✓		✓
Technological/RE various	✓	✓	✓			✓	✓	✓
Technological/energy efficiency	✓	✓	✓			✓		✓
Technological/waste management	✓	✓	✓					

Source: Annexes L-S.

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7.1 Changing mid-century climate outcomes

Quality, quantity and timing

The mean design quality and performance scores of the whole mitigation portfolio sampled here are above global average (see Section 4.3). There are areas where high performance was judged likely to translate into strong mitigation effectiveness, but weaknesses were also observed. The latter include projects, programmes and partnerships where goals were too wide to be achieved in a reasonable time-frame, or where political economy analyses were inadequate to support good design or flexible implementation. Correcting these systematically would contribute to a steady increase in mean scores, but a more actively goal-driven strategy than this is called for in view of the climate emergency identified by the UN and many others.

Findings and lessons learned from Chapters 3-6 lead towards answering the final sub-question under EQ3. In effect, this concerns how Danish skills and resources can best contribute to altering mid-century climate outcomes while staying true to enduring Danish values. This calls for a strategy that is explicit in its goals as well as being *balanced*, in combining actions that offer short-, medium and long-term climate and co-benefit solutions in multiple sectors and locations, and *effective* in achieving and leveraging maximum reductions in GHG emissions against a global, time-bound, net zero goal³⁷.

Some of this can be done bilaterally, using special Danish strengths in technological, ecological and enabling methods of mitigation, specifically by helping countries to install clean energy systems, to conserve high carbon-density ecosystems, and to become more choice aware and capable in planning their low-carbon development (LCD). But most must be done multilaterally:

37 As reviewed by the Danish Council on Climate Change (<https://klimaraadet.dk/en/nyheder/new-report-assesses-governments-climate-effort-and-provides-recommendations-how-meet-70>) several countries, including Denmark, have established legally-binding deadlines (2050 for Denmark) for reaching net zero GHG emissions. The EC is strongly encouraging other countries to do the same, calling for net zero emissions by 2050 and a halving or more of emissions by 2030. Similar goals were announced in late 2020 by China, Japan and South Korea, and in January 2021 by the USA. Such deadlines require a 'target-consistent' approach. They use time-bound limits to replace the 'social cost of carbon' approach and are based on an estimate of what is needed for the limit to be complied with. This requires planners to work backwards from their legal deadline, setting carbon prices and other incentives and rules that are consistent with the time-bound emissions limit. Net zero targets refer to 'territorial' or 'production-based' emissions, however, and not 'consumption' emissions from the manufacture, growing and shipping of imported commodities. In 2017, Denmark had 35 MtCO₂ in territorial emissions but 53 MtCO₂ with consumption emissions added. According to interviewees at the Ministry of Environment and Verdens Skove, the 18 MtCO₂ difference was partly accounted for by imported soy and palm oil produced via tropical deforestation

indirectly by coordinating actions to maximise synergy, and by demonstrating solutions that others can replicate; and directly by working with like-minded governments and intergovernmental and nongovernmental institutions to promote strategic change. The latter can be done both generally through participation, diplomacy and core funding, and in targeted ways by offering Danish expertise on particular mitigation themes, or by requesting particular services to fill gaps in the planning, delivery, assessment and assurance of net zero development pathways for all.

The last paragraph seems to present an impossible list, yet these are all things that Denmark has to some extent been doing over the last decade. Apart from the fact that some of the specific actions can be and are being improved, what is different now is that there is an almost-complete consensus in favour of global net zero as an over-arching organising principle. One important reason for this is the newly-appreciated factor of a potential mid-century climate breakdown due to Arctic, equatorial and oceanic tipping points (Annex E). This helps to clarify why it is so important to achieve the 1.5°C Paris Agreement temperature limit and has added a new level of urgency to making effective and strategic mitigation investments.

Net emissions due to human activity are now more than 50 GtCO₂e annually, so meeting this challenge requires a focus on quantity and timing. To change outcomes, mitigation effects must quickly subtract many GtCO₂e per year. The need for such deep emission cuts implies that each investor should consider how to do most, both cost-effectively and with maximal co-benefits and minimal co-costs. Each investor would then need to share their knowledge with others, so that overall improvements can occur at scale. But does this mean that the GHG savings expected from every investment should always be calculated and compared in quantitative terms? Not necessarily so, since some of the most important elements of any mitigation strategy fall into the general category of 'capacity building', and estimating emission consequences of better modelling, planning, policy development and regulation can only be done in an indicative way. Moreover, many of the co-benefits of mitigation investments can only be listed, not measured.

Opinions differ as to whether it is useful to attempt to go further on quantification. This evaluation stresses the potential utility of measuring emissions where feasible, and reports that baselining, predicting and monitoring emissions are seldom done in practice (Table 6.1). It also reports, however, that baselining, predicting and monitoring capacity building are likewise seldom done in practice (Table 6.2). The Climate Envelope Guiding Principles exempt projects that involve "policy reforms, institutional frameworks and capacity building" from the need to use quantitative, emissions-based indicators (Box 3.1). Yet the financial, economic and social consequences of new policies and regulations are routinely estimated by government planners and independent bodies³⁸, and there is no reason in principle why this cannot be done for GHG emissions.

38 Examples include the UK's Office for Budget Responsibility (<https://obr.uk/about-the-obr/what-we-do/>) and Denmark's own Economic and Environmental Economic councils (<https://dors.dk/english>).

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But in any case, the Guiding Principles do not exempt project designers from using other kinds of evidence to help explain the expected direct or indirect effects of policies and regulations on emissions. The evaluation considers this necessary to making a defensible case for mitigation funding.

Two other points can be made about improving knowledge management within the Danish mitigation portfolio. The first is that the meaningful reporting of performance requires fully-described baselines, statements of expected mitigation consequences, and arrangements for monitoring against those baselines and predictions. Effective ways for describing baselines, anticipating consequences and defining milestones are therefore needed. This suggests the need for a review of existing procedures and for guidelines, supported by policy and technical advice (including research to reduce uncertainties), to enable project designers to build the necessary processes into their designs.

The second point is that knowledge generated by improved design, monitoring and reporting would need to be managed effectively for accountability and learning purposes, a conclusion also reached by the adaptation evaluation and the DCCC and NAO studies. To respond fully would require existing internal information systems across MFA and MCEU to be strengthened so that all mitigation-relevant projects can be quickly identified and analysed at the project and portfolio level, with a public portal where this information can be accessed by all interested parties. A response is already underway at MFA, which is making urgent efforts to improve the tracking of results within a framework known as 'doing development differently', including better monitoring of development assistance programmes.

Co-benefits, co-costs and cost-effectiveness

Important potential co-benefits of ecological mitigation actions include biodiversity, ecosystem services and environmental and water/food security, and adaptation in the face of inevitable and increasing climate chaos. The list continues for technological and 'capacity building' actions, through all the other SDGs, crucially including decent employment and good governance. And there are also co-benefits and opportunities available through existing relationships in all three areas but most relevantly in the last two for Denmark, which has achieved an influential position in the energy sector in a number of countries, the value of which it is hard to over-state.

The basic rationale for engaging in the energy sector is to encourage and enable countries to choose lower-emission pathways than they would otherwise do in meeting their soaring energy demands. It is a correct approach but being one that often yields medium-term (3-7 year) and long-term (8-12+ year) results, short-term, high-impact investments in mitigation and co-benefits are also required, by Denmark and others, to make it viable. After all, 12+ years from 2021 will take us to 2033 or later, by which time the worst consequences of runaway climate change may no longer be avoidable.

This makes it important to be aware of timing and co-benefits in considering the merits of different potential mitigation strategies. Annex D reviews the evidence for there being immediate and large mitigation opportunities in protecting and

restoring high carbon-density ecosystems. Some of Denmark's most effective mitigation investments have involved working directly with local communities and indigenous peoples, and indirectly with governmental and non-governmental partners, to secure forest land rights and stabilise land and forest use by local people in their own domains and in their own interests³⁹. Since the ecosystems concerned are largely species-rich and often endemic-rich tropical forests, with large numbers of people dependent upon their natural goods and services, they often also meet many co-benefit criteria.

The whole approach of working with ecosystems and local people is often described as seeking 'nature-based solutions', these being applicable to mitigation *and* adaptation since the resulting benefits are often consequences of each other. Many of the Danish successes in this area lie in the past, a result of policy shifts and aid cutbacks during the 2010s. Given its importance in responding to the global climate and ecological emergency, however, and its necessary role in balancing the Danish mitigation portfolio and responding to public opinion, it would be right to consider resurrecting the ecomitigation theme within Danish programming. This could be done bilaterally and multilaterally, with non-governmental partners, and/or indirectly through influence and knowledge-sharing with other actors. There are many ways forward, but all require the complexities of nature-based solutions to be understood, and the advantages of the approach, both quantifiable and qualitative, to be appreciated.

Annex E further explores issues of timing and cost-effectiveness in mitigation investment. It starts with the idea that earlier mitigation gains are likely to be more valuable than later ones, in terms of precautionary efforts to avoid climate breakdown in the middle part of this century. To help choose between potential investments, it proposes estimating the physical mitigation value (in tCO₂e) to be expected from each, and then converting them into 'dated mitigation values' (tCO₂edmv) according to when they will happen, in order to capture the significance of a mid-century deadline, while also highlighting co-benefits for various stakeholders. It then compares three model cases, based on examples within the evaluated portfolio: an 'avoided deforestation' case, a 'renewable energy' case, and a 'capacity building' case.

While accepting the uncertainty in such calculations and making no claim that the models represent all aspects of each approach, the indicative results in Annex E do offer useful signals. In short, modelled in this way, the three approaches have quite different implications for when valuable emission gains

39 See page 14 of the adaptation study (PEMconsult & ODI, 2020): "Community-level interventions were in general effective at targeting and empowering vulnerable people and led to improved climate resilience and livelihoods. ... Underlying factors that were found influential for improving climate resilience and livelihoods included: a focus on community empowerment, capacities, institutions and participation in decision-making; engagement with key actors at the sub-national level, including community-based organisations, civil society organisations and local governments; facilitation of dialogue and cooperation among different stakeholders in the public and private sector; linking to livelihoods and income streams and; engaging in ecosystem-based approaches and natural resource management."

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are likely to be received, and also their quantity at unit cost. In these models, using the assumptions specified in each case:

- **'avoided deforestation'** delivers large, early and cumulative but uncertain gains at moderate cost, with one set of co-benefits (biodiversity, etc.);
- **'renewable energy'** delivers moderate, cumulative and certain gains slowly at high cost, with another set of co-benefits (employment, etc.); and
- **'capacity building'** delivers very uncertain but potentially very large gains slowly but at low cost, perhaps with yet other co-benefits (green growth, etc.).

All, therefore, represent kinds of investment that offer distinctive advantages to a mitigation portfolio that must make sense in the short, medium and long term, including quick solutions that buy time for strategic change to occur, and attention to biodiversity and other crises that are also underway. The analysis in Annex E therefore aims to raise 'choice awareness' in the design of a more complete mitigation strategy.

Implications for the Climate Envelope

Domestically, the institutional architecture for mitigation is undergoing rapid change. According to multiple interviewees, high levels of cooperation are being developed among the MoE, MFA, MCEU, MoFAF and EVM, all seeking a comprehensive and coherent whole-government, all-sector mitigation approach in line with the new long-term climate strategy. A question which therefore arises is that if the climate response is to be the responsibility of the whole government, put into effect across the national budget and all economic sectors, will there remain a role for the Climate Envelope as a specialised mechanism for funding international climate-specific activity?

Several points are relevant here. First, although climate and biosphere science can now inform a sense of urgency and guide many decisions, key discoveries are still being made, crucial gaps in knowledge are known to persist, and the reasoning and evidence to support choices among mitigation options still lack firm foundations. The position is worse for adaptation, where even basic principles and how to apply them in different circumstances are still being debated⁴⁰. These uncertainties are in tension with the need to respond urgently to a known global threat. The simultaneous needs for systemic change and rapid improvement in targeting and delivery require that solutions demonstrate transformational, lesson-learning and knowledge-sharing impact across the technological, ecological and enablement themes.

40 See page 13 of the adaptation study (PEMconsult & ODI, 2020): "Climate change adaptation opportunities and challenges were insufficiently understood and underestimated, in part because they were highly situation specific, complex and subject to uncertainty, low levels of capacity among partners and wavering levels of political support at country level. These effects combined to weaken and complicate efforts to both mainstream climate change adaptation through ongoing development cooperation programmes and/or engage directly with climate change specific projects." Also its Recommendation 3: "Gain greater clarity over what climate change adaptation is." Also Caldecott (2021).

These points imply that the Climate Envelope could have an important role in focusing the mandates and competencies of all the government institutions that are involved in a whole-government climate strategy. A parallel can be drawn to the SSC, which seeks to embrace the collective implementation of actions towards broader goals. But to do this effectively, the Climate Envelope would need to manage knowledge more effectively, perhaps using as a model the publicly-transparent systems developed by GCF and including referencing capabilities to support learning by all concerned institutions. Thus, with MFA guaranteeing governance of the system and its diplomatic coordination, and taking the lead on practical and experimental actions in ecological mitigation, an important role remains for the Climate Envelope in keeping track of climate response experiences, managing substantial climate response funding, using it effectively but also experimentally in order to learn from results⁴¹, and managing and using this knowledge to guide all other parts of government towards a more complete climate response.

Balance in the emerging mitigation strategy

The distribution of strategic effectiveness in the evaluated portfolio draws attention to particular Danish strengths in supporting: the decarbonisation of energy systems; institutional, sectoral and subnational low-carbon development planning; and nature-based solutions involving local institutions, communities and participatory sustainable ecosystem management. All are important to meeting needs within the global climate change response, since: scores of governments hope to decarbonise their energy systems; hundreds of subnational institutions and territories would benefit from low-carbon development plans and help with their implementation; and hundreds of millions of hectares of high carbon-density ecosystems exist and require protection and restoration.

Considered in terms of the global climate agenda, most of these needs must be met promptly if there is to be a chance of reaching over-arching temperature, adaptation and biodiversity goals. Denmark alone can only contribute to meeting some of them, however, whether globally or within each partner country. They feature in the NDCs where priority is usually given to one or more of them, depending *inter alia* on how the major GHG sources and sinks are distributed in the economies and territories of the individual country. A balanced Danish mitigation strategy should therefore allow for informed choices on which NDC priorities to address in each partner country, and for an effective response to each chosen element. This response would sometimes be done bilaterally, but more often and more importantly in collaboration with other actors. The real leverage and impact of Danish mitigation efforts will come from demonstrating practical and innovative solutions that can be understood, adapted, replicated and scaled up, from thought-leadership and influence among like-minded actors, and from cooperative investment through multilateral institutions.

It was noted in Section 6.2 that the NDCs are often cautious in describing their goals, but they are among the only statements of climate change mitigation

41 This is consistent with Recommendation 2 of the adaptation study (PEMconsult & ODI, 2020), which calls for greater strategic use of the Climate Envelope for additional, innovative and experimental interventions.

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intention that are anchored in international law⁴², and as such are an important starting point for Danish engagement. It is assumed that the NDC of each partner country accurately reflects its understanding of the distribution of GHG sources and sinks within its economy and territory, and how best to reduce net emissions. It is also assumed that this understanding will continue to evolve with knowledge and higher ambitions, and that research and dialogue involving many knowledge holders will contribute to the evolution of each NDC. Danish expertise can have an important role to play in this, mediated by the Danish representation in partner countries, but other actors will always and also be involved. These might include networks that are already supported by Denmark, such as the NDC Partnership, IEA and IUCN, and other development partners including the development banks and the EU and its member states.

A permanent learning process is mandated by the Paris Agreement, through annual CoPs, intersessional dialogue, and periodic NDC updates and Global Stocktakes. Nevertheless, some 'no-regrets' mitigation activities are likely to be necessary in all partner developing countries. These will often match the Danish strengths noted above: in facilitating the clean energy transition; in encouraging and enabling low-carbon development at institutional and subnational level through integrated planning and demonstrations on energy, waste, environmental management, etc; and in conserving and restoring high carbon-density ecosystems. As noted in Section 7.1b, the last strength has tended to be neglected in recent Danish development cooperation, but this may be reversed in view of the highly cost-effective and immediate mitigation gains and abundant co-benefits available from nature-based solutions. The utility of restoring this complementary element to the Danish mitigation programme is perhaps the single most significant conclusion of this evaluation.

In practice, the key programming challenges are to match these Danish strengths with the particular needs of each country, to agree targeting priorities with the government concerned, and to maximise synergies with national institutions and development partners. Also, to be considered are the relative mitigation consequences of each potential action, which should be chosen to yield large emission reductions as quickly, strategically, and cost-effectively as possible, and with an optimum balance between co-benefits and co-costs. To enable these choices, all costs and benefits must be identified, considered and compared with alternatives in advance. Qualitative and/or quantitative means would be used as appropriate in each case, considering that the effects of building capacity and choice-awareness can only be indicatively estimated, while some co-benefits cannot be measured at all.

Finally, within Denmark and Danish development institutions, there is the need to strengthen the management of knowledge for learning and accountability

42 Parties to the UNFCCC submit Biennial Update Reports and National Communications, while the Paris Agreement requires the NDCs themselves and also the National Adaptation Plans envisioned under Article 7. All can contain information relevant to mitigation and adaptation, but the NDCs are primary sources for commitments on mitigation while any of them can have that role for adaptation. This arrangement was designed to reduce the reporting burden on developing country Parties when adaptation was given parity with mitigation in the Paris Agreement (Caldecott, 2021).

purposes, so that the climate response improves in cost-effectiveness and quality, and also to ensure that know-how spreads across government and more broadly across Danish society. Research can help reduce uncertainty in this area, but outcomes must meanwhile still be monitored against defined baselines and milestones. The programming assumptions, and the general and specific recommendations that follow, are designed to contribute ideas for meeting these programming challenges.

7.2 Recommendations

Programming assumptions

Much has changed since the evaluation began in July 2020. The findings themselves are historical, but their implications must be considered in a new context that arose in late 2020 and early 2021. This was when China and the USA committed themselves to reaching net zero GHG emissions by mid-century (i.e. 2050 ± 10 years), thus joining the EU as a whole and several individual countries (including Denmark) that had already made such commitments. The involvement of the world's largest and second-largest emission sources is encouraging many actors to start planning towards global net zero in a mid-century time frame. The UNFCCC CoP 26 in late 2021 is expected to help consolidate this more ambitious direction.

The recommendations are framed with high ambition appropriate to this new context. They are shaped by all the evaluation's findings and with reference to proposed 'change pathway' principles⁴³. All assume the following desirable norms and outcomes. Danish actions will be done in dialogue with the developing country concerned in each case and in collaboration with other development partners and international institutions that possess relevant knowledge.

- Current efforts by MFA and MCEU to strengthen knowledge management in the climate response for accountability and learning purposes continue and will effectively meet the information needs of the Danish public and government.
- The strategic objectives of Danish mitigation efforts will guide the choice of international partner institutions for collaborative support, whether through core, thematic and project funding, staff secondments, rosters of experts, or through technical input to negotiations.

These three measures are all necessary to a small but influential donor in a complex and uncertain strategic environment, where progress at scale

43 The change pathway in Table 6.3 assumes commitments to: "assessing and comparing cost-effectiveness of climate investments holistically, so that mitigation, adaptation and all co-benefits can all be factored into decisions"; "decisions on mitigation investments that are 'choice aware' in terms of balance between early and later gains, the kind, scale and likely beneficiaries of co-benefits, and the overall cost-effectiveness of climate impact"; "baselining and monitoring effects on GHG emissions and all co-benefits"; and "baselining and monitoring effects on capacity building and institutional enablement with respect to tasks needed for the climate response, including sectoral and whole-economy modelling, scenario building, knowledge management, planning, policy development and regulatory design."

CONCLUSIONS AND RECOMMENDATIONS

against pressing biophysical challenges and deadlines can only occur through partnership. Thus, it will always be necessary to seek cooperation with bilateral, multilateral, non-profit and for-profit partners where opportunities exist for knowledge sharing, added value, co-benefits and transformative impact.

General recommendations

The following findings and implications have arisen from the evaluation and are stated as general requirements rather than formal recommendations.

- The 'mainstreaming' of climate mitigation concerns is essential, meaning the routine informed consideration of climate response consequences in all decisions surrounding development activities and investments.
- A 'whole of government' (or even a 'whole of society') approach is necessary to mobilise adequate and effective sustained investment in mitigation efforts, both within Denmark and as a desirable role of partner countries.
- There is an implicit need for systematic knowledge sharing with all partners involved in any way with Danish mitigation efforts, including staff who take over responsibilities for each initiative during routine turnovers.
- Programmatic approaches, supported by long-term relationships and good understanding of their political economy and political ecology contexts, are generally to be preferred on the grounds of strategic effectiveness to isolated, brief or stand-alone interventions.
- Valuable experimental or 'target of opportunity' investments can nevertheless break new ground or create new opportunities and can often best be identified and explored by embassies using their Local Grant Authority funds.
- A complex and ambitious mitigation portfolio requires adequate resources to meet its advisory, managerial and material needs, the allocation of which must therefore be assured.
- Adequately-funded research is needed to reduce uncertainties around predicting the consequences of mitigation policies and actions⁴⁴, and improving knowledge management to support the climate response.

Specific recommendations

Finally, the evaluation makes two specific recommendations, respectively focused on:

- supporting partner countries in defining more complete and effective mitigation programmes of action, which can then be articulated within more ambitious NDCs; and
- strengthening the design of all mitigation interventions so they more clearly explain what they expect to achieve in mitigation terms, and how they will document progress towards their mitigation goals.

44 Including, as the adaptation evaluation put it, to "clarify the expected contribution of mainstreaming approaches and objectives" (PEMconsult & ODI, 2020: 17).

Recommendation 1. Denmark and its expert partner institutions should support each of its partner governments in identifying its most mitigation-relevant sectors, regions and systems, in becoming fully choice-aware in each of them, in developing options for reduce net emissions in all of them, in selecting the most effective mitigation options, and in planning and resourcing actions in line with those options.

Purpose. Enhancing national mitigation efforts through better information, greater responsiveness to differences in mitigation potential between countries, locations and sectors, and higher ambition.

Rationale. Countries vary in how GHG emissions and opportunities to reduce them are distributed within their territories and economic systems. National aspirations to reduce emissions can be met most effectively by targeting mitigation actions to where the greatest potential gains exist. These opportunities may lie in the energy, LULUCF or another sector, or dispersed across many sectors, or concentrated in different subnational regions, or located within systems of protected areas or other special zones. For example, institutions and peoples at subnational level (e.g. city, province, district, indigenous territory) may have higher mitigation ambitions and/or greater flexibility to pilot actions than their national governments, and may seek to explore or demonstrate new approaches with high mitigation potential.

Especially in developing country contexts, land rights (and hence ecosystems and peoples' dependence on ecosystem services) are often a key factor in local ambitions, so community-based and climate-smart land and ecosystem management can be highly effective ways to protect high carbon-density soils, forests and other ecosystems and associated co-benefits. Cities are also often large emission sources, and their administrations can have sufficient autonomy to be significant mitigation actors. Support for sectoral and subnational initiatives can contribute to achieving national mitigation goals, which may not otherwise be achieved. Thus, effective national mitigation programming can seldom be done by treating a country as a homogenous unit, and requires a more fine-grained approach with sensitivity to political economy and other factors. This requires planners and decision makers to have access to organised cross-disciplinary knowledge from diverse sources.

This recommendation can be implemented by the following measures:

- Develop and apply guidelines and technical specifications for helping developing countries to identify and baseline all their GHG sources and sinks, model and analyse all SDG-relevant co-costs and co-benefits, and to co-develop higher mitigation ambition NDCs. Potential actors include MFA, MCEU and MoE, with city administration and whole-of-government input and in consultation with other actors and knowledge-holders including international institutional partners and Danish NGOs, think tanks and academia.
- Design and deliver training courses on the principles, practices and co-benefits of low-carbon development, the identification and measurement of GHG sources and sinks, and the tasks required for designing and implementing successful measures in diverse sectors, institutions and subnational regions. Such courses would target officials of national and local government and embassy staff, and they should make full use of demonstration projects in the field and in partner institutions. Potential actors include MFA, MCEU and MoE, including embassies supported by Sector Counsellors and other staff and in consultation with national and local government, and with input from other development partners and knowledge-holders including international institutional partners and Danish NGOs, think tanks and academia.

Recommendation 2. Denmark should require that every proposed mitigation action, regardless of its funding source: describes its anticipated mitigation effects; specifies how baseline conditions relevant to mitigation will be described; defines expected mitigation outcomes and criteria and indicators for assessing progress towards them; and provides a full account of arrangements for monitoring and reporting progress towards those outcomes.

Purpose. Enhancing mitigation intervention design for stronger prediction, baselining and monitoring of strategic mitigation effectiveness.

Rationale. Effective mitigation requires large emission reductions to be obtained quickly, cost-effectively and with the best possible balance between co-benefits and co-costs. To do this reliably, investments must be chosen for these specific outcomes, and to support selection all costs and benefits must be identified, considered and compared with alternatives in advance. Some actions are designed to build capacity and choice-awareness, however, which can only be measured indicatively, while some co-benefits cannot be measured at all. Thus, qualitative and/or quantitative means would be used as appropriate in each case. Research can help reduce uncertainty, but for learning purposes outcomes must be monitored against baselines and milestones.

This recommendation can be implemented by the following measures:

- To ensure that choices are made consistently in favour of high-performing mitigation investments, Denmark should require all mitigation proposals to contain a full description of all anticipated costs and benefits and specifying how this is to be done using qualitative and/or quantitative means as appropriate. Potential actors in this process include MFA and MCEU in consultation with other relevant knowledge holders.
- To ensure that each mitigation investment generates useful knowledge for accountability and learning purposes, Denmark should require all proposals for mitigation action, whether funded from development funds or through the Climate Envelope, to contain a full account of arrangements for baselining, predicting outcomes, and monitoring progress, using qualitative and/or quantitative means as appropriate. Potential actors in this process include MFA and MCEU in consultation with other relevant knowledge holders.
- To support all actors in developing proposals and designing effective mitigation investments, Denmark should develop guidelines, manuals and help systems to provide in-depth knowledge of options and best practices in estimating costs and benefits, and in baselining, predicting and monitoring complex and potentially unquantifiable mitigation outcomes. Potential actors in this process include MFA, MCEU, MoE, in consultation with other actors and knowledge-holders including international institutional partners and Danish NGOs, think tanks and academia.

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