# Annex M: The Energy Sector Management Assistance Programme

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## 1. Overview of ESMAP and time-line of Danish support

The World Bank's Energy Sector Management Assistance Program (ESMAP) was established in 1983, and in 2005 it was harnessed to support the priorities specified in the FY 2005 action plan of the World Bank Group, which aimed to scale up investments in renewable energy and energy efficiency in the following ways (WBG, 2005):

- For **renewable energy** (RE):
    - helping partner countries develop their legal and regulatory framework to promote RE markets and mainstream RE in national energy strategies;
    - increasing familiarity with and access to state-of-the-art renewable technologies;
    - inventorising wind and solar resources, energy modelling to support informed sector decisions, and providing TA support for integrating RE resources into national power grids;
    - developing competitive markets and improving nascent markets to justify investments in the industry;
    - providing financing and offering diverse financing mechanisms to increase access and affordability of renewable technologies; and
    - improving the quality and reducing the cost of RE equipment and services.
- For **energy efficiency** (EE):
    - strengthening demand management and distribution efficiency activities;
    - developing competitive markets for energy services and energy efficient technologies;
    - setting up or strengthening national and local energy sector entities to provide training, disseminate EE information and promote technology transfer;

- supporting adoption of EE standards and codes; and
- providing financing and adapting flexible financing mechanisms.

Thereafter the ESMAP business plan was linked to the World Bank's, its loans were subject to approval by the Bank, and the aim was adopted of increasing lending towards RE projects in eligible countries (i.e. those eligible for concessional finance) by 20% a year. To do this, financial contributions were received from Austria, Canada, Denmark, the EC, Germany, Japan, the Netherlands, Norway, Sweden, Switzerland, the UK and two non-governmental foundations (Rockefeller and ClimateWorks). The ESMAP has since been governed by the Consultative Group for the Energy Trust Funded Programs, chaired by a World Bank senior director, comprising representatives from the contributors, and meeting annually to review ESMAP's strategic direction, achievements, use of resources and funding needs.

Since 2005, Denmark has provided support for ESMAP operations and targeted programmes, with a total allocation by 2017 of DKK 208 million (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 the same period. A small part of Denmark's contribution in the last 5-6 years has been in the form of a Junior Professional Officer (JPO) and after that a secondment, both on EE, thus providing ESMAP with access to Danish expertise in this area. This is an approach that ESMAP interviewees stressed could be developed further to great mutual advantage (see below).

## 2. Capacities and priorities of ESMAP

The **2012 evaluation** of ESMAP (Baastel, 2012) found that "ESMAP's response to climate change has been substantial and timely. Now part of the Clean Energy Program, it provides the upstream activities that complement and leverage several existing and developing multilateral initiatives, facilities, and funds within the World Bank Group and related international financial institutions, including the Clean Technology Fund, Global Environment Facility, Carbon Partnership Facility, and Scaling-Up Renewable Energy Program." (page 125).

The **2016 evaluation** of ESMAP (ICF, 2016) found that it was responsive to national priorities, including where those priorities were for climate change mitigation, finding for example that the [then very recent] Paris Agreement "sets a long-term vision toward a low carbon and sustainable future, and calls on countries to peak their greenhouse gas emissions as soon as possible, and submit intended nationally determined contributions (INDCs) that detail plans to rapidly reduce the pace of emissions. Financial resources will be mobilized to implement these INDCs, with a floor of US$100 billion by 2020. ESMAP and ASTAE have a strategic role in providing technical assistance to support capacity development, knowledge, and investment in the sustainable energy sector, which will be critical for establishing, prioritizing, and meeting emission reduction commitments." (page 5).

**Comparing the 2012 and 2016 evaluations**, the relatively strong climate orientation revealed by the 2012 evaluation suggests that ESMAP had been actively engaged with the climate response in the aftermath of the 2007 'watershed', when the Stern Report on the economics of climate change and the Fourth Assessment Report of the IPCC persuaded many governments to accept that climate change was real and important. The rather weaker climate orientation revealed by the 2016 evaluation suggests that this effect had worn off over the several years prior.

Meanwhile, however, there has been significant progress in laying the foundations for future progress on mitigation. In 2011, for example, ESMAP reported that 95% of geothermal energy investment was going into generation plants rather than exploration drilling, and that a lack of risk mitigation was a major constraint on exploration investment. After 18 months of round-table meetings, facilitated and resourced by specialists seconded from Iceland, ESMAP launched a Geothermal Development Plan in 2013[1] and then developed plans with several countries with significant geothermal potential (e.g. Turkey and Indonesia). By 2020/21, 30% of this kind of funding was going into risk mitigation, thus relieving the constraint. In a similar way, ESMAP has been able to make progress with its partners:

- on offshore wind (e.g. through the World Wind Atlas[2] in partnership with DTU) which led to eight countries seeking funds to develop offshore wind roadmaps (including Vietnam, where DEA worked in parallel with ESMAP and the Development Partners Group);
- on solar power (e.g. through solar potential mapping[3]) and an interest in innovations such as floating PV, in which solar is combined with reservoirs and hydroelectricity generation; and
- energy storage, where ESMAP is seeking to develop a global network of energy storage test beds (e.g. in Morocco and South Africa[4]).

## 3. Effectiveness of ESMAP mitigation efforts

Based on the 2012/2016 comparison, the **2020 evaluation** of ESMAP (ICF, 2020) was expected to reveal a stronger climate orientation because of the Paris Agreement, and indeed the evaluation found this to be the case, with highlights given in Box 1.

*Box 1: key findings of the 2020 evaluation of ESMAP.*

"ESMAP's FY 17-20 Business Plan reflects major developments in the sustainable energy strategic global context, compared to the previous Business Plan for FY 14-16. ... The WBG's Climate Action Plan sets ambitious targets for ESMAP's host organization, and ESMAP has a role to play in shaping strategies and programs to achieve those targets" (page 3).

"The WBG has also made ambitious commitments to: increase the climate-related share of its portfolio from 21 to 28 percent by 2020; scale up 20 GW in renewable energy generation and integrate an additional 10 GW of variable renewable energy sources into grids over 5 years; mobilize USD 25 billion in commercial funds for clean energy; invest at least USD 1 billion to promote energy efficiency and resilient buildings by 2020; and increase support to policy actions for sector reform, including fossil fuel subsidies reform." (page 4).

"Overall, ESMAP has established a global brand in the sustainable energy space, particularly in energy access, and a lesser but growing recognition in renewable energy where it has been able to leverage the Bank's ability to fundraise concessional climate funds for new initiatives. ... At the frontier, issues on the horizon like e-mobility, green industrial decarbonization, green hydrogen, fuel cells, and digitalization and their relevance and impact on the sector are being discussed by ESMAP for consideration in the next business plan." (page 9).

"ESMAP's linkages with climate finance in the Bank—supported by the ESMAP's Program Manager

[1] www.esmap.org/node/55629

[2] https://globalwindatlas.info

[3] https://esmap.org/node/71062

[4] https://www.esmap.org/energy_storage

leadership of this team—have also been instrumental in ensuring the relevance of ESMAP activities to concessional climate finance. The best example of its strategic role in this regard is in geothermal energy where its partnership with the [Clean Technology Fund] has led to hundreds of millions of concessional climate finance; as noted above, ESMAP is now replicating this model with energy storage. Efforts are also underway to access GCF funding for clean cooking, with one clean cookstove project in Bangladesh already approved, and with more in the pipeline. Additionally, GCF has asked ESMAP to develop a GCF facility to channel concessional climate funds through the [Solar Risk Mitigation Initiative]." (page 11).

"Through informing WBG lending operations, ESMAP has contributed to efforts that are expected to provide more than 76 million people with access to electricity, install 17.6 gigawatts of renewable energy, and result in 605 terawatt hours of projected lifetime energy and fuel savings [in] over 54 countries." (page xiii).

**Mitigation monitoring**. Thus, 2017 marked a return to an active focus on mitigation impacts at ESMAP, including the monitoring and reporting of GHG emission savings. Thus, ESMAP's current procedure is first to ensure that each investment is pre-approved as being in line with policy on reducing GHG emissions, and then to track their effects as described in the 2017/18 to 2020 Annual Reports and report findings on the ESMAP 'dashboard'[5]. Hence there are now four years of data showing rapid growth in RE generation capacity but rather 'lumpy' emission savings (at 160 $MtCO_2e$ in 2017, 440 in 2018, 56 in 2019, and 356 in 2020) due to major variance in hydroelectricity generation (e.g. from the 2019 drought and power outages in Ethiopia mentioned in Annex i part C of Annex H) and changes within the huge Chinese economy. ESMAP does not have specific emission targets for its portfolio[6], but the monitoring does suggest a trend towards an increasingly 'green' portfolio, which factors-in "expected GHG emissions reductions under WBG financed projects (lifetime $MtCO_2e$)" from the stimulation of public and private investment to accelerate decarbonisation.

**Alignment with NDCs**. ESMAP takes the view that the key issue is to sharpen and improve the NDCs, since they tend to comprise rather vague statements of ambition rather than specific, bankable projects. ESMAP does not have an NDC support programme but seeks to ensure that governments have the information they need to think things through - to look at feed-in tariffs, reverse auctions, or whatever other public investment is needed. For example, interviewees noted that the Government of Pakistan had considered that integrating RE into the grid would be harmful to national interests, but that ESMAP-facilitated studies and dialogue led to a change in policy to set a 30% RE integration goal and a commitment to 'no more coal'. This approach is strongly similar to that of DEA which seeks to build capacity among its partners to appreciate and choose among options for meeting their goals (see Annex S).

[5] https://esmap.org/activities?type=results

[6] ESMAP works with a well-developed range of SMART indicators from Outcome to Output levels, including "average reduction in cost of power supplied, carbon per unit of power generated", and a set of cross-cutting indicators: External Financing Mobilized; Number of People Provided with Access to Renewable Energy; Number of Beneficiaries Expected to be Reached; Generation Capacity of Renewable Energy Expected to be Installed; Metric Tons of $CO_2$ Emissions Expected to be Reduced Per Year; and Projected Lifetime Energy and Fuel Savings.

# 4. Conclusion on effectiveness of Danish support

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 WBG'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 a significant share of ESMAP's impact. In fact, Denmark is among the largest donors, and ESMAP could not have done what it has done over the last decade without it. Denmark was described (here, as in several other contexts in this evaluation) as 'punching well above its weight' in a boxing metaphor that implies consistently high impact for a small country.
- 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 in favour of energy access (SDG 7); it played a key role in the Climate Action Summit (as also noted in Annex H); and its representative has had an influential role in deliberations on climate, gender, and fossil-fuel subsidy reform.

Also mentioned at interview was the use of donor-funded staff positions, and as noted above Denmark has contributed dedicated staff time in the area of EE. This is an area where growth is possible, and strongly advocated by interviewees. The example of Iceland was used to make the point, since here Iceland has ensured for more than a decade that there was always a geothermal specialist on the ESMAP staff, while also making available a Roster of Experts on geothermal power funded by MFA in Reykjavík. This has had a major impact on the geothermal portfolio, to the great benefit of Icelandic and other commercial interests. It was suggested that Denmark consider doing something similar in one or more areas where it has particular strengths, although it was also stressed that the un-earmarked component of its contribution is seen as extremely valuable and should not be greatly reduced if possible.

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, using its convening power, influence, and amplification opportunities through the World Bank. As the world moves quickly, under conditions of new 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.

## Annex a: Information sources for the review

This review is based on: (a) interview (16 Feb 2021) with **Rohit Khanna** (Practice Manager, Energy Climate Finance & ESMAP) and **Anna Aghababyan** (Monitoring Specialist ESMAP) at the World Bank in Washington, DC; (b) communication with **Morten Houmann Blomqvist** (MFA representative with responsibility for overseeing ESMAP contributions); and (c) review of materials from www.esmap.org and other documents listed in the bibliography.

## Abbreviations and acronyms (ESMAP)

| | |
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| ASTAE | Asia Sustainable and Alternative Energy Programme |
| EE | Energy efficiency |
| ESMAP | Energy Sector Management Assistance Programme |
| GCF | Green Climate Fund |
| IEA | International Energy Agency |
| INDC | [Intended] nationally determined contribution |
| JPO | Junior Professional Officer |
| RE | Renewable energy |
| WBG | World Bank Group |

## Bibliography (ESMAP)


Baastel (2012) *External Evaluation of ESMAP 2007-2011 Final Evaluation Report, June 19, 2012*. Baastel (Gatineau, Canada).

ESMAP (various dates) *Annual Reports*. (e.g. http://documents1.worldbank.org/curated/en/712171609756525808/pdf/Main-Report.pdf for 2020)

ESMAP (2009) *Strategic Business Plan 2008-2013*. International Bank for Reconstruction and Development (Washington, DC).

ICF (2016) *External Evaluation of ESMAP and ASTAE Final Report, March 2016*. ICF Consulting Ltd (London).

ICF (2020) *External Evaluation of the Energy Sector Management Assistance Programme (ESMAP): Final Evaluation Report, 2 March 2020*. ICF (Fairfax, Virginia) and ESMAP (Washington, DC).

MFA (2010) *Energy Sector Management Assistance Program, ESMAP, Desk Appraisal, 21st September – 5th October 2010, Final Report*. Technical Advisory Service, Ministry of Foreign Affairs of Denmark (Copenhagen).

MFA (undated) *Development Engagement Document Energy Sector Management Assistance Programme* (ESMAP).

WBG (2005) *Progress on Renewable Energy and Energy Efficiency Fiscal Year 2005*. World Bank Group (Washington, DC).