Annex I: Indonesia Country Study

Contents

Executive summary

Indonesia is an equatorial archipelagic country of immense size and biological and cultural richness. Its economic development has long been accompanied by land-use changes and coal-based electricity that have made the country the world's sixth-largest source of GHGs. These emissions total over 2,200 $MtCO_2e$ annually, with 70% from the LULUCF sector but this varies according to irregular droughts and fires in damaged, drained and increasingly fire-prone ecosystems.

Since 2009, Indonesian policy has been to reduce these emissions, leading to tensions with land, forest and coal interests. LULUCF-sector reforms and arrangements for REDD+ provide the context for many Danish mitigation efforts in 2010-2020, variously creating difficulties and opportunities. The other Danish efforts focused on policy and capacity at national, provincial and district level to promote renewable energy (RE) and energy efficiency (EE), to undertake environmentally sound and ultimately low-carbon development planning and conflict management, and most recently to support improvements in waste management.

In 2009, Indonesia pledged to reduce emissions by 26% by its own efforts (later increased to 29%), and up to 41% with international support, against business as usual emissions in 2030. Its reforms and REDD+ arrangements in the LULUCF sector since 2010 have started to reduce emissions despite resistance by forestry and plantation interests, although the country remains vulnerable ecologically because of past land-use changes. Indonesian efforts have also induced gradual change in the energy sector, despite resistance by coal interests, and since 2017 Indonesia has also engaged with the waste management sector. Danish mitigation interventions have consistently supported these efforts, yielding strong alignment with Indonesian NDC priorities.

The main sequence of Danish mitigation cooperation comprised the Environmental Support Programme phases 1-3 (ESP 1-3, 2005-2018), which through its components (ESP 1-3/1-3) 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.

These ESP initiatives were associated with noteworthy initiatives in ESP 3/3 (Harapan and ERC, and LAMA-I) and the stand-alone Mbeliling project, all undertaken with motivated partners (e.g. NGOs and ICRAF) well embedded in Indonesia. They also led to several Strategic Sector Cooperation initiatives: SSC Energy 1 and 2, with early-starting activity in Lombok but other replications elsewhere, and the SSC Environment and SSC Sustainable Islands Initiative, both with local stakeholders in Lombok and showing early signs of strong effectiveness.

The relationship between Indonesia and Denmark continues to evolve, especially in the energy sector where the five-year IndoDEPP is now being established alongside the final year of SSC Energy 2. This will build on, deepen and broaden the work of the SSC in the areas of energy modelling and planning, integration of RE, and EE, while adding new focus on tendering processes for RE procurement, energy policy and regulations, and coordination across institutions. IndoDEPP may well make good progress because Indonesian priorities in the energy sector have matured greatly since ESP 2. It should also be born in mind that the total budgets for the SSC programmes are relatively small, so their high ambitions and considerable achievements must be judged against their very limited resources.

Much has been achieved in Indonesia since ESP 2, and many lessons have been learned in the process. There is potential to achieve much more, and this can certainly be done in the energy sector, for RE at sub-national level by building on and replicating progress in Lombok and elsewhere, and through strategic innovation on RE procurement and integration nationally. But there are also opportunities to renew a commitment to several areas where there are key opportunities and needs, including for ecological mitigation by replicating successes with NGO partners and local government through the ERC system and beyond, and through territorial low-carbon development and green growth planning systems with local government.

1. National context of mitigation efforts

1.1 Overview of socioeconomic conditions

Indonesia is an equatorial archipelagic country between mainland South-east Asia and Australia, encompassing the large islands of Sumatra, Java, most of Borneo, Flores, Sulawesi, and about half each of Timor and New Guinea, and some 17,000 other islands. These are located within multiple biogeographic zones as defined by fauna, flora and marine biodiversity, and the whole country is ecologically diverse and possesses extreme species richness and high endemism rates. Its eastern and western parts have ever-wet climates with a more seasonal zone in the centre, but the country's climate is strongly influenced by the El Niño-Southern Oscillation (ENSO) in the Pacific Basin, which brings very dry and very wet years at irregular intervals.

Indonesian governments must balance the development needs of a large population that is also culturally very diverse[1], with the demands of environmental sustainability in a country where terrestrial and aquatic ecosystems have already been widely degraded, and against increasing risks from climate change. Their success to date is shown by Indonesia having grown from a poor developing country into an emerging economy, which during the Yudhoyono administration (2004-2014) became a member of the G20. Before the CoViD pandemic in 2020, the poverty rate had been reduced to below 10% and Indonesia was categorised as an upper-middle-income country. A summary of key social indicators as they stood in 2019 is given in Table 1.

Table 1: Indonesia: Human Development Indicators, 2019

1. Human Development Index (HDI, rank of 189 countries)	111
2. Life expectancy at birth (years)	71.5
3. Expected years of schooling (years)	12.9
4. Gross national income per person (2011 PPP USD)	11,256
5. Inequality-adjusted HDI (raw HDI = 0.707)	0.583
6. Gender Development Index (GDI)	0.937
7. Employment to population ratio (% ages 15 and older)	64.2
8. Internet users, total (% of population)	39.8
9. Total population (millions)	267.7
10. Skilled labour force (% of labour force)	39.8
11. Corruption Perceptions Index (CPI, rank of 198 countries)	85

Sources: http://hdr.undp.org/en/countries/profiles/IDN (items 1-10); https://www.transparency.org/en/cpi/2019/results/idn (item 11)

[1] The Indonesian population is estimated to include people who self-identify as belonging to over 400 ethnicities, and who speak up to 700 languages (about half of them in the island of New Guinea). The lingua franca and official language of Indonesia is a Sanskrit-influenced form of Malay known as Bahasa Indonesia.

1.2 Indonesian GHG emissions

a) Overview

Indonesian greenhouse gas (GHG) emissions were the sixth-largest in the world in 2016. Nearly 70% came from land use (agriculture), land-use change and forestry (LULUCF), for which changes in forests and forested peatlands were almost entirely responsible (Table 2). These changes vary in rate from year to year because of irregular droughts and associated fires but are so dominant that to understand most of the country's role in climate change and the context of its potential for mitigation requires an historical perspective on the fate of Indonesia's forests.

Table 2: GHG emissions, sinks, sources and changes in Indonesia

GHG emissions	Unit	2016 data
Total GHG emissions	$MtCO_2e$	2,228.9
Per-person GHG emissions	tCO_2e	7.04
Land-use change & forestry sources/sinks	$MtCO_2e$	1,360.0
Electricity & heat sources	$MtCO_2e$	206.6
Agriculture sources	$MtCO_2e$	190.2
Transport sources	$MtCO_2e$	134.5
Waste sources	$MtCO_2e$	129.5
Manufacturing & construction sources	$MtCO_2e$	84.2
Industry sources	$MtCO_2e$	33.8
Fugitive emissions	$MtCO_2e$	33.3
Other fuel combustion	$MtCO_2e$	30.1
Buildings	$MtCO_2e$	23.1
Aviation & shipping sources	$MtCO_2e$	3.6
Energy intensity	kWh per unit GDP in 2011PPP USD	0.76
Carbon intensity	kg/kWh	0.28
GDP per person % change since 1990	Δ%	141.9
Consumption emissions per person % change since 1990	Δ%	172.8

Source: https://ourworldindata.org/co2/country/south-africa?country=~ZAF

b) 'Business as usual' in 1998-2008

Indonesia inherited from the 1967-1998 New Order (Suharto) regime a land management system in which two thirds of the land area of the nation was designated as forest estate under the control of the Ministry of Forestry (MoF) and alienated from community and local government management. The MoF consistently allocated forest concessions to industrial interests for logging, pulp-wood and oil-palm plantation development, disregarding the livelihoods and rights of the tens of millions of people

who inhabit the forest estate in more than 33,000 villages. These licencing arrangements were typically non-transparent, pervasively corrupt, and poorly coordinated with the plans and interests of other departments of central government or local interests variously represented by provincial and district governments, local communities, indigenous peoples and NGOs.

The resulting long-term trend was a steady degradation and conversion of forest ecosystems and associated local economies for industrial profit. This process accelerated during a chaotic period of decentralisation and deforestation in 1998-2002, during which uncontrolled logging and forest conversion became widely entrenched. Despite subsequent efforts to restore order, the on-going and cumulative biophysical effects of all this had fragmented and degraded the Indonesian forest estate badly by the late 2000s. Many residual forests and peatlands had become fire-prone due to drainage and drying, and large forest and peatland fires accompanied repeated ENSO droughts that were themselves accentuated by climate change.

c) The 'Pittsburgh commitment' and REDD+ in 2009-2014

In 2007, the Yudhoyono administration was embarrassed by reports at UNFCCC CoP 13/2007 in Bali (Indonesia) of high GHG emissions from the LULUCF sector, especially from degrading peatland where carbon density can exceed a thousand tonnes per hectare. Indonesia's First National Communication to the UNFCCC (KLH, 1994) had not mentioned peatlands at all, yet now they were recognised as a GHG source of major international significance. In 2009, therefore, President Yudhoyono committed Indonesia to reducing its GHG emissions by 26% against business as usual (BAU) projections for 2020 (or 41% with international help).

A Second National Communication to the UNFCCC (KLH, 2010) was quickly prepared to establish the scale of the problem and identify potential solutions. The Norwegian government then offered to support Indonesia's efforts to reduce LULUCF emissions through a results-based payment mechanism known as REDD+. This would depend on forest sector governance reform, transparency, enforced regulations and participatory low-carbon development planning across the archipelago. Both governments signed a 'letter of intent' in 2010 and established the Indonesia-Norway REDD+ Partnership (Caldecott *et al.*, 2011, 2013). This helped to shift the forest governance paradigm towards reduced GHG emissions at national and sub-national levels.

Meanwhile, Indonesian public awareness of climate change grew, and the national leadership remained committed to policies and enforcement in combating corruption in government, industry, and the land-use sector. The net effect was to challenge the siloed government bureaucracy to adopt more horizontal coordination in policymaking and development planning, while opening up decisions to some public inspection. However, the scale of structural problems that would have to be overcome if GHG emissions were to be reduced also became apparent, as powerful interest groups became mobilised to resist further change, and as continued rapid expansion of oil-palm plantations joined with legal and illegal logging, encroachment, mining and forest and land fires to maintain a high rate of forest degradation and deforestation.

d) Institutional reforms and land fires in 2015-2019

In 2015, the newly-elected Widodo administration dissolved the national REDD+ Agency and merged the ministries of environment and forestry into a new Ministry of Environment and Forestry (KLHK), which absorbed all climate change and REDD+ responsibilities (Caldecott *et al.*, 2018; Caldecott, 2019). The changes were widely understood to result from a push-back by institutions that had felt under pressure by the REDD+ Agency, and they caused a degree of institutional paralysis across both former ministries. Later that year, however, forest and peatland fires caused immense damage in Indonesia and smoke and photochemical smog in nearby countries, which led to the restoration of environmental priorities through new and enhanced regulations, a new Peatland Restoration Agency (BRG) and increased policy priority for fire prevention, One Map[2], law enforcement, social forestry, and land reform.

Since then, Parliament has endorsed the Law on Paris Agreement No. 16/2016, and the Widodo administration renewed the REDD+ partnership agreement with Norway in 2016 for four years while increasing to 29% its commitment on reducing GHG emissions relative to BAU in 2030 (and 41% with international help). But it has tended to apply a centralised approach to policy development, enforcement and the adjustment of bureaucracies and institutional power relationships and is struggling to meet key performance indicators for its infrastructure development plan and investment procedure reforms amid the CoViD pandemic.

In August 2019, President Widodo signed a regulation to enact a permanent moratorium to prevent deforestation, thus strengthening the 2011 Presidential Instruction on the suspension of new forest concession permits on primary forest and peat, which had been renewed from time to time ever since. The scope of the moratorium covers about 66 million ha of primary forest and peatland. This regulation aims to reduce emissions from forest fires that lead to deforestation but was criticised by NGOs due to a lack of public access to information on the moratorium map status and weak law enforcement.

e) Performance payments and backward steps in 2020

The existence of a credible financing mechanism and the first documented emission reductions in Indonesia have allowed the first results-based REDD+ payments to be made. In August 2020, the GCF Board approved the payment of USD 103 million based on avoided emissions of 20.3 $MtCO_2e$ in 2014-2016 (despite the 2015 fires - see Lang, 2020). In response to the findings of the third review of the partnership (Caldecott *et al.*, 2018), which called for recognition of progress made and the then-recent decline in deforestation rate, Norway authorised the payment to Indonesia of USD 56.15 million for reduced emissions of 23 $MtCO_2e$ from deforestation in 2016-2017 (Jong, 2020). The governments of Indonesia and Norway have now drafted a new REDD+ partnership

[2] A system for publicly-transparent mapping of all government concessions and proposals.

agreement to allow for continued support towards Indonesia's target of a 29% cut in projected emissions by 2030[3].

Also in 2020, Minister of Finance Sri Mulyani Indrawati announced that since 2016 the Government of Indonesia had implemented climate budget-tagging in line with its NDC commitments. It was reported by KLHK that the state's climate change-related budget had increased from IDR 72.4 trillion in 2016 (*ca* EUR 4.3 billion) to IDR 109.7 trillion (*ca* EUR 6.5 billion) in 2018. On the other hand, Indonesia's annual deforestation rate is still 50-60% above the threshold of 325,000 hectares which would need to be maintained consistently during the 2020s if it is to meet its emission targets, and this is likely to become harder to achieve with increasing fire-proneness in Indonesian forest and peatland ecosystems.

Set against the general trajectory in Indonesia of increased transparency, accountability and care for the environment are two disconcerting developments in October 2020.

- **The Omnibus Law on Job Creation** was approved by Parliament, despite protests by labour unions, students, farmers, indigenous peoples and environmental activists. It relaxes licensing procedures for industrial investment and public infrastructure projects by requiring a simple Strategic Environmental Assessment (SEA) rather than the previous Environment and Social Impact Assessments, thus removing the need to consult with and obtain consent from local communities and indigenous peoples. It also relaxes constraints on removing primary forest cover, on maintaining 30% forest cover by provinces, and on using fire to clear land.
- **A ministerial regulation on converting protected forests to food estates** was issued by KLHK in October 2020. This is in line with President Widodo's call to create a 165,000 hectare rice project in the Mega Rice Project area on former peatland in Central Kalimantan, which has been described as "perhaps the largest and most destructive agricultural conversion project in the world in recent times" (Singleton *et al.*, 2004: 170). This appears to reflect a trend at KLHK towards reviving and approving food estate projects in Papua and elsewhere, which would undermine both NDC commitments and the RAN-GRK road map while also reversing progress on participation in decision making by civil society and indigenous peoples (Indrawan *et al.*, 2019).

[3] The Norwegian funds being payments for Indonesian results, they apparently do not count towards the additional emission target of 41% with foreign support.

1.3 The role of the energy sector

a) Main features of the sector as of 2020

By 2020, Indonesia had achieved almost complete (98.5%) access to electricity, up from two-thirds in 2010[4]. But because those with electricity access were not distributed evenly, some eastern provinces were still only three-quarters electrified and the final closure of this gap will require targeted investment in challenging locations. Meanwhile, Indonesian GDP growth was expected to remain strong, and if this is realised (despite climate change impacts, damage to environmental services, and unexpected events like the CoViD pandemic), then energy (especially LPG and electricity) demand is bound to rise greatly. This will be further driven by the entry into the middle classes of the 25 million Indonesians who now live below the national poverty line, and the even larger group only just above this threshold. The need to meet this foreseen demand has shaped a number of Indonesian priorities, including the quest for EE standards, labelling and regulations across all sectors, since these are key instruments with which to moderate energy demand and improve the allocation of energy supply. They also have mitigation significance, since by reducing demand, they relieve pressures that might otherwise encourage short-term fixes such as the continued use of coal for power generation.

Government Regulation No. 79/2014 on National Energy Policy set out Indonesia's ambitions for the primary energy supply mix, with 2030 targets of 30% coal, 22% oil, 23% renewables and 25% natural gas, and with the share of RE rising to at least 31% in 2050; that of oil falling to less than 20% in 2050; that of coal falling to less than 25% in 2050; and that of gas increasing to 24% in 2050. As of 2020, coal still made up around 55% of the energy mix. The Ministry of Energy and Mineral Resources (MEMR), which is in charge both of energy policy and national plans for transmission and distribution of natural gas, issued three regulations in 2017 in an effort to achieve the targeted electrification ratio and to encourage efficient, fair and transparent electricity supply:

- Regulation No. 10/2017 on Power Purchase Agreement Principles;
- Regulation No. 11/2017 on Utilisation of Gas for Electricity Generation, later replaced by MEMR Regulation No. 45/2017 on the same topic; and
- Regulation No. 12/2017 on Utilisation of Renewable Energy Resources for Provision of Electricity, later replaced by MEMR Regulation No. 50/2017 on the same topic.

Total power generation capacity in Indonesia is around 55 GW of which about 30 GW has been installed by the state-owned utility PLN, of which some 80% is from oil, gas and coal, 18% is from hydropower, and 2% is from geothermal sources. The remaining 25 GW or so consists largely of captive (embedded) power for the manufacturing industry, and this largely (60%) consists of diesel generation while co-generation plants provide approximately 25%.

[4] www.statista.com/statistics/865133/indonesia-electrification-rate

Electricity makes up around 10% of the total energy consumption in Indonesia, which is a relatively small share compared with similar-sized economies (e.g. South Africa's), and this is produced mainly from fossil fuels. About 80% of this electricity is used in the densely-populated islands of Java and Bali. In recent years, consumption of electricity has increased by about 7% annually, and every 1% increase in GDP has led empirically to an increase of about 1.6% in energy demand. Indonesia has so far failed to meet this demand growth with adequate system investments, resulting in an increased frequency and duration of power outages. These tend to increase the use of diesel generators, and although outages can also increase the attractiveness of solar PV, the availability of cheap (subsidised) gas, LPG and diesel has slowed the uptake of RE technologies.

b) Renewable energy target and investment

The strategic shortfall in LULUCF emission reductions mentioned in Section 1.2 (e), combined with a relaxation of laws that protect forests and therefore circumvent the permanent concession moratorium, all raise the question of whether these effects can be fully made up in other ways, for example by renewable energy (RE) development. As of May 2020, the RE contribution was at 14.2% of the national energy mix, against a target of 23% in 2025. Potential RE investors have been discouraged by uncertainty in the policy environment, perhaps due to continued influence by oil and coal interests in the energy sector. The government has also been reluctant to provide incentives for RE projects, but a presidential regulation on the RE power purchase price is being finalised that is expected to boost RE investment. The combination of increased demand for supply, falling investment prices and an improved regulatory regime is likely to have an effect. Time will show if this new regulation alone can accelerate RE growth enough for the energy mix target to be reached.

c) Carbon pricing and emission tracking

A presidential regulation on carbon pricing is being finalised, with the aim of beginning to implement an emission reduction and trading regime. Some of the tools needed for carbon price implementation have been developed by KLHK as a contribution to efforts to achieve the NDC goal. These include a national GHG inventory, a national registry system and MRV protocols. Meanwhile, power generation sector targets have been developed by MEMR and PLN, alongside the web-based APPLE-GATRIK system for calculating GHG emissions from generating units and reporting them to the Directorate General for Electricity of MEMR. The implementation of carbon pricing is expected eventually to support a national transition to 'green and clean' energy through cost-effective and efficient measures.

d) Outlook for the energy sector

Considering both the LULUCF and RE sectors, the various Indonesian measures to achieve a significantly reduced overall GHG emission footprint over the next ten years are not particularly convincing. On the other hand, slow incremental growth in policies, plans, regulations and capacities since 2010 may have laid the foundations of

transformative change, should sufficiently skilled leadership be available and willing to give it adequate priority.

1.4 Indonesia's Nationally Determined Contribution (NDC)

Indonesia's INDC and subsequent NDC was formulated at a time of considerable change, strongly influenced by the efforts, policies and personnel associated with post-Pittsburgh climate change policies, the Indonesia-Norway REDD+ Partnership and the REDD+ Agency, but also in the midst of the rearrangement of all climate change-related institutions in Indonesia (see Section 1.2 d). By late 2015, however, the government had returned to most of the previous policy trajectory on addressing climate change. On this basis, the NDC describes the enhanced actions and enabling measures required during 2015-2019 to lay the foundation for more ambitious goals beyond 2020, when "Indonesia envisions achieving archipelagic climate resilience as a result of comprehensive adaptation and mitigation programmes and disaster risk reduction strategies" (GoI, 2016: 2).

The NDC refers to evidence presented previously to the UNFCCC concerning the growth of national GHG emissions (from 1.4 to 1.8 $GtCO_2e$ between 2005 and 2010) and the main contributing sectors (LULUCF and energy). It also mentions the presidential regulations that had established the commitment to a 26% reduction in GHG emissions relative to BAU in 2020 (and up to 41% with international support finance, technology transfer and development and capacity building), and which had been maintained in the INDC. It then extended to 2030 and amended to 29% the first part of the commitment, noting the BAU scenario projection of approximately 2.869 $GtCO_2e$ of emissions in 2030 (cf. 2.229 $GtCO_2e$ in 2016 in Table 2).

The NDC highlights a number of measures taken or planned for the **LULUCF sector**, most of them already mentioned in the context of REDD+ (see Section 1.2 d), the latter being a key element of the NDC which created the need to calculate and agree a Forest Reference Emission Level (FREL) for REDD+ in the period up to 2020. The NDC also explains the priority given to **clean energy** sources by Government Regulation No. 79/2014 on National Energy Policy. Finally, the NDC also commits Indonesia to develop a comprehensive **waste management** strategy and improve related policy and institutional capacity at all levels, with aims that include reduced GHG emissions.

2. The Danish portfolio with Indonesia

2.1 Overview of the portfolio

Denmark opened its Embassy in Jakarta in 1950, but it was closed in the turbulent year of 1965 and only reopened in 1974. Since then, its Official Development Assistance (ODA) to Indonesia averaged about USD 0.77 million in current prices in the 1970s, USD 1.82 million in the 1980s, USD 2.91 million in the 1990s, USD 7.32 million in the 2000s (with a peak of over USD 32 million in 2005, after the Indian Ocean tsunami), and USD 10.84 million in the 2010s (Table 3).

Table 3. Danish aid flows to Indonesia, 2010-2018

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Disbursements (USD millions)	12.46	22.53	13.84	7.87	5.16	4.26	11.43	12.39	7.66

Source: https://stats.oecd.org/qwids/ [Denmark to Indonesia, ODA disbursements all sectors].

The Danish mitigation interventions can be described either in terms of individual projects and programmes, or in terms of their connecting themes. The latter approach can be useful because each intervention often contained multiple themes which were carried forward to subsequent interventions. The documentary record is organised by project, however, and information from this source is given in Table 4, with a timeline provided in Annex b.

Table 4: Danish-funded projects and programmes evaluated in Indonesia

Title	Reference	Timeframe	Channel	Budget (DKK million)
Environmental Support Programme, Indonesia, Phases 1 & 2 (ESP 1/2, Annex d)	#104.Indonesien.1.MFS.2/4	2005-2007 (1) 2008-2012 (2)	Non-CE Non-CE	Phase 1: 90.00 Phase 2: 220.0
Environmental Support Programme, Indonesia, Phase 3 (ESP 3, Annex e)	#104.Indonesien.1.MFS.5 & 104.G.13-6/15-6	2013-2018	Non-CE CE (Harapan) CE (LAMA-I)	270.0
Sustainable and integrated management of Mbeliling Forest, Flores, Phases 1 & 2 (Mbeliling Annex f)	#500.8608.02	2007-2010 (1) 2011-2015 (2)	Non-CE Non-CE	Phase 1: 7.5 Phase 2: 9.4
Strategic Sector Cooperation on Clean Energy, Renewable Energy and Energy Efficiency, Phases 1 & 2 (SSC Energy, Annex g)	#2015-26760 & 2015-56019	2016-2018 (1) 2019-2021 (2)	Non-CE Non-CE	Phase 1: 5.5 Phase 2: 10.0
Indonesia-Denmark Strategic Sector Cooperation (Environment: Circular Economy and Waste Management) (SSC Environment, Annex h)	#2018-14785	2018-2022	Non-CE	10.0
Sustainable Islands Initiative on Energy and Environment (SSC-SII, Annex i)	#2019-41336 and 2019-41337	2020-2023	Non-CE	7.0

2.2 The environmental support programmes

a) Phases and main features

Energy and Environment Cooperation (EEC) with Indonesia started in 2005 with ESP 1 (2005-2007; Danida, 2016a). It was inspired by the idea of 'building back better' after the 26 Dec 2004 Indian Ocean tsunami (one of several natural disasters in that period in Indonesia: Caldecott, 2006 a, b, 2007). A treaty then consolidated ESP 1 (Indonesia & Denmark, 2006) to comprise two components. Component 1 (ESP 1/1) focused on post-tsunami restoration and was implemented by the Agency for Rehabilitation and Reconstruction (BRR) and the National Development Planning Agency (Bappenas). Component 2 (ESP 1/2) focused on building capacity at the Ministry of Environment (KLH) to develop national, provincial and district guidelines for Strategic Environmental Assessment (KLHS/SEA) and Environmental Impact Assessment (AMDAL/EIA).

The second phase (ESP 2, 2008-2012) built on an MoU between KLH and Danida (KLH & MFA, 2007). Its main thrust was capacity building at national, provincial and district level, and the interpretation of this function at the time meant that most (85%) of the budget was for technical assistance. It had three complex and ambitious components:

- Component ESP 2/1 was to support public institutions, focusing on: reform and strengthening of the AMDAL/EIA system; application of KLHS/SEA to national development planning, policy analysis and environmental planning, and local development planning; development and use of enhanced economic instruments in development planning and in environmental fiscal reform.
- Component ESP 2/2 was to encourage and enable increased energy efficiency (EE) in the construction and use of large buildings in the public and private sectors, including the establishment of a knowledge management facility (the Energy Efficiency Clearing House, EECH), EE standards and training of energy auditors and managers, and development of economic instruments for the energy sector.
- Component ESP 2/3 was to support decentralised natural resources management (NRM) and renewable energy (RE) in Sumatra and Sulawesi. This was a complex process, involving: (a) block grants earmarked for NRM and RE-based rural electrification projects through the World Bank-financed Kecamatan (sub-district) Development Programme (KDP); (b) promoting management of upstream areas (sub-catchments), through catchment planning, incentives and education; and (c) building local capacity for sustainable NRM and RE development through the KDP.

The third phase (ESP 3, 2013-2017, extended to 2018) represented the major 'flowering' of Danish EEC in Indonesia. It coincided with the transformation of Indonesia from a poor developing country into an emerging economy through sustained economic growth of over 5% annually. It had three components that each continued and built upon the themes of ESP 2:

- ESP 3/1 targeted capacity building for environmental policy and planning impacts, for institutions at national and pilot province level, and for SEA at all levels;

- ESP 3/2 supported EE, RE and energy conservation, partly at national level through an information clearing house (EECH, later LINTAS), but mainly at decentralised levels, including pilot demonstration activities in the province of Central Java; and
- ESP 3/3 again promoted decentralised approaches, through sub-district and community-based natural resource management (CBNRM), RE for rural electrification, and sub-district water catchment planning.

ESP 3 as a whole engaged with central government at a time when the environmentally unsustainable, high-emission Indonesian development model was under intense scrutiny and pressure to reform. This pressure was being resisted by some institutions and encouraged by others. It also sought to work with local government when decentralisation issues were being disputed, and at the community level when traditional land rights were being disputed. The latter issue was brought to a head by a 2012 High Court decision, which ruled that the Forest Law violated the Indonesian Constitution because it failed to take into account indigenous claims to customary lands (Jensen *et al.*, 2015: 6).

The effect of these tensions was least visible in ESP 3/1 and ESP 3/2, since policy development and strategic environmental analysis with KLH and Bappenas (and Central Java province) and promoting RE and EE with MEMR (and pilot projects in Central Java, of which four reached hand-over stage[5]), were all innocuous subjects in line with climate policy, and generally unthreatening to established interests.

This was not entirely so for ESP 3/3, which like ESP 2/3 sought to engage in various ways with reforms in the LULUCF sector. This was a controversial area at a time of heightened tensions due to the assault on business as usual that had been launched in 2010 by Norway and President Yudhoyono and was starting to 'bite' in 2012-2014. At the time, therefore, the revenue streams upon which the Ministry of Forestry had long depended were being jeopardised by forest exhaustion and REDD+, so the ministry was trying to find new roles for the institution that would sustain its influence and support its many thousands of employees.

Some of the ESP 3/3 initiatives were affected by these processes. The CIF/World Bank Forest Investment Programme (FIP), to which Denmark contributed, was long stalled over the question of how Forest Management Units (FMUs, large, long-term concessions for managing forest areas) would be run and for what purposes. Danish support for a forest certification system based on the Forest Stewardship Council (FSC) standard was blocked by the Ministry of Forestry's preference for the Indonesian SVLK certification and the EU's FLEGT Voluntary Partnership Agreement systems. And Denmark also committed support to the REDD+ Support Facility (RSF), and hence to reforms promoted through the Indonesia-Norway REDD+ Partnership, which was also problematic in the circumstances.

[5] These were the Karimunjawa solar/wind project, the Semarang landfill gas-to-electricity project, the Cilicap waste-to-energy project, and the Klaten starch wastewater project (Jensen & vanderSluys, 2018).

Some initiatives under ESP 3/3 were therefore vulnerable when, in early 2015, the REDD+ Agency was dissolved, and the Ministry of Environment and Forestry (MoEF/KLHK) established (see Section 1.2 d). This created a more stable institutional arrangement, but among ESP 3/3 activities the FSC sub-component was never implemented, the RSF sub-component ceased to operate in 2015, and the FIP sub-component only got underway in 2018 (as FIP 2), by which time it was no longer focused on REDD+ and aligned with RAN-GRK. Instead, it was aimed at community-based forest management, none of the FMUs involved had had a role in REDD+ or RAD-GRK, and it had no links to the KLHK Directorate General of Climate Change Control.

As ESP 3 sub-components and pilot projects were found to be non-viable, they were variously closed and remaining budgets were reallocated to other initiatives for which a good case could be made. The result was adaptive change to events and circumstances, with 90% (DKK 242.4 million) of the total ESP 3 budget spent by the end of November 2018, the expectation that the last funds would be spent against final deadlines, and an exit strategy in the form of SSC Energy and SSC Environment in place.

Despite complexity and change in the political economy environment of ESP 3, some ESP 3/3 initiatives had significant performance, influence, leverage and legacy. These especially included the Harapan forest initiative in Sumatra, and the Locally Appropriate Mitigation Actions in Indonesia (LAMA-I) sub-component, described below (see also Annex e: sub-annex e4).

b) Harapan as a noteworthy ESP 3/3 project

Harapan began as an NGO (BirdLife) operation in the early 2000s and continues to date. It was supported by Denmark in 2011-2013 as a stand-alone project and in 2014-2018 through ESP 3. It aims to secure, by means of community-based action, about 100,000 hectares of mixed intact and badly damaged rainforest against imminent deforestation, thereby avoiding loss of biodiversity and the release of an estimated 10-15 $MtCO_2e$ and allowing the absorption of further carbon through regrowth for as long as the area could be protectively managed. Together with another BirdLife-supported project of a similar nature in the Mbeliling forest of Flores, supported by a stand-alone Danish intervention in 2011-2015 (Annex f), the Harapan initiative influenced policy change in a number of critical areas. These include ecological service payments, baseline and MRV systems for REDD+, forest uses beyond timber, recognition of how indigenous tenure rights and community participation can facilitate protected area management, and also in conflict management and benefit sharing. Both projects kept on implementing CBNRM and monitoring forest and carbon changes despite challenging regulatory and policy changes and informing the NDC focal point accordingly. Project investments in access to markets for non-timber forest products (including, internationally, the voluntary carbon market), capacity building among local communities for project management and in developing payment for ecosystem services (PES) baselines, fire patrols, and biodiversity monitoring are all significant and influential consequences of both projects.

In addition, the Harapan project is significant in at least two specific ways. First, as a **community-based forest conservation project**, it has a long history in a complex environment (and unlike Mbeliling, a socially conflicted one) that has long been subject to intense deforestation pressures. There are many and diverse stakeholders, ranging from tiny communities of indigenous peoples to in-migrant settlers and large private corporations with logging, plantation and coal-mining interests. Saving this particular forest was always likely to be hard, even year to year, and unlikely to be unconditionally successful without a fundamental change in the political environment if favour of forest conservation at district, provincial and national level. It was considered worth the effort, however, because of the widespread deforestation of the island of Sumatra and the conservation value of the residual Harapan forests.

The project, like any other, could have been more effective in detail over the years, but it managed to ensure that the forest is still there after some two decades. Whether or not the particular approach of investing in community-owned commercial enterprises using forest lands and resources as a means to incentivise conservation by local people is flawed has been at issue for many years. It represents a line of thinking dating from when development finance first became available for tropical conservation, in the 1980s, but only on condition that wealth among local people could be improved quickly and measurably (Caldecott, 1996). More recent understanding is that while employment opportunities for local people are indeed helpful, participation, community organisation and a sense of ownership, environmental education, land tenure rights and help with sustainable ecosystem husbandry are all at least equally important, along with other things that must be designed and applied according to specific local conditions.

The design principles and documentary record of performance and evaluation at Harapan are reviewed in Annex e. The review is sympathetic because the evaluation is aware of the difficulties involved in such a project in such a location. It is also positive because it was looking at the specific issue of how to estimate GHG emission reductions through avoided deforestation, and 10-15 $MtCO_2e$ is a defensible estimate of the quantity involved in the Harapan case. This is a large amount of carbon conserved very cheaply, and this value must be recognised in an evaluation of mitigation effectiveness.

The second significance of Harapan lies in its role as the **first trial of the Ecosystem Restoration Concession (ERC) mechanism**. It helped establish with the Ministry of Forestry (now KLHK) contractual rules for an ERC system that allowed it to be rolled out across Indonesia. This led to the establishment of 16 ERCs with a total area of 622,862 hectares (Annex e, G2), thus preventing emission or allowing the absorption of hundreds of $MtCO_2e$[6], with abundant co-benefits in terms of biodiversity survival and ecosystem services. This role of Harapan is important to the extent that the ERC system is important, which is open to question in two senses. First, that while some of the Indonesian ERCs are doing well, with major biodiversity and carbon gains, others are not. And second, that the ERC model is based on the KLHK charging conservationists

[6] An estimated 381 $MtCO_2e$ by 2040 in five ERCs including Harapan (https://partnershipsforforests.com/our-impact-in-numbers/).

high, 60-year rents for surviving fragments of its forest estate, thus exploiting the fact that conservationists are desperate to save some of Indonesia's rich biodiversity and forest carbon. As the development agencies did when they financed integrated conservation-development projects, the approach devalues non-monetary benefits and demands cash. It therefore distorts the conservation equation and makes it very hard to achieve sustainable progress. Even so, the ERC system is considerably better than nothing, the main alternative in Indonesia, in attracting some new conservation money and in saving some forests for a while.

On both these grounds, in the context of all the catastrophes of recent decades and despite questioning by some observers, the evaluation stands by its assessment of Harapan as a noteworthy project and an excellent historical use of Danish funds.

c) LAMA-I as a noteworthy ESP 3/3 project

LAMA-I focused on building the capacity of provincial and district governments to develop integrated low-emissions development plans in dialogue with central government. There were three parts to the sub-component, led respectively by CCROM, ICRAF and GIZ. The first focused on developing policies and regulations on low-emission development through networking, joint planning activities and training. The second focused on developing, testing and distributing tools and insights to guide land-use planning towards greater environmental sustainability and livelihood security while reducing net GHG emissions and safeguarding biodiversity and water catchments. And the third focused on building capacity (awareness, skills, networks, etc.) among government stakeholders and facilitating the mainstreaming of mitigation priorities into government planning processes at all levels.

All LAMA-I tasks were well undertaken, and although hard to quantify the sub-component had significant effects in building capacity to reduce GHG emissions. These effects might well be amplified by the focus on Papua where the potential to head off high emissions through integrated low carbon spatial planning is greatest among all the Indonesian provinces, by the potential leverage effects of using South Sumatra as an influential pilot for dozens of other provinces, and by cross-learning and synthesis between different elements. Through LAMA-I, GoI partners at all levels increased their capacity to develop evidence-based policy, set baselines, measure and report on indicators, and also to appreciate the value of participation, equality and inclusion in the low-carbon development planning process.

In addition, ICRAF was particularly consistent in providing technical assistance to local, provincial and national governments in developing useful tools for baselining and monitoring emissions and including local communities. The aims of LAMA-I remain relevant, especially in providing capacity building for local government since the omission of AMDAL/EIA in the development and licensing process under the 2020 Omnibus Law increases the need for high-quality KLHS/SEA in development planning (see Section 1.2 e). This relevance will increase because Presidential Regulation on GHG reduction (Perpres 60 and 61) will end in 2020, and Bappenas has prepared two draft

presidential decrees to focus on low-carbon development planning rather than just reducing emissions per sector.

2.3 Parallel, spin-off and descendent initiatives

The three components of ESP 3 gave rise to a number of other initiatives, corresponding in part to the themes of the EEC programme that are described in more detail in the next section: **ESP 3/1** on low-carbon development planning yielded an integrated low-emission development planning process (LAMA-I) in ESP 3/3; (b) **ESP 3/2** on energy sector development yielded Strategic Sector Cooperation on Clean Energy, Renewable Energy and Energy Efficiency (SSC Energy, 2016-2021), which in phase 1 focused on scenario analysis and energy planning, and in phase 2 focused on enhancing capacity at relevant national institutions (MEMR, DEN/NEC and PLN) for energy modelling and long-term energy planning; and (c) **ESP 3/3** on forest conservation and ecological mitigation was paralleled by the Mbeliling and Harapan projects.

2.4 Themes of the mitigation portfolio

a) Overview of the themes

All the Danish mitigation interventions reviewed here were designed to build the capacity of Indonesian institutions (i.e. central government ministries and directorates-general, provincial and district governments, sub-districts and communities) in specific ways. Several were undertaken in two or three phases and/or comprised up to three components with distinct areas of focus. Because these areas of focus often continued from one phase or project to another, four distinct (albeit interconnected) themes could be identified:

- **The circular economy theme**, which connects all the components or projects that were concerned with building national, provincial and district government capacity for circular economy thinking (i.e. minimising leakage of unavoided, unused and uncompensated wastes, pollution and other impacts between locations and sectoral activities), and hence strategic analysis, impact assessment and waste management.
- **The energy sector theme**, which connects all the components or projects that were concerned with building central and provincial government capacity to analyse, plan and promote the development and management of the energy sector, including energy efficiency (EE) and renewable energy (RE).
- **The ecological mitigation theme**, which connects all the components or projects that were concerned with building capacity for community empowerment, ecosystem management and ecological mitigation in partnership with district and sub-district government.
- **The low-carbon planning theme**, which connects all the components or projects that were concerned with encouraging and enabling cross-sectoral, whole-economy, low-emission and 'green growth' development action planning and implementation at provincial and district level.

The interventions in each theme belong to the first, second or third 'generations' of each approach (Table 5). This is because one thing leads to another within each theme, changing emphasis at each iteration in response to changing Danish and Indonesian priorities and the lessons of previous interventions[7]. Nevertheless, the four themes provide a way to present the material that makes sense from the point of view of climate change mitigation, as they map onto the main clusters of factors that determine net GHG emissions: the LULUCF sector (Theme 3), the energy sector (Theme 2), the conflicts that arise between sectors and policies (Theme 1), and the territorial harmonisation of sectors and policies around low-emission development (Theme 4).

b) Design quality and performance of the projects by theme

Table 5 presents information on the design quality and mitigation performance of the various projects, programmes and components, by theme and, within each theme, by 'generation'.

- **The circular economy theme** comprised ESP 2/1 in the first generation, ESP 3/1 in the second generation, and SSC Environment and the SSC-SII in the third generation. It featured weak to moderate design in the first two generations, improving to good at pilot-province level. Capacity building activities at national level yielded weak and indirect mitigation performance, but this became stronger at pilot-province level, where there was real potential to achieve significant change locally and through replication effects.
- **The energy sector theme** comprised ESP 2/2 in the first generation, ESP 3/2 in the second generation, SSC Energy 1 in the third generation, and SSC Energy 2 in the fourth generation. It featured weak design and performance in the first generation, improving to good design and moderate to good performance in the later generations, particularly at pilot province level (see Section 2.5).
- **The ecological mitigation theme** comprised ESP 2/3 and Mbeliling 1 in the first generation, and ESP 3/3 and Mbeliling 2 in the second generation. It featured moderate design and weak/diffuse performance in the first generation at national level, but excellent design and strong performance at Harapan and after a slow start at Mbeliling. There was very good design and excellent performance in the second generation.
- **The low-carbon planning theme** comprised only ESP 3/1 and ESP 3/3 in the first generation. It featured good design but weak performance at national and pilot province level, but the approach was greatly accelerated and proven by LAMA-I which corrected the moderate design quality and delivered excellent performance. The low-carbon planning theme united with the circular economy theme in SSC Environment and SSC-SII, both focused on Lombok.

Table 5: Themes, design and performance of interventions evaluated in Indonesia

[7] The multi-levelled unitary Indonesian state, with its pyramidal arrangement of legal powers (e.g., see Annex h cell G2) and great geographic, ecological and ethnolinguistic diversity, and the complexity and evolution of the Indonesian development process, do not lend themselves to classification or synthesis.

Intervention	Generation/Theme	Design	Mitigation performance
ESP 2/1	1/circular economy	4	3
ESP 2/2	1/energy sector	2	3
ESP 2/3	1/ecological mitigation	4	3
ESP 3/1	1/low-carbon planning	3	3
	2/circular economy	5	3
ESP 3/2	2/energy sector	5	4
ESP 3/3	1/low-carbon planning	4	6
	2/ecological mitigation	5	6
Mbeliling 1	1/ecological mitigation	6	5
Mbeliling 2	2/ecological mitigation	6	6
SSC Energy 1	3/energy sector (national)	5	3
	3/energy sector (Lombok)		5
SSC Energy 2	4/energy sector (national)	5	3
	4/energy sector (Lombok)		5
SSC Environment	3/circular economy	4	-
SSC-SII	3/circular economy	5	-
Scores: 7 = perfect; 6 = excellent; 5 = good; 4 = moderate; 3 = weak; 2 = very weak; 1 = extremely weak.			
Note: Mitigation performance = overall effectiveness (direct and/or indirect or, if these not scored, impact as a proxy).			

2.5 SSC Energy and IndoDEPP

A 'fifth generation' of energy sector interventions was launched in November 2020, in the form of the Indonesia-Denmark Energy Partnership Programme (IndoDEPP), which like DEPP phase III programmes in other countries aims to support the relevant ministry (in Indonesia, MEMR) in building its capacity for energy modelling, planning, policy and regulatory development, and the integration of RE to the national grid (MFA *et al.*, 2020). There was a continuity of purpose between components in the 'preparation' phase of the SSC (SSC Energy 1) and its 'implementation' phase (SSC Energy 2), which also relate back to the purposes at national level that were built into ESP 3, and with a similar outreach to the regional level. The latter included developing Energy Outlook reports for Lombok, North Sulawesi and Gorontalo, Riau, and South Kalimantan (DEA & EaEA, 2018, 2019a, b, 2c), as well as a study on 'Powering Indonesia by Wind' (DEA & EaEA, 2017). Preparation of these reports contributed strongly to option awareness and through participation to capacity among government institutions, but SSC Energy started earlier and made most progress in Lombok.

The latter facilitated later collaboration with SSC Environment, which was also Lombok-focused (Annex h), and its development of the SSC-SII, which covers Riau/Batam but focused on Lombok during the evaluation period (Annex i). At least two points are relevant here. The first is that activity in each province or island can be part of a

constellation of similar activities even though some can act as pioneers. The second is that if progress is more advanced in one location (because it started earlier, or because the local government is more cooperative, or for some other reason) then that location may become more attractive to other initiatives that share some of its aims and trained people, and synergies between them may then occur.

In the energy sector, the continuity from the ESPs to SSC Energy and IndoDEPP is stressed by MFA *et al.* (2020: 8). They point out that ESP 2 and ESP 3 supported implementation of policies related to EE/RE with a focus on the local government level, and the use of pilot projects to strengthen national policies, strategies and climate change planning, and that at the national level both supported development of the Clearing House (LINTAS) system and on-line reporting by energy-intensive industries. They observe that it was SSC Energy 2 that most directly inspired IndoDEPP (*Ibid.*: 8-9), with both covering energy modelling and planning, integration of RE, and EE. IndoDEPP will build on work such as the Energy Outlooks, deepening it and adding new areas of focus such tendering processes and coordination across institutions.

With IndoDEPP there will be a renewed emphasis on a national approach that seeks to align plans between government institutions to create a stronger platform for discussing climate ambitions and a more transparent planning process among them. Finally, it should be noted that the budgets for the SSC programmes in Indonesia are relatively small, at DKK 5.5-10.0 million each (Annexes g, h and i), or in total only 5.2% of the total evaluated portfolio in Indonesia (Table 4.4 in the Main Text). Thus, the high ambitions and considerable achievements of these programmes must be judged against their very limited resources.

2.6 Danish interventions in relation to NDC commitments

The evaluated Danish mitigation interventions in Indonesia began several years before and continued for several years after the 2015 INDC/2016 NDC. The latter themselves straddled a moment of dramatic institutional change in 2015, but they were also part of a consistent policy trajectory on climate change mitigation that began in Indonesia in 2009 and continues to date. The precise timings, causes and effects in such a complex country in such a complex period cannot be disentangled completely, so Table 6 merely notes the major points of alignment between the 2016 NDC commitments and the Danish interventions in the relevant timeframe. Alignment was complete at the sectoral level, since all sectors prioritised in the NDC had corresponding Danish interventions.

This reflects two facts. First, the recognition since the 2007 Bali CoP that the LULUCF and energy sectors drive most GHG emissions in Indonesia (the significance of the waste sector was realised a decade later). And second, that the EEC interventions began in 2005 under the sway of a Danish development policy (Danida, 2000) that was pro-poor and sustainability-oriented, were shaped by Danida's longstanding experience in community-based forest management, and continued under a development policy (Danida, 2010) that was oriented to empowerment, environment and climate. Had Danish engagement started under the later, more pro-business policy (Danida, 2017), it seems possible that only the energy sector would have been targeted.

Table 6: NDC mitigation commitments and Danish interventions in Indonesia

Commitments in the NDC (GoI, 2016)	Response in the form of Danish interventions
Strategic goal 1: Reduction of total GHG emissions by 41% with international support relative to the expected emissions according to the BAU scenario in 2030 (i.e. 2,869 $MtCO_2e$).	Alignment with the NDC's strategic goal was correctly used to justify Danish Energy and Environment Cooperation throughout this period.
Sectoral priority 1 - LULUCF. REDD+ to be an important NDC target[8].	Alignment to this NDC priority from 2010 in support for NGO forest conservation activities (a second phase in Mbeliling and a first engagement in Harapan) and then by designing ESP3/3 which absorbed the Harapan project and also tried to support LULUCF sector mitigation in various ways.
Sectoral priority 2 - Clean energy. The NDC is consistent with the National Energy Policy.	Alignment to this NDC priority from 2008 in ESP 2/2, from 2013 in ESP 3/2, and from 2016 in SSC Energy 1 and 2.
Sectoral priority 3 - Waste: Develop a comprehensive waste management strategy and improve related policy and institutional capacity at all levels, with aims that include reduced GHG emissions.	Alignment to this NDC priority from 2016 in the contribution of ESP funds to the Indonesia Marine Debris Pollution Assessment and Management Programme (and again in 2019 to the Oceans, Marine Debris and Coastal Multi Donor Trust Fund). SSC Environment responded to Presidential Regulation No. 97/2017 on national waste management strategy, and from 2018 it focused on managing waste streams, recycling, waste-to-energy, etc. From 2020 the SII focused on similar themes in pilot islands.
Other NDC priorities 1 - Transition to a low-carbon and climate-resilient future, to be achieved through empowerment and capacity building, improved services in health and education, technological innovation, and sustainable natural resource management, in compliance with principles of good governance.	Earlier Danish development policies align with Indonesia's 2016 vision, most consistently in: "The transition to a green economy will reflect the national context, priorities, and governance capacity. The aim is not to define green growth in a uniform manner but to accept that each country has to develop its own solutions of and political framework for green growth that fit its national conditions" Danida (2013a).
Other NDC priority 2: implement 2016 NDC.	Indonesia joined the Danish-funded NDC in 2016, with KLHK and Bappenas as its focal points. the Partnership's database for Vietnam records nine initiatives on mitigation and adaptation (https://ndcpartnership.org/good-practice-database#navi).

[8] By 2016, 'REDD+' was used in Indonesia as shorthand for the whole process of LULUCF sector governance reform for conservation and sustainability, and all the technical, social, financial and institutional aspects thereof.

3. Conclusions

Indonesia is a country where it is hard to change strategic outcomes, because of its extraordinary size and complexity, the inertia of established ways of doing everything, sustained by cultural, political and institutional traditions, and by the delicate and often opaque arrangements that balance and protect powerful and diverse interests. Whether analysed by project or by theme, Denmark was a small but influential actor on behalf of social and environmental sustainability in Indonesian development in 2005-2020. In terms of mitigating GHG emissions, the historical dominance of the LULUCF sector as a GHG source, and coal as a source of electrical energy, meant that to make a difference Denmark would have to engage with some powerful institutions and traditions.

This it did with results that ranged from a small number of failures (e.g. on forest certification) through a large number of slow-acting but cumulatively or eventually important initiatives (e.g. most items to do with strategic planning and impact management in the circular economy and energy sector themes, particularly where they were applied at the provincial rather than central level), to a small number of game-changing initiatives based on local actors working for a common purpose with provincial and national institutions (e.g. Harapan and ERC, Mbeliling, LAMA-I).

The strong design and performance scores of later interventions in all four of the major themes of the Danish-Indonesian EEC suggest that both sides have converged. The Danish side has learned what to offer and how to offer it, while the Indonesian side has learned to encourage sustainability-oriented and locally-inclusive development actions. This latter transformation is the result of many factors, among them:

- pressure of policy to reduce GHG emissions since 2009, driving slow but significant change in the LULUCF and energy sectors against opposition from entrenched interests;
- agitation from the sub-national levels for greater local responsibility and accountable governance since 1998, advancing and reversing in tension with more centralising tendencies and traditions of governance; and
- demonstration effects of initiatives proving that local initiatives could help central government deliver more effectively on its own policy priorities, several of them assisted by Denmark.

Much has been achieved in Indonesia since ESP 2, and many lessons have been learned in the process. There is potential to achieve much more, and this can certainly be done in the energy sector, for RE at sub-national level by building on and replicating progress in Lombok and elsewhere, and through strategic innovation on RE procurement and integration nationally. But there are also opportunities to renew a commitment to several areas where there are key opportunities and needs, including for ecological mitigation by replicating successes with NGO partners and local government through the ERC system and beyond, and through territorial low-carbon development and green growth planning systems with local government.

Annex a: Information sources for the Indonesia country study

Process of country study development		
All country studies were developed according to the note in Annex a of Annex H.		
Persons and institutions consulted in the Indonesia country study		
Institution	**Relevance**	**Interviewee, role, contact, date**
GIZ	Annex e: ESP 3 (Harapan, ERC)	**Per Rasmussen** (Principal Advisor, Sustainable Agricultural Supply Chains in Indonesia, per.rasmussen@giz.de), 23 Oct 20.
Burung Indonesia	Annex e: ESP 3 (Harapan, ERC)	**Tom Walsh** (Senior Advisor, t.walsh@burung.org), 28 Oct 20.
PT REKI	Annex e: ESP 3 (Harapan, ERC)	**Mangara Silalahi** (Executive Director, presdir@hutanharapan.id), 28 Oct 20.
PT RMU	Annex e: ESP 3 (Harapan, ERC)	**Asep Ayat** (ERC Working Group Planning Manager, asep.ayat@ptrmu.com), 3 Nov 20.
World Bank Jakarta	Annex e: ESP 3 (IOMDCR MDTF)	**Dias Natasasmita** (Marine Specialist, dnatasasmita@worldbank.org), 30 Oct 20.
World Bank Jakarta	Annex e: ESP 3 (IOMDCR MDTF)	**Daniel Seno Yusanto** (Finance Officer, dyusanto@worldbank.org), 30 Oct 20.
World Bank Jakarta	Annex e: ESP 3 (IOMDCR MDTF)	**Puni Anjungsari** (Communication Officer, panjungsari@worldbank.org), 30 Oct 20.
World Bank Jakarta	Annex e: ESP 3 (IOMDCR MDTF)	**Priyasha Praba Madhavan** (Knowledge Management Officer, pmadhawan1@worldbank.org), 30 Oct 20.
World Bank Jakarta	Annex e: ESP 3 (FIP 2)	**Dinesh Aryal** (Task Team Leader, daryal@worldbank.org), 30 Oct 20.
World Bank Jakarta	Annex e: ESP 3 (FIP 2)	**Tini Gumartini** (Forestry Policy Consultant, tgumartini@worldbank.org), 30 Oct 20.
World Bank Jakarta	Annex e: ESP 3 (FIP 2)	**Sandra Buana Sari** (Program Assistant, ssari1@worldbank.org), 30 Oct 20.
Consultant	Annex e: ESP 3 (Semarang Project)	**Ian Rowland** (Former International Technical Expert, rowland@gn.apc.org), 2 Nov 20.
Kemitraan - PGR	Annex e: ESP 3 (Renewable Energy Youth Campaign)	**Inda Loekman** (Head of Knowledge Management and Learning, inda.loekman@kemitraan.or.id), 2 Nov 20.
Kemitraan - PGR	Annex e: ESP 3 (Renewable Energy Youth Campaign)	**Amalia Fubiani Sitanggang** (Project Coordinator, amalia.fubani@kemitraan.or.id), 2 Nov 20.
Kemitraan - PGR	Annex e: ESP 3 (Renewable Energy Youth Campaign)	**Hery Sulistio** (Researcher, hery.sulistio@kemitraan.or.id), 2 Nov 20.
Transparency International Indonesia (TII)	Annex e: ESP 3 (energy efficiency governance)	**Danang Widoyoko** (Secretary General, dwidoyoko@ti.or.id), 3 Nov 20.
TII	Annex e: ESP 3 (energy efficiency governance)	**Wawan H Suyatmiko** (Knowledge Management Officer, wsuyatmiko@ti.or.id), 3 Nov 20.
TII	Annex e: ESP 3 (energy efficiency	**Ferdian Yazid** (Economic Governance Officer, fyazid@ti.or.id), 3

	governance)	Nov 20.
TII	Annex e: ESP 3 (energy efficiency governance)	**Belicia Angelica** (Resource Governance Officer, bangelica@ti.or.id), 3 Nov 20.
Rumah Energi	Annex e: ESP 3 (renewable energy)	**Rebekka Angelyn** (Executive Director, r.angelyn@rumahenergi.org), 6 Nov 20.
Rumah Energi	Annex e: ESP 3 (renewable energy)	**Dhita Rahmadini** (Formerly Acceleration of RE Integration, MEMR, d.rachmadini@gmail.com), 6 Nov 20.
ICRAF	Annex e: ESP 3 (LAMA-I)	**Sonya Dewi** (Country Programme Coordinator, s.dewi@cgiar.org), 13 Nov 20.
ICRAF	Annex e: ESP 3 (LAMA-I)	**Suyanto** (Natural Resource Economics & Institutional Analyst, suyanto@cgiar.org), 13 Nov 20.
ICRAF	Annex e: ESP 3 (LAMA-I)	**Andree Ekadinata** (Spatial Analysis Unit Leader, a.ekadinata@cgiar.org), 13 Nov 20.
MEMR	Annex e: ESP 3 (all); Annex g: SSC Energy (all); Annex i: SII (all)	**Gita Lestari** (Head of Bilateral Cooperation at the Secretariat-General, gita.lestari@esdm.go.id), 13 Nov 20.
MEMR	Annex e: ESP 3 (renewable energy); SSC, IndoDEPP	**Harris Yahya** (Director for New and Renewable Energy, harris@esdm.go.id), 20 Nov 20.
Consultant	Annex e: ESP 3 (Karimunjawa project)	**Aminun Khakim** (Photovoltaics Operator, Pulau Parang power generator), 21 Nov 20.
Burung Indonesia	Annex f: Mbeliling Project	**Adi Widyanto** (Conservation and Development Head, a.widyanto@burung.org), 2 Nov 20.
Burung Indonesia	Annex f: Mbeliling Project	**Tiburtius Hani** (Team Leader, t.hani@burung.org), 2 Nov 20.
Castlerock Consulting	Annex g: SSC Energy; Annex i: SII	**Chitra Priambodo** (Director, chitra.priambodo@casterockasia.com), 4 Nov 20.
PT PLN	Annex g: SSC Energy	**Muhammad Ikbal Nur** (Director of Corporate Planning, mikbal@pln.co.id), 5 Nov 20.
PT PLN	Annex g: SSC Energy	**Hot Martua Bakara** (PLN staff, hotbakara@pln.co.id), 5 Nov 20.
PT PLN	Annex g: SSC Energy	**Elsa Oktarini Alvis** (PLN staff, elsa@pln.co.id), 5 Nov 20.
PT PLN	Annex g: SSC Energy	**Edwin Nugraha Putra** (PLN staff, edwin@pln.co.id), 5 Nov 20.
Danish Embassy, Jakarta	Annex g: SSC Energy (all)	**Thomas Capral Henriksen** (Energy Sector Counsellor, thohen@um.dk), 17 Nov 20.
Provincial Office MEMR, Lombok-NTB	Annex g: SSC Energy (renewable energy); Annex i: SII (renewable energy)	**Niken Arumdati** (Head of the Renewable Energy Section, arumdati@gmail.com), 10 Nov 20.
Climate Policy Initiative	Annex h: SSC Environment	**Tiza Mafira** (Associate Director, Tiza.Mafira@cpiglobal.org), 3 Nov 20. (see Mafira *et al.*, 2020)
Danish Embassy, Jakarta	Annex h: SSC Environment (all)	**Morten Holm van Donk** (Environment Sector Counsellor, mordon@um.dk), 18 Nov 20.
Provincial Office KLHK, Lombok-NTB	Annex h: SSC Environment (waste)	**Ida Bagus Gede Sutawijaya (Gusde)** (Head of Section for Management and Final Processing of Regional Landfill, sampahregionalntb@gmail.com), 20 Nov 20.

Provincial Office KLHK, Lombok-NTB	Annex h: SSC Environment (waste)	**Firmansyah** (Head of Section for the Waste Management Programme), 20 Nov 20.
MEMR	Annex i: SII (all)	**Abdurrahman Saleh** (Special Adviser to the Minister on Spatial Planning and Environment, Former General Secretary of the National Energy Council, arrmansa@gmail.com), 17 Nov 20.

Acronyms: ERC = Ecosystem Restoration Concession; FIP = Forest Investment Programme; GIZ = Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH; ICRAF = World Agroforestry Centre, Bogor; IOMDCR MDTF = Indonesia Oceans, Marine Debris and Coastal Resources, Multi-Donor Trust Fund; KLHK = Ministry of Environment and Forestry; MEMR = Ministry of Energy and Mineral Resources; NTB = Nusa Tenggara Barat; PGR = Partnership for Governance Reform; PLN = PT Perusahaan Listrik Negara (State Electricity Company); REKI = Restorasi Ekosistem Indonesia (ERC holder); RMU = Rimba Makmur Utama (ERC holder); TII = Transparency International Indonesia.

Annex b: Timeline of Danish projects and programmes in Indonesia

Year	Indonesia (RI)	ESP	Harapan, Sumatra	Mbeliling, Flores	SSC Energy	SSC Environment	SSC-SII	Marine PAs
2004 and prior	Tsunami devastates Aceh, N & W Sumatra (Dec 2004). Decentralisation Law 32/2004. Forest loss 12,900 km².		BirdLife Consortium (Burung Indonesia) & RSPB project (since 2002).	Cambridge University expedition (1993); Ford Foundation grant to biodiversity projects in Nusa Tenggara (ca 2000); DOF & Danida support to Sumba Project (from 1999); RDE grant to Burung Indonesia for Sumba Project extension to Mbeliling (2001-2002).				
2005	Post-tsunami restoration efforts led by BRR. Forest loss 11,800 km².	**Environmental Support Programme (ESP) 1**: post-tsunami rehabilitation (with BRR, Bappenas) & environmental capacity building (with KLH).	BirdLife/RSPB support continues to 2020.	BirdLife/DOF support continues to date.				Project proposal to Danida by WWF Denmark & WWF Indonesia (Dec).
2006	Forest loss 14,300 km².	**ESP 1** (ESP 2 preparation begins).		Birdlife feasibility study.				Revised project proposal to Danida by WWF Denmark & WWF Indonesia (Feb). Danida approves funding for 'Sustainable community development and management of marine resources in Berau and Solor-

Year	Indonesia (RI)	ESP	Harapan, Sumatra	Mbeliling, Flores	SSC Energy	SSC Environment	SSC-SII	Marine PAs
								Alor, Indonesia'.
2007	CoP 13 Bali: LULUCF emissions make RI the 3rd largest emitter after USA and China. Forest loss 14,900 km².	**ESP 1** (ends Dec).	Darwin Initiative support for Harapan (2007-2011).	BirdLife Programme Document for **Mbeliling project Phase 1.** Project starts (Jul).				No further information.
2008	Forest loss 14,000 km².	**ESP 2** (from Jan): C1 (national capacity building with KLH); C2 (EE with MEMR); C3 (CBNRM, with MoHA).	Ecological Restoration Concession (ERC) issued to PT REKI for South Sumatra part of Harapan.	**Mbeliling Phase 1** continues.				
2009	President Yudhoyono at G20 Pittsburgh commits to 26/41% emission reductions. Forest loss 19,400 km².	**ESP 2** (continues).	KfW support for Harapan (2009-2013).	**Mbeliling Phase 1** continues.				
2010	Indonesia-Norway REDD+ Partnership Letter of Intent. Forest loss 12,800 km².	**ESP 2** (continues).	ERC issued to PT REKI for Jambi part of Harapan.	**Mbeliling Phase 1** ends (May). BirdLife Programme Document for **Mbeliling project Phase 2.**				
2011	REDD+ Task Forces prepare REDD+ and major forest sector governance reform. RAN-GRK. Moratorium on new forest concessions (renewed annually). Forest loss 15,400 km².	**ESP 2** (continues).	**Danish Support to Harapan Rain Forest (DSHRF)**, starts Jul.	**Mbeliling 2** starts (Jan) with Danish support, based on: participatory forest management; forest-based livelihoods; and community conservation agreements.				

Year	Indonesia (RI)	ESP	Harapan, Sumatra	Mbeliling, Flores	SSC Energy	SSC Environment	SSC-SII	Marine PAs
2012	Constitutional Court ruling (MK 35/PUU-X/2012) on customary vs forest law. Major fire peak Aug-Sep. Forest loss 22,600 km².	**ESP 2** (ends Dec).	**DSHRF**. Danish support continues.	**Mbeliling 2** continues.				
2013	REDD+ Agency to promote transparency, sustainability and rule of law in the LULUCF sector. Major fire peak Jun-Oct. Forest loss 11,400 km².	**ESP 3** (starts Jan): C1 (national policy, with KLH & Bappenas); C2 (national and local EE & RE, with MEMR & Central Java); C 3 (CBNRM): Harapan (BirdLife); LAMA-I (with ICRAF and others); FSC forest certification (Borneo Initiative); REDD+ Support Facility (RSF, with World Bank); CBNRM (FIP).	**DSHRF**. Danish support continues.	**Mbeliling 2** continues.				
2014	Forest sector governance reform processes underway. Major fire peaks Feb-Mar & Aug-Oct. Forest loss 18,900 km².	**ESP 3**. C1 & C2 proceed well. FSC/Borneo Initiative C3 sub-component stalls and is never implemented.	**DSHRF** ends (Dec). Continued Danish support for Harapan as a C3 sub-component of ESP 3.	**Mbeliling 2** continues.				
2015	Paris CoP 21. President Widodo dissolves REDD+ Agency and fuses the Environment and Forestry ministries into KLHK. Massive forest and peatland fires peak in Aug-Oct. Peatland Restoration Agency	**ESP 3**. C1 & C2 proceed well. RSF C3 sub-component stalls with the dissolution of the REDD+ Agency.	**Harapan as ESP 3 sub-component**.	**Mbeliling 2** ends (Jun); considered a significant success in terms of building community support for conservation, but government support and sustainability are				

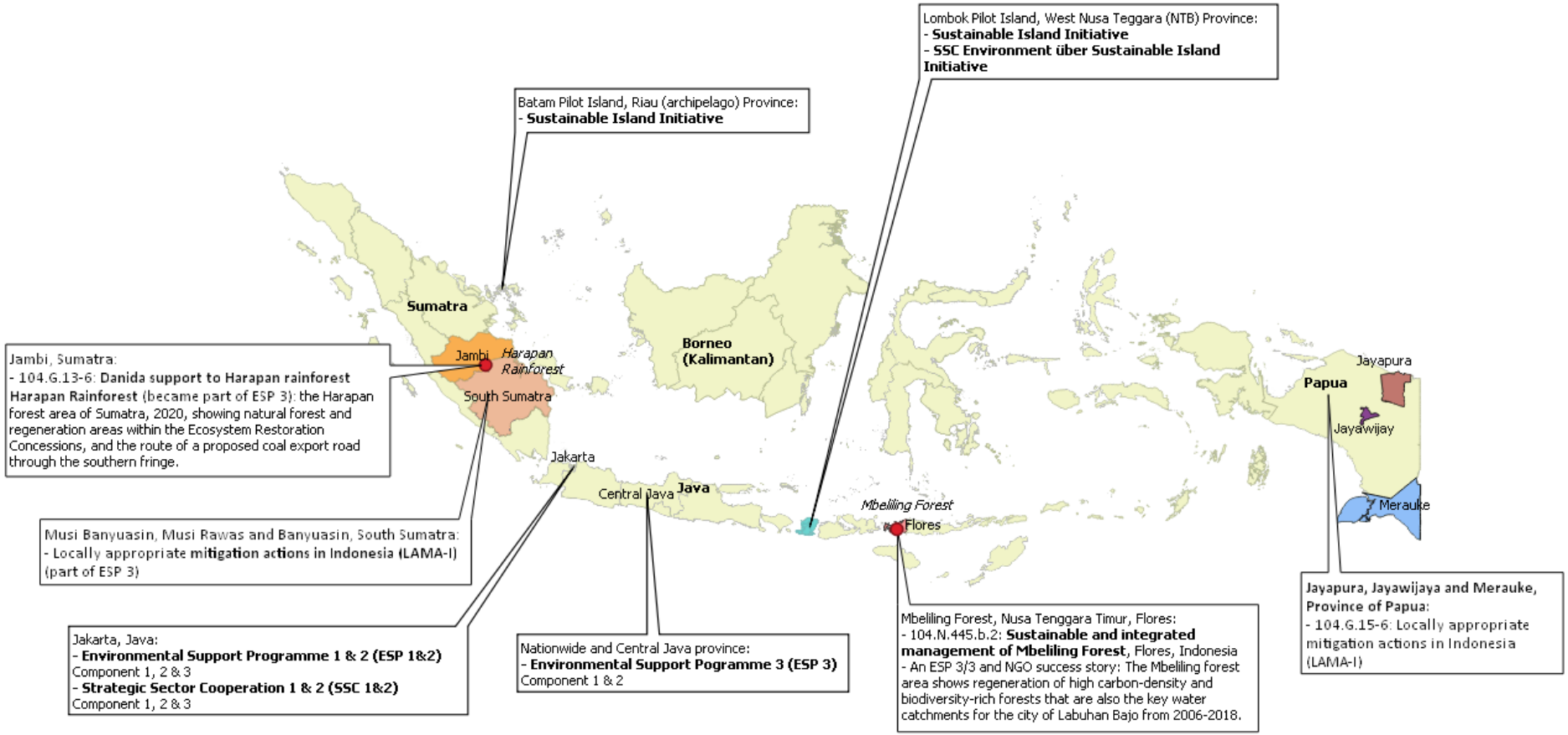
Year	Indonesia (RI)	ESP	Harapan, Sumatra	Mbeliling, Flores	SSC Energy	SSC Environment	SSC-SII	Marine PAs
	(BRG) established. Forest loss 17,500 km².			uncertain.				
2016	Paris Agreement enters into force. RI NDC submitted. Unilateral RI commitment on GHG emissions raised to 29/41%. Forest loss 24,200 km².	**ESP 3**. C1 & C2 proceed well. CBNRM C3 sub-component transfers DKK 40 million to World Bank FIP Trust Fund, but implementation is delayed to 2019. ESP 3 contribution to OMC Trust Fund (World Bank).	**Harapan as ESP 3 sub-component**.		**Strategic Sector Cooperation on Clean Energy, Renewable Energy and Energy Efficiency, Phase 1** (SSC Energy 1) begins (with MEMR), as an exit and continuation strategy for MEMR (C 2) parts of ESP 3.			
2017	Forest loss 13,000 km².	**ESP 3**. C1 & C2 proceed well.	**Harapan as ESP 3 sub-component**.		**SSC Energy 1** continues: Scenario analysis and energy planning; Renewable energy integration; and Energy efficiency.			
2018	Forest loss 12,200 km².	**ESP 3**. FIP sub-component underway with extension of the Denmark-World Bank agreement to late 2021	**Harapan as ESP 3 sub-component**. (ends Dec).		**SSC Energy 1** continues.	Transition planning from ESP 3 to SSC Environment. **SSC Environment** begins (Sep): waste and circular economy.		
2019	Major fire peak Aug-Oct. Forest loss 11,800 km².	**ESP 3** (no-cost extension to mid-2019).	Harapan endangered by a proposed new coal export highway. Interim funding from Darwin Initiative, the International Elephant Project, RSPB, NABU, TFCA, and income		**SSC Energy 2** starts, aims to: build capacity at MEMR, NEC and PLN for modelling & planning; increase RE production & integrate fluctuating RE in the power	**SSC Environment continues**. Danish contribution to OMC Trust Fund.		

Year	Indonesia (RI)	ESP	Harapan, Sumatra	Mbeliling, Flores	SSC Energy	SSC Environment	SSC-SII	Marine PAs
			from PT REKI. KfW considering funding.		sector; better enabling environment for EE in buildings and power production.			
2020	Fire peak Aug-Oct. Omnibus Law relaxes EIA investment rules. Food Estates regulation encourages forest conversion. Deforestation upturn as CoViD drives revenue-seeking and inhibits enforcement efforts. First results-based REDD+ payments to RI.	Mitigation significance of pioneer Danish support to Harapan, nationwide ERC system and LAMA mainstreaming appreciated.			**SSC Energy 2** continues.	**SSC Environment** continues.	**Sustainable Islands Initiative** (SSC-SII) starts: joint SSC Environment & SSC Energy action (budget 50:50 to DEPA and DEA), focused on waste management and waste-to-energy, with NTB (Lombok island), Riau province (Batam), and MEMR.	
2021		FIP scheduled to end.			**SSC Energy 2** continues (to end 2021).	**SSC Environment** continues.	**SII** continues.	
2022						**SSC Environment** continues (to end 2022).	**SII** continues (to end 2022).	

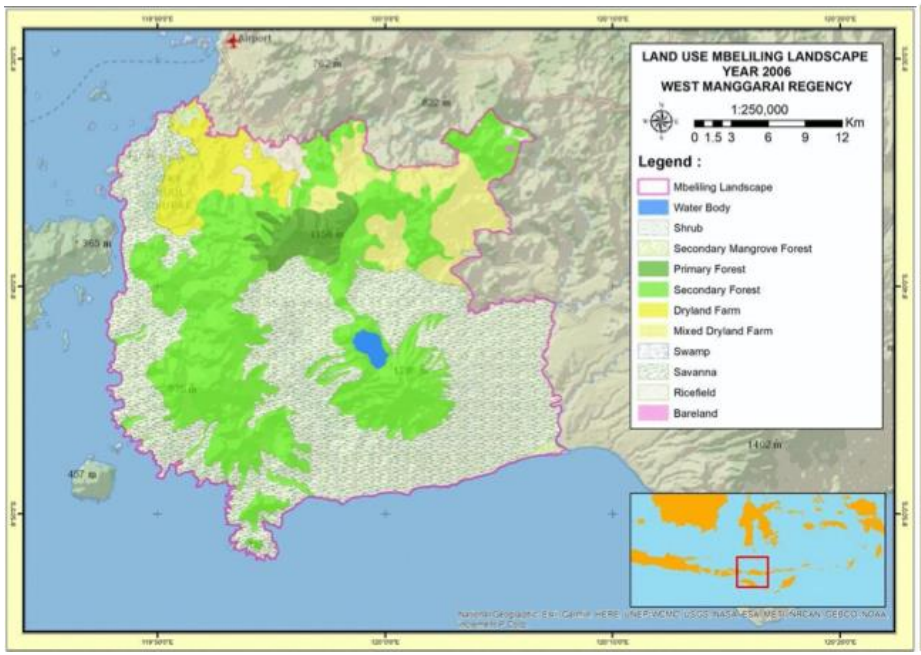
Acronyms. Bappenas = National Development Planning Agency; BRR = (post-tsunami) Rehabilitation and Reconstruction Agency; C = Component. CBNRM = Community-based natural resource management. CDG = Conservation and Development Group (Mbeliling); CoP = Conference of the Parties (to UNFCCC). DOF = Dansk Ornitologisk Forening (Danish Ornithological Society/BirdLife Denmark); FIP = Forest Investment Programme; FPKM = Mbeliling Area Care Forum; FSC = Forest Stewardship Council; KLH = Ministry of Environment. KLHK = Ministry of Environment and Forestry. LAMA = Locally appropriate mitigation action(s). LKM = Low-key monitoring (Mbeliling); MEMR = Ministry of Energy & Mineral Resources. NDC = Nationally Determined Contribution (toward Paris Agreement goals). NTB = Nusa Tenggara Barat (West Nusa Tenggara province). OMC = Oceans, Marine Debris and Coastal Resources Multi-Donor Trust Fund. RAN-GRK = National Action Plan to Reduce Emissions; RNCA = Rural Nature Conservation Agreement (Mbeliling).

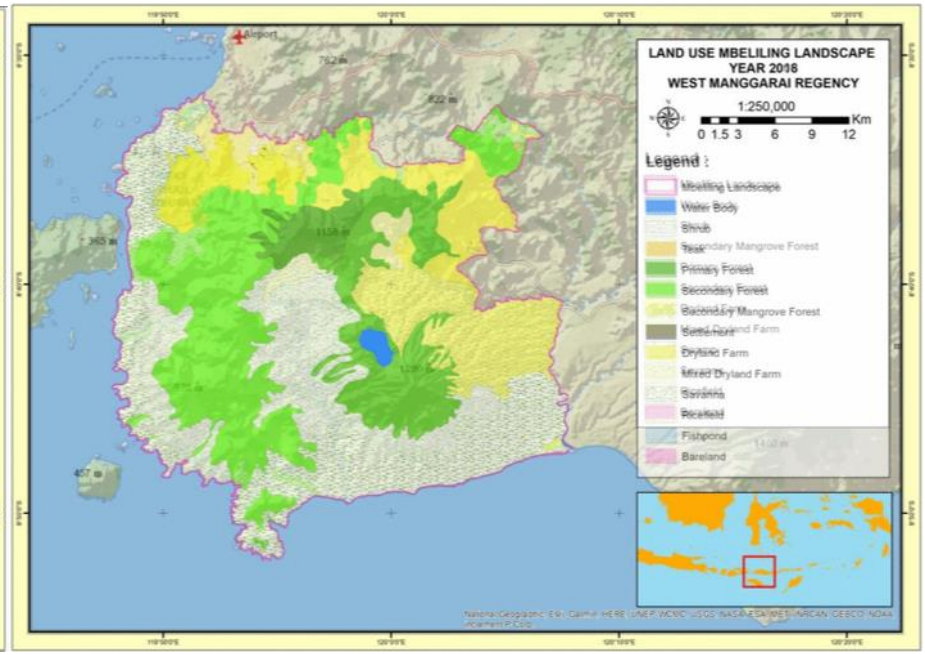
Sources. For Harapan, see Harrison & Swinfield (2015); for Mbeliling, see Widyanto *et al.* (2014); for forest loss data see www.globalforestwatch.org/dashboards/country/IDN/?category=summary&dashboard; see also project and programme reviews.

Annex c: Map of Indonesia with key project locations.

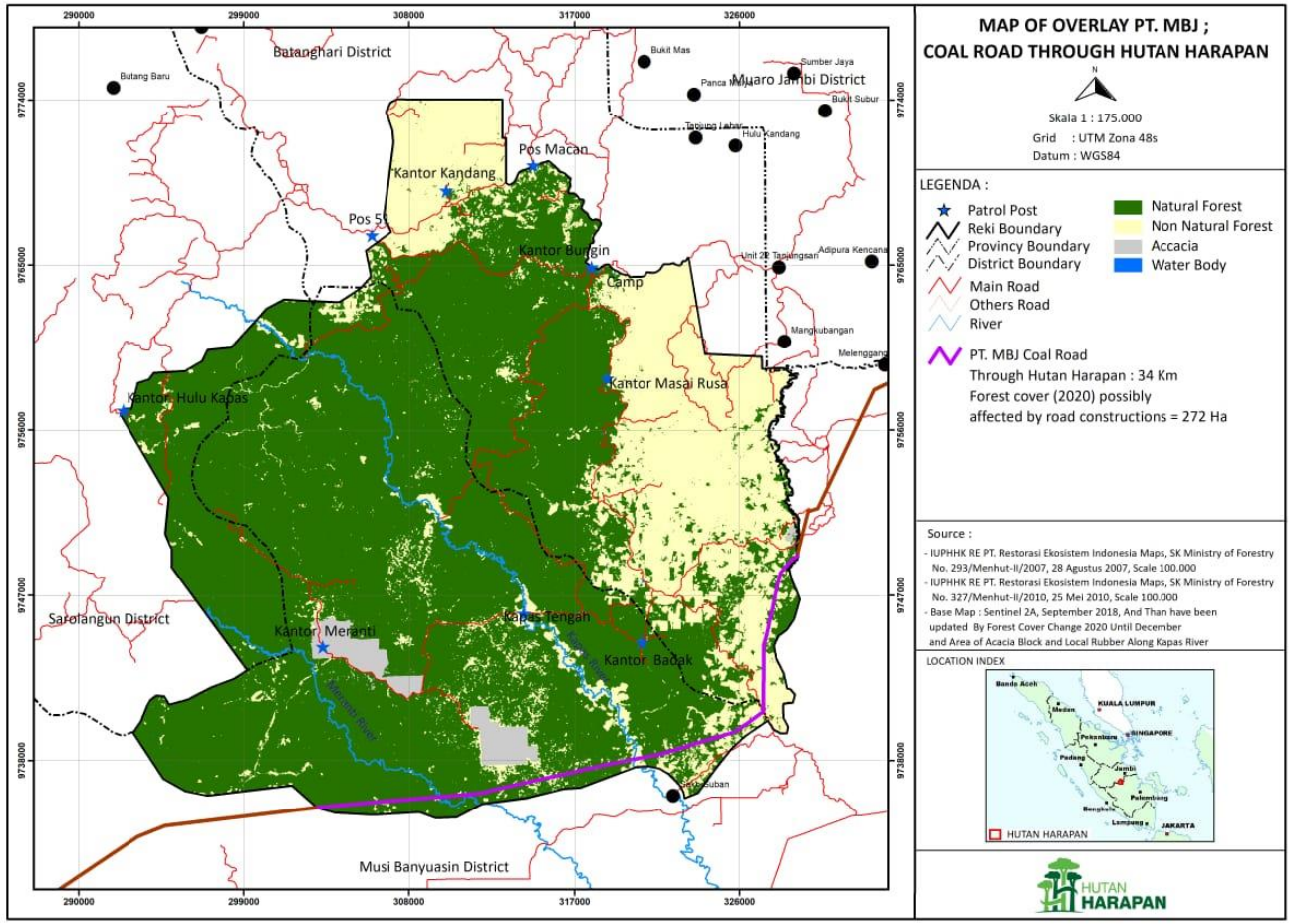


A noteworthy ESP 3/3 and NGO story: the Mbeliling forest area, 2006-2018, showing protection and regeneration of high carbon-density and biodiversity-rich forests that are also the key water catchments for the city of Labuhan Bajo.





A noteworthy ESP 3/3 and NGO story in danger: the Harapan forest area of Sumatra, 2020, showing natural forest and regeneration areas within the Ecosystem Restoration Concessions, and the route of a proposed coal export road through the southern fringe.



Annex d: The Environmental Support Programme (ESP) Phases 1 & 2

Part A: Basic data

A1. Project number & name. 104.Indonesien.1.MFS.2, 104.Indonesien.1.MFS.4: Environmental Support Programme, Indonesia, Phases I & II (ESP 1 & 2)

A2. Interviews. ESP 1 and 2 were too distant in time to yield useful interviews.

A3. Dates & financial data.

ESP 1 ran from Dec 2005 to Dec 2007. MoHA *et al.* (2007): Indonesia and Denmark began this collaboration in 2005 with a two-year environmental sector programme (ESP 1). This comprised a post-tsunami rehabilitation and reconstruction component and a capacity development for environmental management component, implemented by the Agency for (post-tsunami) Rehabilitation and Reconstruction (BRR), KLH and Bappenas. The governments then agreed to prepare a second phase, ESP 2.

ESP 2 five-year budget DKK 220 million, Jan 2008-Dec 2012. Component 1 cost to Danida: DKK 63.5 million (for KLH). Component 2 cost to Danida: DKK 51.8 million (for various). Component 3 cost to Danida: DKK 91.8 million (DKK 82.5 million for Multidonor Trust Fund via World Bank, DKK 9.3 million for activities and adviser). Total disbursed: DKK 207.1 million.

ESP 2 Inception Phase: Jan-Jun 2008, during which "it was understood that the ESP 2 programme document was prepared during the years 2006-2007 based on assumptions and requirements at that time. Therefore there was a need for improvement and modifications of the component activities as long as no modification were done to the objectives." (Danida, 2008a). The Inception Phase overlapped with the first six months of the programme (Danida, 2008b).

A4. Location(s).

ESP 1/1: tsunami-affected areas (Aceh, North Sumatra, West Sumatra).

ESP 2/1-2: national (Jakarta).

ESP 2/3: north-western Sumatra and Sulawesi.

A5. Partners. (a) Bappenas; (b) KLH; (c) MEMR; (d) Ministry of Home Affairs (MoHA); (e) Ministry of Public Works (PU/MoPW); (f) The World Bank.

Part B: Purpose and relevance

B1. Purpose.

ESP 1: "Sustainable environmental management in support of livelihoods in Indonesia" (Danida, 2008a).

ESP 2: "To support GoI's efforts in incorporating environmental concern as a substantial element in safeguarding a sustainable economic development and poverty reduction" (Danida, 2016b).

ESP 2 initially had two components (KLH & MFA, 2007; KLH *et al.*, 2007) but a third was added later (MoHA & MFA, 2007), with the following aims:

- **Component 1**: "Practical instruments and systems for addressing the environmental implications of the development cycle (policy, planning, implementation and regulation) developed, tested and adopted in partner ministries and districts." (Danida, 2008a).
- **Component 2**: "Energy efficiency measures are increasingly adopted by major industrial, commercial and public sector consumers of energy." (Danida, 2007).
- **Component 3**: "The utilisation of natural resources by rural communities in North-western Sumatra is increasingly sustainable and contributes to improvements in rural livelihoods." (MoHA et al., 2007).

B2. Relevance to partners.

Component 1: 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.

Component 2: arguably directly relevant to Indonesian policy on reducing energy intensity and elasticity [see note on energy elasticity].

Component 3: barely relevant to mitigation policy.

B3. Relevance to MDGs/SDGs. For Component 3, MoHA *et al.* (2007: vii) note relevance to the MDGs in that "It aims at alleviating poverty, strengthen local government and community institutions, and improve local governance.", and World Bank (2013: §3.1) notes that it: "contributed towards MDG 7: Ensuring Environmental Sustainability."

B4. Relevance to NDC mitigation commitments. ESP 1 and 2 pre-dated the NDC but contributed to the thinking that shaped the NDC and the mitigation commitments contained therein. ESP 2/2 was relevant to NDC sectoral priority 2 - Clean energy.

B5. Relevance to mitigation. Mitigation verification criteria met: All components - Capacity building; Mitigation mainstreaming; Incentives & regulations.

Part C: Narrative overview

The treaty Indonesia and Denmark (2006) built on and ratified cooperation that started in 2005 and was consolidated as ESP 1. It led to an MoU (KLH & MFA, 2007) by which the ESP Phase 2 (ESP 2) was established, the main aim of which was to build capacity at national, provincial and district level, so most (85%) of the support was for technical assistance.

Component 1 was to support public institutions, aiming to ensure the building of knowledge and capacities on a national level for support of decentralised and cross-sectoral environmental administration. Its intended outputs focused on: reform and strengthening of the Environmental Impact Assessment (AMDAL/EIA) system; application of Strategic Environmental Analysis (SEA) to national development planning, policy analysis and environmental planning, and local development planning; development and use of enhanced economic instruments in development planning and in environmental fiscal reform.

Component 2 was to encourage and enable increased energy efficiency in the construction and use of large buildings in the public and private sectors, including the establishment of a knowledge management facility (the Energy Efficiency Clearing House or EECH), energy efficiency standards and training of energy auditors and managers, and development of economic instruments for the energy sector.

Component 3 was to support decentralised natural resources management (NRM) and renewable energy (RE) while contributing to sustainable development in Sumatra and Sulawesi. This is a relatively complex process, and the planned outputs reflect this complexity:

- *Sustained benefits from NRM by local communities*. Offers block grants through KDP and earmarked for NRM projects, plus intensive awareness-raising and training at village, sub-district and local government level.
- *Rural electrification of a number of villages in North-western Sumatra through renewable energy solutions*. Conditional block grants, combined with awareness raising and training through the PNPM-KDP, fund projects to provide electricity from RE to rural communities and SMEs, with the latter helped to take advantage.
- *Improved management at district level of sub-catchments*. Promotes proper management of upstream areas (sub-catchments), partly through catchment planning, partly through incentives and motivation for upstream NRM users to engage in catchment protection and restoration. Activities include support to catchment planning with involvement of local government, study of possible incentives for catchment management, and field demonstrations/visits.
- *Local level capacity established regarding sustainable NRM and RE development to be applied in the PNPM-KDP*. The latter was a long-established (since 1998) World Bank-financed MoHA loan programme focusing on the funding of community projects through block grants, and the ESP 2 idea was to add a 'green PNPM-KDP' dimension to the process, by which support for NRM and RE would be offered to communities and the results analysed and findings disseminated to the provincial and national levels to inform policies, strategies and plans.

Overall mitigation performance for all three components and for the programme as a whole was estimated at moderate-low, **Score: 3**. This is because the focus was on providing enabling support, but for Components 1 and 2 it was concluded that "mitigation effects are unquantifiable but might become significant in the long term", while for Component 3 it was concluded that "the net mitigation effect would be small though perhaps growing through replication over time."

Part D: Design quality

D1 (a). Theory of change, programme.

The elements deployed in the programme (capacity building for public officials, enhanced regulation, monitoring and planning, outreach and awareness raising, financial opportunities and fiscal incentives, all guided by an environmental sustainability agenda) are known to be effective if properly applied in the right combination, and if this is done in just the right way in a society that is ready for change, then transformative change can occur. The direction and momentum of the unsustainable Indonesian development process and the powerful institutions and expectations created by it, and the complex nature of Indonesian society, all suggested that progress could only be slow and incremental.

An example of the strategic difficulties to be expected is from World Bank (2013: §3.1): "A key element that empowers communities to assume stewardship over their natural environment are land rights which are contested in Indonesia. Communities have little recourse through the legal system if mining concessions, which are granted by local governments, threaten their eco-systems."

D1 (b). Theory of change, Component 1.

From Danida (2008b): "The building up of capacity is a complex matter in the environment sector in Indonesia and that a variety of approaches and tools will be needed in order to develop lasting and meaningful results. The internal factors that are functionally related are the easiest and most direct areas where capacity building can make a difference. But the areas should not be forgotten and where possible and relevant interventions should be made to improve the situation e.g. greater clarity in the mandate of KLH and Bappenas. One of the most important areas is to ensure that there is support and understanding of the new economic instruments within a broad range of stakeholders including civil society and the private sector. Technical assistance is very effective for on-the-job training of key staff, training of trainers as well as contributing to institutional improvements. But there is also a need to complement this type of capacity building with more formal off-the-job training; study tours; participation in conferences; awareness raising seminars and, support to training of a broader group of stakeholders by public sector staff rather than outsourcing all training to technical assistance."

D1 (c). Theory of change, Component 2.

From Danida (2007): There is strong political interest in finding ways to reduce energy consumption in all sectors, since increasing energy costs are perceived as having a direct impact on the national economy, public welfare, and private sector competitiveness. By improving energy efficiency, the aim is to allow energy subsidies to be reduced without harming economic performance while also reducing GHG emissions and conserving Indonesia's remaining fossil fuel and timber assets. This will be done by promoting energy conservation in medium- and large-scale industries and new large private and public buildings, by supporting the production of information, norms, standards and capacity to deliver advisory services, and by raising awareness of opportunities to take advantage of them.

D1 (d). Theory of change, Component 3.

From MoHA *et al.* (2007): There are more than 20 million un-electrified households in Indonesia, and many rural communities will not be connected to the national power grid within the next decade. Mini and micro hydro power (up to 1 MW) is particularly applicable in the project area. The component will provide support through the Kecamatan (sub-district) Development Programme (KDP), a national programme funded by GoI, the World Bank and other donors since 1998, and implemented by MoHA [which may soon become the National Program for Community Empowerment, PNPM]. KDP allocates un-earmarked block grants to the poorest sub-districts, but the Component 3 mechanism will be to offer KDP grants earmarked for 'green' projects, i.e. to fund NRM and RE projects, in four provinces in North-western Sumatra.

D2 (a). Assumptions underlying the theory of change, programme. See components.

D2 (b). Assumptions underlying the theory of change, Component 1.

Assumption 1. That capacity building (orientation, training, awareness-raising of options, expectations and competencies) is an essential enabler of action.

Assumption 2. That capacity must be combined with tools (legislation, guidelines, procedures, skills, etc.) to support action on Environmental Impact Assessment, Strategic Environmental Analysis for national and regional planning and policy analysis, and the development of economic instruments and policies.

Assumption 3. That capacity, tools and policy support will synergise to promote a gradual shift in GoI operations in favour of greater energy efficiency in practice and across the economy.

Assumption 4. That this will contribute, potentially measurably, to declining energy intensity, elasticity and overall energy consumption and net GHG emissions relative to without-project outcomes.

D2 (c). Assumptions underlying the theory of change, Component 2.

Assumption 1. That raising awareness of potential cost savings, and practical 'how-to' demonstrations, will increase interest in considering investing in making buildings more energy efficient.

Assumption 2. That interest can be converted into demand for offered services that make it easier to invest in making buildings more energy efficient.

Assumption 3. That the other risks listed by MoHA *et al.* (2007) will not manifest, i.e.: (a) *that there will be continued political willingness to implement policies promote energy efficiency* (designers judge this to be safe "since the pressure on the budget of energy subsidies is unremitting"); (b) *that the financial market develops appropriate instruments to meet the demand for capital investment* (designers judge this to be safe because "the market will eventually adjust to take advantage of sound investment opportunities"); (c) *that the EECH is ignored* (designers aim to off-set this by focusing the EECH on selected districts initially "and then gradually scaling up"); and (d) *that industries and owners of large buildings cannot be convinced of the case for change* (designers aim to off-set this by ensuring that activities are "coordinated with policy changes that introduce a system of incentives and disincentives to promote energy efficiency.").

D2 (d). Assumptions underlying theory of change, Component 3. (MoHA *et al*., 2007):

Assumption 1. That by combining the offer of earmarked block grants with intensive awareness-raising and training will leader to greater demand for NRM and RE projects.

Assumption 2. That the NRM and RE projects will demonstrate their utility to communities and small enterprises owned by them, and that this will further contribute to growing demand.

Assumption 3. That awareness-raising and training, plus participatory planning (with the support of local government) for micro hydro RE projects that depend on catchment integrity will enable and reward better catchment management at district level.

Assumption 4. That the 'green KDP' experience will be positive and can be documented to enrich national policies, strategies and plans.

D3. Plausibility of assumptions and links.

Component 1. Required extensive reconstruction, but the assumptions are plausible enough. **Score 4**.

Component 2. The assumption that interest in new approaches will turn into demand for advice and actual investment in those new approaches in the absence of regulatory, financier or peer pressure is not particularly plausible. A pathway towards mobilising these pressures would have corrected the design. **Score 2**.

Component 3. It was reasonable to assume that rural people can organise themselves to take advantage of training and grants, use opportunities to learn from each other, and that proven technologies that meet obvious needs will be acceptable and will work. **Score 4**.

D4. General quality of the project design. The design required reconstruction and rewording for clarity. The logic was tenuous but plausible in Components 1 and 3 (Score: 4), flawed in Component 2 (Score 2). **Score 4.**

Part E: Evidence for mitigation performance

E1. Direct effectiveness. None.

E2. Indirect effectiveness. See Impact and Sustainability.

E3. Net GHG emission reductions. None.

E4 (a). Impact, programme. Enabling measures were put in place through Components 1 and 2 that could exert growing influence over time, albeit inhibited by patchy government interest and a corporate reluctance to adopt new approaches. Greening of the KDP-PNPM process through Component 3 has touched many lives in certain areas and might contribute to local empowerment with some environmental benefits, with the possibility of incremental growth in impact if the process is sustained and extended. **Overall Score 4**.

E4 (b). Impact, Component 1. Danida (2016b) found performance to be 'satisfactory'. *Practical instruments and systems*: EIA laws passed and information system support the EIA process; SEA law passed, guidelines developed and approved, 29 SEA pilot projects implemented, training on SEA delivered to governmental and non-governmental stakeholders; PES protocol developed and tested but stalled due to lack of interest.

E4 (c). Impact, Component 2. Danida (2016b) found performance to be 'satisfactory'. *Energy efficiency measures by major users of energy*: 5-50% savings in energy claimed but potential and uptake varies and there is corporate reluctance to adopt. DEM (2013) observed that the Component 2 objectives "are related to the overall development objective by targeting more efficient use of energy, which in addition to strengthening the country's economic efficiency can also lead to significant reductions of carbon emissions and the use of natural resources." Changes during ESP 1 & 2 include: (a) **Energy intensity** (i.e. the ratio of energy consumption in tonnes of oil equivalent per GDP USD million) declined from 402 in 2008 to 374 in 2012, against the target of 325 by 2025 and a 1% per year reduction set in the National Master Plan for Energy Conservation. (b) **Energy elasticity** (i.e. the rate of growth of energy consumption over the rate of growth of GDP) declined from 1.92 in 2008 to 1.55 in 2012, against the target of below 1.0 in 2025 set by Presidential Decree 5/2006. (c) [Indonesian GDP increased from USD 510.2 billion in 2008 to USD 917.9 billion in 2012]. (d) **Energy consumption** (per sq. metre floor area) declined where tried. (e) **Energy consumption** (per unit of industrial production) declined where tried.

Component 2 supported national efforts to achieve these things, but how much can be attributed to the programme is uncertain. "What is clear is that the development has been positive and the way forward is to keep that trend going. Component 2 has created a foundation to build the continued work with improving energy efficiency in Indonesia." Achievements by output are listed as follows: (a) **Energy Efficiency Clearing-House (EECH).** EECH established and operational, with web-site, study tours, databases. (b) **EE building codes**. Voluntary building codes prepared, guidelines disseminated. (c) **Energy audit services**. Agreement reached on auditor certification, training materials available. (d) **Energy conservation competition and government capacity building**. Media coverage obtained and

nine workshops held for central and local government, universities and students.

E4 (d). Impact, Component 3. From Danida (2016b): (a) Performance 'satisfactory'. *Rural communities benefit from NRM and RE technology*: nearly 3,000 green sub-projects, 36,000 households, 1.5 million beneficiaries, but slow and RE especially needs to meet community needs and be supported by village regulations. (b) PNPM Green is on target to achieve its stated KPIs by the end of the programme (this is in the ESPS Completion Note, so unclear what this means). The 2012 Economic and Livelihood Study (described as 'recent', even though this document was signed in 2016) concluded that PNPM Green was improving livelihoods and NRM. All stakeholders agree that where local sub-projects meet local needs, they are most likely to succeed. Local beneficiaries report high returns on investment over six years. (c) More time is needed for some micro hydro projects; peer learning is to be encouraged as it has great potential; stronger and more active local groups are needed.

E5. Sustainability effects. 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. Greening of the KDP-PNPM process through Component 3 has touched many lives in certain areas and might contribute to local empowerment with some environmental benefits, with the possibility of incremental growth in impact if the process is sustained and extended. **Score 4**.

E6. Efficiency issues. All components had problems and delays that "proved challenging" (DEM, 2013: 38) and which included delays in budget approvals and disbursements by central government, in procurement, and in hiring local facilitators (World Bank, 2013), but these all seem to have been managed adaptively. More positively, World Bank, 2013: §3.3) notes that among a sample of 1,765 sub-projects financed by PNPM Rural, "including micro-hydro which is the predominant type of infrastructure project financed by PNPM Green ... typically cost 15 to 25% less compared to similar projects undertaken by line ministries."). **Score 4**.

E7. Capacity building issues. None noted.

E8. Baseline and monitoring arrangements. None noted.

E9. Overall conclusion on mitigation performance.

Component 1 provided enabling support to government and other stakeholders in an across-the-board approach to enhancing capacity to regulate development in a manner that would tend to promote environmental sustainability. Mitigation effects are unquantifiable but might become significant in the long term. **Score 3**.

Component 2 supported government efforts to reduce energy intensity and elasticity, and these did apparently decline but very little can realistically be attributed to the ESP which had only delivered some enabling measures by the end of ESP 2 in 2012. Mitigation effects are unquantifiable but might become significant in the long term. **Score 3**.

Component 3 rolled out education, training and financial inducements to encourage and enable local community investment in planting 'fruit and commercial' trees and micro hydro facilities (spending 4.35 billion Rupiah or DKK 2.8 million for a 5.0 billion Rupiah return in one set of figures - note that the Danida contribution to the 'Green' PNPM Trust Fund was USD 2.295 million in World Bank, 2013: 20). Some gains in avoided GHG emissions might have come from reduced use of firewood and kerosene, and from the growth of fruit trees as long-term assets, but the RE electricity supply is not replacing grid power, so even with 1.5 million beneficiaries the net mitigation effect would be small though perhaps growing through replication over time. **Score 3**.

Overall score 3.

Part F: Other issues

Part G: Notes on other relevant topics.

G1. Continuity of ESP 1, ESP 2, ESP3, SSC Environment, SII

ESPS 1 was the start of a sequence of environmental sector support actions in Indonesia, leading through ESPS 2 and ESPS 3 to the Strategic Sector Cooperation: Environment (Circular Economy and Waste Management), or SSC Environment. Danida (2018a):

- "The DANIDA-funded development cooperation in Indonesia Environmental Support Program, Phase III (ESP 3) came to an end by December 2018. A total of DKK 3 million was made available for the SSC in 2018 to engage into several larger scale activities already during the first year of operation. This resulted in two consultancies describing selected topics and laying the foundation for several SSC activities for the coming years. It furthermore resulted in the first two meetings in the Danish-Indonesian Biowaste Stakeholder Forum in which several Danish and Indonesian stakeholders were brought together to discuss management and treatment of organic waste from households. ESP3 did also, as part of its own operation, support input to waste master planning for 5 selected areas/cities of Indonesia, which will form input to the future SSC. The SSC Environment will be involved in monitoring 3 of ESP 3's pilot projects in 2019 related to waste

management and public-private partnerships after ESP3 has phased out. A transition plan for transition from ESP3 to SSC was formulated in 2018 and covers all common areas of interest between ESP3 and the SSC."

"Close collaboration with the Danish-Indonesian SSC on Energy in 2018. Together, the two SSC's formulated an add-on "partnership" called Sustainable Island Initiative (SII). The SII will commence in 2019 and will introduce a holistic approach to the planning the green transition in Indonesia within both energy and environmental topics exemplifying national planning efforts in geographically separated regions, such as e.g. one or more of Indonesia's 17.000 islands." [See SSC-SII review].

G2. Energy intensity (from: https://knoema.com/atlas/Indonesia/Energy-intensity).

Energy intensity level of primary energy is the ratio between energy supply and gross domestic product measured at purchasing power parity at constant prices of 2011. **Energy intensity is an indication of how much energy is used to produce one unit of economic output**. Lower ratio indicates that less energy is used to produce one unit of output. Indonesian energy intensity was 4.3 MJ/USD in 2008 and 3.8 MJ/USD in 2012, having fallen steadily from a peak of 5.3 MJ/USD in 2000, but error factors within these numbers mean that they can realistically be rounded to a constant 4 MJ/USD for 2008-2012.

Annex e: The Environmental Support Programme (ESP) Phase 3

Sub-annex e1: ESP 3 Programme Overview

Part A: Basic data (ESP 3 all)

A1. Project number & name.

104.Indonesien.1.MFS.5: Environmental Support Programme, Indonesia, Phase III (ESP 3).

104.G.13-6: Danish Support to Harapan Rainforest (DSHRF).

104.G.15-6: REDD+ Support Facility.

104.G.15-6: Locally appropriate mitigation actions in Indonesia.

A2. Interviews. See Annex a: Persons and institutions consulted relevant to Annex e.

A3. Dates & financial data.

Programme: DKK 270 million for 2013-2017 (comprising DKK 220 million from ESP 3 funds, and DKK 50 million from 2012 Fast Start Climate Change or FSCC Funds). A no-cost extension to the end of 2018 was recommended by the Mid-Term Review (MTR), and was put into effect with the result that ESP 3 ended in December 2018.

Component 1: DKK 55.25 million (21% of total), of which 69% is allocated to the decentralised (*daerah*) level. "Component 1 has a budget of DKK 58.25 million (19 million DKK at the national level and 38.25 million DKK at the decentralized level)" (Jensen *et al*., 2015: 10).

Component 2: DKK 71.25 million (26% of total), of which 83% is allocated to the decentralised (*daerah* = provincial/district/city) level. "Component 2 has a budget of DKK 74.75 million (14.50 million DKK at national level and 59.25 million DKK at the decentralized level)" (Jensen *et al*., 2015: 12). From 2016, Component 2 was integrated with the Strategic Sector Cooperation (SSC) on Energy.

Component 3: DKK 135 million (including DKK 50 million from 2012 FSCC Funds (for local low-carbon development planning, forest certification and REDD+) and DKK 50 million from ESP 3 funds. Note that DKK 50 million was provided from 2011 FSCC Funds to support DSHRF. These 'carried-over' funds, and later changes in which sub-components were abandoned and the funds transferred to others, may partly explain the lack of clarity on Component 3 funding. Budget data for sub-components include:

- DKK 26.5 million (2013-2017) to ICRAF for LAMA-I, alongside a EUR 4 million GIZ commitment to complementary work in partnership with ICRAF.
- The REDD+ Support Facility (RSF) was a World Bank trust fund which became effective 17 October 2013, and was designed to end on 31 August 2016. Estimated cost:

USD 4 million (World Bank, 2013). Co-financiers: Government of Norway, USD 1.65 million; Government of Denmark, USD 1.65 million.

- In 2016, DKK 40 million (USD 5.07 million) was transferred to the World Bank's Forest Investment Programme (FIP) trust fund (Jensen, 2017), and later carried over into FIP 2 (2016-2021).
- In 2016, DKK 1.6 million was transferred to the World Bank's Indonesia Marine Debris Pollution Assessment and Management Programme (Jensen, 2017). An additional grant of DKK 7 million was made to the Oceans, Marine Debris and Coastal (OMC) Multi Donor Trust Fund in 2019 (Jensen & vanderSluys, 2018); although this is outside the frame of ESP 3, it is an important spin-off and legacy of ESP 3 that continues to evolve in the context of SSC Environment.
- "Following the recommendations of the 2016 review, a third phase of the Harapan Rainforest (July 2016 to end 2018) is being supported by ESP3 with a budget of DKK 20 million, bringing the total Danish support up to DKK 79 million." (Jensen, 2017: 4).

A4. Location(s).

Components 1 & 2: nationwide plus Central Java

Component 3: Jambi and South Sumatra provinces of Sumatra (DSHRF); Papua and Sumatra (LAMA-I); Kalimantan and Papua (FSC/TBI); RSF (nationwide); CBNRM/FIP (three pilot Forest Management Units or FMUs; later, in FIP 2, 10 FMUs: KPHP Panyabungan in North Sumatra, KPHP Tasik Besar Serkap in Riau, KPHP Limau in Jambi, KPHP Lakitan in South Sumatra, KPHL West Rinjani and KPHP Batulanteh in West Nusa Tenggara, KPHP Kendilo in East Kalimantan, KPHP Tanah Laut in South Kalimantan, and KPHP Dampelas Tinombo and KPHP Dolago Tanggunung in Central Sulawesi).

A5. Partners.

Programme: (a) Bappenas; (b) KLH; (c) Central Java provincial and district governments; (d) MEMR; (e) World Bank.

Component 1: (a) Bappenas; (b) (KLH); (c) Central Java provincial and district governments; (d) AusAID, JICA, KfW, EuropeAid, UKCCU.

Component 2: (a) MEMR; (b) Central Java provincial and district governments; (c) Kemitraan and WALHI (in 2018); (d) GIZ, USAID, Germany/World Bank.

Component 3: (a) World Bank; (b) World Agroforestry Centre (ICRAF, with partners GIZ and CCROM); (c) Burung Indonesia; (d) Ministry of Forestry (added through CBNRM/FIP sub-component); (e) Coordinating Ministry of Maritime Affairs (added through contribution to the Ocean Debris trust fund); (f) Norway (RSF), GIZ (LAMA).

- **DSHRF partnerships**. The Harapan Forest area is covered by two Ecosystem Restoration Concessions (ERCs) which were issued in 2008 (South Sumatra) and 2010 (Jambi) and are both held by PT Restorasi Ekosistem Indonesia (PT REKI), a company established to acquire the ERCs. It is 95% owned by Yayasan KEHI, a foundation was set up by RSPB, Burung Indonesia and Bird Life International, all of them on the Board of Trustees. Parallel to Danish support (from 2009 according to Jensen & vanderSluys, 2018, 2011 according to Burung Indonesia, 2016, and others), work on research and monitoring was underway with support from KfW (2009-2013), the Darwin Initiative (2007-2011) and RSPB (continuous).
- **LAMA-I partnerships**. Component 1 was led by CCROM, Component 2 was led by ICRAF, Component 3 was led by GIZ. All were variously supported by each other and by Bappenas and the Provincial Governments of Central Java, South Sumatra, Jambi, Papua, and West Papua.

Part B: Purpose and relevance (ESP 3 all)

B1 (a). Purpose, programme. "Inclusive and sustainable growth through improved environmental management for climate change mitigation and adaptation" (Danida, 2012a: ii).

B2. Relevance to partners.

For Indonesia, the overall ESP 3 development objective "is well aligned to the various goals and objectives outlined in current environmental and natural resources policies, including the National Medium Term Development Plan (RPJMN) and the climate change and energy policies." (Danida, 2012a: ii). Likewise, the Ministry of Finance green papers on mitigation and incentivising RE & EE, and on incentivising *daerah*-level decarbonisation (Danida, 2012b: 10). The ESP3 program partners engaged and recognized in assisting local and national stakeholders in informing policy development and implementation for low carbon development, green economy, reducing emissions from deforestation and degradation, ecological fiscal transfer, increasing renewable energy mix, conflict resolution, community participation and ecosystem restoration.

For Denmark, "The ESP 3 programme is implemented within the framework of two key Danish strategies: 'The Right to a Better Life', Denmark's strategy for development cooperation, and 'A Greener World for All', which establishes the strategic framework for

Danish support to natural resources management, energy and climate change. The ESP 3 objectives and outcomes are well aligned to these overall strategic principles, and if achieved, will represent an important contribution to their implementation on the ground. Specific areas of strategic relevance include the ESP 3 focus on innovation and technology through the implementation of pilot projects, the emphasis on systematic capacity building of the (primarily) public partners, and the support to sustainable energy solutions and energy efficiency." (Jensen *et al*., 2015: 17).

B3. Relevance to MDGs/SDGs. Component 1 specifically targeted **MDG 7.A** (Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources); Component 2 contributed to the development of a more sustainable energy sector, and so to **SDG 7** (Ensure access to affordable, reliable, sustainable and modern energy for all); and Component 3 contributed at least to **SDG 1** (on Poverty), **SDG 13** (on Climate Change), and **SDG 15** (on Terrestrial Ecosystems).

B4. Relevance to NDC mitigation commitments. NDC sectoral priority 1 - LULUCF (ESP 3/3). NDC sectoral priority 2 - Clean energy (ESP 3/2).

B5 (a). Relevance to mitigation, Programme. See components in sub-annexes.

Part C: Narrative overview (ESP 3 all)

The programme sought a meaningful and influential role within central government at a time when the Indonesian development model was under intense scrutiny and pressure to reform, because of historic grievances, imbalances and unsustainability, and also its climate change impact. This was being resisted by some and encouraged by other institutions. It also sought to work with local government when decentralisation issues were still under dispute, and at the community level when traditional land rights were under dispute. The latter issue was brought to a head by "the 2012 High Court decision, which ruled that the Forest Law violated the Indonesian Constitution because it fails to take into account indigenous claims of customary lands in Indonesia." (Jensen *et al*., 2015: 6). It was bound to be challenging to engage with a system so riven with different, changing, and often conflicting priorities.

These tensions are least visible in Component 1, which focused on policy development and strategic environmental analysis with KLH and Bappenas (and to an extent Central Java), and Component 2, which focused on promoting RE and EE through policies, strategies and planning with MEMR (and also pilot projects in Central Java, of which four reached hand-over stage). These continued the directions of Components 1 and 2 of ESP 2 and are innocuous subjects in line with climate policy, generally unthreatening to established interests. This is not entirely so for Component 3, which like Component 3 of ESP 2 sought to engage in various ways with the reform of the LULUCF sector, which was a key and controversial area at a time of heightened tensions due to the assault on business as usual that had been launched in 2010 by Norway and President Yudhoyono and was starting to 'bite' in the 2012-2014 period.

At the time, the Ministry of Forestry was seeking new revenue streams (the old ones being jeopardised by forest exhaustion and REDD+), and was setting up a system of ERCs and FMUs (the latter enabled by the FIP), while engaged in forest certification through the Indonesian SVLK and the EU's FLEGT Voluntary Partnership Agreement system (and was therefore not interested in FSC and The Borneo Initiative, which was not allowed to develop, thus catching Danida out and guiding them to FIP instead). Meanwhile, Danida had perhaps been caught up in the excitement generated by the Indonesia-Norway REDD+ partnership, and the RSF sub-component was designed to support this, certainly against the institutional interests of the Ministry of Forestry.

The scale of 'overhang' within the whole system, especially concerning the LULUCF sector, and the extent to which it was unappreciated, is revealed by the risk assessment in Danida (2013: 26): "With the elections in 2014, there is a risk that (environment and/or energy related) government policies will shift. This will be monitored carefully, but it is not considered a likely risk, given the current international commitment and support programmes." The actual events that were about to unfold, with major implications for the RSF sub-component of Component 3 are summarised as follows. "The newly-elected President Widodo dissolved BP REDD+ [the REDD+ Agency] in early 2015. At almost the same time the ministries of environment and forestry were fused into a new Ministry of Environment and Forestry (KLHK), which absorbed the National Council on Climate Change (DNPI) and then BP REDD+. Meanwhile, forest and peatland fires in late 2015 caused immense damage and led to a strong response in the forms of new and enhanced regulations, a new Peatland Restoration Agency (BRG) and increased policy priority for fire prevention, One Map, law enforcement, social forestry, and land reform." (Caldecott *et al*., 2018: ii; see also Jensen *et al*., 2015: 6).

The new ministry was somewhat paralysed for a while, and the REDD+ capacity that had been built up was dissipated, but forest fires forced the new regime to begin re-building many of the LULUCF reforms that had been started previously, although now under a new and (because more satisfactory to the most powerful actors) more stable institutional arrangement. The FSC sub-component was never implemented, the RSF sub-component ceased to operate in 2015, and the CBNRM/FIP sub-component only got underway in 2018 after several years'

delay (the Denmark-World Bank agreement was extended to mid-2019, with project end date for late 2021 with support from IBRD loan). As sub-components and pilot projects were found to be non-viable, they were variously closed and remaining budgets were reallocated to other initiatives for which a good case could be made. The result was adaptive change to events and circumstances, with 90% (DKK 242.4 million) of the total programme budget spent by the end of November 2018, the expectation that the last funds would be spent against final deadlines, and an exit strategy in the form of SSC Energy and SSC Environment in place. The performance assessment here focuses on Components 1 & 2 and the DHSRF and LAMA-I sub-components of Component 3.

Overall conclusions on mitigation effectiveness by component:

- 1 - central government mitigation analysis, policy, planning support: **Score: 3**.
- 2 - central government energy efficiency/conservation and renewable energy policy, piloting and knowledge support: **Score: 4**.
- 3 - sub-component on DSHRF: **Score: 6.**
- 3 - sub-component on LAMA-I: **Score: 6**.

Part D: Design quality (ESP all)

D1 (a). Theory of change, programme. Indonesia is a major source of GHGs, with 60% of emissions from the LULUCF sector (which in Indonesia includes an important element of peatland), and most of the rest coming from burning fossil fuels in a fast-growing economy. Government is committed to reducing overall emissions but the only politically-acceptable ways to do so are through reform in the LULUCF sector to reduce deforestation, degradation and forest and land fires, and reform in other sectors to increase energy efficiency and replace the use of fossil fuels as far and as fast as possible with renewable energy. In Indonesia since 2010 REDD+ has been a key priority in the LULUCF sector due largely to the Indonesia-Norway REDD+ Partnership (but also UN-REDD and multiple bilateral initiatives, several supported by Danida), supplemented by the promotion of more sustainable use of forest harvests (e.g. certification of 'sustainable' wood products to ensure market access, and larger and longer-term concessions that are as much to do with forest restoration as they are with exploitation, including ERCs and FMUs). All of these changes began during the ESP 2 period and helped shape the thinking for ESP 3, which sought to offer Danish added value in relevant ways to as many of them as possible: strategic planning and policy development with KLH and Bappenas; EE and RE development with MEMR; and multiple points of contact with the community, field and forest management nexus (e.g. Harapan and LAMA-I in Sumatra and Papua) or with different ministries (e.g. MoHA and KLHK).

D2 (a). Assumptions underlying the theory of change, Programme. See components in sub-annexes.

D3 (a). Plausibility of assumptions and links, programme.

For **Components 1 & 2**, the steps are plausible and the logical links between them secure, both in principle and, because of a low risk of breakdown, in practice. **Score: 5**.

For **Component 3**, the logic of engaging with the field and community level in order to test, refine and demonstrate policy-relevant innovation is acceptable, but the turbulence of practical details and political events in a highly-charged LULUCF sector subject to disputed decentralisation and empowerment agendas caused expectable difficulties. The political economy analysis was clearly inadequate to help the designers avoid some of these difficulties. **Score: 4**.

D4 (a). General quality of design, programme. The concept note, appraisal, revised PD and the three component documents are all well-written and consistent, optimistic and to an extent naive, being unsupported by a political economy/ecology analysis (the Component 3 PD comes closest in its 'National Sector Context' (Danida, 2012d: 6-10), and the MTR (Jensen *et al.*, 2015: 5-6, and 18-19) provides a good summary on 'national context', 'sector developments' and 'risks'. **Overall Score: 4**.

Part E: Evidence for mitigation performance (ESP 3 all)

E3 (a). Indirect effectiveness, programme. See components in sub-annexes.

E3 (a). Net GHG emission reductions, programme. None except for DSHRF.

E4 (a). Impact effects, programme. "Some progress is noted but there are significant delays. Disbursement and expenditures are low, amounting to approximately 15% of the budget half way through the implementation period. Implementation of pilot projects has turned out to be more challenging than envisaged. The legal framework for SEA has taken longer than anticipated and is still pending. Establishment of the clearing house for energy efficiency, energy conservation and renewable energy has also required considerable efforts as has the preparations for the FIP which are still work in progress. Finally, there are delays in the development of a sustainable model for the Harapan Rainforest. Keeping the overall vision of the programme in mind, the [Review Team] finds that a no-cost extension will allow for enhanced opportunities to demonstrate the comparative advantage of Danish know-how and

technology [footnoted as 'environmental management, renewable energy, energy efficiency and greener growth'] in the Indonesian environment, energy and green growth context. In view of the serious delays and their ramifications for achieving outcomes within the time frame envisioned, the RT recommends a no-cost programme extension of one year (to end 2018) in order to achieve programme outcomes, document lessons learned and enhance sustainability. The additional final year should be limited to consolidation of pilot project activities, completion of Danish support to Harapan and FIP. All other activities should be completed by end 2017." (Jensen *et al*., 2015: 2).

E5 (a). Sustainability effects, programme. See Impact.

E6. Efficiency issues, programme.

"By 1 December 2018, the total programme disbursement (spending) amounts to 90% of the budget. As the programme approaches completion, it is good news that it is likely to deliver on all planned outputs and objectives." (Jensen & vanderSluys, 2018). This reflects the fact that by 2018 a number of sub-components and pilot projects had been abandoned and resources re-focused on more achievable actions.

"The ESP3 implementation modality employs parallel structures for implementation and is not fully aligned into the GoI planning, budgeting and monitoring framework. While this is a common model for implementation of donor funds in Indonesia, it does present challenges. It highlights the need for frequent, fluid and effective communication among partners. While the [National Coordination Unit] has produced many important programme management and planning documents, the programme would benefit from increased time spent on shared dialogue and engagement with Indonesian partners rather than written communication [*i.e. talking with colleagues rather than writing to them*]." (Jensen *et al*., 2015: 7).

E7. Capacity building issues. See components in sub-annexes.

E8. Baseline and monitoring arrangements. FIP 2 had baseline studies of carbon analysis, institutions and household surveys in 2019, in reaction to earlier criticism. It is realistic to assume that ICRAF's Indonesian base and extensive work with national and provincial institutions there would have provided the equivalent of an extremely thorough baseline study in terms of institutional capacity. Likewise, the long-term engagement of the partners in Harapan, where forest mapping and social surveys allowed a 2013 baseline in the MFA proposals for 2015 bridging and 2016-2018 new funding. A carbon baseline study was mentioned in the 2012 Inception Review when a REDD+ approach was being considered.

E9 (a). Overall conclusion on mitigation performance, programme. See components in sub-annexes.

Part G: Notes on other relevant topics (ESP 3 all).

G1. Continuity and overlap issues

Having been extended to December 2018, residual ESP 3 funds were used to prepare Strategic Sector Cooperation (SSC) Environment, including through studies on waste management. "The SSC Environment will be involved in monitoring three of ESP 3's pilot projects in 2019 related to waste management and public-private partnerships after ESP3 has phased out. A transition plan for transition from ESP3 to SSC was formulated in 2018 and covers all common areas of interest between ESP3 and the SSC." (DEPA, 2019). This provided a vehicle for waste-related parts of Component 2 of ESP 3 to continue into 2019 and possibly beyond. Meanwhile, too, there was overlap from January 2016 between Component 2 of ESP 3 and SSC Energy (DEA, 2015, 2018a), both of them involved in promoting EE and RE with MEMR, but presumably in different ways, and SSC Energy continued into a 2019-2021 Phase 2 (DEA, 2018b) (see SSC Energy review). In the post-2018 period to the SSC Environment and SSC Energy collaborated to formulate the Sustainable Islands Initiative, to commence in 2019 (see SSC-SII review).

G2. Ecosystem Restoration Concessions (ERCs) in Indonesia

Ecosystem Restoration Concessions (ERCs) in Indonesia

Company (PT)	Province: location	Area (ha)
Restorasi Ekosistem Indonesia	S. Sumatera: Musi Banyuasin	52,170
Restorasi Ekosistem Indonesia	Jambi: Batanghari and Sarolangun	46,385
Restorasi Habitat Orangutan Indonesia	E. Kalimantan: Kutai Timur	86,450
Ekosistem Khatulistiwa Lestari	W. Kalimantan: Kubu Raya	14,080
Gemilang Cipta Nusantara	Riau: Pelalawan	20,265
Sipef Biodiversity Indonesia	Bengkulu: Muko Muk	12,656

Rimba Makmur Utama	C. Kalimantan: Katingan	108,255
Rimba Raya Conservation	C. Kalimantan: Seruyan	36,954
Gemilang Cipta Nusantara	Riau: Kepulauan, Meranti	20,450
Karawang Ekawana Nugraha	S. Sumatera: Ogan Komering Ilir	8,300
Sinar Mutiara Nusantara	Riau: Pelalawan	32,830
Global Alam Nusantara	Riau: Pelalawan	36,850
The Best One Unitimber	Riau: Pelalawan	39,412
Alam Bukit Tiga Puluh	Jambi: Tebo	38,665
Alam Sukses Lestari	C. Kalimantan: Barito Timur	19,520
Rimba Makmur Utama	C. Kalimantan: Kotawaringin Timur/Katinga	49,620
	Total (16 units)	622,862

Sub-annex e2: ESP 3 Component 1 (ESP 3/1)

Part B: Purpose and relevance (ESP 3/1)

B1 (ESP 3/1). Purpose. "Improved local impact from implementation of policies and environmental management, especially in the field of climate change mitigation and adaptation" (Danida, 2012b), with three themes: (a) **Improved implementation of existing planning and management systems** by environmental management institutions aiming at a more efficient use of environmental funds. (b) **Demand-driven practical SEA application** which could encompass policies, plans and programmes at all levels of governments and all sectors. (c) **Consolidation, implementation and effective monitoring** of the National Action Plan to Reduce Greenhouse Gas Emissions (RAN-GRK) and the National Action Plan for Climate Change Adaptation (RAN-API).

B4 (ESP 3/1). Relevance to NDC. Other NDC priorities 1 - transition to a low-carbon future.

B5 (ESP 3/1). Relevance to mitigation. Component 1 aimed to support central government around RAN-GRK, through planning at KLH, and RAD-GRK at local level, and SEA nationally, plus pilot activities in Central Java. 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. "The demand-driven SEA financing will first and foremost be based on evidence of strong political commitment, local implementation and priority to development activities of relevance for climate change mitigation and adaptation" (Danida, 2012b: ii). Part of the Component 1 budget (about DKK 3.5 million in total) was allocated to the Indonesian Climate Change Trust Fund (ICCTF). Mitigation verification criteria met: Mitigation technology (MT). Capacity building (CB). Mitigation mainstreaming (MM). Incentives & regulations (IR).

Part D: Design quality (ESP 3/1)

D2 (ESP 3/1). Assumptions underlying the theory of change, Component 1

Assumption 1. That continued policy priority will be given to finding ways through 'greener' strategic development planning and policy development to reduce GHG emissions without compromising economic growth and poverty reduction goals at all levels and in all sectors.

Assumption 2. That a long-term partnership with the National Development Planning agency (Bappenas) and the Ministry of Environment (KLH) will continue to be the most effective way

to convene, coordinate, pilot and deliver significant support in these areas.

Assumption 3. That promoting what is in effect a 'green growth' strategy through central government guidance and voluntary guidelines will result in significant and rapid reduction in GHG emissions.

Part E: Evidence for mitigation performance (ESP 3/1)

E2 (ESP 3/1). Direct effectiveness ESP 3/1. None.

E3 (ESP 3/1). Indirect effectiveness. ESP 3/1

Mitigation effectiveness depends on the anticipated consequences for net GHG emissions of achieving the Component 1 outcomes. Because the outcomes are all equivalent to 'improved institutional thinking skills and knowledge resources', all effects will be indirect, and their existence and scale will depend:

- First, on the **priority given to achieving mitigation effects** in the operating procedures of KLH (Outcome 1), strategic analysis at national level (Outcome 2) and provincial level (Outcome 5), the precise nature of 'environmental methods and considerations' applied to national (RAN-GRK) and provincial (RAD-GRK) action plans (and spatial and sectoral plans) to reduce GHG emissions (Outcome 3), and the exact ways in which the use of environmental funds at provincial level were to be 'improved' (Outcome 4).
- Second, on the **influence exerted by those priorities** on the decisions, actions, investment priorities, technologies adopted, choices made and other such determinants of 'improved environmentally sustainable development performance' with specific reference to the drivers of GHG emissions and their avoidance.

There is no specific evidence of mitigation effectiveness from Component 1, and no evidence that it was sought through the baselining of emissions (except in a general sense at national level) and the reporting or monitoring of consequences. **Score: 3**.

E4 (ESP 3/1). Impact effects, ESP 3/1.

Component 1 (Jensen *et al.*, 2015: 10-11): "Consultations with all levels in [KLH were sometimes challenging, but] also very valuable, with many useful lessons learned. ... Significant progress is noted at national level: the SEA of the MP3EI was finalized, ToR for the SEA of National Capital Integrated Coastal Development was prepared, and a comparative study of existing SEA guidelines was completed. ... At provincial level there has been little progress so far on SEA."

E9 (ESP 3/1). Overall conclusion on mitigation performance ESP 3/1.

In the absence of reports later than 2015, the conclusion is guided by the 'indirect effectiveness' criterion. **Score: 3**.

Part F: Other issues (ESP 3/1)

F1. Unintended consequences.

Component 1. 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 [see note below on 'green growth'], which has strategic significance for the direction of travel of Indonesia and the goals of Danida interventions.

Sub-annex e3: ESP 3 Component 2 (ESP 3/2)

Part B: Purpose and relevance (ESP 3/2)

B1 (ESP 3/2). Purpose.

Objective: "Energy efficiency (EE), energy conservation (EC) and renewable energy (RE) policies effectively implemented with a focus on the local government level, and experiences from pilot projects used to strengthen national policies, strategies and climate changes planning" (Danida, 2012a: iv). Expected outcomes:

- 1 (national level): EBTKE (EE Directorate) effectively supporting local governments in implementing national energy efficiency and conservation policies and strategies, integrating EE/EC into CC strategies and plans, and reporting on national EE/EC targets
- 2 (national level): EBTKE (RE Directorate) effectively supports LG in implementing renewable energy policies and strategies, integrating RE into CC strategies and plans and reporting on national RE targets
- 3 (national level): National EE, EC and RE policies and strategies tested and improved based on implementation of pilot / demonstration projects in selected provinces
- 4 (provincial level): RAD-GRK (with a focus on the energy sector) and related local energy policies and strategies are being implemented resulting in a reduction in GHG emissions.
- 5 (provincial level): Results of energy efficiency, energy conservation and renewable energy pilot/demonstration projects are in Central Java used to improve policies/ strategies and are being adopted by others. (Danida; 2012:8)

B2 (ESP 3/2). Relevance to partners.

Indonesia: Component 2 will have an important positive impact on the environment and climate change, since support will encourage a more efficient use of energy and a shift to renewables, resulting in less fossil fuel consumption, and consequently, reduced GHG emissions and associated environmental impacts. In addition, the component will contribute to the national goal of full electrification by 2025 and 23% RE in 2025 through rural electrification based on solar PV.

Denmark: contribution to poverty reduction through electrification from RE not only supports the goal to alleviate poverty but also the goal of increased share of RE leading to reduced GHG emissions.

B3 (ESP 3/2). Relevance to MDGs/SDGs. Mitigation technology (MT) Renewable Energies to remote villages and. Capacity building (CB) Energy Efficiency and RE implementation to SME and others.

B4 (ESP 3/2). Relevance to NDC mitigation commitments. NDC sectoral priority 2 - Clean energy.

B5 (ESP 3/2). Relevance to mitigation. Component 2 aimed to build on knowledge management established by ESP 2 through the Energy Efficiency and Conservation Clearing House (later renamed Lintas EBTKE), outreaching to MEMR for RE, to provide guidance and technical support to local level governments. It was expected to "have an important positive impact on the environment and climate change, since support will encourage a more efficient use of energy and a shift to renewables, resulting in less fossil fuel consumption, and consequently, reduced GHG emissions and associated environmental impacts. Energy supply based on renewables is more sustainable in the longer term. Providing renewable-based electricity to poor communities without access to the national grid will have a positive impact - providing them with a relatively cheap and reliable source of energy. Energy efficient and EC measures in SMEs can lead to increased ability to compete successfully in the marketplace." (Danida, 2012c: 17). Mitigation verification criteria met: Mitigation technology (MT). Capacity building (CB). Mitigation mainstreaming (MM). Incentives & regulations (IR).

Part C: Narrative overview (ESP 3/2)

Indonesia is going through massive development and growth transformations and to achieve these goals expansion of access to clean, affordable, reliable and abundance of energy (electricity) is needed. The aim of ESP 3/2 is to contribute to systematic embracement of EE as an effective tool to stretch the scarce energy resource longer and to lower the CO_2 footprint per units produced in addition to reduce input costs for the productive sector especially and not limited to SMEs. ESP 3/2 supported improved implementation and monitoring of energy efficiency (EE), energy conservation (EC) and renewable energy (RE) policies and strategies through targeted support at the national level, while at the same time providing parallel support to the decentralized level (in Central Java Province and districts). The support includes two main elements: support to national government's ability to provide sound, timely and appropriate EE, EC, and RE technical and policy advise to key stakeholders, including decentralized government levels, and general monitoring. Secondly, direct support will be provided to selected local governments (including to district/ municipal level) to further develop and implement local government EE, EC and RE policies. The component was designed with a view that ESP 3

would be the last phase of a traditional development assistance programme from Denmark to Indonesia but that it would also serve as a transition phase into building a new partnership between the two countries based on trade and commerce, private sector engagement, university collaboration and NGO partnerships. It therefore aimed to provide support to innovative ideas (e.g. introduction of RE technology) and policy initiatives (RAD–GRK). Over the five years, it was hoped that these innovations would become more firmly rooted within the Indonesian institutions and private companies and their 'way of doing business'.

Part D: Design quality (ESP 3/2)

D1 (ESP 3/2). The concept was to support GoI establish relevant actions and policies, vetting facilities for EE practices and technologies, best practice concepts, information campaigns, finance solution, monitoring systems, etc. at national level and in parallel test these tools and systems at the Provincial and district level in Central Java thus collecting evidence and examples to further inform policies. This was expected to lead to a general shift towards improved EE in designs and implementation. In parallel, RE electrification was to be supported at the district level to enhance a green path to growth. The actions would run in coordinated parallel with a wide range of other EE and RE actions collectively being sufficient in size, evidence and impact to leave lasting CO_2 reductions and a more permanent shift towards low emission growth.

D2 (ESP 3/2). Assumptions underlying the theory of change.

Assumption 1. That continued policy priority will be given to promoting energy efficiency (EE), energy conservation (EC), and renewable energy (EE) through systems that facilitate access to knowledge on how to do so by potential investors, local and central government actors and other interested parties.

Assumption 2. That a long-term partnership with the Ministry of Energy and Mineral Resources (MEMR, Directorate General for New, Renewable Energy and Conservation) will continue to be the most effective way to convene, coordinate, pilot and deliver significant support in these areas.

Assumption 3. That promoting knowledge and guidance on EE, EC and RE will shape investments in ways that result in significant and rapid reduction in GHG emissions.

D3 (ESP 3/2). Plausibility of assumptions and links.

Assumption 1: plausible as input is given to build up relevant institutions that can promote EE thus intervention is less dependent on changed work flows within existing institutions although this also is needed and part of the assumption.

Assumption 2: plausible also because intervention is closely aligned with national plans and interventions by other developing partners.

Assumption 3: plausible based on experience from other countries.

D4 (ESP 3/2). General quality of the project design. ESP 3/2 seemed well designed as an integrated part of national efforts to improve EE and increase electrification also through RE solutions. It was logical and seemed sufficiently flexible to be able to adjust as needed. Long term adviser(s) were part of the implementation. All in all, good design based on years of collaboration and experience. The design does seek innovation but allows for them to be captured and included. **Score**: 5.

Part E: Evidence for mitigation performance (ESP 3/2)

E1 (ESP 3/2). Direct effectiveness, ESP 3/2. Rural electrification through RE solar PV will replace use of kerosene and paraffin which will reduce GHG emissions in the local setting and improve indoor climate. **Score**: 5

E2 (ESP 3/2). Indirect effectiveness, ESP 3/2. Improved EE inherently offers only indirect effects on GHG emissions. **Score**: 5

E3 (ESP 3/2). Net GHG emission reductions. None (lack of monitoring).

E4 (ESP 3/2). Impact effects. Component 2 supported MEMR in helping local governments to put national EE and EC (Outcome 1) and RE (Outcome 2) policies into effect, used pilot projects to test and improve EE, EC and RE strategies (Outcome 3), and informed provincial stakeholders on how to improve the energy dimensions of their RAD-GRK mitigation plans, both technically (Outcome 4) and in the light of demonstration projects (Outcome 5). A web-based Clearing House approach was used to make available information on how to improve EE, EC and RE, thus offering knowledge management support to all users in the hope that this would facilitate at least Outcomes 3-5.

The pilot project portfolio was diverse, including projects on waste management (landfill gas in Semarang, heavy-metal smelting, pollution from palm-starch and batik manufacturing in Klaten, and exploration of a waste-to-energy initiative in Cilicap), artisanal gold mining, a groundwater survey, and two wind energy initiatives - one in Sumba island linked to the Sumba Iconic Island Initiative, and feasibility work for a proposed Karimunjawa RE hybrid system in the Java Sea. These last were in line with an increased national focus on wind energy. Several of the pilot projects fell away, but four were approaching hand-over stage by late 2018: the Karimunjawa RE

project, the Semarang landfill gas-to-electricity project, the Cilicap waste-to-energy project, and the Klaten starch wastewater project (Jensen & vanderSluys, 2018). The Karimunjawa PV power generations in Nyamuk, Genting and Parang were running in full capacity in November 2020. Estimated GHG reduction from ESP3-Karimunjawa was calculated with no evidence of verification. The Central Java and district governments integrated lessons from ESP3 into their development plans and supported maintenance in Karimunjawa, Semarang and Cilacap. Support from MoF and MEMR for solar power generation came in 2019 through PLN's feasibility study. The combination of supportive policy, competent delivery of organised knowledge, availability of known technical solutions, and innovative experimentation suggests positive contributions, although there was no evidence of baselining or GHG emission effects. **Score**: 4.

E5 (ESP 3/2). Sustainability effects. The transformation path initiated through the systematic EE interventions do provide for sustainable long term avoided emissions. It is not possible to specifically pinpoint if it was the danish or a result of efforts from the National or other bilateral or multilateral DP´s but the collective effort towards a lower CO2 growth path is as a minimum partly or maybe fully sustainable. **Score**: 6.

E6 (ESP 3/2). Efficiency effects. "After some initial delays, the [Clearing House, CH] location has been identified ... The [Review Team] saw the proposed building design, and notes progress with respect to ensuring effective CH operation. Staff has now been assigned to the CH, a website is under development, and training programmes are being prepared. ... Progress is also noted on, among others, monitoring and reporting. ... A somewhat unexpected and very successful development has been the increased focus on wind energy. ... At the provincial level, activities have been fairly limited, focussing on training (study tours to Denmark) and preparation for further training activities. ... The identification, feasibility and design of candidate pilot projects is well underway." (Jensen *et al*., 2015: 12-14).

E7 (ESP 3/2). Capacity building effects. 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), and the development of clear communication strategies will be one of the tools supported to ensure that lessons learned and knowledge developed from local government pilot and demonstration activities are effectively disseminated to other institutional, private sector and civil society stakeholders. 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. **Score** 3 (due to the absence of 'prior, during, after' indicators).

E8 (ESP 3/2). Baseline and monitoring arrangements. (a) Quarterly progress monitoring of physical activities and financial progress, based on the approved annual work plans. (b) Random (spot check) monitoring on the technical quality of implemented activities. (c) On-going dialogue and interviews with involved stakeholders at different levels to gauge satisfaction level of support activities. (d) Results monitoring on an annual basis to determine how the outputs are contributing to achieving the expected outcomes, and the extent to which outcomes are being achieved – this results monitoring will follow the component results matrix included in Annex 1 and will be reported on in annual progress reports.

E9 (ESP 3/2). Overall conclusion on mitigation performance, ESP 3/2. In the absence of reports later than 2015, the conclusion is guided by the 'indirect effectiveness' criterion. **Score**: 4.

Part F: Other issues (ESP 3/2)

F1 (ESP 3/2). Unintended consequences. A consequence of establishing the Clearing House was to promote dialogue among the RE, EE, biofuels and geothermal directorates of MEMR, which would be a useful enabling step towards the design of a more sustainable economic system [see note below on 'green growth'].

F2 (ESP 3/2). Other performance issues. ESP 3/2 continued in SSC Energy.

Part G: Notes on other relevant topics.

G1. Topic 1. Parallel Donor Support to EE, EC and RE in Indonesia

Name	Funded by	Amount (millions)
PAKLIM	Germany (GIZ)	USD 11.70
Mini Hydro Power Project for Capacity Development	Germany (GIZ)	USD 15.80
ASEAN Energy Manager Accreditation Schemes	EU (Switch-Asia)	
Indonesia Clean Energy Development	USA (USAID)	USD 16.250

(ICED)		
The Energy and Environment Partnership (EEP)	Finland	EUR 4.000
The Indonesia Domestic Biogas Programme	Netherlands (embassy)	EUR 0.657
PV Pilot Project in Government Building – Center of Excellence	Netherlands (INDF)	~ EUR 0.300
Ring of Fire (Geothermal)	WWF International, UK-FCO	USD 0.500
Overcoming Barriers to Renewable Energy in Rural Area	Australia (AusAID)	~ USD 0.300
Urban Environment Improvement Program (Waste Management)	Japan (JICA)	USD 6.000
Implementing Low Carbon Public Transport in Jakarta	REEEP	EUR 0.317
Local Renewables: South-South Cooperation between cities in India, Indonesia & South Africa	REEEP	EUR 0.150
Planning and policy support for producing RE biogas in the Indonesian industry	REEEP	EUR 0.150
Barrier Removal for Cost Effective Development and Implementation of Energy Efficiency Standards and Labelling (BRESL)	GEF-UNDP	USD 7.800
Renewable Energy for Electrification	Germany, World Bank	USD 150.000

Sub-annex e4: ESP 3 Component 3 (ESP 3/3)

Part B: Purpose and relevance (ESP 3/3)
B1 (ESP 3/3). Purpose. "Climate change mitigation through community-based natural resources management, integrated low-emissions development plans, forest ecosystem restoration, sustainable forest management and support to the national REDD+ strategy"

(Danida, 2012a). The appraisal (Danida, 2012d) noted that Indonesia's environmental agenda was shifting towards climate change and an increased focus on REDD+, so Component 3 was adjusted and made increased use of Danish FSCCF from 2013 onwards. The result was that Component 3 initially consisted of five discrete sub-components:

- **Danish support to Harapan Rainforest** (DSHRF, with Burung Indonesia).
- **Locally Appropriate Mitigation Actions in Indonesia** (LAMA-I, with ICRAF).
- **FSC Certification** (FSC/TBI, with the Borneo Initiative). This was never implemented due to disagreements over forest certification approaches between TBI and the Ministry of Forestry as well as TBI's legal registration in Indonesia.
- **Danish support to the REDD+ Support Facility** (RSF, with the World Bank). The objective was to provide technical support and institutional capacity building during the early operational phase of the Fund for REDD+ in Indonesia (FREDDI) and the REDD+ Agency (World Bank, 2013, 2014). It was dissolved in 2015, along with the REDD+ Agency which was its primary focus.
- **Community-based natural resource management** (CBNRM/FIP, with the Forest Investment Programme). This followed the ESP 2 involvement with the World Bank-financed Kecamatan Development Programme (KDP) and National Program for Community Empowerment (PNPM) in which Danida 'Green PNPM' grants were offered to communities for RE and catchment protection purposes. This was abandoned because of policy divergence with the Ministry of Home Affairs. It was decided instead to collaborate with the the Ministry of Forestry and its World Bank-financed FIP, which included an element for small grants to indigenous peoples and local communities wishing to engage in community forestry or establish customary forests (including mapping of customary tenure and management planning). The Danida involvement was envisioned to focus on implementing three Forest Management Units (Annex in Jensen *et al.*, 2015), but the Danish funding was later carried over into FIP 2 which covered ten FMUs.

B1 (ESP 3/3). Purpose, DSHRF. The stated objective of DSHRF is to "Contribute to a significant CO_2 net emission reduction from Indonesia's forests whilst co-benefits (biodiversity, livelihoods) stabilized". The purpose of the overall Harapan Rainforest Programme is to protect, restore and sustain approximately 100,000 hectares of lowland rainforest habitat in Sumatra. The area comprises two former logging concessions, both logged, partly burned and partly replanted with *Acacia mangium,* but still containing significant areas of natural forest and populations of native wildlife. Saving what remains requires the following issues to be resolved sustainably: (a) Land sales and forest encroachment are the primary threats in Jambi, especially in Batanghari Regency (district); encroachment has deforested 36% (16,566 ha) of the Jambi license area since 2005, 41% (6,880 ha) of this since license acquisition in 2010. (b) Illegal logging is the primary threat in South Sumatra via the Kapas and Meranti Rivers and access through adjoining concessions; 6% (3,360 ha) of the South Sumatra license area has been deforested, mostly since license acquisition in 2007. (c) Conflict resolution efforts by government have proven ineffective. (d) Some encroaching communities had agreed to enter mediation, but different groups and factions had different expectations, and these disagreements made the situation very fragile. Some encroaching communities were demanding 'enclaving' where their claimed land would be removed from the permanent forest estate and therefore the concession. Other commercial companies in a similar situation in Indonesia factor a 20% loss of land into their plans, and plantation companies operating in Riau province generally lose 20-35% of gross plantation area to encroachment or overlapping tenure (e.g. PT Riau Andalan Pulp and Paper, a HTI timber plantation in Pulau Padang, Riau province, which lost 48% of its land).

B1 (ESP 3/3). Purpose, LAMA-I In collaboration with the national and local (*daerah*) development planning agencies (Bappenas and Bappeda), the aim is to support Indonesia in 'Synergising Locally Appropriate Mitigation Action and Green Economy' by implementing proven methodology for integrating climate mitigation (and adaptation), environment and development concerns through multiple stakeholder negotiations, and undertaking other related actions in selected provinces, so that the GoI will be better able to reach its targeted reduction in emissions (ICRAF, 2013).

B1 (ESP 3/3) Purpose, FIP This was originally intended to support REDD+ and align with National Plan in Reducing GHG Emissions (RAN-GRK), but this focus was later changed in FIP 2 to 'Promoting Sustainable Community Based Natural Resource Management and Development.' The executing agencies were five KLHK directorates-general with responsibilities closely related to Forest Management Unit (FMU) development and management, emphasizing community-based forest management, but excluding the Directorate General of Climate Change Control (PPI) that houses the dissolved REDD+ Agency and DNPI. The project implementers were ten FMUs, none of which have had a role in REDD+ or RAD-GRK.

B4 (ESP 3/3)./ Relevance to NDC. NDC sectoral priority 1 - LULUCF (ESP 3/3).

B5 (ESP 3/3). Relevance to mitigation: overview Component 3 was an umbrella for two enabling initiatives in support of sustainability reforms in the LULUCF sector (FSC/TBI, and RSF, both inactive or dissolved by 2015) and three natural resource management initiatives (DSHRF, LAMA-I, and CBNRM) that sought livelihood impacts at community level while feeding lessons learned to other levels. All are in principle relevant to the programme objectives and hence to Indonesian and Danish priorities. Through the CBNRM process, Danida sought a way to scale down global climate funds to community level through World Bank channels - initially involving a choice between the 'Green PMPN' with MoHA as tested in ESP 2, and a new

Forest Investment Program (FIP) arrangement with the Ministry of Forestry. This was resolved in favour of FIP (see below).

B5 (ESP 3/3). Relevance to mitigation: DSHRF. Addresses key causes of deforestation and degradation through a focus on the ecosystem restoration concessions concept (Danida, 2012d: 5). Mitigation verification criteria met: Mitigation ecology (ME).

B5 (ESP 3/3). Relevance to mitigation: LAMA-I . Addresses key causes of deforestation and degradation through a focus on participatory low-emissions development planning at district level (Danida, 2012d: 5). Mitigation verification criteria met: Mitigation mainstreaming (MM). Training & education (TE).

B5 (ESP 3/3). Relevance to mitigation: FSC/TBI. Addresses key causes of deforestation and degradation through a focus on sustainable forest management (SFM) and certification of natural forest concessions (Danida, 2012d: 5). Mitigation verification criteria met: Incentives & regulations (IR).

B5 (ESP 3/3). Relevance to mitigation: RSF. Addresses key causes of deforestation and degradation through a focus on implementation of the national REDD+ strategy (Danida, 2012d: 5). Mitigation verification criteria met: Mitigation ecology (ME). Mitigation mainstreaming (MM). Incentives & regulations (IR).

B5 (ESP 3/3). Relevance to mitigation: CBNRM/FIP. Addresses causes of deforestation and degradation through a focus on community-based natural resources and forest management (Danida, 2012d: 5). Mitigation verification criteria met: Mitigation ecology (ME).

Part D: Design quality (ESP 3/3)

D1 (ESP 3/3). Theory of change, RSF. REDD+ projects seek to build the capacity of forest-owning countries to make credible offers of carbon conservation in the form of credits for sale, on the assumption that there will one day be a demand for such credits at a price that will justify the cost of creating them (which includes the costs of setting aside areas of forest and peatland and protecting them from accidental or deliberate damage over at least decades). The Indonesia-Norway REDD+ Partnership is just such an approach, based on the need for reform of forest sector governance in Indonesia if deforestation is to be brought under control and eventually halted (Caldecott *et al*., 2011, 2013). In the process many complex issues arose that required more or different design effort than originally anticipated, including the ability to handle REDD+ financial transactions to credible international standards (the special focus of FREDDI and the World Bank), but also including many other technical matters (data and information management, policy development on fire, forest governance, land use, collaboration with sub-national actors, etc.). It was to help mobilise all this extra effort and expertise that the RSF was established.

D1 (ESP 3/3). Theory of change, DSHRF. As in other ICDPs, a nationally-protected area is introduced to people who had seen it (optimistically and illegally) as a potential free-access zone. Compliance is promoted by boundaries being clarified, agreed, marked and mapped, and by benefits (jobs, land tenure, commercial facilities, etc., including possible income from REDD+ and ecotourism) being accepted in lieu of open access, while conflict resolution processes, environmental education, and enforcement fill in the gaps. Over time, local people accept and may come to appreciate the benefits of a stable relationship with the forest and its managers, if they are not provoked by feelings of injustice (e.g. from frustrated expectation or the distribution of benefits), or suborned by outsiders (e.g. timber or wildlife poachers).

D1 (ESP 3/3). Theory of change, LAMA-I.

The planning imperative. All Indonesian cities, districts and provinces are required to produce plans (RAD-GRK) to contribute to national targets for reducing GHG emissions. These plans must be consistent with development plans that also meet economic growth targets. Spatial planning at the district level must therefore integrate emission reduction with economic growth without compromising water catchment functions, biodiversity and ecological buffers (ICRAF, 2013). To be robust and effective, these must be negotiated at local level and harmonised with provincial and national plans, while also taking into account the decentralisation of government systems, and commitments to conserve biodiversity and maintain the environmental services that are closely linked to climate change adaptation strategies. These complex planning requirements created a need to build local government capacity and develop tools with which quickly to create participatory, sound plans. Collaboration between government, communities, the private sector, civil society and research bodies was therefore imperative.

LUWES & ABACUS. ICRAF had already worked with some district governments to develop a methodology called Land-Use Planning for Low Emissions Development Strategies (LUWES) that links land-cover changes (1990–2010, with 26 categories of land cover across Indonesia), carbon stocks and economics. Software called Abatement Cost Curve Analysis for REDD (ABACUS) had also been developed that allows emissions to be estimated under a range of user-defined scenarios, projects future emissions and analyses opportunity costs. Using LUWES and ABACUS, therefore, plans had been developed by a few pilot local governments that link

policies to anticipated emissions. The first plans by districts that have not yet used this methodology will need to be followed up to improve quality and relevance.

LUMENS & LAMA. To be most effective, the methodology will need additional elements to cover adaptation to climate change, impacts on local climate, maintenance of watersheds and ecological buffers, and sustainable rural livelihoods. A revised version of LUWES, called Land-Use Planning for Development with Multiple Environmental Services (LUMENS), will therefore be used. Indonesia's social and ecological diversity is very high, however, and interventions must be flexible enough to be meaningful in each locality while still being useful at national level (and potentially so internationally as well). To help ensure this, ICRAF will work with locally-appropriate mitigation action (LAMA) projects supported by two donors, Danida and BMU-IKI, using the same tools and allowing sites to be chosen that offer variety in terms of past land-based emissions, current stock and standing forest, poverty level and economic growth, and with varying threats potential for emission reduction.

D2 (ESP 3/3). Assumptions underlying the theory of change, RSF.

Assumption 1. That the Indonesian political commitment to mitigation in general and to REDD+ in particular would continue over the years needed to accomplish all necessary reforms and to build all necessary capacities.

Assumption 2. That the GoI REDD+ Agency would continue to develop all necessary components of the REDD+ approach (moratorium on new forest concessions, mapping of all plans and concessions affecting Indonesian forests and peatlands, MRV system, work with sub-national actors, financial mechanism, etc.).

Assumption 3. That sustained processes of reform, mapping, moratorium, improving the rule of law, resolving conflicting claims, etc. would be reflected sooner rather than later in a proven reduction of the deforestation rate that could be rewarded financially by the Partnership.

Assumption 4. That soon thereafter it would become possible to offer credible carbon conservation credits from Indonesian forestry to international carbon markets.

Assumption 5. That those carbon credits would generate funds to reward Indonesian conservation forestry well enough, when combined with co-benefits (water catchment, biodiversity, environmental security, public welfare, recreational, tourism and ecotourism opportunities, etc.), to stabilise the forest/non-forest frontier across Indonesia.

D2 (ESP 3/3). Assumptions underlying the theory of change, DSHRF.

Assumption 1. That interest in REDD+ as a mitigation mechanism would continue to attract national policy support and international financial support for the protection and restoration of damaged tropical forests. [The concern expressed by Burung Indonesia 2011, was that a credible REDD+ financial transfer mechanism credits would be established.]

Assumption 2. That efforts to resolve conflicting land claims and stabilise the forest/non-forest frontier, including the community partnership model and the suppression of illegal encroachment, would continue to be supported by the authorities at national, provincial and district level. [The concern expressed by Burung Indonesia 2011, was that these would be too hard to negotiate and implement, that the project would be unable to use resources effectively, that enforcement would be ineffective, and that the Indonesian authorities would lose interest.]

Assumption 3. That the presence of an active research and conservation community of interest, the employment and deployment of patrol staff, and relationship-building with local communities alongside a capacity to respond to at least some of their self-identified development needs, would create a momentum towards stability in land use and take pressure off the forest so that a new ecological equilibrium would emerge and be sustainable.

D2 (ESP 3/3). Assumptions underlying the theory of change, LAMA-I.

Assumption 1. That there is continued political support at national and local government level for reducing GHG emissions from the LULUCF sector (ICRAF 2013 was concerned specifically about support for REDD+ and continuity of political commitment to low emission development strategies whatever the outcome of the 2014 presidential election).

Assumption 2. That availability and continuity of counterpart staff in local government will be sufficient for the planning process and its tools and skills to be transferred and full ownership and practical competence built up.

Assumption 3. That conflicts of priority and interest between low-carbon and high-growth elements of local development plans can be resolved without compromising climate, biodiversity and environmental security concerns, such that the final output will make a significant contribution to mitigation and other environmental objectives.

D3 (ESP 3/3). Plausibility of assumptions and links, RSF. Assumptions 1-3 are crucial to the rationale of the RSF, and at the time (in 2013-2014) there was no reason to doubt the validity of Assumptions 1 or 2, while the momentum of change generated by the Indonesia-Norway REDD+ Partnership was spectacular enough to give a high level of confidence that Assumption 3 at least, and quite possible Assumption 4, would soon be fulfilled (see Caldecott *et al*., 2013). Everything changed for political reasons in early 2015 (see Caldecott *et al*., 2018), but this is not relevant to the design of the intervention. Finally, Assumption 5 is a strategic one that is built

into all REDD+ interventions; it is in fact highly questionable whether markets without government manipulation are capable of maintaining a high and stable price for conserved carbon.

D3 (ESP 3/3). Plausibility of assumptions and links, DSHRF. The steps are reasonable in principle, but fraught with risks and the need for extremely sensitive, competent and flexible implementation arrangements. **Score: 4**.

D3 (ESP 3/3). Plausibility of assumptions and links, LAMA-I. The steps are reasonable in principle, but the third assumption requires some optimism regarding the extent to which the momentum of the Indonesian development process can be redirected to wholly benign outcomes in practice. **Score: 4**.

D4 (ESP 3/3). General quality of design: RSF. The relevant World Bank documents (2013, 2014) are clearly formulated and there was good reason at the time to think that the sub-component as designed would be effective. **Score: 5**.

D4 (ESP 3/3). General quality of design: DSHRF. The design quality is high by the standards of the time, and clearly and thoroughly described, if rather weak on mitigation justification despite some attempt to indicate the scale of opportunity. **Score: 5**.

D4 (ESP 3/3). General quality of design: LAMA-I. The design quality is high, and clearly and thoroughly described. **Score 6**.

Part E: Evidence for mitigation performance (ESP 3/3)

E2 (ESP 3/3). Direct effectiveness, DSHRF. The counterfactual ('what if not') scenario presumably involved 100% deforestation of 100,000 ha over time, but a range of possible outcomes would depend on how things work out in the context of Indonesian forest governance reform, the effectiveness of project strategies in the field, market conditions, climate change effects (especially fire-proneness), etc. The early 2010s was a time of some optimism (*harapan* means 'hope' in Indonesian), with government committed to controlling illegal logging and deforestation after the Indonesia-Norway REDD+ Partnership began in 2010 (Caldecott *et al.*, 2011, 2013). Any saving of forest would be a gain relative to the counterfactual (see Burung Indonesia, 2011; Edwards *et al.*, 2014; Danida, 2012), but the amount of carbon conserved would have to be compared with other carbon savings per unit cost available by other means. Plans to stabilise encroachment involve new commercial activities in partnership with communities in buffer areas, including rubber planting, distillation and processing of gaharu (agarwood, fungal-infected *Aquilaria*), and distillation and processing of citronella oil. A reasonable chance of saving around 50,000 ha of natural (if damaged) forest in Sumatra, along with several million tonnes of conserved carbon and thousands of wild species, was no doubt worth the Danish investment (the total amount of which in 2009-2018 was DKK 80.5 million according to Jensen & vanderSluys, 2018). Much of the Harapan Rainforest is apparently still standing and regenerating, with an Indonesian and international (including Danish) research and conservation presence, although the Danish government ceased funding the project in 2018 (Diana & Jong, 2018), and a new highway through the edge of the area is sought by a coal mining company (Diana, 2020). **Score: 6**.

E2 (ESP 3/3). Direct effectiveness, LAMA-I None.

E3 (ESP 3/3). Indirect effectiveness, FSC/TBI, RSF, CBNRM/FIP

FSC/TBI. The forest certification sub-component was never implemented so was entirely ineffective. **Score: 1**.

RSF. The REDD+ Support Facility contributed to what was in effect an unpanned first phase of the Indonesia-Norway REDD+ Partnership (2011-2014) as it engaged with stakeholders and motivated efforts to open up the LULUCF sector to public scrutiny and the rule of law in support of the policy of reducing deforestation and forest/peatland degradation. Although the changes in 2015 dissolved the arrangements that the RSF was intended to support, there were significant legacy effects, some of which resurfaced in various ways later (see Caldecott *et al.*, 2018). The RSF sub-component might be said to have been highly effective before the end of 2014 (**Score: 5**), and at least mildly effective thereafter (**Score: 3**). **Overall Score: 4**.

CBNRM/FIP. The aim was for local natural resources and landscapes to be placed under sustainable management by local communities, leading to improved natural conditions and improved livelihoods. The FMU model represents a major reorganisation of the management strategy for the Indonesian permanent forest estate. The documentary record confirms that DKK 40 million was contributed to the FIP Trust Fund in 2016, but as of December 2018 the deadline for spending it was extended to the end of June 2019. The Danish funding was rolled over into FIP 2, the mechanism of which was based on management by the World Bank in collaboration with KLHK with 70% of the fund disbursed to improve the capacity of 10 FMUs (KLHK & Forci Development, Mid-term FIP 2, 2019). Various reviews of FIP 2 n 2017-2019 questioned the relevance and efficiency of the project and recommended re-organising it to align with the emissions reduction from the deforestation program. They also repeatedly mention the importance of setting baselines for monitoring against. The program's most visible story is

developing a knowledge and skills centre called KMIS, designed to generate and manage knowledge for managing FMUs through a digital platform. There was however little evidence that much knowledge was generated or used. **Score: 2**.

Ocean debris. Denmark's contribution to the trust fund was "to raise awareness for action from public sector actors at national and subnational levels". Engagement with ministries was proving hard, however, and there was little sign of progress by late 2018. The World Bank frames the work of the OMC Trust Fund as a key entry point to the whole process of protecting and sustainably managing Indonesia's marine and coastal environment, including 'blue carbon' investment and mitigation, environmental security and adaptation, sustainable fisheries and tourism, coral reef, mangrove and sea-grass conservation, etc. (World Bank, 2019). Its actual functions, however, are described as deepening knowledge, increasing awareness, and strengthening coordination. The small Danish ESP 3 investment was perhaps strongly effective in midwifing the OMC, but the OMC itself will have little effect in reducing GHG emissions in the short to medium term. **Score 2**.

E3 (ESP 3/3). Indirect effectiveness, DSHRF

The ERC approach has its roots in the Ministry of Forestry's Ministerial Decree SK 159/Kpts-II/2004 regarding Ecosystem Restoration in Production Forest. This policy was strengthened by the entry of ERC as a new nomenclature for specific private concession in 2007 regulated under the Government Regulation No. 6 in 2007 regarding Forest Administration and Development of Forest Utilization and Management. The two ERCs issued for the Harapan Rainforest in 2008 and 2010 were the first such licences issued by the Ministry of Forestry (Jensen *et al*., 2015). Subsequently, with Danida support, Burung Indonesia worked with the Ministry (since 2015 the Ministry of Environment and Forestry, KLHK) to find ways to improve ERCs as conservation vehicles (Blomley, 2015).

As a result of the lessons learned and regulatory and contractual changes introduced through this experience and dialogue, it became possible for other ERCs to be awarded. The 16 current ERCs (see G8) cover almost 623,000 ha ad are registered in the National Registry System and automatically listed as REDD+ Demonstration Areas with minimum assistance from the government. The target of ERC for 2017-2025 is for almost 1,130 ha (Peta Indikatif Pemanfaatan Hutan Produksi 2020).

A consequence of Danida support was to preserve a future role for PT REKI, which is now a leading actor in working with six ERCs in Sumatra and Kalimantan with the support of Partnerships for Forests. By funding the Harapan project, therefore, Danida (and earlier donors KfW and the Darwin Initiative, as well as RSPB and Birdlife International) enabled Burung Indonesia to leveraged strategic change that led to many hundreds of thousands of hectares being placed under protective and restorative management, with abundant potential mitigation and co-benefits. Some (unknowable but certainly significant) share of the results can therefore be attributed to Danida's intervention. **Score: 7**.

E3 (ESP 3/3). Indirect effectiveness, LAMA-I Mitigation effectiveness depends on the anticipated consequences for net GHG emissions of achieving the LAMA-I outcomes. The latter focus on building the capacity of provincial and district governments to develop integrated low-emissions development plans in dialogue with central government, including: (a) development of policies and regulations on LCD through networking, joint planning activities and training (Component 1, led by CCROM); (b) developing, testing and distributing tools and insights to guide land-use planning towards greater environmental sustainability and livelihood security while reducing net GHG emissions and safeguarding biodiversity and water catchments (Component 2, led by ICRAF), and (c) building capacity (awareness, skills, networks, etc.) of government stakeholders and facilitating the mainstreaming of mitigation priorities into government planning processes at all levels (Component 3, led by GIZ).

These tasks appear to have been well and efficiently undertaken, and no doubt contributed to increased capacity in the specified areas, with potential effects in reducing GHG emissions relative to the without-project scenario. These effects might well be amplified by the focus on Papua where the potential to head off high emissions through integrated low carbon spatial planning is greatest among all the Indonesian provinces, by the potential leverage effects of using South Sumatra as an influential pilot for dozens of other provinces, and by cross-learning and synthesis between the Danida- and GIZ-supported elements of the project. The objectives of LAMA-I are still very relevant, especially in providing capacity building for local government since the omission of AMDAL (EIA) in the development and licensing process under the 2020 Omnibus Law increases the need for high-quality KLHS (SEA) in development and spatial planning. The relevance will also increase going forward because Presidential Regulation on GHG reduction (Perpres 60 and 61) will end in 2020 and Bappenas has prepared two draft presidential decree to focus on low-carbon development planning rather than just reducing emissions per sector. **Score: 6**.

E3 (ESP 3/3). Net GHG emission reductions, DSHRF. Burung Indonesia (2016: 11) states that "A Project Development Document (PDD) for carbon assessment was not budgeted due to the decision by the DSHRF Steering Committee to focus on addressing encroachment. Thus, a document of carbon measurement/counting in Hutan Harapan is not available as promised in

this project." This is unfortunate for a mitigation effectiveness assessment and raises questions about the strategic priorities of the Steering Committee. Still, the 'preliminary estimate' of 10-15 million tCO_2e conserved is at least consistent with the scale of the forest carbon asset and may well be more if carbon accretion in the regenerating ecosystem is considered, even after subtracting emissions from further encroachment and the planned community enterprises.

E3 (ESP 3/3). Net GHG emission reductions, LAMA-I. None.

E4 (d). Impact effects, ESP 3/3. **Component 3** (Jensen *et al.*, 2015: 15-16):

- **Outcome 1 (DSHRF)**: See below.
- **Outcome 2 (FSC/TBI)**: Not implemented.
- **Outcome 3 (REDD Support Facility)**: "Has demonstrated good progress and is nearly completed."
- **Outcome 4 (LAMA-I)**: See below.
- **Outcome 5 (CBNRM/FIP)**: "Has yet to begin due to prolonged preparations."

This all adds up to a slow if promising start and the need to explore the potential impact of Components 1 & 2 through later reports that are not available for this draft.

E4 (ESP 3/3). Impact effects, DSHRF Burung Indonesia (2016) highlights the following achievements: (a) it made a critical contribution to strengthening the ERC policy and regulatory frameworks; (b) it started forest commodity businesses in cooperation with communities (agar, rubber, citronella); (c) it signed agreements with FMUs on conflict resolution, forest management and forest-based business development, with FORDA on ERC policy, silviculture testing and inoculating of agarwood, and with three universities for forest ecology, carbon and socioeconomic research; (d) it completed boundary settlement and demarcation for both concessions; (e) it prepared the *Hutan Harapan Strategic Forest Management Plan* (2014); (f) it restored necessary culverts, roads and bridges and established five field offices; (g) it built capacity for effective forest patrols against encroachment, illegal logging and forest fires; (h) it developed policies and procedures for protecting human rights and promoting constructive social engagement; (i) it developed livelihood agreements, recognised by KLHK and local government, with four groups of Batin Sembilan [Orang Rimba] indigenous people; (j) it informed the development of KLHK regulations on conflict resolution, and manuals on assessment, mediation, and Assisted Natural Regeneration (ANR); (k) it provided field study sites for 81 graduate and post graduate students, and data for scores of publications; and (l) it collaborated with national and international ERC stakeholders to help build an ERC network of 14 ERC holders and 51 applicants. 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 multipurpose forest functions including protection and sustainable forests resource production, and away from a conventional timber concession model. **Score**: 6.

E4 (ESP 3/3). Impact effects, LAMA-I

Policy component (Component 1) achievements include: the partial mainstreaming of low-emission development (LED) into the medium-term development plans (RPJMD) of six districts in Papua and South Sumatra; preparation of provincial LCD strategies for Papua and South Sumatra; inputs to the South Sumatra Green Growth Plan; facilitation of regulations for integrated planning processes across districts and province in South Sumatra; and the reactivation of provincial working groups on mitigation for South Sumatra and Papua.

Technical support (Component 2) achievements include: LUMENS tested in target districts and lessons learned published; LUMENS adopted by Bappenas for use in revising RAD-GRK, supported by training in 31 provinces; LUMENS improved in support of the South Sumatra Green Growth Plan, and tested to meet ecosystem restoration and SEA needs; high-quality databases on LULUCF, carbon stocks, biodiversity, land-use profitability, and regional economy and social accounting developed and available for Banyausin, Merauke and Jayapura districts of Papua; a new tool for LAMA-related value-chain analysis (VAE-LAMA) developed for use by local stakeholders; and an iterative learning system (PEP-Online) for improving RAD-GRK developed with Bappenas and launched in 2017.

Capacity building (Component 3) achievements include: local expert networks and cross-sectoral working groups established in six districts (where they produced LCD plans) and two provinces; delivery of 76 capacity-building activities in two provinces; seven nationwide training sessions resulting in revised RAD-GRK for 34 provinces; support to RAN-GRK Secretariat and Bappenas on the PEP-Online tool, and in revising the RAD-GRK for Papua and South Sumatra.

This 2017 summary from Danida (2018) is consistent with the earlier conclusions of Jensen *et al.* (2015): "After an initial delay in starting this sub-component in late 2013, good progress has been made in developing, testing and rolling-out spatial planning tools for low-emission development in Papua and South Sumatra provinces. Progress has been made in linking these tools and

models to district level 5 year and annual sector plans and budgets, as well as linking to civil society platforms in Papua. Furthermore, the provincial RAD-GRK is being revised in Papua and will build on the work done with the three pilot districts under this project. However, the lack of REDD+ results-based financing from national level means that incentives for districts and provinces to implement low-emission actions that address deforestation drivers are somewhat limited." **Score**: 6.

E5 (ESP 3/3). Sustainability effects, DSHRF Burung Indonesia (2016) stresses that restoration concessions cannot earn money from the sale of timber, because the timber asset is already exhausted, so must find other sources, and that encroachment on the Harapan forest is driven by pressures beyond its control. Just considered from the point of view of its own progress in its own social and ecological environment, however, the Harapan project had marked sustainability effects. **Score**: 6.

E5 (ESP 3/3). Sustainability effects, LAMA-I There is enough evidence from interviews that the low-carbon planning principles and decision tools developed through LAMA-I have been adopted by Bappenas and several provinces that it is realistic to assess the project as having had important sustainability effects. **Score**: 6.

E9 (ESP 3/3). Overall conclusion on mitigation performance, DSHRF. There are a number of reasons to think that the Harapan project performed well as a mitigation investment, notably the several million tCO_2e conserved and absorbed on site in the regenerating forest since the first ERC concession was issued in 2008, plus all co-benefits, and the multiplying effect from proving the ERC mechanism which was then rolled out over large areas of the Indonesian forest estate, plus all their co-benefits. It is important to appreciate that even if a forest is eventually destroyed, a delay of even a few decades will still have contributed to mitigation since the GHG content of the atmosphere depends on a dynamic balance between sources and sinks, and our collective problem is that carbon emissions have temporarily (since about 1950) exceeded the biosphere's capacity to absorb them safely. Adequate economic-ecological calculations are still missing that would make sense of the overall effect of all Indonesia's (and its partners') forest conservation efforts, relative to everything else that has been going on in Indonesia and throughout the biosphere over recent decades and considering the responses of the Earth's climate system. But even in their absence it is reasonable to conclude that the Harapan project is very valuable, the Danida investment reasonable, and the mitigation effectiveness very high. **Score: 6**.

E9 (ESP 3/3). Overall conclusion on mitigation performance, LAMA-I. The project 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. **Score: 6**.

Part F: Other issues (ESP 3/3)

F1. Unintended consequences. **Component 3**. The consequences (already noted) of negotiating an amended model for ERCs with KLHK, and of rescuing PT REKI from its financial difficulties for its later role with Partnership for Forests, were certainly unintended but are presumably significantly positive. Also the consequences (already noted) of developing a conflict resolution centre of excellence at Harapan.

Annex f: The Mbeliling Forest Project, Flores

Part A: Basic data

A1. Project number & name. [500.8608.02, 104.N.445.b.2 (phase 1)]: Sustainable and integrated management of Mbeliling Forest, Flores, Indonesia

A2. Interviews. See Annex a: Persons and institutions consulted relevant to Annex f.

A3. Dates & financial data. Phase 1 ran from Jul 2007 to May 2010 (Danida funding applied for was about DKK 7.5 million; BirdLife, 2007). Phase 2 ran from Jan 2011 to Jun 2015 (Danida funding about DKK 9.4 million, plus some from BirdLife sources; BirdLife, 2015).

A4. Location(s). Indonesia: Mbeliling Forest, West Manggarai District, western Flores island.

A5. Partners. (a) BirdLife family members (DOF, Burung Indonesia); (b) Yakines, an NGO in the West Manggarai area.

Part B: Purpose and relevance

B1. Purpose.

Development objective: Participatory forest management improves sustainable livelihoods in communities around Mbeliling.

Immediate objectives:

1. Empowerment goal: "Local communities are able to participate in the decision making process for forest management" (BirdLife 2007); "Local communities are able to participate in the decision making process for the management of Mbeliling landscape" (BirdLife, 2010).

- *Indicators from MTE, 2009*: (a) local communities are actively participating in the process of developing the management plan for the Mbeliling forest; (b) local communities are actively participating in the joint management forum; and (c) at least 30% of the participants are women.

2. Poverty reduction goal: "Local communities have increased economic activities through the sustainable use of forest resources" (BirdLife, 2007); "Local communities have improved their incomes through sustainable economic activities" (BirdLife, 2010).

- *Indicators from MTE, 2009*: (a) cash income of 10-20 selected households per village is increased by an average of 10% within project period; (b) alternative income sources established for households around Mbeliling (1-3 new alternative income-generating activities); (c) increase in the public services towards the poorer households in the Mbeliling area with 5-10 public facilities being established during the project period.

3. Conservation goal: "A management plan is agreed on and a concept of the productive landscape in Mbeliling supported through an assessment by joint a team from the Ministry of Forestry and the local government" (BirdLife. 2007); "The Mbeliling area is developed environmentally sustainabl[y] by using an integrated landscape management [approach]" (BirdLife, 2010).

Indicators from MTE, 2009: (a) at least 15 of the Village Conservation Agreements or Rural Nature Conservation Agreements are signed by the end of the project; and (b) management plan drafted and agreed on by stakeholders within project period.

B2. Relevance to partners. For **Indonesia**, the project was fully in line with policy and commitments on poverty, decentralisation and biodiversity conservation.

For **Denmark**, the project was fully in line with policy to deliver on the SDGs (see below) and its mild and non-specific interest in conserving biodiversity as expressed in *The World 2030*.

B3. Relevance to MDGs/SDGs. The Mbeliling programme as designed and implemented clearly made significant contributions to achieving:

- **SDG 1: No Poverty** (also **MDG 1**, by improving and securing livelihoods);
- **SDG 5: Gender Equality** (also **MDG 3**, by planning for and almost achieving ambitious goals on women's participation);
- **SDG 6: Clean Water and Sanitation** (also **MDG 7**, by protecting local water sources and catchments, and stabilising land use across a large and fragile water catchment for the city of Labuan Bajo);
- **SDG 10: Reduced Inequalities** (by specifically targeting poorer households for support);
- **SDG 13: Climate Action** (also **MDG 7**, on mitigation by safeguarding forests and preventing the release of 5-10 million tCO_2e, and on adaptation by safeguarding a forested and farmed landscape and strengthening local ecosystem management);
- **SDG 14: Life Below Water** (also **MDG 7**, by preventing the large-scale deposition of silt from upland erosion into coastal and marine ecosystems);
- **SDG 15: Life on Land** (also **MDG 7**, by conserving an area important for endemic and native birds and other species);
- **SDG 16: Peace, Justice and Strong Institutions** (by making explicit and effective arrangements for avoiding and resolving conflict and promoting participation and democracy); and
- **SDG 17: Partnerships** (also **MDG 8**, by involving BirdLife in Indonesia and Denmark, local NGOs, and district government).

B4. Relevance to NDC mitigation commitments. NDC sectoral priority 1 - LULUCF.

B5. Relevance to mitigation. Mitigation verification criteria met: Mitigation ecology (ME).

Part C: Narrative overview

The stated purpose of the Mbeliling project from the start was focused on improving livelihoods. While there was a secondary 'conservation' goal which covers biodiversity in this Important Bird Area (IBA) and biodiversity hotspot, there was no mention of climate change or mitigation in any of the BirdLife documents, from the Phase 1 Programme Document (BirdLife, 2007) to the Phase 2 Completion Report (BirdLife, 2015). It is interesting to compare this with the equivalent aim as stated by Danida (2018) for a very similar project in the Kafa Biosphere Reserve in Ethiopia: "improved and climate resilient livelihoods, while increasing forest carbon stocks, and

reducing carbon emissions from deforestation".

- **Thus, within 12 years, the emphasis in rationalising similar projects had largely replaced biodiversity with climate change adaptation and mitigation, while keeping livelihood improvement as the key rationale**.

This shows how biodiversity conservation has had to be presented to ODA donors, by stressing poverty and now climate, but never biodiversity as such, and also the trajectory of global concern on climate change from the 'before Paris' to the 'after Paris' eras.

- **As public concerns over climate change fuse with those over mass extinction and ecological breakdown, it is likely that these three areas will soon be united as a single, integrated priority for all development assistance**.

The DOF project in Mbeliling aimed to set up a permanent system of highly-participatory and community-based forest ecosystem management (by putting in place locally-accountable forums, environmental education, participatory development planning and conservation implementation, etc.), in which local people would be encouraged and enabled to organise themselves to understand, advance and protect their long-term interests as residents of a forest and farming landscape. The importance of biodiversity (in terms of 'web-of-life' utility and as specific and potential realisable assets if properly managed, protected and monitored) was built into the design from the beginning. A further essential part of the project was to help local farmers gain an income (e.g. from small-scale production, tourism, and organic and sustainable cultivation of cocoa, vanilla, etc.) in return for their protection of local nature. This has all apparently worked out very well, taking advantage of low-conflict social conditions in the project area. The GHG emission benefits were not baselined or monitored directly, but forest cover and ecosystem quality proxies were used. No major forest re-growth has yet been reported, but BAU at the time (and since) suggests significant emission savings through forest protection. **Score: 6**.

- **The value of aid investments in preventing catastrophic outcomes and preserving social and ecological systems is grossly under-appreciated, and the Mbeliling project offers a case study in why this neglect should be challenged**.

Part D: Design quality

D1. Theory of change. The 94,000 ha Mbeliling forest landscape is a key water catchment and biodiversity refuge (see G1) in western Flores (BirdLife 2007). Issues include: (a) illegal logging; (b) previous land clearing for agriculture; (c) dissatisfaction with the boundaries by the local communities; (d) deforestation has reduced the water catchment areas; and (e) illegal trapping of rare birds and mammals. This is a poor part of Indonesia, where constraints on livelihoods include: (a) that the main occupation is subsistence farming by traditional methods using traditional crops and varieties; (b) that arable land is limited by infertile soils and a decreasing and more unpredictable water supply; (c) that poor access to district extension services and poor infrastructure impedes improvement of farming practices, development of new alternative crops, including agro-forestry and tree crops, and their market chains; and (d) that shortage of freshwater results from past deforestation and heavy use of the Mbeliling water catchment area for urban areas, particularly Labuan Bajo (the capital of West Manggarai district). The project design is based on empowering local communities to be partners in the management of the entire Mbeliling landscape with the district government. It was designed to focus on: the 27 local communities through Conservation and Development Groups (CDGs) federated into an Mbeliling Committee (FPKM); women (by giving high priority to their inclusion in all CDGs); village and household benefits (e.g. new income-generating activities and enhanced the water catchments, with a focus on poorer families); and building conservation understanding through environmental education, Rural Nature Conservation Agreements (RNCAs) and involving local people in management planning and low-key monitoring (LKM) of results.

D2. Assumptions underlying the theory of change.

Assumption 1. That local people will be willing and able to participate actively, equitably and effectively in CDGs and the FPKM, and in all the study, analysis, planning and dialogue processes surrounding their establishment and operation.

Assumption 2. That communities will be willing to join in and be bound by their RNCAs, and participate in the dialogue, planning and field-work activities and other opportunities required of or presented to them.

Assumption 3. That collective behaviour change will occur as a result of all the participation, organisation, affirmation, education, experiment, study, analysis, dialogue and other processes involved in participatory implementation of the project, including at least some economic benefits at household level arising from and/or facilitated by the project.

Assumption 4. That the net effect will be more stable forest boundaries (and hence avoided GHG emissions and preserved ecosystem services), regeneration of damaged forest (and hence absorbed carbon and restored ecosystem services), recovery of wildlife populations (and hence biodiversity benefits), and significantly greater economic well-being and livelihood security (and hence poverty and sustainable human development improvements) than would otherwise have been the case.

D3. Plausibility of assumptions and links. The assumptions are plausible, but all depend on the absence of factionalism, conflicts of interest between and within communities, and opportunistic exploitation and aggravation of potential conflict by outside groups of settlers or political parties. This seems fair in context, if rather unusual, and the PD addresses conflict by arguing that the FPKM, RNCAs, CDGs, etc. offer "avenues for long-term conflict prevention within villages, between villages, between clusters of villages, and between local communities and the District Government (and other major local stakeholders). Enabling the local communities to participate actively in formulating development plans for their communities will also increase their control over their own situation and prevent issues from escalating into conflicts. The direct and full involvement of the local communities in the formulation of the Mbeliling landscape management plan is another strong contribution to long-term conflict prevention." (BirdLife, 2010: 13). Further evidence of the peaceful and compliant nature of Mbeliling society is provided by the comment that "there turned out to be a very high compliance to the agreed rules, including actually paying back the funds borrowed from the pool including the interest, and therefore also a sufficiently high level of trust among the people involved in each group" (BirdLife, 2010: 17). **Score: 6**.

D4. General quality of the project design. The design responds to all known principles of community-based renewable natural resource management and is generically appropriate to a low-conflict social situation such as that described. It also seems well adapted to the conditions prevailing in western Flores and to the Indonesian governance system as modified through decentralisation in the 2010s. It also allows for an exit strategy in which DOF will after 4 years leave behind a fully-functioning FPKM and Mbeliling Committee as permanent parts "of the available platforms for future discussions, communication and interventions pertaining to the Mbeliling landscape and be the custodians of the Mbeliling landscape management plan on behalf of the local communities" (BirdLife, 2010: 14). **Score: 6**.

Part E: Evidence for mitigation performance

E1. Direct effectiveness. None.

E2. Indirect effectiveness. The Mbeliling project is exemplary in many ways. Its potential weakness as a mitigation intervention is whether the forest would have been further damaged in the absence of Danida support. This risk peaked after 2004 with the decentralisation law and rates of forest loss in the 12-20,000 sq. km per year range. Danida support was thus well timed relative to a nationwide threat, but western Flores was far from the main centres of industrial logging and plantation development in Kalimantan, Sumatra and latterly Papua. It is a steep upland forest area, hard to access, with little high-value timber and marginal value as farmland. But these factors have not stopped the destruction of many other similar areas in Indonesia, including across the Lesser Sunda Islands, so it was fair for BirdLife to note the rich and important biodiversity, the gradual encroachment and wildlife predation, and to become concerned about Mbeliling. Given the dramatic changes induced by the project with Danida funding, and their likely sustainability, it is reasonable to assume that in the project's absence a steady degradation of the area would have continued, and eventually it would have been entirely lost to fire and soil erosion. **Score: 6**.

E3. Net GHG emission reductions None recorded but inferable from avoided deforestation.

E4. Impact.

Phase 1. "There was a massive attention to water protection. All villages had planted trees around springs and in family forests to protect water but also to raise family income in the future by planting relevant species (durian, rambutan, fruit-trees, timber wood, and cocoa). Both local and exotic species had been planted. The outcome could allegedly already be seen: more birds close to houses, better water supply for irrigation which again made it possible to grow and sell vegetables." (MTE, 2009: 19-20).

Phase 1 & 2. "The most important achievement was the strengthening of stakeholder support in bringing about a productive Mbeliling landscape. Support from communities is evidenced by the way they have implemented the agreement points of Village Nature Conservation Agreements (RNCA), participated in ecosystem services monitoring, economic development activities and many others. Public knowledge of the Mbeliling project and the importance of the landscape has improved markedly as a result of public awareness raising through various means and media. Improved knowledge has led to increased public support for conservation activities in Mbeliling as it is now recognized that Mbeliling is vital in terms of hydrology, biodiversity, and economy. A reduction in pressures and threats to the Mbeliling landscape constitutes proof of this public knowledge support." (BirdLife (2015: 2). **Score: 6**.

E5. Sustainability. See G2. "The existence of several pieces of legislation created at the district and village levels guarantees the sustainability of the project. Further, existence of CDGs and microfinance groups (cooperatives) is another guarantee of sustainability as they have proven to be active in running routine activities monthly. In the framework of ensuring the FPKM's sustainability, cooperative activities and commodity marketing initiatives are organised through the FPKM. Both of these activities indicate the continued existence of the FPKM in the long term. In supporting Mbeliling farmers' vegetable agribusinesses, the project team has opened an

outlet in Labuan Bajo to market their produce." (BirdLife (2015: 8). "As the communities gained experience, they realized that they shared a number of common interests, such as a desire to improve their livelihoods. The CDGs are rooted in the villages and can be the basis of landscape governance with the FPKM. Since representatives of village governments, community leaders and the CDGs all participate, the FPKM represents the concerns of local communities across the entire landscape. This gives the forum leverage in dealing with the district government or other external parties. Through the Mbeliling Committee, the FPKM has become one of a number of stakeholders who interact with the district government." (Widyanto *et al.*, 2014). **Score: 6**.

E6. Efficiency.

The start of Phase 1 was delayed by recruitment difficulties and gained momentum only in early 2008 after starting in mid-2007. Although it accomplished many of its set indicators it was running out of time in September 2009 and the MTE then recommended both an extension and a second phase. The MTE concluded (2009: 28-29):

- **Empowerment** "planned outputs and activities were well under way. The communities are actively participating in the development of a management plan. The villages are participating in Forum activities although Forum has lost its members from the government agencies and the body must re-define its vision and mission. Only approx. 10% of the participants are women out of the forecasted 30%."
- **Poverty reduction** "outputs and activities suffered from the late time of implementation – and certainly also from lack of attention from both the project and the Yakines [local NGO partner] management. There is no sign of an increase in cash income for 10-20 households [per] village. Alternative sources of income established. Tourism activities have been initiated and alternative herbal and natural medicine products have been developed. The effect is yet to be seen. Increase in public service cannot be seen."
- **Conservation** "outputs and activities have been halfway accomplished. 11 RNCAs had been signed and the rest is to follow this year [2009]. The establishment and mutual acceptance of a formal management plan was in its initial phase."

Phase 1 Score: 4.

The Completion Report concluded (BirdLife, 2015: 3):

- **Empowerment outcomes**: "(1) Villagers in 27 villages have been involved in activities conducted by the FPKM, such as member meetings, training and strengthening networks, at the village, cluster and landscape levels and outside Mbeliling. Through the FPKM, as a vessel for Mbeliling communities' aspirations, 27 villagers were involved as members of the Mbeliling Committee and participated in its activities, such as thematic discussions and the deliberation of various regulation/policy initiatives. (2) People from 27 villages participated in discussions on the Mbeliling Landscape Strategic Management Plan (RS-BAM) through consultations carried out in the 27 villages involved in RNCA deliberations, which constituted part of Mbeliling landscape management planning at village level. (3) Women's involvement averaged 27%."
- **Poverty reduction outcomes**: "(1) On average 19 households per village increased earnings by an average 21% a month. (2) Management of existing economic enterprises (livestock, vegetables etc.) by villagers increased with the application of business analyses and plans. The project facilitated training on business plans and analyses, and helped villagers to manage and monitor the progress of their businesses. Villagers developed 7 new types of businesses successfully increasing their earnings."
- **Conservation outcomes**: "(1) By the end of the project, 26 RNCAs had been legalised, only 1 RNCA yet to be legalised. (2) From the outcomes of studies and field observations, it was found that there were no habitat changes and populations of key species remained stable. (3) The Mbeliling Landscape Strategic Plan was legalised through District Head Regulation No. 12/2015."

Further details on outputs are available in pages 3-6 of BirdLife (2015), covering the membership and operations of the Mbeliling Committee (which includes district government) and FPKM (which does not), the CDGs in 27 villages (with 44% women participation), the establishment of RNCAs, and grants and projects under their auspices, household earning increments, 219 microcredit business proposals (51% of recipients being women), ecotourism enterprises, research studies on key species and habitats (including *Monarcha sacerdotum*, *Cacatua sulphurea* and *Varanus komodoensis*), tree planting around 46 critical water sources, LKM of 27 transects, strategic planning, and educational outreach activities).

The Completion Report concluded: "No serious problems that could hamper the implementation of activities arose during the project. Almost all assumptions were met except for those relating to the willingness of the West Manggarai District Government to provide joint funding for renovating the forestry office in Werang. Generally, project targets were achieved on time, though some small outputs were achieved in the 6-month no-cost extension period." (BirdLife, 2015: 7).

"The beneficiaries of the project are around 35,000 people (approximately 7,000 households) in the 27 villages of Mbeliling. 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. Recipients of intensive benefits from the project were CDG members, microfinance groups and demonstration farmers totalling 1,131 adults comprising 629 men and 502 women and their families." (BirdLife, 2015: 6).

Phase 2 and overall Score: 6.

E7. Baseline and monitoring arrangements.

Baselines. From Phase 1 the project included the mapping of forest cover using interpreted satellite imagery, forest function and RNCAs, and others "to support the implementation of the Mbeliling landscape management plan" (BirdLife, 2010: 19). Likewise, baseline studies were done by Indonesian students on the ecology of five endangered bird species, and by a sub-contracted specialist on the endemic subspecies of Komodo dragon, to inform species action plans and the Mbeliling landscape management planning process (BirdLife, 2010: 18).

Monitoring. From Phase 1 the project included participatory monitoring of ecosystem services (water sources and catchments) and populations of endangered species, including the establishment 27 permanent survey lines that were walked by trained villagers using LKM techniques every three months - the data showed stable populations (BirdLife, 2015: 3).

Thus baselining and monitoring of ecosystem extent and integrity were used and are available as proxies for avoided deforestation and reversed degradation, as confirmed by mapped forest extent and classification of structure based on remote imagery in 2006 and 2018.

E8. Overall conclusion on mitigation performance.

Ensuring that close to 100,000 ha of forest (5-10 million tCO_2e at the lowest end of tropical moist forest estimates) was permanently secured at a cost of DKK 17 million (ca EUR 2.5 million, thus ca EUR 0.25-0.5/tCO_2e, excluding regeneration absorption), plus numerous social, economic and biodiversity co-benefits, seems remarkably cost-effective. This required the design of an excellent project by BirdLife, however, as well as its satisfactory implementation by Burung Indonesia, and the cooperation of local people and government. **Score: 6**.

Part F: Other aspects of design and performance

F1. Unintended consequences. No negative consequences were detected.

F2. Other performance issues. As noted, 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 a point is that these elements must be adapted to local circumstances. 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. BirdLife (2015: 2) mentions that "Government funding still prioritises infrastructure development. Conservation activities could thus not secure adequate Government funding. Stakeholders still have trouble working in an integrated manner as sectoral interests remain strong. Overlapping policies and/or programs are frequent. The policy of rotating government staff was a challenge which demanded extra effort from the project team for developing rapid and effective coordination and communication."

F4. Missing documents. Most documents listed as available in BirdLife (2015) were not provided (i.e. List of Burung Indonesia publications; Burung Indonesia Brief Report Biological Studies 2012; Burung Indonesia Lessons learned reports; Burung Indonesia Stories from the field; Forest and Landscape training and technical reports; DOF article, manuals, www.dof.dk).

Part G: Notes on other relevant topics.

G1. Biodiversity values of the Mbeliling forest.

The rediscovery of the Flores Scops-owl (*Otus alfredi*) by Kjærgaard & Larsen (2010) confirmed that the area contains all four endemic Flores bird species, the three others being the Flores crow (*Corvus florensis*), the Flores (priestly) monarch flycatcher (*Monarcha [Symposiachrus] sacerdotum*) and the Flores (Wallace's) hanging-parrot (*Loriculus flosculus*). All of them are rare and highly specialised in their habitat needs. Also present are the Critically Endangered Flores hawk-eagle (*Nisaetus floris*), the endangered yellow-crested cockatoo (*Cacatua sulphurea*), and the endemic blind snake (*Typhlops schmutzii*) and Flores giant rat (*Papagomis armandvelley*). Flores is a hotspot for biodiversity in general, with high species richness and significant endemism across taxa (see Trainor *et al*., 2000). Recent discoveries in the area include the Komodo dragon (*Varanus komodoensis;* Fowlie, 2013), which is a rare Indonesian endemic and a flagship species.

G2. Mbeliling sustainability update (source: Burung Indonesia).

Mbeliling Forest is managed by local communities facilitated by Burung Indonesia. The sustainability of funding for Mbeliling community based forest management has not materialized yet. The community groups can access funding from the village fund (*Dana Desa*) and local government assistance. The community groups have improved their skills in organizing themselves to monitor their forest territory (patrolling), and managing its small scale tourism. Community group representatives and Burung Indonesia are aware that they must be creative in

generating revenues through ecosystem services, such as NTFP, eco-tourism, water retails, and exploring the environment fiscal transfer administered by the Minister of Finance and Village level public services company (BLUD). Community groups have also built relationship with tour operators and hotel industry in Labuhan Bajo to collaborate for eco-tourism and to offer water retail program as Mbeliling has the water springs. The legacy of the project in supporting communities to monitor protected areas of Mbeliling forest has resulted in the increase of forest cover as shown in the map that Burung Indonesia compiled from 2006-2018. The ecological fiscal transfer provides incentives to villages that can prove its validated results of managing its protected areas. The Ministry of Finance is assessing villages around Mbeliling protected forest to receive incentives for their success in maintaining their forest. Nusa Tenggara Timur (NTT) is a province with low forest cover and high poverty.

Annex g: Strategic Sector Cooperation (SSC) Energy Phases 1 & 2

Part A: Basic data

A1. Project number & name. 2015-26760 & 2015-56019: Strategic Sector Cooperation on Clean Energy, Renewable Energy and Energy Efficiency, Phase 1 (2016-2018) & Phase 2 (2019-2021)

A2. Interviews. See Annex a: Persons and institutions consulted relevant to Annex g.

A3. Dates & financial data.

Phase 1 (preparation phase, 2016-2018) budget: DKK 5.5 million (DEA, 2015), with three components: (a) scenario analysis and energy planning; (b) renewable energy integration; and (c) energy efficiency.

Phase 2 (2019-2021) budget: DKK 10 million (DEA, 2018a), with three outcomes: (a) enhanced capacity at MEMR, NEC and PLN for energy modelling and long-term energy planning; (b) increased RE production by PLN and other producers and integration of fluctuating RE in the power sector; and (c) improved enabling environment for EE in buildings and power production.

A4. Location(s). Indonesia.

A5. Partners. Phases 1 & 2: (a) Ministry of Energy and Mineral Resources (MEMR); (b) National Energy Council (NEC); (c) National Electricity Company (PLN).

Part B: Purpose and relevance

B1. Purpose.

Phase 1: "To assist Indonesia government agencies and other relevant stakeholders in developing relevant policies, strategies and solutions to increase the electrification rate and to achieve the government's long-term RE and EE objectives" (DEA, 2015: 2). Three components:

- Scenario analysis and energy planning;
- Renewable energy integration; and
- Energy efficiency.

Phase 2: "To assist Indonesia government agencies and other relevant stakeholders in developing relevant strategies, policies and solutions to support the implementation of Indonesia's Nationally Determined Contribution under the UNFCCC as well as national targets for electrification, renewable energy and energy efficiency" (DEA, 2018a: 6). Three outcomes:

- Enhanced capacity at MEMR, NEC and PLN for energy modelling and long-term energy planning;
- Increased RE production by PLN and other producers and integration of fluctuating RE in the power sector.

- Improved enabling environment for EE in buildings and power production

B2. Relevance to partners.

For **Indonesia**, the SSC is relevant to challenges facing the national energy system, which including expanding the electricity grid, meeting growing electricity demand, reducing dependency on fossil fuel while reaching the renewable energy target of 23% in 2025, and reducing energy intensity by 1% annually.

For **Denmark**, these are areas "where Danish experience and lessons learned can be used in the Indonesian context" (DEA, 2015: 2).

B3. Relevance to MDGs/SDGs.

SDG 7 ('Ensuring access to affordable, reliable, sustainable and modern energy for all'), and sub-goals 7.1 (universal access by 2030), 7.2 (substantially increased RE in the global energy mix by 2030), 7.3 (double the rate of improvement in EE by 2030), 7.A (international cooperation on RE, EE, etc.), and 7.B (prioritise support for developing countries, especially LDCs, SIDS & LLDCs).

SDG 13 ('Take urgent action combat climate change and its impacts') and sub-goal 13.2 ('Integrate climate change measures into national policies, strategies and planning').

B4. Relevance to NDC mitigation commitments. NDC sectoral priority 2 - Clean energy.

B5 (a). Relevance to mitigation. Capacity building (CB) - the programme support phase 1 and 2 does not include funding for technologies or implementation tools to justify relevance towards technologies or regulations.

Part C: Narrative overview

The SSC Energy preparation phase (SSC Energy 1) ran from January 2016 to December 2018, with a budget of DKK 5.5 million, and therefore paralleled the final two years of ESP 3/2. Both were embedded within MEMR with a view to giving Indonesia access to Danish expertise in EE, EC and RE. The main difference between them was that whilst ESP 3/2 had a capacity to work both at the national and at the regional (provincial and district) level on RAD-GRK implementation and demonstration projects, and on knowledge exchange between the local and central levels to strengthen national policies and plans, SSC Energy 1 worked only at national level, where:

- in SSC Energy 1/1 it engaged with the NEC, MEMR, PLN working group to focus on data gaps, technology catalogue, energy scenarios, plan reviews, guidelines;
- in SSC Energy 1/2 it engaged with the PLN working group to focus on stable operation of the electricity network and power system security with fluctuating RE (especially wind); and
- in SSC Energy 1/3 it engaged with the MEMR working group to focus on how to increase the use of EE in industry and EE in energy planning as energy subsidies are reduced, including the development of an EE obligation scheme.

This provided a necessary differentiation between ESP 3/2 and SSC Energy 1 in the period of overlap (2016-2018). After that, with ESP 3 closed, SSC Energy 2 (2019-2021, budget DKK 10.0 million) continued national level engagements but with an increasing involvement with island-level (Lombok-focused) energy sector (whole economy) planning and technical design in 2018-2019:

- in SSC Energy 2/1 it focused on enhancing capacity at MEMR, NEC and PLN for energy modelling and long-term energy planning (RUEN) for low-carbon development, including studies, analyses, update of technology catalogue, long-term business plan (RUPTL), energy outlook studies, and recommendations for policy and regulatory improvements;
- in SSC Energy 2/2 it focused on RE integration through enhanced forecasting, grid code strengthening and Energinet training in Denmark, and on exploring ways to de-risk private investment in RE; and
- in SSC Energy 2/3 it focused on technical support to provinces on minimum energy performance standards for buildings and appliances, and on the enabling environment for national and provincial EE strategies, targeting large energy users (under the '6000 toe program' [6000 TOE or tonnes of oil equivalent = ca 252,000 GJ or 69,780 MWh]).

There was a continuity of purpose between components in the 'preparation' phase (SSC Energy 1) and 'implementation' phase (SSC Energy 2), with 1/2 and 2/2 on **knowledge**, 2/2 and 3/2 on **RE integration**, and 1/3 and 2/3 targeting **EE**. These also relate back to the purposes at national level that were built into ESP 3/2, and with a similar (but in SSC Energy geographically more limited) outreach to the regional level. The latter included developing *Energy Outlook* reports for Lombok, North Sulawesi and Gorontalo, Riau, and South Kalimantan (DEA & EaEA, 2018, 2019a, 2019b, 2019c), and a study on 'Powering Indonesia by Wind' (DEA & EaEA, 2017) , but SSC Energy started earlier and made most progress in Lombok. This advance in Lombok facilitated later collaboration with SSC Environment, which was also Lombok-

focused (Annex h), and development by SSC Environment of the the SSC-SII, which covered Riau/Batam and Lombok but was also focused in practice during the evaluation period on the latter (see Annex i). Two points are relevant: first, that activity in each province or island can be part of a constellation of similar activities while some act as pioneers; and second, that if progress is more advanced in one location (because it started earlier, or because the local government is more cooperative, or for some other reason) then that location may become more attractive to other initiatives that share some of its aims and trained people, and synergies between them may then occur.

Part D: Design quality

D1. Theory of change.

Phase 1 & 2: Indonesia has ambitious 2025-2030 targets for changing the energy mix in favour of RE and reducing GHG emissions, in line with President Yudhoyono's 2009 'Pittsburgh Commitment' and the UNFCCC NDC (GoI, 2016). These require an applied focus on technical options for RE, on investment incentives for RE and EE, and on enabling policies and regulations. Indonesia possesses abundant resources of wind, water and geothermal energy (and tidal power, though this is seldom mentioned) which could be harnessed for RE purposes. Denmark possesses a real track record in promoting an RE-rich energy mix and an EU-integrated RE system with HVDC transmission from wind power, and promoting EE and EC. The SSC Energy partnership is a way to provide Indonesia (through MEMR) with access to Danish skills and experience in devising and implementing measures needed for Indonesia to achieve its NDC and energy sector goals.

D2. Assumptions underlying the theory of change.

Assumption 1. That there will be no major change in government priorities for the energy sector.

Assumption 2. That the SSC Energy partnership will be an effective way to transfer knowledge and skills and so build capacity in MEMR, NDC and PLN to undertake tasks in line with the implementation of the Indonesian NDC and national energy policy targets.

Assumption 3. That increased capacity within MEMR, NDC and PLN will make a significant contribution to the accomplishment of the Indonesian NDC and national energy policy targets, and that this will result in significant national GHG emission reductions.

D3. Plausibility of assumptions and links. The assumptions are plausible, considering that MEMR, NDC and PLN are responsible for the energy sector (electricity generation, distribution, use and conservation), the goals of increased EE and RE substitution are consistent with settled GoI policies to reduce fossil fuel subsidies and GHG emissions (so there is unlikely to be a major change, and career incentives are likely to maintained), and Denmark does possess real expertise which if properly mobilised and deployed could enable rapid learning. But in contrast to the design of ESP 3, which emphasises its integration with the national energy plans and coherence with other development partners, there is less evidence of such links in the SSC design. The Phase 1 project document does mention that Indonesia joined the IEA in 2015 and the IEA has started a project ('EE in emerging Economies'), which could have yielded opportunities for collaboration, but these are not explored further.

D4. General quality of the project design. The programme design documents are clear and the theory of change valid, although here are missed opportunities for collaboration and relative to ESP 3 the design comes across as less precise and rather over-ambitious in the intended results considering the budget. **Score: 5**.

Part E: Evidence for mitigation performance

E1. Direct effectiveness. None at national level (EE is inherently indirect). Some in Lombok (see impact).

E2. Indirect effectiveness. Some at national level (see impact, but also overall effectiveness). Some in Lombok (see impact).

E3. Net GHG emission reductions None at national level. Some might be expected in Lombok (see impact).

E4. Impact effects.

SSC Energy 1/2 (national). KPMG (2018) lists the main outputs: (a) Capacity building through various seminars and workshops where Danish lessons are learned. (b) Integration of Balmorel power sector model in the modelling team at NEC [Balmorel is a bottom-up partial equilibrium energy system optimisation model with a special focus on electricity and district heating sectors - see: https://ens.dk/en/our-responsibilities/global-cooperation/balmorel-lite. (c) Inputs to the 'Indonesian Energy Outlook' series (DEA & EaEA, 2018, 2019a, 2019b, 2019c) and a report on 'Powering Indonesia by Wind' (DEA & EaEA, 2017). (d) Development of an Indonesian Technology Catalogue on power production anchored at NEC (NEC, 2017). (e) RE-Integration study report. Transfer of Danish lessons learned on RE-integration into an Indonesian context. (f) Cooperation with EBTKE (the new and renewable energy directorate-general of MEMR) and

the International Energy Agency (IEA), in order to define an energy efficiency baseline on current policies – to be used in the Indonesian EE Masterplan. (g) Three study tours to Denmark on modelling, RE-Integration and EE. A total of 57 delegates and stakeholders visited Denmark in 2017. Other, similar but more detailed and discursive lists of 'results and achievements' are given in the SSC Energy Annual Reports for 2016-2018 (DEA, 2017, 2018c, 2019b - see G2, G3, G4).

It has to be assumed that the various activities and actions supported by SSC Energy 1/2 contributed to the enabling environment for RE and EE that will allow strategic and significant changes in the sector going forward, including through the effects of new or amended laws, regulations, guidelines, practices and skills among key staff. This is an argument for an indefinite engagement, since without very specific deliverables (e.g. a particular set of policies or laws with pre-defined coverage and content) no end-point can be visualised. On the other hand, the general areas in which improvements might be anticipated are fairly clear, since they map onto the components, outcomes and relevance summaries above, but there is little or no evidence for any specifiable impact.

SSC Energy 2 (Lombok).

Interviews confirmed the following SSC Energy 2 activities in Lombok in 2019-2020: (a) energy modelling training (Balmorel and Leap models) for NTB officials; (b) development of Lombok Energy Outlook 2019-2030; (c) development of Pre-FS on RE solutions in Lombok; (e) development of Lombok energy technology catalogue; and (f) development of biomass power plants under the cooperation of a provincially-owned enterprise PT Gerbang Emas NTB and DSIF (Danish Sustainable Infrastructure Finance) – early stage. Interviews suggested impact on capacity (see E7) and RE projects on the ground using the pre-feasibility study RE solutions (wind, solar, biomass and waste) in Lombok as a guide, including the early development of biomass power plant.

The work in Lombok perhaps comes closest to achieving impact, since it has reached the prefeasibility stage, in which specific technologies are considered for use in specific contexts. First the *Lombok Energy Outlook 2030* (DEA & EaEA, 2018) compared four scenarios ('BAU' based on RUPTL 2018-2027; 'current condition'; 'no fossil fuel subsidies'; and 'Socioeconomic' which included health costs from power-plant pollutants) in order to identify the most cost-efficient way forward for the power sector in Lombok. Thus, showed that Lombok could achieve 58% RE by 2030 in a cost-effective way, and the prefeasibility studies then examined specific options for doing so (KPMG, 2018). According to DEA (2019a), these "focus on four technology options: biomass, solar PV, wind and waste incineration. Each technology is analysed by an estimate of the project IRR based on five parameters and evaluated by a project risk assessment. The studies show that solar and wind projects are currently evaluated to be the most economically viable projects at Lombok, however, there are significant co-benefits for incineration and biomass as well." This work allowed SSC-SII to be developed with SSC Environment. **Score**: 4 (national), 6 (Lombok).

E5. Sustainability effects. See Impact. Any longer-term effects of new laws, regulations, etc. are likely to be a continuing and sustainable one. **Score**: 4 (national), 6 (Lombok).

E6. Efficiency issues. See Impact. The SSC Energy 1/2 were implemented according to budget and time requirements. In the absence of any comment on efficiency in any of the documents reviewed, and in light of the results and continuing positive 'mood music' of the cooperation (at least between DEA and MEMR), it can only be assumed that efficiency was good. On the other hand, long-term TA if selected wisely is seldom problematic (or problems are seldom self-reported). **Score**: 5.

E7. Capacity building issues. 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. **Score**: 3 (national), 5 (Lombok).

E8. Baseline and monitoring arrangements. Apart from the energy masterplan for Sumba under ESP 3/2 no provincial energy outlooks had been prepared in Indonesia, and apart from a regional energy plan (RUED) for Riau in Dec 2015, no RUED had been developed for NTB province until 2019. These outputs aside, there is a lack of baselines and monitoring of impact and effectiveness (as opposed to expenditure) in the SSC Energy itself. **Score**: 3.

E9. Overall conclusion on mitigation performance. Mitigation performance would be expected to increase in Lombok from a 2016-2019 baseline of nil. It is not possible at this stage to estimate the leverage and multiplier effects that might be anticipated over the longer term, in Lombok (where they might be expected to be significant) or nationally. 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. Rather they are part of and contributed to a general direction of travel. **Score**: 3 (national), **Score**: 5 (Lombok).

Part F: Other issues

F1. Unintended consequences. None noted.

F2. On partnerships. Evaluating ESP 2/3 and SSC Energy 1/2 together raises the question of whether such a long-term (2007-2020) and constructive engagement between Denmark and Indonesia constitutes a true 'partnership', based on shared purpose, complementary needs and offerings, dialogue and trust. This would be easier to evaluate if the two sides possessed a clearer definition of the term is undefined in the project documentation it is unclear what Denmark gains already because there is no Mitigation Impact hence use of Mitigation funding may have an expiry date.

Part G: Notes on other relevant topics.

G1. Indonesia's NDC mitigation commitments in the energy and waste sectors (GoI, 2016: 2-3):

"For the waste management sector, the GoI is committed to develop a comprehensive strategy to improve policy and institutional capacity at the local level, enhance management capacity of urban wastewater, reduce landfill waste by promoting the 'Reduce, Reuse, Recycle' approach, and the utilization of waste and garbage into energy production. The GOI is committed to further reduce emissions from the waste management sector by 2020 and beyond, through comprehensive and coherent policy development, institutional strengthening, improved financial and funding mechanisms, technology innovation, and social-cultural approaches."

G2. Results & achievements summarised from SSC Energy Annual Report 2016 (DEA, 2017):

Comprehensive study on integration of RE prepared and shared with 70 stakeholders from the public and private sector, also involving Danish private sector from the wind industry. The 'Indonesia Energy Outlook 2016' has a substantial footprint from the SSC especially with focus on how to model the power supply system taking into account larger shares of fluctuating energy in the future. Landmark signing of a power purchase agreement in Copenhagen to develop a 72 MW wind farm in south Sulawesi. The wind farm project will be the first large scale wind project in Indonesia and a significant step forward in the green transition as an icebreaker project.

G3. Results & achievements summarised from SSC Energy Annual Report 2017 (DEA, 2018c):

- Indonesian technology catalogue on energy, describing a range of proven energy technologies suitable for Indonesia and estimating the expected cost of electricity from these technologies in Indonesia, in 2020, 2030 and 2050.
- 'Indonesia Energy Outlook 2017' will have a substantial footprint from the SSC especially with focus on how to model the power supply system.
- Launch of the Indonesian wind map, and presentation of the final study on integration of renewable energy.
- Signing of an MOU between PLN, the Danish Embassy and DEA to strengthen cooperation with PLN as the implementer of energy polices.
- 'CleanTech Roundtable Discussion' on RE and EE and the new initiative P4G.

G4. Results & achievements summarised from SSC Energy Annual Report 2018 (DEA, 2019b):

- An MOU was signed for continuation of the SSC (phase II).
- A number of site visits to Energinet and Lindø Offshore Renewables Center highlighted the green transition in Denmark.
- Phase II of the SSC was formally developed in collaboration with MEMR, NEC and PLN.
- The SSC engaged in modelling and energy planning on a regional level, especially by developing the 'Lombok Energy Outlook 2030' (DEA & EaEA, 2018) and 'Prefeasibility Studies for RE' on Lombok (KPMG, 2018).
- A new SSC component, SSC-SII was launched in collaboration with the SSC Environment, with Lombok as a pilot area. SSC-SII will also have strong B2B focus.
- Finalisation of the study on EE in selected power plants, which showed that all of the power plants were operating close to design values though at only ca. 32% efficiency (cf Danish power plants operating at around 45% efficiency). The EE and flexibility of the power plants will be one of the subjects of phase II of the SSC.

Annex h: Strategic Sector Cooperation (SSC) Environment

Part A: Basic data

A1. Project number & name. 2018-14785: Indonesia-Denmark Strategic Sector Cooperation (Environment: Circular Economy and Waste Management).

A2. Interviews. See Annex a: Persons and institutions consulted relevant to Annex h.

A3. Dates & financial data.

ESP 3 came to an end in December 2018 and the SSC began in September 2018, with DKK 3 million available for its activities in 2018. A plan for transition from ESP3 to SSC was formulated in 2018. The Partnership Document gives a budget of DKK '9,998.881' (i.e. DKK 10 million] for Aug 2018-Dec 2022.

A4. Location(s). Indonesia: Lombok.

A5. Partners. (a) Danish Environmental Protection Agency (DEPA); (b) Embassy of Denmark in Jakarta; (c) Ministry of Environment and Forestry (KLHK)

Part B: Purpose and relevance

B1. Purpose. To "contribute to growing a green and sustainable economy with sound environmental management by supporting Indonesian efforts to tackle waste and make better use of valuable resources through a Circular Economy, hereby further reducing the negative environmental impacts to livelihoods, economy and health." (DEPA, 2019).

B2. Relevance to partners.

For **Indonesia**, SSC Environment offers ways to meet its commitments to reduce emissions from the waste sector in its NDC (GoI, 2016), as well as those foreseen in its National Waste Policy and the local waste management plans (Jakstrada) developed under it. Moreover, GoI "has pledged to reduce plastic and other marine waste by 70% by 2025, which is strongly linked to overall 100% urban collection targets on land. ... Indonesia's Plan of Action on Marine Plastic Debris 2017-2025 was published in June 2017 by the Coordinating Ministry of Maritime Affairs and depicts of total 58 activities to be implemented by 15 different ministries." (RDE, 2018: 22).

The legal and administrative basis for Jakstranas and Jakstrada implementation developed further in 2019-2020, with the following highlights: (a) establishment of Ministerial Regulation on Roadmap for Extended Producer's Responsibility (Permen KLHK No P.75/2019) was published in December 2019; (b) as of Feb 2020, 21 provinces and 353 district/municipalities had developed their Jakstrada; (c) the NTB provincial government published its Jakstrada in 2019 through Governor Regulation No. 5/2019 (Pergub No. 5/2019). The NTB Jakstrada applies the national target of 30% waste reduction and 70% waste process and management as its target but to be achieved by 2023 (2 years earlier than national target).

SSC Environment is relevant to **both countries** since it covers the chapter on 'environment' in the Joint Action Plan 2017-2020 which currently guides the Indonesia-Denmark bilateral strategic partnership.

For **Denmark**, the SSC is a continuation of environmental cooperation with Indonesia that goes back to 2005 and remains in line with Denmark's priorities for international cooperation - including, recently, its role in support of the World Bank programme in Indonesia on Municipal Solid Waste Management, and the global World Bank Trust Fund for oceanic sustainability PROBLUE (which partly addressed land-based pollution sources such as those targeted in part by the SII).

B3. Relevance to MDGs/SDGs.

DEPA (2019) lists the following contributions to the SDGs by SSC Environment:

- **SDG 9** ('Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation'), and in particular - 9.B: Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities.
- **SDG 11** ('Make cities and human settlements inclusive, safe, resilient and sustainable'), and in particular - 11.3: By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries; 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management; and 11.A: Support positive economic, social and environmental links between urban, per-urban and rural areas by strengthening national and regional development planning.
- **SDG 12** ('Ensure sustainable consumption and production patterns'), and in particular - 12.1: Implement the 10-year framework of programmes on sustainable consumption and

production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries; 12.2: By 2030, achieve the sustainable management and efficient use of natural resources; 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment; 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse; and 12.A: Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production.

- **SDG 13** ('Take urgent action to combat climate change and its impacts'), and in particular - 13.2: Integrate climate change measures into national policies, strategies and planning.
- **SDG 14** ('Conserve and sustainably use the oceans, seas and marine resources for sustainable development), and in particular - 14.1: By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.
- **SDG 17** ('Strengthen the means of implementation and revitalize the global partnership for sustainable development'), and in particular - 17.6: Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism; 17.7: Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed; and 17.14: Enhance policy coherence for sustainable development.

B4. Relevance to NDC mitigation commitments. NDC sectoral priority 3 - Waste sector.

B5. Relevance to mitigation. Mitigation verification criteria met: Mitigation technology (MT). Capacity building (CB). Incentives & regulations (IR).

Part C: Narrative overview

The waste sector in Indonesia has ambitious targets at national level, but the local authorities that are responsible for collecting and managing wastes are often under-resourced. The SSC project aims to help correct this in many ways, starting with a financing study to clarify the financial and resource allocation aspects of waste management, and to identify where it is most efficient to apply changes to optimise funding streams in the sector. The diverse actions that the SSC undertakes are highlighted in the SSC Environment 2019 annual report (7 Feb 2020), which included reference: to workshops with ministries, development partners, national NGOs and social enterprises (e.g. Waste4Change, Greeneration and the Indonesian Waste Platform), as well as private companies, provincial/city governments, and local government agencies; to the SSC contribution through Bappenas to the National Medium-Term Development Plan 2020-2024 (RPJMN) on circular economy issues; to the approval by KLHK of new roadmap on Extended Producers' Responsibility (EPR), a key milestone reflecting SSC advice; to workshops on promoting biowaste and research with the Biowaste Forum a new Research Forum; to the further development of cooperation with KLHK on tasks such as development of the national data management/reporting system, strengthening of the Waste Bank programme, EPR/Plastic and support to five cities for improvements of organic waste management services and preparation of proposals for investment projects; and to the formulation of SSC-SII. The latter was to be launched by the Danish Minister for Environment and the Governor of West Nusa Tenggara (NTB, which includes Lombok).

Part D: Design quality

D1. Theory of change. To support Indonesian efforts to tackle the waste problem, while making better use of valuable resources through the circular economy model, the partners will focus on implementation of Presidential Regulation No. 97/2017 on national waste management strategy (Jakstranas), which calls for 100% waste reduction/handling by 2025, and zero waste dumping or open burning. This calls for effort at all levels to promote the separate handling of **four domestic waste streams**: (a) recyclables; (b) organics; (c) residuals (including hazardous waste); and (d) mixed garbage in the environment. The partners will concentrate on **three outcomes** (a) moving recyclables into recycling; and (b) separating organics from residuals; and (c) research & monitoring. This will take pressure off landfills, but for now leaves aside landfill management and incineration (and therefore WtE, which is pending new regulations). **Six strategies** will be used, targeting: (a) communication with public and companies; (b) local government incentive systems; (c) recycling facilities and waste banks; (d) separation of organics (for use in biogas and fertiliser production); (e) collection and transportation; and (f) the special problem of plastics and marine debris.

D2. Assumptions underlying the theory of change.

Assumption 1. The Jakstranas and Jakstrada are the key to improving public waste management.

Assumption 2. Enough public, private and government support can be built to participate in waste management activities.

D3. Plausibility of assumptions and links. Waste management is widely seen as a 'poor man's task' in Indonesia, where tens of millions of poor people every day survive by raking over, collecting, concentrating, buying, selling and re-using wastes. Getting active participation among the 'decision making classes' may be a struggle, although the Jakstranas and Jakstrada will presumably help.

D4. General quality of the project design. A very well-written background study document (RDE, 2018) clearly explains the Indonesian waste problem and sector, stakeholders, etc. and the relevance of the SSC (see notes). The Partnership document (DEPA & KLHK, 2018) starts off well enough but becomes superficial in the last 1.5 pages. **Score: 4**.

Part E: Evidence for mitigation performance

E1. Direct effectiveness. None.

E2. Indirect effectiveness. None.

E3. Net GHG emission reductions None.

E4. Impact effects. All activities in 2018 involved study tours, discussions, knowledge gathering, networking, awareness-raising, consultancy studies and some planning (e.g. on plastics with KLHK, guidelines for take-back systems, encouragement of waste banks). "Further activities in 2019 are being planned in Indonesia for influencing municipal and provincial framework conditions for private sector to invest in circular economy and sustainable waste management solutions." (DEPA, 2019). Interviews confirmed that the following activities had taken 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-FS on Waste Management for Lombok. The ToR of the Pre-FS has been jointly discussed and the consultant would be procured by DEPA. It is easy to see how this could add up to making a difference over time, but impacts are potential at present.

E5. Sustainability effects. See Impact.

E6. Efficiency issues. "Score 4 [out of 5 for results achieved] is given [by DEPA, 2019] since all planned activities in the period September-December 2018 were carried out successfully except one visit to Indonesia that were postponed to January as this suited the Indonesian partners better."

E7. Capacity building issues. 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.

E8. Baseline and monitoring arrangements. Jakstranas and Jakstrada has been developed by related governments outside the Project component.

E9. Overall conclusion on mitigation performance. No mitigation performance, but the programme was just starting out.

Part F: Other issues

F1. Unintended consequences. None.

F2. Other performance issues. See links with SSC Energy in SSC Energy review.

F3. Jakstranas and Jakstrada implementation in 2019-2020.

- Establishment of Ministerial Regulation on Roadmap for Extended Producer's Responsibility (Permen KLHK no P.75/2019) was published in December 2019.
- As of Feb 2020, there are 21 provinces and 353 district/municipalities that have developed their Jakstrada.
- NTB provincial government published its Jakstrada in 2019 through Governor Regulation no 5/2019 (Pergub no 5/2019). The NTB Jakstrada applies the national target of 30% waste reduction and 70% waste process and management as its target but to be achieved by 2023 (2 years earlier than national target).

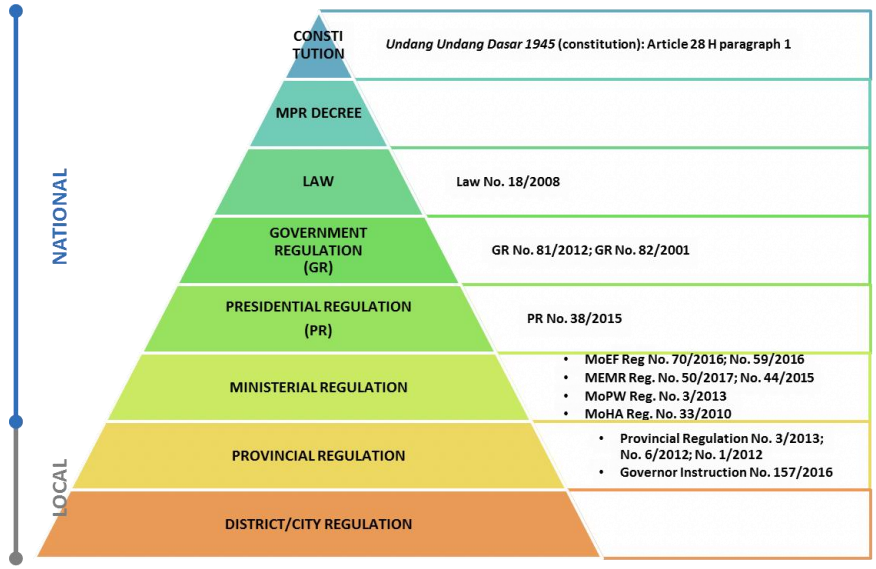
Part G: Notes on other relevant topics.

G1. The Indonesian waste problem (RDE, 2018: 6-7).

According to KLHK, Indonesia produced more than 65 million tonnes of waste in 2017 and this is estimated to increase 2-4% every year. World Bank studies found that cities are responsible for producing 38 million tonnes of this, of which only 45-50% is collected on average. Most collected waste ends up in landfills, whereas only about 1.9 million tonnes is properly reused, recycled, or incinerated in a controlled way. For urban waste, this means that about 45% is not collected and eventually finds its way to water streams, parks, the sea or is illegally burned in the

backyard. An estimated 1.29 million tonnes of waste end up in the ocean. "Of the total waste stream, plastics constitute 12-17% of which 60-70% is considered 'low value' flexible plastics, and higher quality plastics are either collected by the informal sector or reused. Additionally, with a daily level of 11 million kg of plastic waste being generated in Indonesia out of which 9 million kg are mismanaged, Systemiq estimates that this contributes considerably to the leakage of 13.5 million tons of plastic to our oceans every year globally. Having examples of Indonesian cities, where only 1% of the municipality make use of formal waste collection services, it remains clear that an effort must be made to design waste out of the system in order to keep materials and products in use, thereby limiting pollution and promoting a regeneration of natural systems."

G2. Legal framework of Solid Waste Management in Indonesia (RDE, 2018: 20).



Note: MPR = Majelis Permusyawaratan Rakyat (People's Consultative Assembly, Parliament).

G3. Presidential Regulation No. 97/2017 on Jakstranas (From Waste Management to Circular Economy in Indonesian context, Jakarta, October 26, 2018). https://ec.europa.eu/environment/international_issues/cem_presentations/Presentatie%20Herman%20EU%20CE%20Missie%20261018%20final.pdf

Presidential Regulation No. 97/2017 on Jakstranas sets the National Targets for Solid Waste Management: (a) by 2025, 100% of solid wastes must be 'well managed' (meaning 30% 'reduced' [= reduced waste generated per person, reduced waste generated at source, reduced waste to landfill and environment] and 70% 'handled' [= increased waste to recycle and recover, reduced waste to landfill and environment]; and (b) by 2025, there must be no littering of solid waste in the river, beach, ocean, open dumping system and open burning.

G4. Waste Banks (Bank Sampah) (RDE, 2018: 23).

"Waste banks are community-based establishments. There are more than 5.000 waste banks in Indonesia now and number is increasing. Waste banks are set up in neighbourhoods typically for about 1.000 residents and are usually run by poorer people who wish to increase their income. Waste bank customers bring non-organic waste to the banks where it is treated like a deposit. Transactions are recorded preferably in a bank book that the customer holds or alternatively in lists kept by the bank. Some banks also accept organic waste, however most do not as their physical space is limited. The waste banks sell the deposited material to mobile agents for reuse or recycling. Thus, the waste deposits are transformed into money that can be withdrawn when needed after a contribution of about 15% is deducted for the waste bank's operating costs."

G5. Waste to Energy (RDE, 2018: 23).

"Within the W2E sector, many actors are waiting to see if an adjusted version of the Presidential Decree 18/2016 on Waste-to-Energy will be issued, allowing acceleration of large scale incineration of household waste. ... Meanwhile, focus lies on other types of energy recovery from household waste, such as biogas, composting, RDF plants, etc. Most larger landfills are equipped with a (not very well) functioning methane collection and energy production plant, and there are a good number of small scale pilot projects in Indonesia involved in energy recovery."

Annex i: Sustainable Islands Initiative (SSC-SII)

Part A: Basic data

A1. Project number & name. 2019-41336 and 2019-41337: Sustainable Islands Initiative on Energy and Environment (SSC-SII)

A2. Interviews. See Annex a: Persons and institutions consulted relevant to Annex i.

A3. Dates & financial data. This is a three-year DKK 7 million SSC commitment from 2020 (half for DEPA, half for DEA), signed off in January 2020.

A4. Location(s). Indonesia: Lombok and Riau/Batam.

A5. Partners. (a) KLHK; (b) MEMR; (c) Provincial Government of West Nusa Tenggara (NTB); (d) Provincial Government of Riau (an archipelago south of Singapore, capital Batam)

Part B: Purpose and relevance

B1. Purpose. To further develop and implement provincial solid waste and energy plans in line with national policies and strategies at provincial and local level in an island setting.

B2. Relevance to partners. SII is relevant to **Indonesia** partly because of its commitments to reduce emissions from the waste and energy sectors in its NDC (GoI, 2016), and partly because of the decentralising and local growth trajectories of this archipelagic country of 17,000 islands and 34 provinces, which require a finer-grained and more locally-appropriate approach to sustainable development and environmental quality in each of its diverse localities. Being constitutionally a unitary state, traditionally a centralised one, and historically presiding over a deeply unsustainable development process characterised by high GHG emissions, this requires a degree of new thinking by all concerned in all levels of government. The results from Lombok (see G1) suggest that local government is highly receptive to this approach and opportunity. SII is relevant to **Denmark** because past investment in Indonesian environmental management since 2005 has created new conditions in which the advancement of Denmark's own international development priorities could now move into a transformative 'ignition phase'.

B3. Relevance to MDGs/SDGs.

According to Danida (2020), the SII will contribute to: **SDG 6** ('Clean Water and Sanitation'), by establishing a more efficient solid waste management it will mitigate illegal dumping of waste, and improve water quality and protect water-related ecosystems (6.3 & 6.6); **SDG 7** ('Affordable and Clean Energy'), by demonstrating the technical and financial viability of WtE it can enhance international cooperation in renewable energy (7.2.7.a & 13.a); **SDG 11** ('Sustainable Cities and Communities'), as positive economic and environmental links will be enhanced by adopting a more integrated approach to solid waste management and energy planning (11.a & l1.b); **SDG 13** ('Climate Action'), since a more integrated approach will automatically strengthen climate change measures in the form of policies, strategies and planning (13.2); **SDG 17** ('Partnerships for the Goals'), given the holistic nature of the SII, he project addresses four out of the five sub-goals (Finance 17.3, Technology 17.6 & 17.7, Capacity-building 17.9 and Systemic issues 17.14).

B4. Relevance to NDC mitigation commitments. NDC sectoral priority 2 - Clean energy. NDC sectoral priority 3 - Waste sector.

B5. Relevance to mitigation. Mitigation verification criteria met: Mitigation technology (MT). Capacity building (CB). Incentives & regulations (IR).

Part C: Narrative overview

Indonesia generates over 190,000 tonnes of waste per day, mostly organic but including at least 20% plastic. Most is burned or dumped. Solid wastes are estimated to generate up to about 1.2 tCO_2e per tonne, including short-lived climate pollutants (e.g. IGES, 2019), so the total GHG from Indonesian solid wastes would be in the region of 85 million tCO_2e annually. In Lombok alone, an estimated total of about 900,000 tonnes of wastes (1.08 million tCO_2e) was generated in 2019.

The National Waste Policy Indonesia calls for effective handling of increasing amounts of solid waste, and the National Energy Policy calls for this to be done in line with the objective of transitioning towards more renewable energy generation. In that regard a potential unexploited opportunity is the introduction of WtE as a means to mitigate negative environmental consequences of untreated solid waste while simultaneously being a source for new renewable energy generation satisfying the ever growing energy demand. In order to meet the challenges arising from increased waste generation and energy demand the regional government has adopted the Local Waste Management Plan (*Jakstrada*) and Local Energy Plan (RUED) - addressing issues concerning waste reduction/handling and electricity generation and renewable energy, respectively.

Jakstrada for provinces and islands have targets of 30% waste reduction and 70% waste handling by 2025. To achieve these ambitious goals, Jakstrada focuses on preventing potential resources from entering the waste stream and reducing waste for final treatment, e.g. through WtE solutions. Currently in Northern Lombok, only 19% of waste is handled and the rest is burned or dumped.

The main priority of the provincial government is to increase recycling using Waste Bank systems, in which local reception stations are paying a pre-set amount for selected valuable waste fractions delivered by waste pickers, companies or households. The SII will look into means of supporting the enhancement and separation of valuable waste streams. Focus will be on the potential of using sustainable biomass and residual and organic waste for energy production in various WtE solutions. Some activities will also be directed towards improved recycling through recycling centres and waste banks. The SII will include waste/energy studies for Lombok island and for Riau (Batam).

The current power system is almost entirely based on fossil fuels, with diesel being the main fuel in the mix, closely followed by coal. The steadily growing power demand is expected to double by 2030. This is expected to be accommodated by expanding power production by means of natural gas and coal. Even though fossils fuels are given an important role in the future energy mix, the RUED contains ambitious renewable energy (RE) targets of at least 35% in the energy mix by 2025 and 50% by 2050. To achieve these targets, the RUED has a number of activities focusing on using domestic RE resources where biomass and solid waste are emphasized as important elements.

The SII is a joint initiative of the existing SSC Energy and SSC Environment in Indonesia. The proposal was developed by the Danish Energy Agency (DEA) and the Danish Environment Protection Agency (DEPA) in collaboration with provincial authorities of West Nusa Tenggara (NTB) and national authorities (presumably Bappenas, KLHK, MEMR) in Jakarta. Two islands were selected for the SII by the national authorities: Lombok and Riau Islands (Batam). The SII aims to support islands towards a green and low carbon pathway through more effective solid waste management and sustainable bioenergy solutions. The SII will address strategic challenges as well as constraints in the framework conditions and develop replicable solutions related to solid waste, circular economy and Waste to Energy (WtE). The objectives are embedded in national policies and laws, and supported by growing NGO environmental movements in the cities. Environmental cleanliness and therefore waste management is politically popular (or an least inoffensive) and not too expensive (unlike, for example, making serious changes in LULUCF sector governance or prohibiting coal mining), so is a relatively easy way to contribute to the country's mitigation targets.

Part D: Design quality

D1. Theory of change. Careful and participatory study of waste management practices and WtE opportunities and requirements in the islands will allow options for specific investments to be defined, which have the potential to improve island environments and with replication will also contributing to Indonesian GHG emission reduction goals in the waste sector.

D2. Assumptions underlying the theory of change. Source: Danida (2020).

Assumption 1. Studies and mapping of quantities and composition of waste and collection systems with local partners and alongside training will clarify waste feedstock availability while raising awareness and skills, identify feasible options for improved waste management and WtE, and allow waste monitoring and reporting systems to be improved.

Assumption 2. More effective separation and collection of waste will ensure more reliable supply of feedstock for WtE, allowing WtE plans to be developed and integrated with local sector plans on waste and energy will be improved, and the plans used as a basis for business planning and the attraction of private investors into the WtE sector.

Assumption 3. Knowledge generated through these steps can be used to enhance constructive dialogue between island and centre, and among islands, this spreading ideas and allowing the centre to correct polices and regulations for waste management and WtE.

Assumption 4. There will be continued national and provincial policy encouragement for local progress on waste management and WtE, and this will allow economic instruments for feasible WtE to be introduced.

D3. Plausibility of assumptions and links. All steps are reasonably plausible in principle but will depend completely on how they are carried out in practice since multiple levels of stakeholders (community to district to province to national) must all be aligned in their understanding and enthusiasm over a sustained period. **Score: 5**.

D4. General quality of the project design. The theory of change and assumptions had to be reconstructed from the project document, but this having been done it seems straightforward. **Score: 5**.

Part E: Evidence for mitigation performance

E1. Direct effectiveness. SII cannot yet be assessed. See G1 and Overall conclusion.

E2. Indirect effectiveness. SII cannot yet be assessed. See G1 and Overall conclusion.

E3. Net GHG emission reductions SII cannot yet be assessed. See G1 and Overall conclusion.

E4. Impact effects. SII cannot yet be assessed. See G1 and Overall conclusion.

E5. Sustainability effects. Lombok is well ahead of Riau/Batam. While it was started with the Danish concepts on renewables, circular economy and waste management, the Lombok provincial government (Pemprov and Pemda) took the time to discuss and choose which of those concepts can be adapted in Lombok. This approach suggests likely sustainability.

E6. Efficiency issues. The project experienced a long delay as the consequence of institutional re-arrangement on bilateral cooperation protocols. The bilateral cooperation was cancelled and re-established through an MoU between Minister of Environment Denmark and Minister of Energy and Mining, also with KLHK. The governors signed a more technical agreement under the coordination of NEC, MEMR, and KLHK. DEA and DEPA manage the project directly covering all the activities from their budget. No funding has been transferred or will be transferred to the Indonesian partners. Delays suggest limited efficiency.

E7. Capacity building issues. 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 useful as a 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.

E8. Baseline and monitoring arrangements. None found, other than reference of assisting partners/government of Indonesia to meet the target of Jakstranas (30% waste ended up in landfill by 2025) and ER energy mix for 23% by 2025.

E9. Overall conclusion on mitigation performance. The project clearly has the potential to trial and demonstrate Jakstrada and RUED methods and benefits, while also helping the provincial governments to reach their Jakstrada targets (see G 1). If the SII made a 50% contribution to Lombok reaching its 2025 Jakstrada goal of 30% waste reduction and 70% waste handling, and assuming that in these circumstances half the total waste (450,000 tonnes per year) is recycled, composted or used to generate electricity that replaces coal-based power, then savings in GHG emissions might amount to 270,000 tCO_2e/year by 2025, in Lombok alone (with some co-benefits in terms of public health and tourism). The leveraging of far greater savings may be possible if convincing strategies can be proven and replicated. While it is possible to imagine greater opportunities for RE in Indonesia, the SII budget of DKK 7 million might be expected to score 4 or 5 for mitigation effectiveness in due course.

Part F: Other issues

F1. Unintended consequences. None noted.

F2. Other performance issues. Awareness on waste management is relatively high especially in tourism spots through NGOs and CSR programs.

F3. Additional observations on the SII, considering its strategic relevance in an archipelagic nation. Given the positive progress taking place in Lombok and hopefully followed by Batam, the replicability factor is high. The activities carried out so far under SSC are well within the objective SSI, which aims to support islands towards a green and low carbon pathway through more effective solid waste management and sustainable bioenergy solutions. In the **energy sector**, the capacity building in energy planning, coupled with development of a high level assessment of feasibility of RE solutions, and followed up with effort to develop real project on the ground is very attractive for other islands that are facing problems of over demand of affordable and reliable electricity.

Similarly in the **waste management sector**, many islands are having pressures on their resources and environmental carrying capacity due to rapid economic growth and consumptive behaviour. Thus, technical assistance and support in finding solutions on solid waste, circular economy and waste to energy would attract high interest and political willingness from the local (island) governments. Based on the interview with provincial NTB officials, it is a hoped that what have been taking place in Lombok could be replicated in Sumbawa, which is another major island in NTB province. As island tourism is growing and the national marine highway program is ongoing, there is an increased focus for development in small islands.

Part G: Notes on other relevant topics.

G 1. Effects of the 2018 Lombok earthquake and 2020 CoViD pandemic

- The earthquake forced major changes in NTB government budget allocations, with most of the budget re-allocated to emergency response and rebuilding.

- The safety protocols for waste treatment were hard to follow after the earthquake.
- Wastes were contaminated by asbestos and this was a concern to relief workers.
- Lombok earthquake disaster in July 2018 - March 2019 severely impacted fiscal capacity of the provincial government, specifically allocation for energy projects such as biogas digester, micro-hydro and solar power for communities. This fiscal constraint was exacerbated with Covid-19 pandemic. Details of budget reduction:
- Comparison between 2018 and 2019: reduction of more than 90% budget
- 2018: installation of 1 unit of centralized solar PV 15 kwp, rehabilitation of 1 unit of centralized solar PV 15 kwp and 389 units of biogas digester;
- 2019: only 2 units of biogas digester.
- In 2020 alone, there is 75% budget reduction due to Covid pandemic. Budget was reallocated to provincial Social and Health Offices (Dinas Sosial and Dinas Kesehatan).

G2. Progress reports since the 2020 programme document

Progress reports were all generated by the Embassy team, consisting activities of workshop, training, meetings with dignitaries, and study tours. Embassy of Denmark in Jakarta sent progress report and project plans of SSC-SII-Circular Economy/Waste Management from 2017-September. The reports emphasize the relevance to SDG achievements, with strong reference to RUED, Jakstranas, Jakstrada and RE energy mix.

Acronyms and abbreviations (Indonesia)

ABACUS	Abatement Cost Curve Analysis for REDD.
AFOLU	Agriculture, forestry and other land uses ('sector').
AMDAL	*Analisis Mengenai Dampak Lingkungan* (Environmental Impact Assessment [Analysis], EIA).
ANR	Assisted Natural Regeneration (of forests).
APPLE-GATRIK	*Aplikasi Penghitungan dan Pelaporan Emisi Ketenagalistrikan* (Electricity Emission Calculation and Reporting Application).
Balmorel	A bottom-up partial equilibrium energy system optimisation model with a special focus on electricity and district heating sectors (see: https://ens.dk/en/our-responsibilities/global-cooperation/balmorel-lite).
Bappeda	*Badan Perencana Pembangunan Daerah* (Regional [province/district] Development Planning Agency.
Bappenas	*Badan Perencana Pembangunan Nasional* (National Development Planning Agency.
BAU	Business as usual.
BLU	*Badan layanan umum* (a public service agency).
BMU	*Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit* (Germany)
BPDLH	*Badan Pengelola Dana Lingkungan Hidup* (the Environment Fund Management Agency).
BRG	*Badan Restorasi Gambut* (Peatland Restoration Agency).
BRR	*Badan Rehabilitasi dan Rekonstruksi* (post-tsunami Rehabilitation & Reconstruction Agency).
B2B	Business-to-business.
CBNRM	Community-based natural resource management.
CCROM	Centre for Climate Risk and Opportunity Management (Indonesia).
CDG	Conservation and Development Group.
CIF	Climate Investment Funds.
CoViD	Coronavirus (SARS-Cov-2) disease.
DEA	Danish Energy Agency.
DEN	*Dewan Energi Nasional* (National Energy Council, NEC).
DEPA	Danish Environment Protection Agency.
DKK	Danish kronor.
DOF	*Dansk Ornitologisk Forening* = Danish Ornithological Society (BirdLife Denmark).
DSHRF	Danish (sometimes 'Danida') Support for Harapan Rain Forest (Indonesia)
EBTKE	*(Direktorat Jenderal) Energi Baru Terbarukan dan Konservasi Energi* ([Directorate General] for New Energy, Renewable Energy, and Energy Conservation, DGNEREEC [of MEMR).
EE	Energy efficiency.
EEC	Energy and Environment Cooperation.
EECH	Energy Efficiency Clearing-House.
EIA	Environmental impact assessment.
ENSO	El Niño-Southern Oscillation.
ERC	Ecosystem Restoration Concession.
ESDM	*Dinas Energi Sumber Daya dan Mineral* (MEMR service office at local level).
ESP	Environmental Support Programme.
FIP	Forest Investment Programme.
FMU	Forest Management Unit (*Kesatuan Pengelolaan Hutan,* KPH).
FORDA	Forest Research Development Agency (Indonesia)
FPKM	*Forum Peduli Kawasan Mbeliling* (Mbeliling Area Care Forum).
FSC	Forest Stewardship Council.
FSCC	Fast Start Climate Change.
GCF	Green Climate Fund.
GHG	Greenhouse gas.
GIZ	*Gesellschaft für Internationale Zusammenarbeit* (Germany).
G2G	Government-to-government.
HVDC	High voltage direct current (a way to distribute electricity over long distances with minimum loss of energy to heat).
IBA	Important Bird Area.
ICDP	Integrated conservation-development project.
ICRAF	World Agroforestry Centre.
IDR	Indonesian Rupiah (EUR 1.00 = IDR 16,841 as of 26 November 2020).
IKI	*Internationale Klimaschutzinitiative* (Germany)
INDC	Intended NDC (as presented to UNFCCC before the Paris Agreement).
IndoDEPP	Indonesia-Denmark Energy Partnership Programme
IRR	Internal rate of return.
Jakstrada	*Kebijakan Strategi Daerah* (Regional [province/district] Waste Management

	Strategy.
Jakstranas	*Kebijakan Strategi Nasional* (National Waste Management Strategy).
KDP	Kecamatan (sub-district) Development Programme.
KEHI	*(Yayasan) Konservasi Ekosistem Hutan Indonesia* (Indonesia).
Kemitraan	The Partnership for Governance Reform in Indonesia.
KfW	*Kreditanstalt für Wiederaufbau* (Germany).
KLH	*Kementerian Lingkingan Hidup* (Ministry of Environment).
KLHK	*Kementerian Lingkingan Hidup dan Kehutanan* (Ministry of Environment and Forestry).
KLHS	*Kajian Lingkungan Hidup Strategis* (Strategic Environmental Assessment [study], SEA)
LAMA-I	Locally Appropriate Mitigation Actions in Indonesia
LCD	Low-carbon development.
LDC	Least-developed country.
LED	Low-emission development.
LINTAS	*Layanan dan Investasi* (Services and Investments [information clearing house]).
LLDC	land-locked developing country.
LPG	Liquefied petroleum gas.
LULUCF	Land use, land-use change and forestry (sector).
LUMENS	Land-Use Planning for Development with Multiple Environmental Services.
LUWES	Land-Use Planning for Low Emissions Development Strategies.
MEMR	Ministry of Energy and Mineral Resources.
MJ	Megajoule.
MoHA	Ministry of Home Affairs.
MoU	Memorandum of Understanding.
MRV	Monitoring, reporting and verification.
MTR	Mid-term review.
NABU	Nature and Biodiversity Conservation Union (Germany).
NDC	Nationally Determined Contribution (as presented after the Paris Agreement).
NRM	Natural resource management.
NTB	Nusa Tenggara Barat (West Nusa Tenggara, and Indonesian province).
ODA	Official Development Assistance.
OMC-MDTF	Oceans, Marine Debris and Coastal Resources Multi-Donor Trust Fund (Indonesia).
PD	Programme Document.
P4G	Partnering for Green Growth and the Global Goals 2030.
Perpres	*Peraturan Presiden* (Presidential Regulation).
PLN	*Perusahaan Listrik Negara* (State Electricity Company).
PNPM	*Program Nasional Pemberdayaan Masyarakat* (National Program for Community Empowerment).
PPP	Purchasing power parity.
PPRK	*Perencanaan Pembangunan Rendah Karbon* (Low-Carbon Development Plan).
PT	*Perseroan Terbatas* (limited-liability company).
PV	Photovoltaic.
RAD-API	*Rencana Aksi Daerah Adaptasi Perubahan Iklim* (Regional [province/district] Action Plan for Climate Change Adaptation (Indonesia)
RAD-GRK	*Rencana Aksi Daerah Penurunan Emisi Gas Rumah Kaca* (Regional [province/district] Action Plan to Reduce Greenhouse [glass house] Gas Emissions).
RAN-API	*Rencana Aksi Nasional Adaptasi Perubahan Iklim* (National Action Plan for Climate Change Adaptation).
RAN-GRK	*Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca* (National Action Plan to Reduce Greenhouse Gas Emissions).
RE	Renewable energy.
REDD+	Reducing (GHG) emissions from deforestation and (forest) degradation, with internationally-agreed forestry, biodiversity and social safeguards.
REEEP	Renewable Energy & Energy Efficiency Partnership.
REKI	(PT) Restorasi Ekosistem Indonesia.
RNCA	Rural (sometimes 'Village') Nature Conservation Agreement.
RPJMD	*Rencana Pembangunan Jangka Menengah Daerah* (Regional [province/district] Medium Term Development Plan).
RSF	REDD+ Support Facility.
RSPB	Royal Society for the Protection of Birds (UK).
RUED	*Rencana Umum Energi Daerah* (Regional [province/district] Energy Plan).
RUEN	*Rencana Umum Energi Nasional* (National Energy Plan).
RUPTL	*Rencana Usaha Penyediaan Tenaga Listrik* (Electricity Supply Business Plan for 2019-2028).
SEA	Strategic environmental analysis
SFM	Sustainable forest management.
SIDS	Small island developing state.

SII	Sustainable Islands Initiative.
SME	Small and medium-sized enterprise.
SSC	Strategic Sector Cooperation.
SSC-SII	Strategic Sector Cooperation-Sustainable Islands Initiative.
SVLK	*Sistem Verifikasi Legalitas Kayu* (Timber Legality Assurance System).
TAS	Technical Advisory Services (Danida).
TBI	The Borneo Initiative.
TFCA	Tropical Forest Conservation Action.
UKCCU	United Kingdom Climate Change Unit
UNFCCC	United Nations Framework Convention on Climate Change (and 2015 Paris Agreement).
VAE-LAMA	Value Chain Analysis for Locally Appropriate Mitigation Actions.
WALHI	*Wahana Lingkungan Hidup Indonesia* (Indonesian Forum for the Environment).

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