

Partnership Document and Application

for

**Sustainable Island Initiative
in
Energy and Environment**

between

Denmark and Indonesia

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Signatures:



Name, date


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General information	MFA File no. 2019-41336 and 2019-41337
Title	Sustainable Island Initiative in Energy and Environment (SII)
Country	Indonesia
Duration	3 years
Total budget (DKK)	7.00 Mio. DKK (3.5 Mio DKK for DEPA, 3.5 Mio. DKK for DEA)
Thematic focus	Solid Waste Management, Circular Economy, Waste to Energy and Bio-mass (Environment and Energy)
Indonesian Public Authority	Ministry of Environment and Forestry (KLHK) Ministry of Energy and Mineral Resources Provincial Government of West Nusa Tenggara (NTB) Provincial Government of Second Island
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Summary of background analysis and key strategic choices	<p>Introduction:</p> <p>This Sustainable Island Initiative (SII) is a joint add-on initiative and part of the existing strategic sector cooperation (SSC) within Energy and Environment in Indonesia. The proposal has been developed by the Danish Energy Agency (DEA) and the Danish Environment Protection Agency (DEPA) in collaboration with provincial authorities from West Nusa Tenggara (NTB) and national authorities in Jakarta. Two islands have been selected for the Initiative, Lombok Island and Riau Islands (Batam) by the national authorities. During the formulation process comments and inputs have also been obtained from the Danish Embassy in Jakarta and the Danish Ministry of Foreign Affairs (MFA). 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).</p> <p>Indonesia faces significant challenges associated with ensuring effective handling of increasing amounts of solid waste in accordance with the National Waste Policy as well as ensuring that the continued increase of electricity generation capacity is done in line with the objective of transitioning</p>

towards more renewable energy generation as stipulated in the National Energy Policy.

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 Regional Environment Plan Framework (Jakstrada) and Regional Energy Plan framework (RUED) - addressing issues concerning waste reduction/handling and electricity generation and renewable energy, respectively.

Many islands in Indonesia experience a rapid growing economy, urbanisation and changing consumer patterns resulting in a pressure on ensuring adequate affordable energy capacity as well as solid waste management. This SII aims at assisting local authorities in implementing national policies and developing replicable solutions to waste management and WtE in an island setting.

Regional Environment Plan Framework (Jakstrada)

Indonesia is estimated to generate over 190,000 tons of waste every day, the majority of which is organic waste. Plastic constitutes around 25,000 tons per day of which at least 20 percent is believed to end up in rivers and coastal waters. The systems and practices in waste management are not adequately developed to meet the increasing demands for more effective and sustainable handling of waste, including plastic. The waste is not viewed as a valuable resource, within a circular economy perspective, for energy or compost production. Most of the waste is illegally burned or dumped untreated, while “treatment” most often means disposal at uncontrolled landfills. The infrastructure, financial allocations and technical solutions are inadequate to meet the growing demands for effective and resource-based waste systems.

Jakstrada is the regional waste management strategy for provincial governments, also at islands, with targets of 30% waste reduction and 70% waste handling by 2025 and act as the overall framework in the development of action plans and activities at local level. In order to achieve these ambitious goals, the Jakstrada is especially focussing on preventing potential resources from entering the waste stream and reducing waste for final treatment, e.g. through WtE solutions.

Basic data for waste generation, composition, collection and handling have been collected for Lombok from the provincial Jakstrada (environment plan) and a master plan study done for Northern Lombok. The data are based on the authorities' estimates, and need to be verified and further developed. That is why a study-tour is planned in the beginning of the initiative. In 2019, the generation of waste at Lombok Island is estimated to be app. 900.000 tonnes.

The master plan study for Northern Lombok shows that only 19% of all waste is handled. Of this, about 15% is collected by the local environment agency or by community organisations and a further 4% is recovered as inorganic materials by waste pickers. The balance, or about 80% of the generated waste, is not collected and is either burned or dumped by the citizens.

The main priority of the provincial government is to increase recycling of household and similar waste by, among others, utilizing the so-called Waste Bank (WB) 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 within both the formal and informal sector, including utilisation of local capacity, operation and maintenance as well as enhancement of skills of the stakeholders within solid waste management.

Focus will be on the potential of utilising sustainable biomass and residual- and organic waste for energy production in various WtE solutions. A few activities will also be directed towards improved recycling through recycling centres and waste banks.

The SII will include waste/energy studies for the entire Lombok island and for Riau (Batam).

Regional Energy Plan framework RUED

Today the 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 fossil fuels are given an important role in the future energy mix, the RUED also contains an ambitious renewable energy (RE) targets of at least 35% RE in the energy mix by 2025 and 50% by 2050.

To achieve these targets, the RUED has a number of activities focusing on utilising domestic available RE sources where biomass and solid waste are emphasized as important elements. Even though biomass statistically is considered a renewable fuel, it is important to stress that in order to guarantee the CO₂ reducing effect it must be ensured that the utilized biomass can be classified as sustainable. Based on that the SII will perform technical and financial viability analyses of WtE projects, thus providing the regional, provincial and local government a better basis for executing and implementing the activities in the RUED.

Taking advantage of synergy effects from integrating SWM and RE

Approaching the challenges associated with waste and energy planning in an integrated way. A, more holistic and systemic approach can be achieved acknowledging and exploiting the inherent interdependencies of SWM and energy generation.

The objective of the SII is to further develop and implement provincial solid waste- and energy plans. This will be approached by operationalisation of already existing national policies and strategies at provincial and local level in an island setting.

Lombok has been chosen as the first island as it can be said to represent the situation and the inherent challenges herein, that many Indonesian island face. Riau island with focus on Batam City has been selected as the second island due to its urban and industrial setting and challenges. The selection of two island is based on a request from the central government with a view is to expand the scope. Expanding the scope will substantiate the SII concept by better conceptualising how differences in socio-economic aspects, practises, availability of resources etc. can be condensated into a set of more general principles, which can be replicated to other islands in the country.

Approach to capacity building

The SII will apply the same approach to capacity building as for the two present SSCs for environment and energy.

First of all, national ownership, involvement and engagement among local authorities is key and shall be ensured in all processes starting with initial problem and needs analysis, sector studies and planning, through execution to monitoring, completion and continuation of activities within existing institutions and programs. The SII is not a traditional development project where inputs are delivered through external financial and technical inputs. On the contrary, capacity change is sought through strategic dialogue, joint and own analysis of needs, challenges and solutions and most importantly by national execution of changes and new initiatives. DEA and DEPA will facilitate, coach and expose local parliamentarians, decision-makers, technical key personnel and others to new innovative approaches to an integrated waste and energy planning and management and thereby instill reflection that hopefully will lead to action and change in the local administrations.

Even though there is a national policy framework for waste and energy, it is still foreseen that the SII will address a number of structural framework conditions that relates to local sector policies, institutions, finance and legal issues as well as cross sectoral coordination, planning and management. The capacity building efforts will be directed towards such challenges but defined more narrowly between partners as project developers. In addition human capacities should be provided and mobilized by local authorities at municipality and provincial levels.

The capacity building approach will be directed towards changing prevalent thinking and practices of why and how to change present systems and approaches to energy and waste planning and management. The capacity building approach aims at catalyzing changes through own problem analysis and identification of own solutions. Exposing to and learning from Danish and international experiences in energy, waste, and sustainable biomass management will also be ensured during study tours and peer-to-peer train-

	<p>ing visits as well as DFC scholarship activities. Some of the capacity building efforts will be linked with on-going activities under the SSCs, i.e. bringing central and local partners together on workshops, trainings and consultations.</p> <p>The SII will also work closely with DFC in planning and execution of scholarship programs. The Embassy and the two agencies will be involved in selection of participants and content development, and to the extent possible make sure that DFC training courses are linked to activities under the SII. Such efforts already take place under the present SSCs. Efforts will also be made to discuss competence development needs and plans with partner organisations. If there are relevant training institutions these might be included in workshops, seminars and training activities together with partners.</p> <p>Capacity building is not seen as an end in itself but as a means to achieving change and realization of the planned outcomes.</p> <p>Organisational setup</p> <p>The Energy and Environmental departments within the central government and the provincial governments are committed to the SII. Furthermore the Provincial Governments, Governor’s Office and public institutions like the development planning agency (Bappenas), the environment and waste management agency (LHK) and the energy agency (ESDM) are main responsible for implementing the Jakstradas and RUEDs. Together with the Central Government, they are therefore the primary Indonesian partners in the SII and will ensure that activities are integrated and matched with already planned activities under the Jakstradas and RUEDs.</p> <p>The primary Danish partners in the SII are the Danish Environmental Protection Agency (DEPA) and the Danish Energy Agency (DEA).</p> <p>DEPA has an on-going government-to-government (GtG) cooperation with Indonesia on CE and SWM, initiated medio 2018. In Denmark, DEPA has the main responsibility for implementing strategies and regulation in relation to the environment, circular economy and waste management. Waste management in Denmark is well established on WtE, CE and recycling/reuse businesses why DEPA is sharing Danish experience with Indonesia in this regard.</p> <p>DEA’s Global Cooperation Department partners with other countries and shares the Danish experiences on shaping an energy system that combines a green, low-carbon and reliable energy supply with economic growth. DEA has had a GtG cooperation with Indonesia since 2015. The first phase of the SSC was implemented in the period 2016-2018 and has provided support to low carbon planning and modelling, technical assistance for integration of RE and energy efficiency among key stakeholders in Indonesia. In the second phase from 2019 to 2021, DEA project to build upon and leverage activities and results achieved under phase one to address some of the key and strategic development challenges in Indonesia.</p>
<p>Linkages to UN Sustainable Development Goals</p>	<p>This project will contribute to the following SDGs:</p> <ul style="list-style-type: none"> • SDG 6 “Clean Water and Sanitation”

	<ul style="list-style-type: none"> ○ Establishing a more efficient SWM will mitigate illegal dumping of waste, though improve water quality and protect water related ecosystems (6.3 & 6.6). ● SDG 7“Affordable and Clean Energy” <ul style="list-style-type: none"> ○ Providing analysis of technical and financial viability of WtE can enhance int. cooperation to investment and facilitation of RE (7.2.7.a & 13.a) ● SDG 11 ”Sustainable Cities and Communities” <ul style="list-style-type: none"> ○ Positive economic and environmental links will be enhanced by adopting a more integrated approach to SWM and energy planning (11.a & 11.b). ● SDG13 “Climate Action” <ul style="list-style-type: none"> ○ A more integrated approach will automatically strengthen climate change measures in policies, strategies and planning (13.2). ● SDG17 “Partnerships for the Goals” <ul style="list-style-type: none"> ○ Given the holistic nature of the SII the 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).
<p>Project Logic (Theory of Change)</p>	<p>Theory of Change</p> <p>If collection of data and basic studies are undertaken on basic waste and WtE with local partners then knowledge and understanding among partners are improved and technical, economic and social feasible options for improved waste management and WtE initiatives can be identified and pursued further. If mapping of quantities and composition of waste and collection systems are undertaken then assessment of waste feedstock and economical viability of WtE projects can be established. If local partners are involved through out the process, then knowledge and ownership will be enhanced. If skills and knowledge is enhanced then dialogue with decision makers will be substantiated and investment projects can be developed. If analytical work is undertaken then there is basis to further strengthen strategic and integrated sector planning and deciding on options and investment opportunities.</p> <p>Data collection and reporting systems will be improved so that more reliable data can be ensured and better sector progress assessment made and right investments ensured. If assistance and training are provided to local staff and links can be made to national level then local data management capacity will be enhanced and sector planning improved.</p> <p>If separation and collection of waste are improved then higher and more reliable feedstock supply of waste can be ensured and plans for WtE developed. If WtE plans are developed then local sector plans in waste and energy will be improved. If local plans are improved then these will contribute to implementing national targets and serve as good examples for other islands. If technical advice and training are provided then national staff will be better equipped to analyse, guide and decide on sustainable and economically feasible options for investments in waste management and WtE.</p> <p>Collaboration between provincial decision-makers and private sector stakeholders will be enhanced so that todays challenged implementation and</p>

management of waste and WtE can be overcome and basic services improved. If assessments of economic incentives and cost recovery measures can be identified and political commitment ensured then economic instruments for feasible WtE can be introduced. If short business cases are developed then the local authorities will be able to pitch project proposals for potential investors and donors. This will ensure that competences among local partners are established and actual projects can be implemented.

Method of work

The overall objective of the SSCs for energy and environment are to improve framework conditions related to sustainable development within the two sectors and the achievement of the SDGs for Indonesia in the sectors. As part of the SSCs, the SII aims to operationalise already formulated strategies and targets by providing analyses and recommendations on how to establish a more efficient SWM system with a clear interlinkage to technical and financial viability of WtE in the form of biogas, sustainable biomass fired power plant and incineration.

To do this, the SII focuses on assisting the process of implementing the regional policies and plans for waste management and energy (Jakstrada and RUED, respectively). Whereas the SCCs operate on a more overall national level, the output of the SII aims to move sustainable waste- and energy management past national plans towards actual implementation at a regional level.

The strong focus on treating the Jakstrada and RUED in connection instead of parallel entities under separate jurisdictions, is crucial in order to prompt integration and strengthening necessary synergies between waste as a resource and energy generation. By solving the challenges arising from waste and energy jointly and in a coordinated manner it is believed that a more efficient process as e.g. the alignment and improvement of framework conditions and practises, will ensure that resource and economic potentials can be exploited in the actual implementation of the Jakstradas and the RUED.

By establishing a common understanding of the interdependencies of the two strategies and the inherent optimisation potential, it is believed that a positive effect on the political awareness and willingness to address these challenges can be developed, and thereby providing a greater opportunity to introduce innovative solutions within SWM and WtE.

Some basic data and information on waste has been collected from the environment plan and studies. However, there is a need to obtain more accurate and reliable data on waste volumes, composition and waste streams as well as availability of sustainable biomass resources in order to assess and develop WtE solutions. If studies and more basic information are obtained through mapping and quantification of the potential volumes of waste streams and sustainable biomass, then informed choices and decisions can be made in terms of the viability of potential WtE projects. If the studies are undertaken, then options for solutions can be identified that will be presented to local decision makers.

	<p>The national frameworks in terms of overall policies are quite well developed but are only partly implemented by local authorities and private service providers. The SII therefore aims at operationalizing national policies in an island context and at the same time, where relevant, address strategic or structural challenges to an effective realization of national goals and targets within energy and solid waste.</p> <p>On Lombok, both the Jakstrada and the RUED contain clear targets but differ in the level of comprehensiveness when it comes to ensuring that the targets are met through actual planned activities. As both plans can be said to have overlapping/closely related activities the various responsible authorities have acknowledged the need and usefulness of trying to integrate these instead of treating it in isolation. A key focus area of the SII is therefore to assist in identify and improve an integration of circular economy (CE), solid waste management (SWM) and sustainable energy (SE) in the regulatory and practical frameworks, i.e. power purchase agreements, sale of gas, gate/tipping fees, user payments, business registration, tax etc.</p>
Main objective of SSC project	The objective of the SII is to support development on two islands towards a green and low carbon pathway through the integration of effective solid waste management and WtE solutions.
Outcome A	The local authorities have sufficient knowledge of waste and energy to embark on strategic integrated planning in solid waste management and WtE to identify how the potential increased power capacity from WtE can mitigate fossil fuel consumption and how to integrate it in the regional grid.
Output A.1	Common understanding of key challenges, waste and energy sector needs and detailed work planning as well as in-depth knowledge of present situation (baseline) and pre-feasibility of organic waste and WtE potentials.
Output A.2	Technology catalogue, energy production assessment and grid assessment.
Outcome B	Authorities capable of identifying and improving an integration of CE, SWM and RE in the regulatory and practical framework and are capable of implementing provincial policies and action plans for circular economy, waste management (Jakstradas) and energy (RUEDs)
Output B.1	Report identifying barriers and providing suggestions for integrated waste management and WtE solutions.
Outcome C	Separation, collection and transportation of organic waste improved to make use of this large waste fraction and improve handling of the residual waste for WtE and sanitary landfills.
Output C.1	Technical advice to islands for improved implementation of SWM and enforcement of standards for waste separation, collection and treatment.
Output C.2	Higher quantities of waste managed and handled by Waste Banks (WBs) and Recycling Centre Facilities (RCF).
Output C.3	A revised data collection and reporting system for solid waste developed in collaboration with KLHK and LHK.
Output C.4	Short report with assessment of institutional arrangements and financial models within SWM.

Outcome D	Public-private collaboration strengthened by initiating preparatory assessments of funding opportunities for SWM and WtE.
Output D.1	Mediation of provincial decision-makers and private sector stakeholders to overcome deterrent challenges.
Output D.2	Support for private sector engagement by initiating preparatory steps of SWM, WtE and/or biomass projects and identification of possible financial mechanism and funds and support towards enabling actual investments.
Assumptions and risks	<p>The partnership is based on the local the Jakstradas and RUEDs as framework for improved public SWM and (clean) energy supply. However, from Jakstradas and RUEDs to actually implementation there is a considerable risk of lack of political commitment and economic priority.</p> <p>Main risks are the lack of coherent plans without clear priorities and insufficient staffing. These risks will primarily be addressed through dialogue and technical assistance providing relevant, realistic and feasible solutions. It is the intention that the technical assistance will be conducted through targeted dialogue and involvement of small focused working groups focusing on specific solutions and implementation hereof.</p> <p>Another significant risk is insufficient allocation of public funds for implementation of the planned and required activities. Therefore, attention will be given to the mobilisation of not only private, but also public funding from different sources and mechanisms.</p> <p>Lastly, the partnership outputs depend on commitment from the provincial and local authorities. Ensuring that the SII reflects the priorities and needs of said authorities and other relevant stakeholders, the proposed activities of the SII are therefore based on issues related to SWM and energy production from waste and sustainable biomass raised by the provincial stakeholders on NTB.</p>
Management set-up	<p>The Memorandum of Understandings (MoUs) signed by the ministries of energy and environment in the respective countries serve as an overall umbrella for the SSC's on energy and environment, including the SII. The Embassy of Denmark (EoD) and the Governor of NTB also signed a Letter of Intent (LoI) in February 2019 regarding Energy, CE and SWM for Lombok. The LoI describes the intentions to work together in NTB in the energy and environmental sectors.</p> <p>Pursuant to the MoUs, Steering Committees (SC) have been established for energy and environment, respectively. The SCs are responsible for the coordination, execution, monitoring, evaluation and implementation of the MoUs. At the biannually SC meetings, high-level officials represent the ministries in Indonesia and Denmark and the EoD. The SII reports to the two SCs and present progress reports, relevant updates and potential changes in the work programs as orientation.</p> <p>In addition to the SCs, Provincial Working Groups (PWGs) will be established for each of the islands. The PWGs shall be headed by the respective Governor's office and include members of the Regional Government,</p>

	<p>Bappedda, Dinas LHK, Dinas ESDM, other local authorities and representatives from DEA, DEPA and Embassy of Denmark. The PWGs will be directly involved in the implementation of the SII. During the implementation of the SII, thematic working groups will be formed at technical level around specific tasks. The PWG will be the main administrating group securing progress and coordination.</p> <p>This way vertical and horizontal coordination and integration between central and provincial level as well as at provincial level among local authorities and institutions will be supported by SII.</p> <p>DEA and DEPA will prepare and submit one joint annual progress report to Danish MFA.</p>
<p>Contributions from Danish Public Authority</p>	<p>DEPA and DEA will provide relevant staff with sector expertise from Denmark and internationally as well as involve other relevant stakeholders.</p> <p>In collaboration with the local partners, DEPA and DEA staff will participate actively in workshops, planning meetings, technical sessions, peer-to-peer trainings, networking in Denmark and Indonesia and other activities as guided by the SCs, PWGs and the respective ministries and provincial governments.</p> <p>The core team from DEPA are:</p> <ul style="list-style-type: none"> • Partnership Manager: Mr. Jan Møller Hansen • Biowaste and WtE Specialist: Dr. Rasmus Eisted • Waste Data Specialist: Ms. Anne Louise Nissen • SWM Specialist: Ms. Marianne Ladekarl Thygesen • SWM Economic Specialist, Mr. Mathias Vrå Hjørt <p>The core team from DEA are:</p> <ul style="list-style-type: none"> • Partnership Manager: Anders Kruse • Energy System Specialist, Ms. Maria-Eftychia Vestarchi • Biogas and WtE specialist, Mr. Thomas Hwan Jensen <p>Other specialists from Danish authorities and institutions within energy and environment will be utilized during implementation depending on specific needs and requirements.</p> <p>The application includes specific working days for environment and for energy tasks. However, a significant number of working days will be utilized on joint activities within environment and energy. DEA and DEPA will ensure a close coordination and collaboration throughout implementation of the SII. Implementation period will be from December 2019 to December 2022.</p>
<p>Contributions from Indonesian authority</p>	<p>Inputs from Indonesian authorities are based on the current plans, priorities and programmes implemented by the NTB Provincial Governments, Bappedas, Dinas LHK, Dinas ESDM and other local authorities and partners. Staff resources will be provided as agreed in the work plans and shall work closely with the Danish colleagues. The Indonesian partner authorities</p>

	<p>and staff are responsible for mobilising adequate financial and human resources for the technical working groups, stakeholder forums and in project management contributing to efficient and effective delivery of outputs and results for the SII. The Indonesian partners are expected to be active in initiating and implementing activities, preparing for missions and workshops, meetings and take active part in peer-to-peer trainings etc. The Provincial Governments will also play a vital role in ensuring coordination between provincial and local authorities, municipalities, regencies, units and other partners as well as coordinate with sector ministries and other national stakeholders. The local authorities and their staff within energy and environment will make information and data available on energy and environment sectors on the two islands.</p>			
<p>Budget from Danish side</p>	<table border="1" data-bbox="534 683 1449 828"> <tr> <td data-bbox="534 683 1165 828"> <p>Grand total</p> </td> <td data-bbox="1165 683 1449 828"> <p>3.500.000 (DEPA) 3.500.000 (DEA)</p> </td> </tr> </table>		<p>Grand total</p>	<p>3.500.000 (DEPA) 3.500.000 (DEA)</p>
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