

Guidelines for Strategic Sector Cooperation 2020, **TEMPLATE 10**

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Completion report full Strategic Sector Cooperation Project
Country: Indonesia
Sector: Environment & Energy (Waste-to-Energy)
Title: Sustainable Island Initiative (SII)

1. Danish Authority		
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Danish Authority – Project leader (DEA)	Danish Energy Agency Louise Martinsen, lsmn@ens.dk +45 33951220	
2. Main Partner Authority	Ministry of Environment and Forestry of Indonesia Ministry of Energy and Minerals of Indonesia Local authorities of West Nusa Tenggara Province in particular Lombok Island, and Riau Islands Province (Kepri) in particular Batam Island	
3. Project period	According to the grant letter	Actual
Start (day/month/year) DEA	01/02/2020	31/01/2022
Completion (day/month /year) DEA	01/02/2020	30/06/2023
Start (day/month/year) DEPA	10/03/2020	10/03/2020
Completion (day/month /year) DEPA	10/03/2023	30/06/2023

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4. Total project expenditure (DKK)	3,500,000	3,289,819
DEA		
DEPA	3,500,000	3,444,192

5. UN Sustainable Development Goals

This project set out to contribute to the following SDGs:

- SDG6 “Clean Water and Sanitation”
 - Establishing a more efficient SWM will mitigate illegal dumping of waste, though improve water quality and protect water related ecosystems (6.3 & 6.6).
- SDG7 “Affordable and Clean Energy”
 - 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)
- SDG11 “Sustainable Cities and Communities”
 - 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”
 - A more integrated approach will automatically strengthen climate change measures in policies, strategies and planning (13.2).
- SDG17 “Partnerships for the Goals”
 - 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).

The projects conducted under the SII have generally worked broadly across various fields of expertise, in particular sustainable island development, waste-to-energy and waste management. As the waste sector relates to a wide range of sectors, a successful waste management system requires considerations of multiple aspects and has implications for public health, local economy, tourism, energy, environment and infrastructure. Accordingly, the barriers identified over the course of the total project period have spanned across several sectors and have revealed a high degree of complexity. The analysed solutions and policy approaches reflects the varying aspects and attempts to address the complexity of efficient waste management. An overarching aim of the SDGs is to increase support towards lower income countries in their efforts to mitigate and adapt to existing and future hazards/threats, and in this context the SII has addressed several SDGs as described below.

In relation to SDG6, the SII have worked with several initiatives, both technical and regulative, aimed at reducing negative impacts of non-sanitary landfills and illegal dumping of waste. Barriers have been identified and guidance on how to design and implement an efficient and environmentally sound waste management system have been provided. The benefits of an efficient waste management system, plays well into the SDG6, aiming to reduce water pollution and increase water quality.

SDG7 is reflected in the core vision of SII; namely, the creation of synergies between waste management and energy production. One of the first deliverables of the SII was a technology catalogue for specific waste-to-energy technologies jointly selected with the partners. Proper waste-to-energy solutions presents a wide array of benefits in relation to modern energy services and bi-products of economic growth, and in this context the technology catalogue has served as a means to increase awareness about the available options, and the pros and cons of these. The implementation of more modern waste-to-energy solutions mitigate emissions from landfilling, advance circular economy, and serve to minimize the waste volumes directed to landfills, while simultaneously producing green energy. The waste sector, and its interrelations to the energy sector, is a complex field to navigate, and a field that is often under-prioritized and poorly described data-wise. In this context, the SII has served describe interrelations and potential synergies between the waste and energy sectors, and to map out resources, waste flows, electrical grid infrastructure, projected demand/supply of power and investment requirements.

SDG11 concerns sustainable and resilient cities and settlements for humans. As shown in the reports of the SII, the Lombok and Batam islands face significant economic challenges and complex institutional frameworks, which so far have hindered the development of an efficient waste handling system. Local regencies have their own budgets and targets for their waste handling that must be taken into account when proposing local initiatives. SII have highlighted and proposed integrated waste management and waste-to-energy technologies, from the local perspectives of Batam and Lombok, thereby showcasing the potential for reducing the adverse environmental impact of cities and settlements. During visits to Bornholm and Samsø the Indonesian partners learned about sustainable island development and had discussions with local politicians, civil servants and civil society on how and why to develop and implement integrated visions and plans to secure the wellbeing of citizens and the economy and environment of islands.

For SDG13 on climate action, SII's core focus on combined waste management and renewable energy production is an example of the type of climate actions included under SDG 13. The SII has worked more with mitigation aspects of this SDG than adaptation – when specifically working on climate action. Discussions, analyses, workshops and a study tour to Denmark have highlighted initiatives aimed at building capacity for effective climate change-related planning and management on the two islands.

SDG17 revolves around partnerships for the implementation of the individual SDGs. The funding behind the SII plays into mobilizing resources for developing countries through international cooperation. SII set out to strengthen multi-stakeholder partnerships in terms of waste, energy, finance and capacity building. The SII project has facilitated dialogue between representatives from different sectors (waste, energy, planning, budgeting) through workshops in an attempt to promote collaboration across sectors and thereby increase the chance that synergies are materialized. The SII has analysed project financing both from national funds but also international grants or investments. Identified national grants favoured other islands than Batam and Lombok, therefore, the SII findings point to which features investors will look for prior to investments, thereby providing guidance to local decision makers on how to proceed with developing a well-functioning waste handling system that considers the principles of circular economy, while providing renewable energy and reducing negative impacts on the environment and local populations. During the project period a peer-to-peer (partnership) collaboration was established between the Indonesian islands and Bornholm and Samsø in Denmark.

6. Summary of results according to the predefined output and outcome indicators (from Results Framework and Work Plan)

(final update of plan attached)

OUTCOME A

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.1 indicator: Reports on activities, webinars and Study Tour.

- Initial mission with high-level minister participation in Q1 2020
- Sustainability workshops held on October 20th 2020 (for Lombok) and April 20th 2021 (Kepri).
- Danish Island-webinars (three joint webinars) conducted in June 2021. Experts and delegates from Bornholm and Samsø had prepared presentations related to their initiatives, progress and visions on waste management
- A study tour to Denmark was conducted Q4 2022 with visits on the islands of Bornholm and Samsø, including meetings with mayors, civil servants, workshop at Samsø and site visits.
- Launch workshops at Q2 2023 held at each of the two Islands; partners and other stakeholders were gathered and the results of the SII project were presented and discussed

Output A.2: Technology catalogue, energy production assessment and grid assessment.

Output A.2 indicator: Reports and note on activities included.

- Technology catalogue on waste-to-energy technologies was published in April 2021. Due to COVID19 induced travel restrictions partner involvement was in the form of online meetings, correspondences and physical site visits conducted by local consultants.
- Two reports (one for each island): "*Waste-to-energy potential and project development guideline*" was published in November 2022 following a process of meetings, interviews and missions during most of 2022.

Output B and D were gathered into one large project with multiple outputs. Their respective Outputs are listed outcome-wise, while the indicators are listed jointly below:

OUTCOME B

Output B.1: Report identifying barriers and providing suggestions for integrated waste management and WtE solutions.

OUTCOME D

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.

Output B.1, D.1 and D.2 indicators:

- Two detailed background reports made (one for each island): "*Barriers of waste-to-energy and how to address them*", published Q2 2023 and handed over to partners at physical launch workshops with

participation from partners, other local stakeholders, national and international consultants and representatives from the Danish Energy Agency and the Embassy.

- Two condensed reports (briefs) on Financial aspects of SWM and WtE presenting a condensed and easy accessible presentation of chapters in the background report. These were also translated into Bahasa and brought in physical copies at the launch workshop.
- Two leaflets on barriers and identified solutions, representing the main findings from the background reports, were published and translated into Bahasa.
- A total of three missions were conducted under this project. First in August 2022, then again in December 2022 and finally in May 2023. The two first missions focused on partner meetings/interviews, workshops for the partners, data collection and verification, and site visits on relevant waste facilities. The final mission focused on the dissemination of the finalised content of the project – also highlighting previous SII content one last time.
- During three missions by BOFA to Lombok and Batam/Kepri, institutional and financials barriers were also discussed extensively with local authorities, and solutions for practical ways forward were identified. This was also the case during the study visit to Denmark in 2022.
- Several workshops and seminars were held on Lombok and Kepri to bring stakeholders together and discuss challenges. A workshop was also conducted by the Energy Academy on Samsø with local decision makers and civil servants.

OUTCOME C

Output C.1: Technical advice to islands for improved implementation of SWM and enforcement of standards for waste separation, collection and treatment.

Output C.1 indicator: Jakstrada with targets and new initiatives for effective organic waste management. During visits to Lombok and Batam/Kepri DEPA provided technical advice on most central parts of waste management systems, incl. planning, organisation, sorting, collection, treatment, financing, logistics, communication, data management, recycling, waste value chains, organic waste, hazardous waste and other aspects of waste management. Jakstradas have been updated on an annual basis, and new initiatives for handling organic waste have been introduced for composting, Black Soldier Flies and others. Waste sector studies were prepared for both Lombok and Batam/Kepri with analysis of challenges and recommendations for improved waste management services, including use of waste for energy production.

Output C.2: Higher quantities of waste managed and handled by Waste Banks (WBs) and Recycling Centre Facilities (RCF).

Output C.2 indicator: Number of well performing Waste Banks and Recycling Centre Facilities. (Data not compiled) The local authorities are providing data and reporting to KLHK on Waste Banks and RCFs. There is priority given by local authorities to improve the WBs and RCFs on the Indonesian islands. The number has increased. However not all WBs and RCFs are performing as expected, but some are. The exact number is not known.

Output C.3: A revised data collection and reporting system for solid waste developed in collaboration with KLHK and LHK.

Output C.3 indicator: Updated waste data collection and reporting system
DEPA is provided support to KLHK for improving its national waste data systems and technical advice have also been provided on data management to the LHK on Lombok. A comprehensive waste study was done for Lombok by Rambøll Consultants, which also included waste data and recommendations for how to improve waste data management. Waste data systems used by local authorities in Indonesia however still needs to be improved in order to provide a more reliable and consistent data on quantities, composition and waste streams.

Output C.4: Short report with assessment of institutional arrangements and financial models within SWM.

Output C.4 indicator: Short report prepared, presented and discussed with local authorities.

Presentations, training materials by BOFA

During Q4 2022, Q1 and Q2 2023 BOFA made three 2 weeks missions to both Lombok and Batam to conduct workshops, trainings and to provide technical advice to LHKs and other local authorities on effective waste management and circular economy. BOFA developed comprehensive training packages covering most aspects of waste management for local authorities. The work also dealt extensively with issues related to institutional and financial models of SWM. The need for ensuring sufficient financing for waste management has been a key issue throughout the cooperation with Indonesian authorities and continues to be.

7. Deviations from initial budget, partner and Work Plan

- The original travel budget showed to be overestimated and only 28% has been spend compared to the budget. This is partly due to COVID and the new possibility to meet online afterwards and due to more travels from consultancies, which is part of the consultancy budget. 12% extra was used on DEA personnel. This is partly due to a change in staff including project manager and since the project showed to be more TA intensive than first anticipated. (For DEA budget/expenditure)
- There has not been changes in Partner Authority during the project period, and no additional authorities have been formally introduced/involved in the SSC during the project period.
- Some activities were delayed and missions planned for the first half of the project period have had to be cancelled. Both delays and cancellations were caused by COVID-related travel restrictions. As missions and physical interaction in the form of meetings, site visits and workshops have been central for the work, the project was less intensive when the COVID19 pandemic was at its worst. Once the restrictions were lifted, intensity was increased as well. Also, budget originally allocated for travelling was reallocated to consultancy- and DEA TA in order to increase the level of detail and scope of the prepared analyses. As a result the project has resulted in the preparation of very detailed reports containing e.g. compilations of data that has proven very valuable in relation to understanding the challenges and potentials related to waste management and waste-to energy.

8. Overall results

The overall objective of the SII was to support development on one island (Lombok) and in one island province (Kepri) towards a green and low carbon pathway created by effective solid waste management and WtE solutions.

The sub-objectives of the SII were:

- to assist the authorities in identifying and improving an integration of Circular Economy (CE), Solid Waste Management (SWM) and Renewable Energy (RE) in the regulatory and practical framework, enhancing the implementation of provincial policies and action plans for circular economy, waste management (Jakstradas) and energy (RUEDs);
- to provide assessments of the potential and pre-feasibility of CE, SWM and Waste-to-Energy (WtE) development on the two islands under both current and improved framework condition; and
- to support and promote the foundation for private sector stakeholders' engagement and funding opportunities for WtE at Lombok and the second island.

It is the assessment that the overall objective has been partly achieved. Support to green transition has been provided through dialogues, seminars, visits in Indonesia and study tours in Denmark, consultancies and sharing of best practices and cases from Denmark. The Embassy in Jakarta has been very active in promoting this agenda towards the Indonesian islands.

There are still structural and fundamental challenges that need to be addressed in order to fully realise the potential of a green transition. However, the awareness among local decision makers and sector professionals have been stimulated and hands-on practical solutions have been shared with partners. Interacting with Danish local politicians, sector professionals from energy and waste utilities and other relevant institutions have been important in terms of providing examples of how the adoption of more holistic cross-sectoral perspectives can lead the way for implementation of integrated SWM and WtE solutions. There has been a good and consistent interaction and knowledge sharing between Indonesian partners, and the Danish environment and energy agencies, local politicians, civil servants and energy- and waste utilities from Bornholm and Samsø.

More sustainable energy solutions, effective waste handling (i.e. sorting, collection and less disposal) as well as prevention, recycling and reuse of waste/resource materials add to lowering the carbon foot print of both the energy and the waste sectors, while also reducing the negative environmental impacts of the sectors. During the project efforts have been made to show how waste management can be done efficiently and effectively, and how proper treatment of waste can be associated with a range of benefits for society, including both environmental benefits and renewable energy production. There is still a long way to realise the potentials in this regard on the two islands. However, awareness, knowledge and vision have been strengthened during the cooperation between Danish and Indonesian partners, and the impression is that the project has spurred a renewed interest in working with identification and implementation of activities aimed at making SWM, including WtE, greener and more efficient. But due to the barriers identified, no larger projects have been implemented as of yet.

The Danish islands Samsø and Bornholm have been very active not only in telling their story, but also showing how they are moving in the direction of lower emissions, zero-waste and more green and sustainable energy solutions in practice. And very importantly, the cases of Samsø and Bornholm has served to show that the necessary changes can be implemented without detrimental effects on island economy; thus, the changes can go hand-in-hand with economic development, more tourism, job creation etc. Also,

the Danish cases served to show how community engagement can be used actively in process of establishing integrated SWM and WtE projects.

Most of the planned outputs of the Project have been achieved. Reference is made to the attached updated results framework and work plan (2022).

During implementation of the SII Project, the following have been some of the main activities:

- Dialogues, seminars, workshops and visits on energy- and waste sector governance, planning, services, financing and technical options and solutions for the Indonesian islands.
- Consultancies and advice on biomass sustainability, waste-to-energy solutions, waste sector studies, investment aspects and financing options.
- Preparation of reports on waste streams, technology options, barriers, potentials and financial aspects, which jointly provide a holistic, coherent and sound basis for making decisions on new activities aimed at improving SWM practices and potentially establishing integrated SWM and WtE projects.
- Study visit to Denmark for local decision makers, local parliamentarians and senior staff from local planning, energy and waste authorities.
- Dialogues between local politicians and civil servants on challenges and solution to sustainable island development, green transition and practical solutions to energy- and waste management challenges.
- Peer-to-peer visits to Lombok and Batam/Kepri by management and staff from the waste utility at Bornholm, BOFA.

In August and in November 2022 DEA together with consultants from Viegand Maagøe went to Indonesia to visit partners. Both trips were very successful, and resulted in the gathering and verification of detailed data regarding the waste and energy sectors on the two islands, fruitful discussions with a broad range of stakeholders, several site-visits at different waste handling facilities, and the hosting of two very successful workshops, where partners provided a lot of valuable insights to the conducted analyses. In Q2 2023, final launch workshops were held at the two islands; here DEA and consultants handed over the final reports to partners, and presented the entire portfolio of products created throughout the project to workshop participants. The products were very well received, and discussions across participants from different sectors suggested that awareness of the need for cross-sectoral collaboration has indeed been raised.

In Q3 2022 DEPA and DEA hosted a Study Tour for local decision makers and senior officials to Denmark. The Study Tour provided the Indonesian delegates with insight into the challenges, development and solutions applied in Denmark for accelerating green and sustainable development on islands in the country. The Study Tour focused on how planning, financing and execution of renewable energy, waste-to-energy, circular economy and waste management are undertaken in Denmark, and in particular for island societies. During the Study Tour, the delegates had the opportunity to meet with mayors, senior civil servants, senior planners and technicians from local authorities, energy and waste utilities, civil society and state institutions on Bornholm and Samsø. The Study Tour included visits to municipalities, energy and waste utilities, recycling centres, biogas plants, wind- and solar plants and other initiatives on the Danish islands as well as visits and/or meetings in the capital Copenhagen. The Vice-Governor of Lombok, local parliamentarians and senior staff from the provincial/city waste and energy agencies participated in the Study Tour.

A cooperation agreement was made with the waste utility at Bornholm, BOFA, to visit both Lombok and Batam/Kepri three times (Q4 2022, Q1 and Q2 2023). The visits included seminars, site visits and dialogues/consultations on circular economy, waste planning, waste prevention and reuse, waste data

analysis, reporting, biogas and other waste-to-energy solutions, sustainability of technical solutions etc. There was good attention from local authorities during workshops, site visits and meetings. BOFA also prepared a comprehensive set of materials and presentations for the local authorities.

In 2021, a Technology Catalogue on WtE solutions and a Waste Sector Study were prepared, which provided valuable information and possible options for investments in WtE and waste management. A project planning and investment guideline for Waste Management and WtE projects has also been prepared by the Environment SSC Programme, which has been used in the cooperation with the local authorities at Batam/Kepri and Lombok. The guideline includes principles and criteria for developing bankable and feasible project proposals for investments.

BOFA undertook three missions to both Lombok and Batam/Kepri with director and experts to conduct workshops, trainings and consultations as well technical advice on key elements for effective waste management and sustainable island development.

Waste management sector studies with analysis and recommendations for effective waste management were prepared for both Lombok and Batam/Kepri and with recommendations/suggestions for ways forward.

The Trade Council of Danish Embassy made several visits to the islands during the project period to explore potential private collaboration opportunities, both within energy and environment. DSIF has initiated a pre-feasibility study to determine viability of a biomass-fired power plant in the NTB province. As investment advisor Ib Albertsen entered his position at the Danish Embassy he became a valuable partner in the programme. He has participated in both a mission to Lombok and Batam; Ib Albertsen has been an important facilitator in relation to DSIF activities in the NTB province, and he expressed interest in engaging in future discussions with partners in case they decide to proceed with designing future WtE projects.

During implementation of the project, Danish experiences with PPPs in waste and energy have been shared with local authorities. Examples of PPPs and business models for energy and waste services were also included during the visit to Denmark in 2022. Aspects of private sector involvement and collaboration between public and private actors have also been touched upon during the BOFA visits to the islands. Finally, the reports prepared by Viegand Maagøe outline different financing options and highlight a range of different initiatives (policy de-risking, financial de-risking, and financial incentives), which can be used to enhance the profitability of investments. Thus, the project has provided partners and other interested stakeholders with a sound overview different financial models and the pros and cons of the different options.

One of the main findings of the studies conducted as part of the project is, that current framework conditions does not incite private engagement and investments in SWM and WtE. Accordingly, the project has not directly lead to private sector activities. However, by pointing out the barriers for private engagement, and by providing suggestions for how the barriers can be addressed, project activities have contributed to outlining a framework that potentially can underpin future private engagement in SWM and WtE projects, and thereby increase the chance that projects will actually materialise.

9. Key lessons learned and recommendations

- It is possible to increase awareness and commitment towards green transition among local decision makers and sector professionals from energy and waste sectors through dialogue, best practice and knowledge sharing and peer-to-peer cooperation.
- Language barriers are often more significant with the local partners and operators, compared to partnerships in Jakarta. This can, to a large degree, be overcome by translating documents and providing fluent Bahasa Indonesia speakers or professional translators at meetings and workshops. Products/reports translated to Bahasa Indonesia have been well received by the partners.
- Restricting the focus to the local level and to changes in framework conditions, which can be implemented at the provincial level has been proven to represent a challenging approach, making it difficult to actually solidify projects and investments within SWM and WtE. Actual implementation is hampered, as critical components of the framework conditions are set by the national government. This implies that implementing changes can be outside the scope of the local authorities, in some areas. Furthermore, our core partners have little say in relation to the setting of waste budgets, leaving little room for making the required changes. To initiate new and complex waste technologies/approaches an even wider inclusion of authorities are required.
- Danish local authorities, utilities and private sector have a lot to offer in terms of showing how national policies and legislation are translated and put into action at local level, and which can serve as inspiration and motivation for change elsewhere. Also, SII has shown that interaction between representatives from Indonesian Authorities and representatives from Danish local authorities, utilities and private sector can take different forms – either through online seminars, study trips or physical workshops, where Danish stakeholders (in this case BOFA) are invited to participate in capacity building activities in an Indonesian setting.
- Involving two different Danish agencies in the same project has contributed to increasing knowledge and experience across sectors of energy and waste and of cross-sectoral solution to green solutions and WtE. This has been a beneficial and good learning opportunity for both the Indonesian local authorities and the Danish agencies. However, it has also proven challenging, as coordination across agencies is not always an easy task.
- Despite the COVID pandemic, it was possible to keep the project and its activities going. The ability of adapting and staying flexible during implementation are important for achieving objectives, outcomes and activities.
- The SII project has run over three and a half year, which can be considered a long programme, but when dealing with challenges such as the ones in focus in the SII, it has become evident that three the project period primarily suffices to increase awareness and stimulate interest. However, working relations have been established, which will be maintained by the Embassy, DEA through its bilateral cooperation, and also by DEPA through the 2nd phase of its SSC environment cooperation with Indonesia.

10. Case stories showcasing overall results/fulfilment of the overall objective of the SSC

- Lombok’s 2030 targets: At COP26 in Glasgow in 2021, Lombok presented their ambitions in reducing CO2 emissions and becoming a green and sustainable island. The SII Project inspired the local authorities in raising their ambitions towards becoming a climate-neutral island, as also demonstrated by the Danish islands (see annex 1).
- Pre-feasibility study on waste for Lombok: In 2021, a comprehensive waste sector study was prepared by a team of international and national consultants from Rambøll. The study, which supplements the Technology Catalogue on WtE solutions, was prepared in collaboration with local environment and city authorities, and also included kick-off and final dissemination workshops with good participation of the national stakeholders. The study has been shared with the Governor and local authorities, and its recommendations are now used in the dialogue with local authorities at Lombok.
- Numerous pre-feasibility studies prior to SII involvement, but no projects: During meetings with partners on Batam it emerged that some 13 pre-feasibilities on WtE projects had in fact already been made. All had ended up with the same conclusion – that economic feasibility was not present. However, none of the studies had been shared, and no efforts were put into further analyses of the underlying causes of the results and how barriers might be addressed. Basically, the analyses conducted in the SII project end up with the same conclusion as previous studies (confirming the impression that there was no commercial business case for WtE projects) , but in contrast to previous studies, the SII has put significant effort into analysing barriers and how they can be addressed, thereby providing essential information to partners on how to proceed with their efforts to create a framework that can support the development of an efficient SWM system and integrated SWM and WtE solutions.
- Perception of waste: When talking about WtE there seem to be a common perception in the waste sector (and public sector, more broadly), that waste is a valuable resource, and accordingly, that private investors should be willing to pay a high price for waste as an input to energy production. No doubt, waste should, seen from a circular economy perspective, be perceived as a valuable resource, but it is important to recognize that the value of waste for WtE is far from being sufficient to cover the costs of running an efficient waste management collection system. Thus, WtE is only a relevant option for processing the share of collected waste, that cannot be used for other higher value purposes. Accordingly, the analyses has pointed at the importance of changing the perception of integrated SWM and WtE projects, and recognizing that the main driver is SWM, while WtE represents a positive by-product. A spin-off that may serve to increase the profitability of SWM, but not something which can finance the running of an efficient SWM system. Essentially, waste to energy solutions are primarily dealing with waste challenges, rather than energy-related issues.
- Lack of cross sectoral cooperation: During the project it became evident that cooperation between authorities across different sectors is very low, and that silo thinking may represent an important obstacle for the implementation of integrated SWM and WtE solutions. The SII project has addressed this by: 1) bringing stakeholders from different sectors together at workshops, seminars and on the study tour, and 2) adopting a holistic and coherent analyses approach, where interrelations are emphasised and where aspects related to the entire suite of relevant sectors (e.g. environment, energy, planning) are considered jointly.

Completion Report assessed by the SSC Steering Committee	Steering Committee Assessment

[day/month/year]	
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Annex 1: Lombok’s 2030 targets

At COP26 in Glasgow in 2021, Lombok presented their ambitions in reducing CO2 emissions and becoming a green and sustainable island. The SII Project inspired the local authorities in raising their ambitions towards becoming a climate-neutral island, as also demonstrated by the Danish islands.

In 2022 Viegand Maagøe finalized reports on “Waste-to-energy potential and project development guidelines for Batam/Lombok”. The reports identifies relevant locations and technologies for WtE projects on Lombok and Batam, and provides partners with a high level screening of potentially relevant projects. The reports also contain a generic project development guidelines, which serves to give partners an overview of the different phases of project development and highlight crucial steps in the process. The reports, which are easy to read and developed with a focus on visual presentation of information, may serve as a basis for creating a common understanding of SWM and WtE challenges across the range of different stakeholders, which all have a share in the issue.

Since mid-2022 Viegand Maagøe has also been working on two other assignments; one focusing on identification of barriers to SVM and WtE projects and different ways for addressing these, and another focusing on investment aspects and financing options of WtE projects. This work will result in the preparation of one background report, and two shorter notes (one on barriers and solutions and one on investment and financing) for each the islands. The notes, among others include a rough business case and a review of de-risking instruments, which form an integral part of making the business case financially viable. The reports and notes are currently undergoing final revisions and they are expected to be ready for dissemination no later than by the end of Q1 2023. The preliminary results of the analyses included in the three products were presented and discussed at workshops with partners during a mission in November 2022, and several partners have afterwards expressed great interest in the project and seem anxious to receive the products.



In 2021, the SII prepared a Technology Catalogue on WtE solutions for Lombok and Batam/Kepri. The preparation of the Technology Catalogue included a kick-off workshop, mid-way workshop and a final stakeholder dissemination workshop. The Catalogue includes technologies capable of producing energy while consuming waste aiming to reduce overflows of waste in the landfills that are currently near full capacity. The catalogue serves as a tool for comparisons between various technologies and features both technical and economic key figures to help policy makers and planners to assess optimal choices when planning for WtE.