



The Government of Indonesia
& Asian Development Bank

**ADB TA 8287-INO: Scaling Up Renewable Energy Access
in Eastern Indonesia**

Inputs to the Sumba Iconic Island Road Map

28 December 2015



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Prepared for: The Government of
Indonesia and Asian
Development Bank

Prepared by: PT. Castlerock Consulting

Castlerock Consulting
Graha Iskandarsyah, 7th floor
Jl. Iskandarsyah Raya No. 66C
Jakarta 12160
Indonesia

Tel: +62 21 270 2404
Fax: +62 21 270 2405
www.castlerockasia.com

Version: 1.0



FOREWORD

This report has been prepared by Castlerock Consulting for the Government of Indonesia and the Asian Development Bank (ADB) under ADB Technical Assistance (TA) No. 8287-INO: Scaling-Up Renewable Energy Access in Eastern Indonesia.

The report directly supports the Sumba Iconic Island Initiative by drawing on earlier resource studies and least-cost planning analysis to formulate a year-by-year schedule of investments to achieve the Iconic Island objectives. The report also compiles inputs provided under the TA for Iconic Island program monitoring and evaluation.

Other principal deliverables produced under this ADB TA assignment include:

- Inception Report (November 2013)
- Deliverable B: Energy Resources for Grid Supply & Electricity Demand Analysis for Sumba (September 2014);
- Mid-Term Report: Least-Cost Electrification Plan for the Iconic Island (December 2014); and
- Deliverable A: Achieving Universal Electricity Access in Indonesia (July 2015, to be published as an ADB Knowledge Product).

Background and documentation on the Sumba Iconic Island Initiative, including the above reports, can be downloaded from www.sumbaiconicisland.org.

The Castlerock team gratefully acknowledges the leadership and support provided Ms. Maritje Hutapea, Director of Various Energy, and staff from throughout the Directorate General of New and Renewable Energy and Energy Conservation; personnel from PLN Wilayah Nusa Tenggara Timur (especially Mr. Suliaman) and Area Sumba, who provided guidance on system planning; counterparts in the Mining & Energy Services and the Regional Development Planning Agencies within the four kabupaten of Sumba; and Dr. Pradeep Tharakan, Senior Energy Specialist (Climate Change), of the ADB who guided preparation of the report.



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1. UPDATING THE ICONIC ISLAND ROAD MAP

1.1 INTRODUCTION

From the outset of the Sumba Iconic Island (SII) program the principal stakeholders have recognized the need for a formal and inclusive structure for planning and coordinating program activities. The Directorate General of New and Renewable Energy and Energy Conservation (*Direktorat Jendral Energi Baru dan Terbarukan dan Konservasi Energi*, EBTKE) formally designates and convenes an implementation team for the SII program each year. The most recent legal basis for the team is Minister of Energy and Mineral Resources Decree No. 556 K/73/DJE/2015 issued in August 2015. The composition of the team draws from national and local government, development partners, state-owned enterprises, foreign and local non-governmental organizations (NGOs), as well as consultants and private investors. This decree is presented in Appendix A.

As noted in the decree, a key output of the Implementation Team is the SII Road Map, which provides a time-bound sequence of activities to meet the SII objectives, and identifies the party responsible for each activity. An update of the Road Map commenced in the third quarter of 2015. One objective of this update was to incorporate the findings of the Sumba Least-Cost Electrification Plan that was prepared under this ADB TA and documented as the Mid-Term Report.

However, the least-cost plan defined the total cumulative investment required to achieve the least-cost mix of generation and transmission identified for the target year of 2025. It did not provide year-by-year project sequencing, investment needs and dependencies that are needed for a comprehensive update of the SII Road Map.

This report describes the tools and analysis prepared to translate the least-cost investment mix into a year-by-year plan. In doing so, it highlights key dependencies and trade-offs. This report also summarizes the monitoring and evaluation framework that was prepared under the ADB TA for the management of the program.

1.2 THE RUPES: A TOOL FOR PLANNING ICONIC ISLAND INVESTMENT

An Excel-based model, the *Recana Umum Penyediaan Energi Sumba* (RUPES, or Sumba General Energy Supply Plan), was prepared to establish a year-by-year plan of investments to achieve the least-cost electricity supply mix in 2025. A manual for use of the model is provided in Appendix B.

The model is applied as follows:

1. The user specifies the number of new households connected to the grid each year (i.e. specifies the change in the electrification ratio), which in turn determines power system load for that year and amount of new transmission and distribution infrastructure required.
2. The user also specifies:
 - a. the number of new households supplied by off-grid systems each year;
 - b. the “s-curve” for cumulative capital expenditure by year over the period of construction for each candidate power plant
 - c. the unit costs for each power plant (USD/kW installed) and network (USD/km of line installed), which includes financing costs

1. Updating the Iconic Island Road Map. . .

3. The user then enters the commissioning date for each of the plants so that energy production balances with energy demand.

This approach allows the user to see the generation requirements associated with achieving the target electrification ratio set by the user. Alternatively, the user can start with tasks (2) and (3) first, where task (3) consists of installing new renewable energy capacity as quickly as realistically possible, and then entering the number of households that can be added so that demand does not exceed supply from renewable resources. This enables the user to assess the maximum number of households that can be added per year while maintaining 100% reliance on renewables.

As discussed further in Section 1.3, there are two different approaches because achieving a target of near-universal access by 2020 (reflecting the accelerated renewable energy target set by the Minister of Energy and Mineral Resources, per Minister of Energy and Mineral Resources Decree No. 3051/K/30/MEM/2015) results in demand that exceeds the amount of renewable generation that can be constructed within this period.

Limitations and principal assumptions of the model are as follows:

1. The adequacy of capacity additions is assessed by comparing total energy production with total energy consumption, i.e. it relies on an energy balance. However, this does not guarantee that sufficient generation capacity is available throughout the year to meet power demand. Confirmation of the power load balance requires analysis using Homer or a similar chronological production simulation/dispatch model.
2. Total energy consumption is determined as a function of the number of households connected. It does not separately forecast residential and non-residential demand, but models total demand as a function of the number of connected households. The rationale for this approach is discussed in the Mid-Term Report.
3. New MV and LV network investment is a function of the number of new households connected.

Three scenarios have been developed:

1. A “business as usual” scenario that is based on PLN’s Electricity Business Supply Plan (*Rencana Usaha Penyediaan Tenaga Listrik*, RUPTL) 2015-2024 and PLN guidance on the number of new connections expected to be added per year;
2. An “accelerated electrification ratio” scenario that achieves 95% electrification ratio by 2020; and
3. An “100% renewable supply” scenario that achieves 100% renewable supply by 2020 (bearing in mind the limitation of the model to work on an energy rather than demand basis).

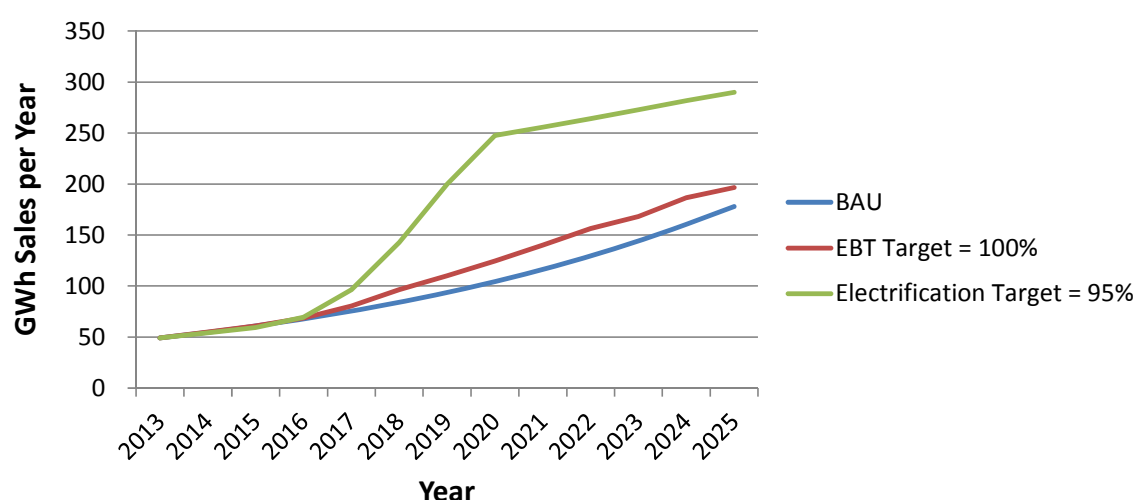
Scenarios (2) and (3) have been developed based on Deliverable B: Energy Resources for Grid Supply & Electricity Demand Analysis for Sumba (September 2014), and Mid-Term Report: Least-Cost Electrification Plan for the Iconic Island (December 2014), both prepared under this ADB TA.

1.3 KEY FINDINGS

A key finding is that achieving an electrification ratio of 95% by 2020 results in energy sales 2.5 times higher than in the “business as usual” case. Not enough renewable capacity can be brought on line quickly enough to fully serve this rapid increase in demand, hence there is continued reliance on diesel generation (or possibly small-scale LNG generation as per the 2015-2024 RUPTL) over the time horizon of this scenario.

Alternatively, if the new customers cannot be added so quickly such that the electrification ratio does not exceed 51% by 2020, enough renewable generation can be added to fully supply this lower demand. In this case, electricity sales in the “accelerated electrification ratio” case are approximately twice as large as for the “100% renewable supply” scenario. Exhibit 1.1 shows the electricity sales trajectory under each scenario.

Exhibit 1.1: Electricity Sales under Each Scenario



Details of each scenario and the associated analysis, including identification of responsibilities, dependencies and prerequisites are presented in Appendix C. The results of each scenario are summarized in Exhibit 1.2.

Exhibit 1.2: Summary of RUPES Results

For 2020	BAU	95% Electrification	100% Renewable
Renewable Portion	43%	65%	100%
Electrification Ratio	34%	95%	51%
Public Investment	USD 13.0 M	USD 210.6 M	USD 87.6 M
Private Investment	USD 53.4 M	USD 189.9 M	USD 189.9 M

Note: Investment figures exclude USD 27.9 million (M) calculated for off-grid supply. Small hydro with small dams are assumed to be part of private investment.

These 2020 results are consistent with the results of the least-cost plan presented in the Mid-Term Report, which assume 95% electrification ratio and are summarized in Exhibit 1.3. With another 5 years (2020 to 2025) and USD 50 M additional investment, the share

1. Updating the Iconic Island Road Map. . .

of renewable supply can reach 71%; with an extra USD 276 M, the renewable share can reach 87% (as the extra cost is attributable largely to pumped hydro capacity additions).

Exhibit 1.3: Cumulative Investment by 2025 under the Least-Cost Plan

	71% Renewable	87% Renewable
Off-grid & Mini-grid*	49.7	49.7
Grid		
- Generation**	215.9	434.9
- Network	171.9	171.9
- Other***	12.9	19.5
TOTAL	450.4	676.0
Total per household	2,702	4,055

Notes:

Values stated in million USD, except for “total per household”, which is stated in USD. There is a total of 166,688 electrified households in 2025.

* Base Case is used since the Low Case assumed a 55% reduction in busbar energy costs resulting from high renewable penetration, but based on the HOMER results it appears that the reduction is more on the order of 15%.

** Net of existing plant.

*** “Other” represents an estimate of the costs of a control system and other studies and implementation activities. Assumed to be 3% of all grid capex.

There are four principal observations:

1. **A high voltage backbone is required.** Many of the renewable resources available for development are in eastern Sumba, whereas most of the electricity load is in western Sumba. Moreover, few of these renewable resources are located near load centers. As described in the Mid-Term Report, a high voltage transmission line is required running east-west to bring renewable generation to load centers. This must be accompanied by improved network control systems. This is a pre-requisite for any significant scale-up of renewable generation on Sumba. PLN is now planning an east-west high-voltage line for commissioning in 2017; this should appear in the 2016-2025 RUPTL. Any slippage in commissioning of this line will likely impact the timing of PV, wind and storage hydro capacity additions.
2. **A huge scale up in MV/LV network is required.** The bulk of PLN investment is required for MV and LV infrastructure and new connections. In the case of 95% electrification ratio, some USD 143 million would be required for MV, LV and new connections, whereas approximately only USD 25 million would be required for the HV line. (These figures exclude control systems and studies).
3. **Renewable development relies on the private sector.** On the other hand, the private sector is principally responsible for renewable generation development. However, this generation development not only depends on commissioning of the HV line, but also on new regulations for PV and wind development.
4. **Renewable development can proceed independently of electrification.** Because investment in renewable capacity is to be financed from a different source than network investment, we do not need to choose between a high electrification ratio and increased renewable supply. Both activities should proceed in parallel, though development of more than the first few MW of wind and PV capacity will depend on the rate of new connections and associated load building.



2. MONITORING AND EVALUATION ACTIVITIES

2.1 OBJECTIVE

The objectives of monitoring and evaluation (M&E) activities under ADB TA 8287-INO: Scaling-Up Electricity Access in Eastern Indonesia are to:

1. Develop an M&E Framework for the Sumba Iconic Island initiative which covers the program logic, log frame, and M&E plan. This framework is intended to serve as a guide to develop an M&E plan for each of activity listed in the Road Map; and
2. Provide capacity building for relevant stakeholders (local government and executing agency in the form of (i) training to familiarize on M&E framework (program logic, log frame and M&E plan) (ii) training on the process and detailed data/indicators in conducting the M&E activities

2.2 APPROACH

To achieve the objectives above, the following activities have been carried out:

A. Desktop Studies

- Conduct literature review on development of M&E framework for program level
- Review on-going and previous studies on Sumba Iconic Island (e.g., Inception report of the ADB TA, studies commissioned by HIVOS on Solar Home Systems, SEHEN, grid-connected study and socio-economic survey, etc.), as well as and the current Road Map for each sub-activity to:
 - Identify the current target and assess whether it is realistic;
 - Assess options for monitoring and evaluation indicators and the basis for the Key Performance Indicators (KPIs), e.g, number of installations, size of installed capacity, number of people with increased access to electricity, etc, type of data required to calculate or estimate the indicators and source of data; and
 - Develop the draft Program Logic and Logical Framework of Sumba Iconic island as a basis for the M&E Framework.

B. Field Visits:

- Discuss with key stakeholders the program logic and the institutional framework for M&E Implementation;
- Assess the capacity of the local government to implement M&E activities;
- Gauge the actual conditions of the previous renewable energy technologies that have been implemented; and
- Ensure that data required for monitoring and evaluation purposes are available and can be collected.

C. Analysis and report writing to finalize M&E Framework for the Sumba Iconic Island program:

- Re-define a realistic target for each sub-activity based on findings from the field visits;
- Develop a complete M&E Table and set the methodology (data sources, algorithm, and means of verification to define or calculate/estimate the KPI);
- Determine the schedule and frequency of data evaluation;
- Document the M&E plan into a High-Level M&E Framework document that includes an M&E Log Frame and M&E template for Sumba Iconic Island;
- Discuss and present the M&E Framework and M&E template to stakeholders

2. Monitoring and Evaluation Activities. . .

in the Rapat Pleno VI 10-13 Maret 2014

- D. Capacity building regarding M&E framework and M&E plan to relevant stakeholders, particularly to local government
 - Public consultation on the M&E framework;
 - Training on the M&E plan structure; type of data needing to be collected and gathered, and frequency of data gathering; and
 - Preparation and presentation of recommendations on M&E plan implementation for the Local Pemda (at district level) and the Capacity Development Facilitator
- E. Support to M&E activities:
 - a. Review mid-term M&E Activities;
 - b. Prepare terms of reference for third party consultant to prepare the SII baseline and the first M&E report; and
 - c. Update the roadmap based on the M&E plan and M&E report.

2.3 DELIVERABLES

Deliverables of M&E activities are highlighted below and attached as Appendix C:

1. Final Report: Monitoring and Evaluation Framework for Sumba Iconic Island
2. Final Log Frame that indicates key indicators for input, activities, output, outcome and goal/impact
3. Presentation of the final M&E Framework
4. Monitoring and evaluation template for M&E execution
5. Terms of references for the consultant, 2014
6. Terms of references for the consultant, 2015



APPENDIX A: DECREE ESTABLISHING THE SII IMPLEMENTATION TEAM



**MENTERI ENERGI DAN SUMBER DAYA MINERAL
REPUBLIK INDONESIA**

**KEPUTUSAN MENTERI ENERGI DAN SUMBER DAYA MINERAL
REPUBLIK INDONESIA**

**NOMOR: 556 K/73/DJE/2015
TENTANG**

**TIM IMPLEMENTASI *ICONIC ISLAND*
TAHUN ANGGARAN 2015**

MENTERI ENERGI DAN SUMBER DAYA MINERAL REPUBLIK INDONESIA,

- Menimbang : a. bahwa dalam rangka Pelaksanaan Kegiatan Implementasi *Iconic Island* Tahun Anggaran 2015, perlu membentuk Tim Implementasi *Iconic Island*;
- b. bahwa berdasarkan pertimbangan sebagaimana dimaksud pada huruf a, perlu menetapkan Keputusan Menteri Energi dan Sumber Daya Mineral tentang Tim Implementasi *Iconic Island* Tahun Anggaran 2015;
- Mengingat : 1. Undang-Undang Nomor 17 Tahun 2003 tentang Keuangan Negara (Lembaran Negara Republik Indonesia Tahun 2003 Nomor 47, Tambahan Lembaran Negara Republik Indonesia Nomor 4286);
2. Undang-Undang Nomor 1 Tahun 2004 tentang Perbendaharaan Negara (Lembaran Negara Republik Indonesia Tahun 2004 Nomor 5, Tambahan Lembaran Negara Republik Indonesia Nomor 4355);
3. Undang-Undang Nomor 15 Tahun 2004 tentang Pemeriksaan Pengelolaan dan Tanggung Jawab Keuangan Negara (Lembaran Negara Republik Indonesia Tahun 2004 Nomor 66, Tambahan Lembaran Negara Republik Indonesia Nomor 4400);
4. Undang-Undang Nomor 30 Tahun 2007 tentang Energi (Lembaran Negara Republik Indonesia Tahun 2007 Nomor 96, Tambahan Lembaran Negara Republik Indonesia Nomor 4746);
5. Undang-Undang Nomor 30 Tahun 2009 tentang Ketenagalistrikan (Lembaran Negara Republik Indonesia Tahun 2009 Nomor 133, Tambahan Lembaran Negara RI Nomor 5052);

6. Undang-Undang ...

6. Undang-Undang Nomor 27 Tahun 2014 tentang Anggaran Pendapatan dan Belanja Negara Tahun Anggaran 2015 (Lembaran Negara Republik Indonesia Tahun 2014 Nomor 259, Tambahan Lembaran Negara Republik Indonesia 5593) sebagaimana telah diubah dengan Undang-Undang Nomor 3 Tahun 2015 (Lembaran Negara Republik Indonesia Tahun 2015 Nomor 44, Tambahan Lembaran Negara Republik Indonesia Nomor 5669);
7. Peraturan Pemerintah Nomor 14 Tahun 2012 tentang Kegiatan Usaha Penyediaan Tenaga Listrik (Lembaran Negara Republik Indonesia Tahun 2012 Nomor 28, Tambahan Lembaran Negara Republik Indonesia Nomor 5281) sebagaimana diubah dengan Peraturan Pemerintah Nomor 23 Tahun 2014 (Lembaran Negara Republik Indonesia Tahun 2014 Nomor 75);
8. Peraturan Pemerintah Nomor 45 Tahun 2013 tentang Tata Cara Pelaksanaan Anggaran Pendapatan dan Belanja Negara (Lembaran Negara Republik Indonesia Tahun 2013 Nomor 103, Tambahan Lembaran Negara Republik Indonesia Nomor 5423);
9. Peraturan Pemerintah Nomor 79 tahun 2014 tentang Kebijakan Energi Nasional (Lembaran Negara Republik Indonesia Tahun 2014 Nomor 300, Tambahan Lembaran Negara Republik Indonesia Nomor 5609);
10. Keputusan Presiden Nomor 42 Tahun 2002 tentang Pedoman Pelaksanaan Anggaran Pendapatan dan Belanja Negara (Lembaran Negara Republik Indonesia Tahun 2002 Nomor 73, Tambahan Lembaran Negara Republik Indonesia Nomor 4212) sebagaimana telah dua kali diubah terakhir dengan Peraturan Presiden Nomor 53 Tahun 2010 (Lembaran Negara Republik Indonesia Tahun 2010 Nomor 92; Tambahan Lembaran Negara Republik Indonesia Nomor 4418);
11. Instruksi Presiden Republik Indonesia Nomor 1 Tahun 2006 tentang Penyediaan dan Pemanfaatan Bahan Bakar Nabati (Biofuel) sebagai Bahan Bakar Lain;
12. Keputusan Presiden Nomor 121/P Tahun 2014 tanggal 27 Oktober 2014;
13. Keputusan Presiden Nomor 59/M Tahun 2015 tanggal 6 Mei 2015;
14. Keputusan Menteri Energi dan Sumber Daya Mineral Nomor 0002 Tahun 2004 tentang Kebijakan Pengembangan Energi Hijau;
15. Peraturan Menteri Energi dan Sumber Daya Mineral Nomor 32 Tahun 2008 tentang Penyediaan, Pemanfaatan dan Tata Niaga Bahan Bakar Nabati (*Biofuel*) Sebagai Bahan Bakar Lain sebagaimana telah diubah tiga kali terakhir dengan Peraturan Menteri Energi dan Sumber Daya Mineral Nomor 12 Tahun 2015 (Berita Negara Republik Indonesia Tahun 2015 Nomor 406);

16. Peraturan Menteri Energi dan Sumber Daya Mineral Nomor 18 Tahun 2010 tentang Organisasi dan Tata Kerja Kementerian Energi dan Sumber Daya Mineral (Berita Negara Republik Indonesia Tahun 2010 Nomor 552) sebagaimana telah dua kali diubah terakhir dengan Peraturan Menteri Energi dan Sumber Daya Mineral Nomor 30 Tahun 2014 (Berita Negara Republik Indonesia Tahun 2014 Nomor 1725);
17. Peraturan Menteri Keuangan Nomor 190/PMK.05/2012 tentang Tata Cara Pembayaran Dalam Rangka Pelaksanaan Anggaran Pendapatan dan Belanja Negara (Berita Negara Republik Indonesia Tahun 2012 Nomor 1191);
18. Peraturan Menteri Keuangan Nomor 53/PMK.02/2014 tentang Standar Biaya Masukan Tahun Anggaran 2015 (Berita Negara Republik Indonesia Tahun 2014 Nomor 344) sebagaimana telah diubah dengan Peraturan Menteri Keuangan Nomor 57/PMK.02/2015 (Berita Negara Republik Indonesia Tahun 2015 Nomor 413);
19. Keputusan Menteri Energi dan Sumber Daya Mineral Nomor 4203 K/73/MEM/2014 tentang Pembentukan Tim Pelaksana Kegiatan di Lingkungan Kementerian Energi dan Sumber Daya Mineral;
20. Keputusan Menteri Energi dan Sumber Daya Mineral Nomor 4212 K/73/MEM/2014 tentang Pemberhentian dan Pengangkatan Pejabat Kuasa Pengguna Anggaran/Kuasa Pengguna Barang di Lingkungan Kementerian Energi dan Sumber Daya Mineral;

Memperhatikan : 1. Daftar Isian Pelaksanaan Anggaran (DIPA) Direktorat Jenderal Energi Baru Terbarukan dan Konservasi Energi Nomor DIPA-020.15.1.412590/2015 tanggal 14 November 2014;

2. Nota Dinas Menteri Energi dan Sumber Daya Mineral kepada Direktur Jenderal Energi Baru, Terbarukan dan Konservasi Energi Nomor 11/73/MEM.E/2015 tanggal 30 Juni 2015 hal Pembentukan Tim Pelaksana Kegiatan Lintas Kementerian/Lembaga;

MEMUTUSKAN:

Menetapkan : KEPUTUSAN MENTERI ENERGI DAN SUMBER DAYA MINERAL TENTANG TIM IMPLEMENTASI *ICONIC ISLAND* TAHUN ANGGARAN 2015.

KESATU

- : Membentuk Tim Implementasi *Iconic Island* Tahun Anggaran 2015 yang terdiri dari Komite Pengarah (*Steering Committee*), Komite Pelaksana (*Organizing Committee*) dan Kelompok Kerja (*Working Group*) serta Sekretariat Bersama Program Pengembangan Pulau Sumba sebagai Pulau Ikonis Energi Terbarukan dengan susunan keanggotaan sebagaimana tercantum dalam Lampiran Keputusan Menteri ini.

KEDUA

- : Tim Implementasi *Iconic Island* Tahun Anggaran 2015 mempunyai tugas dengan rincian masing-masing sebagai berikut:

1. Komite Pengarah (*Steering Committee*) mempunyai tugas:
 - a. memberikan arahan strategis kepada Komite Pelaksana (*Organizing Committee*) dan Kelompok Kerja (*Working Group*);
 - b. mengawasi pelaksanaan program pengembangan Pulau Sumba sebagai Pulau Ikonis Energi Terbarukan; dan
 - c. membuat dan menyampaikan laporan kepada Menteri Energi dan Sumber Daya Mineral melalui Direktur Jenderal Energi Baru, Terbarukan dan Konservasi Energi.
2. Komite Pelaksana (*Organizing Committee*) mempunyai tugas:
 - a. melakukan perencanaan program kerja untuk pelaksanaan *Blueprint* dan *Roadmap* program pengembangan Pulau Sumba sebagai Pulau Ikonis Energi Terbarukan;
 - b. melakukan koordinasi pelaksanaan program pengembangan Pulau Sumba sebagai Pulau Ikonis Energi Terbarukan dan koordinasi dengan Kelompok Kerja (*Pokja*);
 - c. menjalin hubungan dengan para pemangku kepentingan (*stakeholders*).
3. Kelompok Kerja (*Working Group*) terbagi ke dalam 3 (tiga) Kelompok Kerja dengan tugas masing-masing:
 - a. Kelompok Kerja I : Kebijakan dan Kelembagaan, mempunyai tugas:
 - 1) menyusun *Blueprint* dan *Roadmap* pelaksanaan program pengembangan Pulau Sumba sebagai Pulau Ikonis Energi Terbarukan;
 - 2) identifikasi kebijakan pendukung (termasuk insentif);
 - 3) identifikasi kendala di sisi regulasi nasional dan lokal (provinsi dan kabupaten) dan koordinasi untuk mengatasi kendala tersebut; dan

- 4) menyiapkan dan mengimplementasikan kegiatan pengembangan kapasitas sumber daya manusia (*capacity building*) melalui pendidikan dan pelatihan
 - b. Kelompok Kerja II : Penyediaan dan Pemanfaatan Energi, mempunyai tugas:
 - 1) memfasilitasi kegiatan pembangunan fasilitas energi seperti pembangkit, jaringan, pemanfaatan energi; dan
 - 2) menyiapkan dan mengimplentasikan kegiatan-kegiatan ekonomi/produktif.
 - c. Kelompok Kerja III : Promosi, Kerjasama dan Pendanaan, mempunyai tugas:
 - 1) memfasilitasi dan mengembangkan kegiatan kerjasama program pengembangan Pulau Sumba sebagai Pulau Ikonis Energi Terbarukan dengan para pemangku kepentingan lainnya;
 - 2) menyusun skema dan mekanisme pendanaan yang menarik; dan
 - 3) melakukan komunikasi dan sosialisasi kepada pemangku kepentingan dan warga masyarakat lokal, yaitu masyarakat Pulau Sumba
4. Sekretariat Bersama mempunyai tugas:
- a. memfasilitasi pelaksanaan kegiatan Program Pengembangan Pulau Sumba sebagai Pulau Ikonis Energi Terbarukan;
 - b. memfasilitasi pelaksanaan monitoring, evaluasi dan pelaporan Program Pengembangan Pulau Sumba Sebagai Pulau Ikonis Energi Terbarukan;
 - c. menjadi penghubung informasi antar Kementerian/Lembaga/PLN dalam rangka penyiapan program kegiatan;
 - d. mengkoordinasikan publikasi dokumen hasil kerja kelompok kerja I, II, dan III;
 - e. melakukan kompilasi dan diseminasi studi yang telah dilakukan dalam rangka Pengembangan Pulau Sumba Sebagai Pulau Ikonis Energi Terbarukan; dan
 - f. melakukan kompilasi dan diseminasi kebijakan serta regulasi yang telah dilakukan dalam rangka Pengembangan Pulau Sumba Sebagai Pulau Ikonis Energi Terbarukan.

KETIGA

- : Dalam melaksanakan tugasnya, masing-masing Satuan Kerja Perangkat Daerah dapat membentuk tim di daerah yang dapat memperlancar Program Pengembangan Pulau Sumba Sebagai Pulau Ikonis Energi Terbarukan.

- KEEMPAT : Untuk koordinasi di tingkat kabupaten di Pulau Sumba diberikan kewenangan kepada kabupaten terkait melakukan koordinasi lintas kabupaten di Pulau Sumba yang berkoordinasi dengan Propinsi Nusa Tenggara Timur dalam hal mengatur mekanisme implementasi dan koordinasi kegiatan serta sinkronisasi kebijakan.
- KELIMA : Untuk memperlancar proses pelaksanaan kegiatan maka dibentuk Sekretariat Bersama Program Pengembangan Pulau Sumba Sebagai Pulau Ikonis Energi Terbarukan.
- KEENAM : Sekretariat Bersama berkedudukan di Jl. Pegangsaan Timur No. 1, Menteng, Jakarta 10320, Gedung Kantor Direktorat Jenderal Energi Baru, Terbarukan dan Konservasi Energi, dimana kegiatan harian dilakukan oleh Staf Sekretariat Bersama yang ditempatkan oleh HIVOS dan ADB/*Castlerock*.
- KETUJUH : Masa kerja Tim Implementasi *Iconic Island* Tahun Anggaran 2015 adalah selama 12 (dua belas) bulan terhitung sejak tanggal 2 Januari 2015 sampai dengan 31 Desember 2015.
- KEDELAPAN : Anggota Tim Implementasi *Iconic Island* Tahun Anggaran 2015 diberikan honorarium selama 12 (dua belas) bulan dengan rincian sebagai berikut :
- | | |
|---------------------|----------------------------|
| 1. Pengarah | : Rp1.500.000/orang/bulan; |
| 2. Penanggung jawab | : Rp1.250.000/orang/bulan; |
| 3. Ketua | : Rp1.000.000/orang/bulan; |
| 4. Wakil Ketua | : Rp850.000/orang/bulan; |
| 5. Sekretaris | : Rp750.000/orang/bulan; |
| 6. Anggota | : Rp750.000/orang/bulan; |
- KESEMBILAN : Segala biaya yang timbul dalam pelaksanaan pekerjaan Tim Implementasi *Iconic Island* Tahun Anggaran 2015 dibebankan pada DIPA Direktorat Jenderal Energi Baru, Terbarukan dan Konservasi Energi Nomor 020.15.1.412590/2015 tanggal 14 November 2014 pada program, kegiatan, output, dan suboutput Nomor 020.15.12.4032.002.004.016 (Program Pengelolaan Energi Baru Terbarukan, dan Konservasi Energi, Kegiatan Pembinaan, Program dan Perencanaan Bioenergi, Program Sumba Iconic Island, Implementasi Iconic Island).

KESEPULUH : Keputusan Menteri Energi dan Sumber Daya Mineral ini mulai berlaku pada tanggal ditetapkan dan berlaku surut sejak tanggal 2 Januari 2015.

Ditetapkan di Jakarta

pada tanggal 27 Agustus 2015

a.n MENTERI ENERGI DAN SUMBER DAYA MINERAL
DIREKTUR JENDERAL,

A handwritten signature in black ink, appearing to read 'Rida Mulyana', with a horizontal line underneath.

RIDA MULYANA

Tembusan:

1. Menteri Energi dan Sumber Daya Mineral;
2. Sekretaris Jenderal Kementerian Energi dan Sumber Daya Mineral;
3. Inspektorat Jenderal Kementerian Energi dan Sumber Daya Mineral;
4. Direktur Jenderal Perbendaharaan, Kementerian Keuangan;
5. Direktur Jenderal Anggaran, Kementerian Keuangan;
6. Pejabat Pembuat Komitmen Penunjang, Direktorat Jenderal Energi Baru, Terbarukan dan Konservasi Energi;
7. Bendahara Pengeluaran, Direktorat Jenderal Energi Baru, Terbarukan dan Konservasi Energi;
8. Yang bersangkutan.

LAMPIRAN KEPUTUSAN MENTERI ENERGI DAN SUMBER DAYA MINERAL

NOMOR : 556 K/73/DJE/2015

TANGGAL : 27 Agustus 2015

SUSUNAN KEANGGOTAAN

TIM IMPLEMENTASI ICONIC ISLAND

TAHUN ANGGARAN 2015

NO.	NAMA/JABATAN	INSTANSI	JABATAN DALAM TIM	KETERANGAN
1	Menteri ESDM	Kementerian ESDM	Pengarah	Honor
2	Direktur Jenderal EBTKE	Kementerian ESDM	Penanggung Jawab (Ketua Komite Pengarah)	Honor
3	Direktur Aneka Energi Baru dan Energi Terbarukan	Kementerian ESDM	Ketua (Wakil Ketua I Komite Pengarah dan Ketua Komite Pelaksana)	Honor
4	Direktur Bioenergi	Kementerian ESDM	Wakil Ketua (Wakil Ketua II Komite Pengarah dan Wakil Ketua I Komite Pelaksana)	Honor
5	Direktur Panas Bumi	Kementerian ESDM	Sekretaris	Honor
6	Gubernur Nusa Tenggara Timur	Pemerintah Provinsi NTT	Anggota (Komite Pengarah)	Tanpa Honor
7	Asisten Deputi Urusan Ketenagalistrikan	Kemenko Perekonomian	Anggota (Komite Pengarah)	Tanpa Honor
8	Direktur Operasi Indonesia Timur	PT. PLN (Persero)	Anggota (Komite Pengarah)	Honor
9	William Sabandar	Tenaga Ahli Menteri ESDM Bidang Energi Baru Terbarukan	Anggota (Komite Pengarah)	Tanpa Honor
10	Tri Mumpuni	Yayasan IBEKA	Anggota (Komite Pengarah)	Tanpa Honor
11	Widhyawan Prawiraatmadja (Wawan)	Kepala Unit Pengendali Energi (UPK) Kementerian ESDM	Anggota (Komite Pengarah)	Tanpa Honor

12	Kepala Pusat Pendidikan dan Pelatihan Ketenagalistrikan dan EBT	Kementerian ESDM	Anggota (Komite Pengarah)	Tanpa Honor
13	Kepala Puslitbangtek Ketenagalistrikan dan EBTKE	Kementerian ESDM	Anggota (Komite Pengarah)	Honor
14	Direktur Energi, Telekomunikasi, dan Informatika	Kementerian PPN/Bappenas	Anggota (Komite Pengarah)	Honor
15	Dit. Pengembangan Wilayah, Ditjen Bina Pembangunan Daerah	Kementerian Dalam Negeri	Anggota (Komite Pengarah)	Tanpa Honor
16	Asisten Deputi Urusan Infrastruktur Energi	Kementerian Desa, PDT& Transmigrasi	Anggota (Komite Pengarah)	Honor
17	Direktur Kawasan Konservasi dan Bina Hutan Lindung	Kementerian LH dan Kehutanan	Anggota (Komite Pengarah)	Honor
18	Asisten Deputi Urusan Ketenagalistrikan dan Aneka Usaha	Kementerian Koperasi dan UKM	Anggota (Komite Pengarah)	Honor
19	Asisten Deputi Urusan Kajian Kebijakan Wilayah dan Sektor	Kementerian LH dan Kehutanan	Anggota (Komite Pengarah)	Honor
20	Bupati Sumba Timur	Pemerintah Kabupaten Sumba Timur	Anggota (Komite Pengarah)	Honor
21	Bupati Sumba Barat	Pemerintah Kabupaten Sumba Barat	Anggota (Komite Pengarah)	Honor
22	Bupati Sumba Barat Daya	Pemerintah Kabupaten Sumba Barat Daya	Anggota (Komite Pengarah)	Honor
23	Bupati Sumba Tengah	Pemerintah Kabupaten Sumba Tengah	Anggota (Komite Pengarah)	Honor
24	Kepala Dinas Pertambangan dan Energi Provinsi NTT	Pemerintah Provinsi NTT	Anggota (Komite Pengarah)	Tanpa Honor

25	Direktur Konstruksi dan Energi Baru & Terbarukan PT PLN (Persero)	PT PLN (Persero)	Anggota (Komite Pengarah)	Honor
26	Asisten Deputi Urusan Pengendalian Pencemaran Pertambangan, Energi Dan Migas	Kementerian Lingkungan Hidup dan Kehutanan	Anggota (Komite Pengarah)	Tanpa Honor
27	Kepala Bappeda Provinsi NTT	Pemerintah Provinsi NTT	Anggota (Komite Pengarah & Anggota Pokja I)	Honor
28	Direktur Konservasi Energi	Kementerian ESDM	Anggota (Wakil Ketua II Komite Pelaksana)	Tanpa Honor
29	Kasubdit Investasi dan Kerjasama Aneka EBT	Kementerian ESDM	Anggota (Komite Pelaksana dan Anggota Pokja III)	Honor
30	Kasubdit Investasi dan Kerjasama Bioenergi	Kementerian ESDM	Anggota (Komite Pelaksana dan Koordinator Pokja III)	Honor
31	<i>Coordinator Climate, Energy and Development</i>	HIVOS	Anggota (Komite Pelaksana)	Tanpa Honor
32	Senior Climate Change Specialist	<i>Asian Development Bank (ADB)</i>	Anggota (Komite Pelaksana)	Tanpa Honor
33	<i>Minister Counselor</i>	Kantor Duta Besar Norwegia untuk Indonesia	Anggota (Komite Pelaksana)	Tanpa Honor
34	HIVOS	HIVOS	Sekretariat Bersama	Tanpa Honor
35	ADB/Castlerock	ADB/Castle Rock	Sekretariat Bersama	Tanpa Honor
36	Kepala Seksi Kerjasama Aneka EBT	Kementerian ESDM	Sekretariat Bersama (dan Anggota Pokja III)	Tanpa Honor
37	Kepala Subdit Penyiapan Program Aneka EBT	Kementerian ESDM	Anggota (Anggota Pokja I)	Honor
38	Kepala Subdit Penyiapan Program Bioenergi	Kementerian ESDM	Anggota (Koordinator Pokja I)	Honor

39	Kepala Bagian Pemantauan dan Evaluasi, Biro Perencanaan Umum dan Kerjasama Luar Negeri	Kementerian PU & PR	Anggota (Anggota Pokja I)	Honor
40	Kepala Subdit Perencanaan Umum	Kementerian PU & PR	Anggota (Anggota Pokja I)	Honor
41	Kepala Bappeda Kabupaten Sumba Timur	Pemerintah Kabupaten Sumba Timur	Anggota (Anggota Pokja I)	Honor
42	Kepala Bappeda Kabupaten Sumba Barat	Pemerintah Kabupaten Sumba Barat	Anggota (Anggota Pokja I)	Honor
43	Kepala Bappeda Kabupaten Sumba Barat Daya	Pemerintah Kabupaten Sumba Barat Daya	Anggota (Anggota Pokja I)	Honor
44	Kepala Bappeda Kabupaten Sumba Tengah	Pemerintah Kabupaten Sumba Tengah	Anggota (Anggota Pokja I)	Honor
45	Kasubdit Keteknikan dan Lingkungan Aneka EBT	Kementerian ESDM	Anggota (Anggota Pokja I)	Honor
46	Kepala Bidang Program Ketenagalistrikan	Kemenko Perekonomian	Anggota (Anggota Pokja I)	Tanpa Honor
47	Kepala Bidang Energi Baru dan Konservasi Energi	Kemenko Perekonomian	Anggota (Anggota Pokja I)	Tanpa Honor
48	Kepala Bidang Energi	Kementerian Lingkungan Hidup dan Kehutanan	Anggota (Anggota Pokja I)	Tanpa Honor
49	Kepala Bidang Perencanaan LH Wilayah dan Sektor	Kementerian Lingkungan Hidup dan Kehutanan	Anggota (Anggota Pokja I)	Tanpa Honor
50	Kepala Bidang Perencanaan Ekonomi Lingkungan	Kementerian Lingkungan Hidup dan Kehutanan	Anggota (Anggota Pokja I)	Tanpa Honor
51	Kepala Bidang Infrastruktur Migas dan Energi Alternatif	Kementerian Desa, PDT & Transmigrasi	Anggota (Anggota Pokja I)	Tanpa Honor

52	Kepala Bidang Mineral dan Energi	Kementerian Desa, PDT & Transmigrasi	Anggota (Anggota Pokja I)	Tanpa Honor
53	Kepala Divisi Infrastruktur Energi, Kedeputan Bidang Peningkatan Infrastruktur	Kementerian Desa, PDT & Transmigrasi	Anggota (Anggota Pokja I)	Tanpa Honor
54	Kepala Bidang Program Ketenagalistrikan	Kemenko Perekonomian	Anggota (Anggota Pokja I)	Honor
55	Kepala Subdirektorat Pengembangan Wilayah II	Kementerian Dalam Negeri	Anggota (Anggota Pokja I)	Honor
56	Kepala Subdirektorat Kawasan Suaka Alam dan Hutan Lindung	Kementerian Lingkungan Hidup dan Kehutanan	Anggota (Anggota Pokja I)	Tanpa Honor
57	Kasubdit Penyiapan Pemanfaatan Hutan Alam	Kementerian Lingkungan Hidup dan Kehutanan	Anggota (Anggota Pokja I)	Tanpa Honor
58	Kepala Seksi Analisis dan Evaluasi Program Aneka EBT, Subdit Penyiapan Program Aneka EBT	Kementerian ESDM	Anggota (Anggota Pokja I)	Tanpa Honor
59	Kepala Seksi Analisis dan Evaluasi Program Bioenergi, Subdit Penyiapan Program Bioenergi	Kementerian ESDM	Anggota (Anggota Pokja I)	Tanpa Honor
60	Direktur	<i>Institute for Essential Services Reform (IESR)</i>	Anggota (Anggota Pokja I)	Tanpa Honor
61	<i>Project Manager Green Energy (Sumba)</i>	HIVOS	Anggota (Anggota Pokja I)	Tanpa Honor
62	<i>Renewable Energy Specialist / Deputy Team Leader</i>	<i>Castlerock Consulting Pte. Ltd.</i>	Anggota (Anggota Pokja I)	Tanpa Honor
63	<i>Monitoring & Evaluation Specilist</i>	<i>Castlerock Consulting Pte. Ltd.</i>	Anggota (Anggota Pokja I)	Tanpa Honor

64	<i>Capacity Development Specialist</i>	<i>Castlerock Consulting Pte. Ltd.</i>	Anggota (Anggota Pokja I)	Tanpa Honor
65	General Manager PT PLN (Persero) Wilayah NTT	PT PLN (Persero)	Anggota (Koordinator Pokja II)	Honor
66	Kepala Seksi Perencanaan Program Bioenergi	Kementerian ESDM	Anggota (Anggota Pokja II)	Honor
67	Kepala Bidang Energi Terbarukan	BPPT	Anggota (Anggota Pokja II)	Honor
68	Kepala Bidang Rekayasa Sistem Infrastruktur Energi dan Tenaga Listrik	BPPT	Anggota (Anggota Pokja II)	Honor
69	Kepala Bidang Ketenagalistrikan dan Konstruksi	Kementerian Koperasi dan UKM	Anggota (Anggota Pokja II)	Honor
70	Kasubdit Identifikasi & Pendayagunaan Sumber Daya	Kementerian Pertanian	Anggota (Anggota Pokja II)	Honor
71	Kepala Bidang Kelistrikan dan Pemanfaatan Energi	Pemerintah Provinsi NTT	Anggota (Anggota Pokja II)	Honor
72	Kepala Dinas Pertambangan dan Energi Kabupaten Sumba Timur	Pemerintah Kabupaten Sumba Timur	Anggota (Anggota Pokja II)	Honor
73	Kepala Dinas Pekerjaan Umum dan Pertambangan dan Energi Kabupaten Sumba Barat	Pemerintah Kabupaten Sumba Barat	Anggota (Anggota Pokja II)	Honor
74	Kepala Dinas Pertambangan dan Energi Kabupaten Sumba Barat Daya	Pemerintah Kabupaten Sumba Barat Daya	Anggota (Anggota Pokja II)	Honor
75	Kepala Dinas Pertambangan dan Energi Kabupaten Sumba Tengah	Pemerintah Kabupaten Sumba Tengah	Anggota (Anggota Pokja II)	Honor
76	Frans J. Likadja	Universitas Nusa Cendana	Anggota (Anggota Pokja II)	Honor
77	Ketua Yayasan Alam Lestari	Yayasan Alam Lestari	Anggota (Anggota Pokja II)	Honor

78	Ketua Yayasan Sumba Sejahtera	Yayasan Sumba Sejahtera	Anggota (Anggota Pokja II)	Honor
79	Kepala Divisi Energi Baru Terbarukan	PT PLN (Persero)	Anggota (Anggota Pokja II)	Honor
80	Kepala Divisi PT PLN Pusat untuk Wilayah Timur	PT PLN (Persero)	Anggota (Anggota Pokja II)	Honor
81	Manager Perencanaan PT PLN (Persero) Wilayah NTT	PT PLN (Persero)	Anggota (Anggota Pokja II)	Honor
82	Manager PT PLN (Persero) Area Sumba	PT PLN (Persero)	Anggota (Anggota Pokja II)	Honor
83	Kasubdit Penerapan Teknologi Energi Bersih dan Efisien	Kementerian ESDM	Anggota (Anggota Pokja II)	Tanpa Honor
84	Kasubdit Pengembangan dan Pemanfaatan Energi	Badan Perencanaan Pembangunan Nasional (Bappenas)	Anggota (Anggota Pokja II)	Tanpa Honor
85	Kasubdit Pembinaan Program Ketenagalistrikan	Kementerian ESDM	Anggota (Anggota Pokja II)	Tanpa Honor
86	Kepala Seksi Perencanaan Program Aneka EBT	Kementerian ESDM	Anggota (Anggota Pokja II)	Tanpa Honor
87	Koordinator Proyek Pengembangan Bisnis	PT. Nagata Bisma Shakti	Anggota (Anggota Pokja II)	Tanpa Honor
88	Direktur	PT. Sumberdaya Sewatama	Anggota (Anggota Pokja II)	Tanpa Honor
89	Ketua	Masyarakat Energi Terbarukan Indonesia (METI)	Anggota (Anggota Pokja II)	Tanpa Honor
90	<i>Program Manager IDBP (Indonesia Domestic Biogas Programme)</i>	Hivos	Anggota (Anggota Pokja II)	Tanpa Honor
91	<i>Iconic Island Field Coordinator</i>	Hivos	Anggota (Anggota Pokja II)	Tanpa Honor

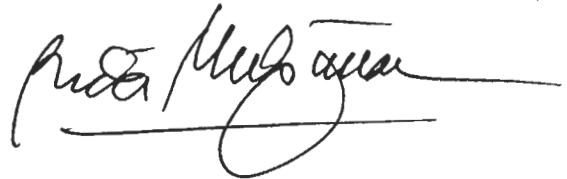
92	<i>Country Representatives</i>	Winrock International	Anggota (Anggota Pokja II)	Tanpa Honor
93	<i>Senior Program Officer</i>	Winrock International	Anggota (Anggota Pokja II)	Tanpa Honor
94	<i>Team Leader TA ADB</i>	<i>Castlerock Consulting Pte. Ltd.</i>	Anggota (Anggota Pokja II)	Tanpa Honor
95	<i>Mini Hydro Specialist</i>	<i>Castlerock Consulting Pte. Ltd.</i>	Anggota (Anggota Pokja II)	Tanpa Honor
96	<i>Biomass Energy Specialist</i>	<i>Castlerock Consulting Pte. Ltd.</i>	Anggota (Anggota Pokja II)	Tanpa Honor
97	<i>GIS Specialist</i>	<i>Castlerock Consulting Pte. Ltd.</i>	Anggota (Anggota Pokja II)	Tanpa Honor
98	<i>Wind Energy Specialist</i>	<i>Castlerock Consulting Pte. Ltd.</i>	Anggota (Anggota Pokja II)	Tanpa Honor
99	<i>Project Officer (Infrastructure) Indonesia Resident Mission</i>	Asian Development Bank (ADB)	Anggota (Anggota Pokja II)	Tanpa Honor
100	<i>Energy Consultant</i>	Asian Development Bank (ADB)	Anggota (Anggota Pokja II)	Tanpa Honor
101	Ketua Yayasan Sosial Donders	Yayasan Sosial Donders	Anggota (Anggota Pokja II dan Anggota Pokja III)	Honor
102	Kepala Bidang Program P3TKEBTKE	Kementerian ESDM	Anggota (Anggota Pokja III)	Honor
103	Kepala Bidang Program dan Kerjasama Pusdiklat KEBTKE	Kementerian ESDM	Anggota (Anggota Pokja III)	Honor
104	Kepala Seksi Investasi Aneka Energi Baru dan Energi Terbarukan	Kementerian ESDM	Anggota (Anggota Pokja III)	Tanpa Honor
105	Kepala Seksi Investasi Bioenergi	Kementerian ESDM	Anggota (Anggota Pokja III)	Tanpa Honor
106	Kepala Seksi Kerjasama Bioenergi	Kementerian ESDM	Anggota (Anggota Pokja III)	Tanpa Honor

107	<i>Stakeholder Engagement Officer Sumba Iconic Island</i>	Hivos	Anggota (Anggota Pokja III)	Tanpa Honor
108	Manager Radio	Max FM Radio, Sumba Timur	Anggota (Anggota Pokja III)	Honor
109	Manager Radio	Vox Mundi Radio, Sumba Barat Daya	Anggota (Anggota Pokja III)	Honor
110	Community Development Facilitator	<i>Castlerock Consulting Pte. Ltd.</i>	Anggota (Anggota Pokja III)	Tanpa Honor
111	Community Development Facilitator	<i>Castlerock Consulting Pte. Ltd.</i>	Anggota (Anggota Pokja III)	Tanpa Honor
112	Financial Specialist	<i>Castlerock Consulting Pte. Ltd.</i>	Anggota (Anggota Pokja III)	Tanpa Honor
114	Ketua The Indonesia Green Financial & Investment Institute (TIGFII)	<i>The Indonesia Green Financial & Investment Institute (TIGFII)</i>	Anggota	Honor
115	Kasubdit Pelayanan dan Pengawasan Usaha Bioenergi	Kementerian ESDM	Anggota	Honor
116	Agus Santoso	Anggota UPK Kementerian ESDM	Anggota	Honor
117	Kasubag Program dan Anggaran Bidang Minerba, EBTKE, dan Geologi	Kementerian ESDM	Anggota	Honor
118	Direktur Perencanaan Kawasan Hutan	Kementerian LH dan Kehutanan	Anggota	Honor
119	Kepala Bidang Planologi	Kementerian LH dan Kehutanan	Anggota	Honor
120	Ketua Koperasi Kamanggih	Koperasi Kamanggih	Anggota	Honor
121	Ketua Yayasan Pelita Sumba	Yayasan Pelita Sumba	Anggota	Honor
122	Manager PT PLN Pusat untuk Wilayah Timur	PT PLN (Persero)	Anggota	Honor

123	Dhita Rachmadini	Staf Tenaga Ahli Menteri ESDM Bidang Energi Baru Terbarukan	Anggota	Honor
124	Nita Apriliani Puteri	Kementerian ESDM	Anggota	Honor

Ditetapkan di Jakarta
pada tanggal 27 Agustus 2015

a.n MENTERI ENERGI DAN
SUMBER DAYA MINERAL
DIREKTUR JENDERAL EBTKE,



RIDA MULYANA



An Investment Plan on Renewable Energy Projects Development by 2025 in Sumba Iconic Island

Financial Model User Manual

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**ADB TA 8287-INO: Scaling Up Renewable Energy
Access in Eastern Indonesia**

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B.1 BACKGROUND

ADB Technical Assistance (TA) No. 8287-INO: Scaling-Up Renewable Energy Access in Eastern Indonesia supports the Government of Indonesia's Sumba Iconic Island (SII) initiative. Several technical study reports or deliverables have been completed as the TA is progressing. Logically a renewable energy projects investment plan ought to be formulated following the preceding studies so that the SII initiative can be recognized and realized in future in the monetary term. Such an investment plan should be supported by concrete data and realistic financial projections including potential financing sources. Consequently, a financial model has been built up to satisfy the requirements for data processing and calculations.

This Financial Model User Manual book describes the key assumptions used in the aforementioned financial model for renewable-energy-based electricity generating projects in Sumba Iconic Island ("the Model"), prepared by PT. Castlerock Consulting company ("the Castlerock") for its analysis and projection of future power demand, potential projects, investment costs, implementation schedule and financing resources. The document also briefly explains the Model structure, function, data articulations and outputs of each calculation sheet, and relations among the different sheets; in order to facilitate model users in their further updating of the Model.

The Castlerock assumes no responsibility for the accuracy of the assumptions used in the Model and for the results from the financial projections since the Model would play an indicative rather than deterministic role for the investment plan.

The model building is mainly based on the following documents that have been produced for the TA:

- Inception Report (Final)
- Mid-Term Report (Final): Least-Cost Electrification Plan for the Iconic Island;
- Deliverable B: Energy Resources for Grid Supply & Electricity Demand Analysis for Sumba (Final Report)

Some assumption data was directly provided by the Castlerock consultants depending on their knowledge and experiences in the relevant areas as well as their professional judgements.

B.2 MODEL STRUCTURE AND CALCULATION BASIS

The Model was established to forecast demand for power facilities, to simulate possible renewable energy project deployment and summarize investment costs to be incurred. Based on Microsoft Excel version 2010 it consists of nine worksheets: five calculation sheets and four output sheets. This is a user-oriented model and many inputs or assumptions are supposed to be updated in future by users considering the ever-changing conditions. If a separate sheet were formed to particularly address the assumption data, it would probably make the users dazzled and inefficient by switching too frequently between the assumption data sheet and the related calculation sheets. Therefore, the initial input data was incorporated into the corresponding calculation sheets rather than singled out and put on a separate worksheet.

The cells containing the initial or changeable data on each sheet are highlighted with yellow colour. The Model user is allowed to change those data only.

The nine worksheets are titled as follows:

- Demand worksheet. It contains the forecasted demands for electricity and electricity related facilities. They include the number of households connected on-grid and electricity consumptions; the power system facilities required such as HV, MV and LV transmission lines, transformers and sub-stations; numbers of mini-grid and off-grid customers; control system and pertinent studies.
- Schedule worksheet. This is the core worksheet of the Model where the future power projects and the existing generating capacity are illustrated to show how the demands forecasted on the Demand worksheet will be balanced by supply in the next decade. It proposed projects in different technologies, namely, hydro, solar PV, biomass, wind, diesel, and pumped storage as an alternative. The facilities for mini-grid, off-grid and networks have been scheduled over 10 years.
- S-curve worksheet. This sheet describes how the construction work load for each new project will spread over the construction period. Expressed in percentage points, such information provides a basis for distributions of capital costs of the proposed projects listed on the Capex worksheet.
- Capex worksheet. Capital costs (Capex) for each project or facility item have been inserted into the sheet. Capex is distributed in line with the work load deployment described on the S-curve worksheet.
- Financing sources worksheet. Identification of financing sources and their distributions is the major purpose of the Model which is also the essence of the renewable energy investment plan. The sheet re-states all the potential projects and their capital costs in each year adjusted with the predicted inflation rate of the year. Summaries of Capex by year, by technology and by financing sources are also expressed on the sheet.
- Four Graphs sheets generate various graphs or charts to demonstrate the power demand and supply trends and mainly the annual and cumulative capacities under different technologies and different financing sources, and the annual and cumulative Capex under different technologies and different financing sources . The charts could be applied to presentation of the results of the investment plan.

The projects' capital costs are calculated in real term excluding the inflation element as shown on the Capex worksheet, but the figures on the Financing Sources worksheet are inflated in nominal term. The Model covers the period from 2015 to 2025 and operates on an annual basis.

B.3 DEMAND FORECAST

The Demand worksheet demonstrates the projections of various electricity-related demands in the fields of on-grid, system network, mini-grid, off-grid and other system. It provides a basis on which further analysis and forecast for the investment plan can be carried out.

B.3.1 On-grid

The on-grid electricity consumption development depends on the increase in number of households and the rate of connecting new households is a major driver of the demand trajectory and hence the timing of new capacity. According to Exhibit 2.10 of the mid-term report the number of households will increase from 32,091 in 2013 to 129,130 in 2025. The

compound annual growth rate (CAGR) ¹ is calculated to be 12.3%. The number of households in each year during the planning period is estimated using the CAGR. As a result, the first data line on the Demand worksheet is the incremental household connection number in each year. That is where the Model user should start using the model – how many new connections in which years? The user can replace the figures in the first line with any data considered more accurate.

The energy consumption per household is the total system consumption divided by the number of residential consumers. This system consumption includes non-household consumption as well as household consumption. Therefore, the energy consumption per household is not the average household consumption. The number of residential connection serves just as a base to forecast the overall energy consumption.

The energy consumption per household in 2013 and the total system consumption volume in 2025 are also taken from Exhibit 2.10 of the mid-term report. The energy consumption per household each year is estimated using the relevant CAGR, and the total system consumption each year can be determined by multiply the number of households connected in the year by the energy consumption per household of the year.

B.3.2 Network

As indicated in Exhibit 4.18 of the mid-term report, the length of LV transmission line will increase from 633 km in 2013 to 3,216 km in 2025 and the 20kv line from 747 km in 2013 to 1,161 km in 2025. The numbers in each year are calculated applying their respective CAGR. The LV/20kV line per household is calculated using the total line length of a year divided by the cumulative number of households connected in the year. It is noticed that the 20kV line per household decreases over the planning horizon. This figure is 0.023 in 2013 and 0.009 in 2025. It means the growth rate of 20kV line would be lower than the growth rate of households connected over the planning period.

The numbers of LV/MV transformers in 2013 and 2025 also come from Exhibit 4.18 of the mid-term report.

The number of transformers in each year is calculated based on the transformers per household.

The total grid connection in a year is assumed to be the same as the number of households of that year.

The total HV lines to be installed by 2025 will be 208.4 km as indicated in Exhibit 4.18 of the mid-term report. The work load for the HV lines in each year is explained the Schedule worksheet.

According to Exhibit 4.18 of the mid-term report gives the numbers of HV/MV substations, 20kV line regulators and 20kV field circuit breakers to be built up by 2025. Their deployment during the period can be determined by the Model user at will, when the relevant numbers on the worksheet are just indicative.

¹ CAGR is a year-over-year growth rate over a specified period of time. It is calculated by taking the nth root of the total percentage growth rate, where n is the number of years in the period being considered.

B.3.3 Control system and studies

The demand for control system and studies is expressed in percentage points of the total work load. The figures can be modified by the Model user.

B.4 PROJECTS' CAPACITIES AND SCHEDULE

The results from the demand analysis require corresponding electricity supply to be materialized in the right times and at the right places. The Schedule worksheet contains the core data in relation to new projects, new capacities and capacity realization schedule. Based on these information capital costs estimation and financing sources identification would be done. Since the “demand” model is done on an energy basis, there may be a need for higher capacity additions than indicated in this sheet due to peak period needs.

On top of the Schedule worksheet there is a toggle that can be switched between “Yes” or “No” for the recommended pumped storage projects. One pumped storage project, one wind power project supported by the pumped storage plant and one solar PV power project supported by the pumped storage plant have been proposed in the investment plan. Therefore, there are basically two situations in capacity schedule: with and without the pumped storage. When the toggle is switched to “No”, all the data related to the pumped storage will disappear and the results will exclude the effects of the pumped storage.

B.4.1 On-grid generation

The projects and their locations described on the worksheet are referred to Exhibit 4.8 of the mid-term report which indicates the generation sites and lists all the on-grid power plants, existing or new, assumed to be in operation by 2025.

The data for capacities and net production volumes of the hydro run of river (RoR) projects and the hydro storage project are all copied from Appendix A of Deliverable B report.

The capacities of the three pumped storage projects are described in Section 3.13 of the mid-term report.

Exhibit 3.42 of the mid-term report has provided the capacities and capacity factors for the wind power plants, while Exhibit 3.43 and Exhibit 3.44 provided the capacities and capacity factors for the PV power plants and biomass power plants respectively.

The capacity factor of the diesel power projects is given by Exhibit 3.46 of the mid-term report, and the diesel power capacities are listed in Exhibit 4.8. As non-renewable energy the diesel power capacities can be used to adjust the balance between the electricity supply and demand in the investment plan. In case of oversupply some diesel power capacities may be installed later or cancelled. If there is an undersupply situation, full diesel capacities shall be installed.

Except for the hydro power projects, the net productions of other technologies are calculated by (capacity * 24 hours * 365 days * capacity factor).

The existing power capacities are summarized to be 12.9 MW in Exhibit 5.2 of the mid-term report. This can be added up on the new capacities to get a total capacity and a total net production volume in 2025.

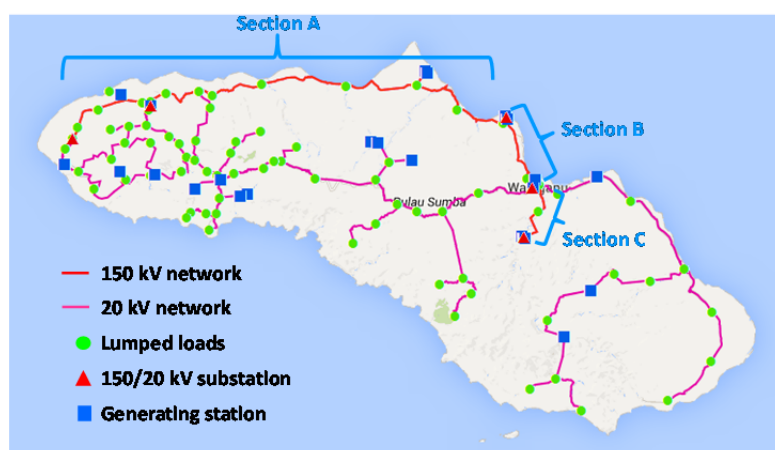
The column for year of commission stipulates the time for a new project to start operation. Meanwhile, the capacity to be installed for each new project is illustrated on the right part of the worksheet in light of the year of commission. The Model user can rearrange the commission time for a project by changing its year of commission. But if the period between the year of commissioning and the beginning time (end of 2014) is set less than the construction time length (shown on the Capex worksheet) for a project, “Error” will appear to notice a mistake.

The cumulative electricity supply each year is compared with the power demand of the year stated on the Demand worksheet to see if the two are well balanced.

B.4.2 Network

New LV lines, new MV lines, new transformers and new connections to be installed in each year during 2015-2025 are calculated using their total numbers obtained from the Demand worksheet, after deduction of the existing figures.

There are three sections of HV lines as shown below:



Each section takes two years (50/50 s-curve) to complete. Section B will include two substations and is 14% of the line. It should commission the year before the Hambapraing windfarm commissions. Section C will include one substation and is 11% of the line. It should commission the year before the Kulungawa PV commissions. Section A will include two substations and is 75% of the line. It should start the year after Section B or C is finished, whichever is later. Their workloads spread over the period were restricted by the years of commissioning and the S-curves of the three Sections.

The new substations, 20kV line regulators and 20kV field circuit breakers to be constructed are determined by using the total numbers from the Demand worksheet.

B.4.3 Mini-grid

The demand for mini-grid electricity is dependent on the number of solar PV customers. As summarized in Figure 51 of Deliverable B, totally 685 customers were connected with the mini-grid for solar PV power in 2013. But because the experience with mini-grids solution has not been positive, and because the existing mini-grids systems have often been placed in areas that will be grid connected, the existing mini-grids are considered ineffective. According to Exhibit 2.10 of the mid-term report, the PV mini-grid will serve 4,162 households by 2025. This number is assumed to be all new connections. The

customers to be connected each year can be calculated using the corresponding CAGR, or can be modified by the user.

B.4.4 Off-grid

The existing number of customers for off-grid power in 2013 is referred to the S-1 tariff class in Exhibit 3.1 in the Inception Report. Similar to the situation in mini-grids, these off-grids are regarded ineffective. According to Exhibit 2.10 of the mid-term report 33,396 households will be connected to the off-grid by 2025, and this number indicates totally new connections. The number of customers to be connected each year is calculated taking the CAGR, or can be modified by the user.

B.4.5 Balance check

If the aggregated numbers on the worksheet are found to be inconsistent with each other after some modification has been made, "Check Balance!!!" will appear on top of the sheet and balance checking should be conducted immediately.

B.5 S-CURVE

S-curve is a type of curve that shows the growth of a variable in terms of another variable. Here on the S-curve worksheet it describes the distributions of the construction work load of a project among the years of construction period, and is expressed in percentage. The sum of total percentages of workloads for a project is 100%.

The figures in the yellow cells on the S-curve worksheet are the Consultant's assumptions and the Model user can change them discretionarily.

B.6 CAPITAL COSTS DISTRIBUTIONS

On the Capex worksheet the capital cost amount for a project is determined by multiplying its unit cost (USD/kW) by its capacity (kW) as shown on the Schedule worksheet. The costs here are expressed in real term where the base year's (2014) prices were applied without considering the price escalation and general inflations.

B.6.1 On-grid generation

The unit costs for all the hydro RoR projects are taken from Appendix A in Deliverable B report.

The unit cost for the hydro storage project is shown in Exhibit 3.10 of the mid-term report.

The total capital cost for the pumped storage project is referred to Exhibit 5.2 in the mid-term report.

The unit cost for the wind power project is taken from Section 3.7 in the mid-term report.

Exhibits 3.23, 3.25 and 3.26 in the mid-term report provide the unit costs for the new solar PV, biomass and diesel projects respectively.

B.6.2 Network and other facilities

The unit cost data for all the network facilities come from Exhibit 4.17 in the mid-term report.

The unit costs for mini-grid and off-grid are shown in Exhibit 5.1 of the mid-term report.

The costs of a control system, other studies and implementation activities are provided in Exhibit 5.4 of the mid-term report.

B.6.3 Cost table

The column for construction time shows the construction time length for each project, which is derived from the S-curve worksheet.

After the capital costs have been presented, they are spread over the investment planning period based on their own S-curves and the years of commissioning. The total capital cost amount in each year is summarized at the bottom of the cost table.

A non-pumped-storage situation in terms of costs will appear if you switch the toggle for pumped storage on top of the Schedule worksheet to “No”.

The cost data including the unit cost and the total cost amount for a project can be re-set by the user. However, if such a change causes the aggregated numbers being unbalanced, "Check Balance!!!" will appear on top of the sheet and a balance check should be conducted.

B.7 FINANCING SOURCES

The Financing Sources worksheet contains final outputs of the Model, which demonstrate potential financial resources suitable for the different projects or network facilities. The purpose is to illustrate where the money will come from to cover the capital costs of each project in each year for the investment plan.

When the capital costs on Capex worksheet are based on constant prices, the monetary values on this sheet have to be expressed in nominal term where the general inflation element needs to be included, because the financing sources require the expected actual costs to be spent in the real world. Obviously the inflated investment amounts shall be larger than the capital costs estimated with constant prices. According to ADB's forecast, the consumer price index or the inflation rate of Indonesia in 2014 would be 5.7% and in 2015 the inflation is expected to decelerate to an average of 4.8%. The long-term inflation in the following years is assumed by the Consultant to be 5.5%. The figures on the worksheet have been inflated with these rates. The Model user may change the inflation rates from time to time.

Each project may have more than one financing source to be applied at the same time or at different times, but the sum of the sources in a year should be equal to the costs estimated for the year. Currently the sheet records two financing sources: public and private. “Public” includes projects that would be financed by Central Government, Regional Government or PLN. The respective sources of funding are APBN, APBD or APLN. All “Public” projects will be operated by PLN.

The financing source table can summarize the annual amounts by source, by technology or by group in every year. And the total amounts are presented at the bottom where the Model ends up.

B.8 GRAPHS

There are four worksheets separately containing various graphs or charts for annual and cumulative capacities or capex by source or by technology. All the data used for the graphs are transferred through the linkages from the previous worksheets of the Model. Therefore, no direct change to the numbers on these four sheets should be done. But the user can change the type of a particular chart as long as appropriate. It should be noticed that several charts are formulated in the without-pumped-storage case. Once these charts are in use, the toggle for pumped storage on Schedule worksheet needs to be switched to “No”. When the toggle is kept in “Yes”, the charts without pumped storage are invalid. On top of each of the sheets an indicator is put up to show if the situation is with or without the pumped storage.

On the first graphs worksheet a chart for electricity demand and supply over the next decade is carried out. Then it shows an annual capex chart by source with pumped storage and a cumulative capex chart by source with pumped storage. A chart for annual capex by source without pumped storage and a chart for cumulative capex by source without pumped storage follow suit.

The second graphs worksheet includes charts for annual capex by hydro with and without pumped storage; charts for annual capex by other generation technologies, i.e., solar PV, wind, biomass and diesel with and without pumped storage; and charts for annual capex by network with and without pumped storage. In the case of annual capex by network with and without pumped storage, the only difference between with and without pumped storage is in the capex of the control system and studies.

The third graphs worksheet has the same types of charts as those on the second graphs worksheet, but the annual capex data is replaced with the cumulative capex data.

On the fourth graphs worksheet there are charts for the annual new capacity installation and cumulative capacities each year by technology, and charts for the annual new capacity installation and cumulative capacities each year by source. In the without-pumped-storage case bars related to the pumped storage projects on the charts will disappear.



APPENDIX C: RUPES RESULTS

This appendix contains the presentation on RUPES results for input into the update of the Iconic Island Road Map.



REVIEW OF THREE RUPES SCENARIOS FOR UPDATING THE SII ROADMAP 30 September 2015



AGENDA

1. Review of the three RUPES scenarios
2. Challenges in achieving 95% electrification ratio and 95% renewable production simultaneously
3. Issues and options for each component of RUPES → highlight dependencies & prerequisites
4. Recent developments

Background document: Sumba Least-Cost Electricity Plan,

<http://castlerockasia.com/sumba/sii.html>



WHAT IS “RUPES”?

- RUPES = Rencana Umum Penyediaan Energi Sumba
- A spreadsheet tool that:
 - Forecasts annual electricity consumption (MWh) for Sumba to 2024 based on rate of connections (increase in electrification ratio)
 - Allows users to specify the generation resources that can be developed to meet this future load
 - Calculates the capital costs over time and by type (generation source, network) and funding source (private, public)
- Objective is to determine the timing and level of investment required to achieve SII targets
- Load forecasts and investment options and costs based on previous ADB analysis
- Provides first-order estimates that should be confirmed through additional studies



THREE RUPES SCENARIOS

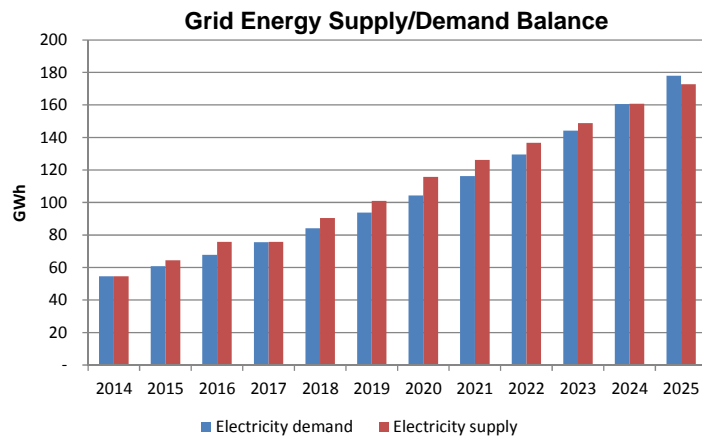
1. Business as Usual (BAU)
 - Based on RUPTL 2015-2025 and committed plant
 - Uses PLN guidance on new connections
2. Achieve Electrification Ratio of 95% by 2020
 - Adds new renewable capacity as fast as possible
 - Adds new connections to achieve 95% electrification ratio by 2020
3. Achieve 100% Renewable Portion by 2020
 - Adds new renewable capacity as fast as possible
 - Limits new connections to achieve 100% renewable supply by 2020

This is a rough estimate, subject to limitations of the model and assumptions made



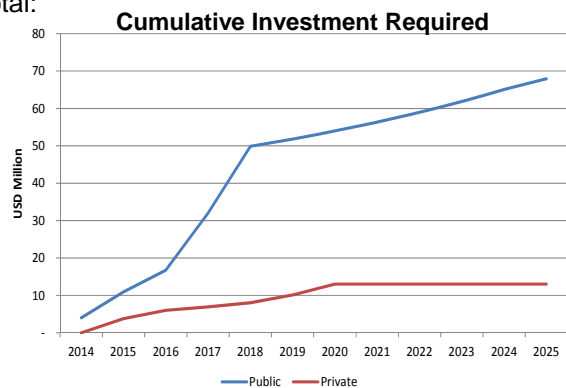
I. SKEMA "BUSINESS AS USUAL" ...(1/4) - RESULTS

- Electrification Ratio:
 - 2020: 34%
 - 2025: 46%
- Demand growth 2014-2025: 11.3% per year
- Portion of Grid Energy Provided by Renewables:
 - 2020: 43%
 - 2025: 25%
- Total installed capacity:
 - 2020: 19.9 MW
 - 2025: 29.9 MW
- Total generation:
 - 2020: 104 GWh
 - 2025: 178 GWh



I. SKEMA "BUSINESS AS USUAL" ...(2/4) – FUNDING REQUIRED THROUGH 2025

- Private – Total: USD 13.01 M
 - PLTS: USD 4.03 M
 - PTLMH: USD 8.98 M
- Public (PLN & Government) – Total: USD 53.43 M
 - PLTMH: USD 1.52 M
 - PLT Biomass: USD 5.43 M
 - PLTMG: USD 18.11 M
 - Network: USD 28.37 M
- **TOTAL: USD 67 M by 2025**



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I. SKEMA "BUSINESS AS USUAL" ...(3/4) – ANNUAL FUNDING REQUIRED THRU 2020

Project	MW	2015	2016	2017	2018	2019	2020	Total
Electrification Ratio		29%	30%	32%	34%	36%	38%	
Renewable Share		30%	43%	39%	48%	43%	43%	
Public Generation	11.6	1.5	-	9.1	14.4	-	-	25.1
PLTMH	0.6	1.5	-	-	-	-	-	1.5
PLTMG	10.0	-	-	7.0	11.1	-	-	18.1
PLT Biomass	1.0	-	-	2.1	3.3	-	-	5.4
Private Generation	5.4	3.8	2.2	0.9	1.1	2.1	2.9	13.0
PLTMH	4.4	3.8	2.2	0.9	1.1	0.5	0.4	9.0
PLTS	1.0	-	-	-	-	1.6	2.5	4.0
Network + Misc.		1.3	1.5	1.6	1.9	2.0	2.2	10.4
Off-Grid & Mini-Grids		0.2	0.2	0.2	0.2	0.2	0.2	1.1
TOTAL (Excl. existing)	17.0	6.8	3.9	11.8	17.6	4.3	5.3	49.6

- "Public" represents projects implemented by PLN with APLN, APBN or APBD funding.
- Annual values are stated as nominal USD, in millions
- Costs are based on overnight capital costs in ADB Mid-Term Report, with 4.7 to 5.8% annual inflation, depending on the year



I. SKEMA "BUSINESS AS USUAL" ...(4/4) – SCENARIO DETAILS THRU 2020

Project	MW	2015	2016	2017	2018	2019	2020	Total	Comments
Electrification Ratio		29%	30%	32%	34%	36%	38%		Includes grid & off-grid supply
Renewable Share		30%	43%	39%	48%	43%	43%		Reported for grid supply only
Public Generation	11.6	1.5	-	9.1	14.4	-	-	25.1	
Lokombo C	0.4	1.0	-	-	-	-	-	1.0	Under development
Umbu Wangu	0.2	0.5	-	-	-	-	-	0.5	Under development
PLTMH	0.6	1.5	-	-	-	-	-	1.5	
Waingapu PLTMG	10.0	-	-	7.0	11.1	-	-	18.1	As scheduled in RUPTL
PLTMG	10.0	-	-	7.0	11.1	-	-	18.1	
Tana Rara, STe	1.0	-	-	2.1	3.3	-	-	5.4	Project near HTI, but could represent project proposed for SBD
PLT Biomass	1.0	-	-	2.1	3.3	-	-	5.4	
Private Generation	5.4	3.8	2.2	0.9	1.1	2.1	2.9	13.0	
Wanakaka	1.5	2.3	-	-	-	-	-	2.3	Under development
Harunda	1.4	1.5	1.5	-	-	-	-	3.0	Under development
Wanakaka II	0.6	-	0.4	0.6	0.4	-	-	1.4	
Soru	0.4	-	0.3	0.4	0.3	-	-	0.9	Under development
Kanangar	0.2	-	-	-	0.2	0.2	0.2	0.6	Under development
Maidang	0.3	-	-	-	0.2	0.3	0.2	0.7	
PLTMH	4.4	3.8	2.2	0.9	1.1	0.5	0.4	9.0	
Hambapraing2	1.0	-	-	-	-	1.6	2.5	4.0	Project that was tendered
PLTS	1.0	-	-	-	-	1.6	2.5	4.0	
MV/LV Infra & Conn's.		1.3	1.5	1.6	1.9	2.0	2.2	10.4	Consistent with PLN 2015 Sumba & NTT RUPTL
Network + Misc.		1.3	1.5	1.6	1.9	2.0	2.2	10.4	
New Mini-Grid		0.2	0.2	0.2	0.2	0.2	0.2	1.1	Assumes 2 to 3 mini-grids per year
New Off-Grid		-	-	-	-	-	-	-	Assumes no more individual HH systems
Off-Grid & Mini-Grids		0.2	0.2	0.2	0.2	0.2	0.2	1.1	
TOTAL (Excl. existing)	17.0	6.8	3.9	11.8	17.6	4.3	5.3	49.6	

Notes:

All values shown in current USD, taking into account inflation of 4 to 5.5% per year on overnight capital costs reported in the Mid-Term Report



II. SKEMA “ACCELERATED SII: ELECTRIFICATION RATIO” (1/5) – APPROACHING THE TARGET ELECTRIFICATION RATIO BY 2020

- Achieve the following by 2020:
 - Electrification Ratio: 95%
 - Renewable generation identified potential added as fast as possible
- Demand growth from 2014 to 2025 of 17.2% per year
- Capacity additions 2016-2020:
 - PLTMH: ~5 MW as planned
 - PLTMH with dams: 8.5 MW
 - PLTB: 10 MW in 2019
 - PLTS: 10 MW over 2017-2019
 - PLT Biomass: 1 MW in 2018, 3 MW in 2020
 - PLTD: 2.5 MW in 2017
 - PLTMG: 10 MW in 2018 as planned
- System control design as a basis for HV network specification
- HV network completed by 2020
- New line: ~2,600 km LV + ~1,140 km MV by 2020 → **~10x current annual rate**
- 93,000 connections added between 2017-2020 → **~10x current annual rate**

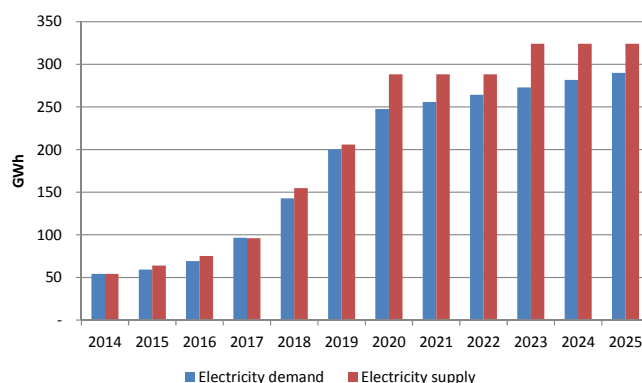
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II. “ACCELERATED SII: ELECTRIFICATION RATIO” (2/5) – RESULTS

- Electrification Ratio:
 - 2020: 95%
 - 2025: 95%
- Portion of Grid Energy Provided by Renewables:
 - 2020: 65%
 - 2025: 68%
 - Excludes large storage dam at Maidang
- Total installed capacity:
 - 2020: 62.9 MW
 - 2025: 68.9 MW
- Total generation:
 - 2020: 248 GWh
 - 2025: 290 GWh

Grid Energy Supply/Demand Balance

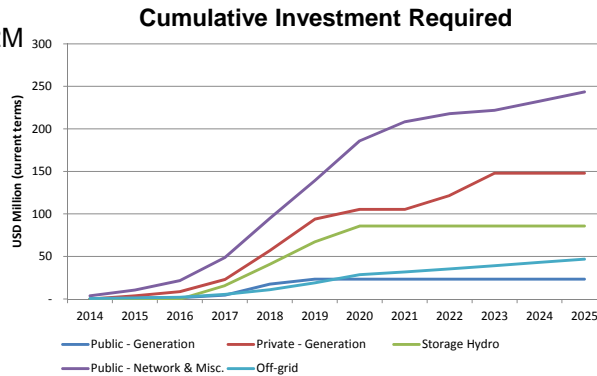


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II. SKEMA “ACCELERATED SII: ELECTRIFICATION RATIO” (3/5) – FUNDING REQUIRED THROUGH 2020

- Private Generation: USD 105.2M
 - PLTS: USD 36.1 M
 - PTLMH: USD 9.0 M
 - PLTB: USD 42.0 M
 - PLT Biomass: USD 18.1 M
- Public Generation: USD 28.0M
 - PLTMH: USD 1.5 M
 - PLT Biomass: USD 5.4 M
 - PLTD/MG: USD 21.0 M
- Storage hydro: USD 84.7 M
- Public Network & Misc: USD 182.6 M
- Off-grid/Mini-grid: USD 27.9 M
- TOTAL: USD 428.4 M new investment by 2020**



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II. SKEMA “ACCELERATED SII: ELECTRIFICATION RATIO” (4/5) – ANNUAL FUNDING REQUIRED THRU 2020

Project	MW	2015	2016	2017	2018	2019	2020	Total
Electrification Ratio		29%	32%	42%	59%	80%	95%	
Renewable Share		30%	42%	34%	38%	40%	65%	
Public Generation	14.1	1.5	-	12.0	14.4	-	-	28.0
PLTMH	0.6	1.5	-	-	-	-	-	1.5
PLTD/MG	12.5	-	-	9.9	11.1	-	-	21.0
PLT Biomass	1.0	-	-	2.1	3.3	-	-	5.4
Private Generation	27.4	3.8	4.9	14.3	34.0	36.8	11.5	105.3
PLTMH	4.4	3.8	2.2	0.9	1.1	0.5	0.4	9.0
PLTB	10.0	-	-	-	16.3	25.8	-	42.0
PLTS	10.0	-	2.7	13.3	16.6	3.5	-	36.1
PLT Biomass	3.0	-	-	-	-	7.0	11.1	18.1
PLTA Bendungan	8.5	-	7.5	15.8	20.8	22.0	18.6	84.7
Network + Misc.		6.7	11.2	27.0	46.3	44.5	46.8	182.6
Off-Grid & Mini-Grids		0.7	0.7	3.4	5.6	8.0	9.6	27.9
TOTAL (Excl. existing)	50.0	12.6	24.3	72.5	121.2	111.3	86.5	428.4

- “Public” includes projects implemented by PLN with APLN, APBN or APBD funding
- Large storage dam at Maidang excluded due to resettlement
- Annual values are stated as nominal USD, in millions
- Costs are based on overnight capital costs in ADB Mid-Term Report and AFD Storage Hydro Assessment, with 4.7 to 5.8% annual inflation, depending on the year

Compares to investment of USD 49.6 million under BAU

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II. "ACCELERATED SII: ELECTRIFICATION RATIO" (5/5) – SCENARIO DETAILS THROUGH 2020

Project	MW	2015	2016	2017	2018	2019	2020	Total	Comments
Electrification Ratio		29%	32%	42%	59%	80%	95%		Includes grid & off-grid supply
Renewable Share		30%	42%	34%	38%	40%	65%		Reported for grid supply only
Public Generation	14.1	1.5	-	12.0	14.4	-	-	28.0	
Lokomboro C	0.4	1.0	-	-	-	-	-	1.0	Under development
Umbu Wangu	0.2	0.5	-	-	-	-	-	0.5	Under development
PLTMH	0.6	1.5	-	-	-	-	-	1.5	
New PLTD	2.5	-	-	2.9	-	-	-	2.9	Needed to meet demand, not in RUPTL
Wasingapu PLTMG	10.0	-	-	7.0	11.1	-	-	18.1	As scheduled in RUPTL
PLTDMG	12.5	-	-	9.9	11.1	-	-	21.0	
Tana Rara, STe	1.0	-	-	2.1	3.3	-	-	5.4	Project near HTI, but could represent project
PLT Biomass	1.0	-	-	2.1	3.3	-	-	5.4	proposed for SBD
Private Generation	27.4	3.8	4.9	14.3	34.0	36.8	11.5	105.3	
Wanakaka	1.5	2.3	-	-	-	-	-	2.3	Under development
Harunda	1.4	1.5	1.5	-	-	-	-	3.0	Under development
Wanakaka II	0.6	-	0.4	0.6	0.4	-	-	1.4	
Soru	0.4	-	0.3	0.4	0.3	-	-	0.9	Under development
Kanangar	0.2	-	-	-	0.2	0.2	0.2	0.6	Under development
Maidang	0.3	-	-	-	0.2	0.3	0.2	0.7	
PLTMH	4.4	3.8	2.2	0.9	1.1	0.5	0.4	9.0	
Hambapraing	10.0	-	-	-	16.3	25.8	-	42.0	Project currently under discussion
PLTB	10.0	-	-	-	16.3	25.8	-	42.0	
Hambapraing2	2.0	-	2.7	4.2	-	-	-	6.9	Project that has been tendered
Tanjung Sasar	2.0	-	-	2.8	4.4	-	-	7.2	Notional project only. Tender not yet scheduled
Kulangawa2	2.5	-	-	3.5	5.5	-	-	9.1	Notional project only. Tender not yet scheduled
Bilacenge	1.5	-	-	-	2.2	3.5	-	5.7	Notional project only. Tender not yet scheduled
Pandawai	2.0	-	-	2.8	4.4	-	-	7.2	Notional project only. Tender not yet scheduled
PLTS	10.0	-	2.7	13.3	16.6	3.5	-	36.1	
Rakawatu, STI	3.0	-	-	-	-	7.0	-	11.1	Notional project near HTM
Kapopak Penang, STI	-	-	-	-	-	-	-	-	Notional project near HTM. Starts after 2020
PLT Biomass	3.0	-	-	-	-	7.0	11.1	18.1	
Praikalala + Kadahang	8.5	-	7.5	15.8	20.8	22.0	18.6	84.7	Projects identified by AFD Study w/no resettlement
PLTA Bendungan	8.5	-	7.5	15.8	20.8	22.0	18.6	84.7	To be determined whether public or private
MV/LV Infra & Conn's.	2.6	6.9	21.0	41.1	37.2	34.6	143.4		
HV Infrastructure	-	-	1.5	3.7	7.3	12.2	24.7		
Studies & Control Sys.	4.1	4.3	4.5	1.6	-	-	14.5		
Network + Misc.	6.7	11.2	27.0	46.3	44.5	46.8	182.6		
New Mini-Grid	0.2	0.2	2.8	4.9	7.2	8.7	23.9		Assumes "Low Cost" Scenario from Mid-Term Rep.
New Off-Grid	0.5	0.5	0.6	0.7	0.8	0.9	3.9		Assumes "Low Cost" Scenario from Mid-Term Rep.
Off-Grid & Mini-Grids	0.7	0.7	3.4	5.6	8.0	9.6	27.9		
TOTAL (Excl. existing)	50.0	12.6	24.3	72.5	121.2	111.3	86.5	428.4	

Notes:

All values shown in current USD, taking into account inflation of 4 to 5.5% per year on overnight capital costs reported in the Mid-Term Report

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III. SKEMA "ACCELERATED SII: EBT PORTION" (1/5) – APPROACHING 100% RENEWABLE ENERGY BY 2020

- Achieve the following by 2020:
 - Renewable portion of generation: 100% (Beware of limitations of the model!)
 - New connections added as fast as possible
- Capacity additions 2016-2020:
 - PLTMH: ~5 MW as planned
 - PLTMH with dams: 8.5 MW
 - PLTB: 10 MW in 2019
 - PLTS: 10 MW over 2017-2019
 - PLT Biomass: 1 MW in 2018, 3 MW in 2020
 - No PLTD or PLTMG (current RUPTL calls for 10 MW PLTMG in 2018)
- System control study as a basis for HV network specification
- HV network completed by 2020
- ~2,000 km of LV line and ~870 km completed by 2020 → **~8 times current annual rate**
- 25,000 connections added between 2016-2020 → **~2 times current annual rate**

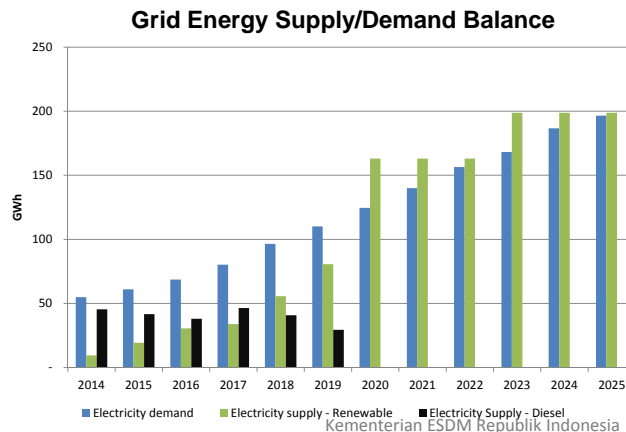
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III. "ACCELERATED SII: EBT PORTION" (2/5) – RESULTS

- Electrification Ratio:
 - 2020: 51%
 - 2025: 62%
- Demand growth 2014-2025: 12.3% per year
- Portion of Grid Energy Provided by Renewables:
 - 2020: 100%
 - 2025: 100%
 - Excludes large storage dam at Maidang
- Total installed capacity:
 - 2020: 39.3 MW
 - 2025: 45.3 MW
- Total generation:
 - 2020: 125 GWh
 - 2025: 197 GWh

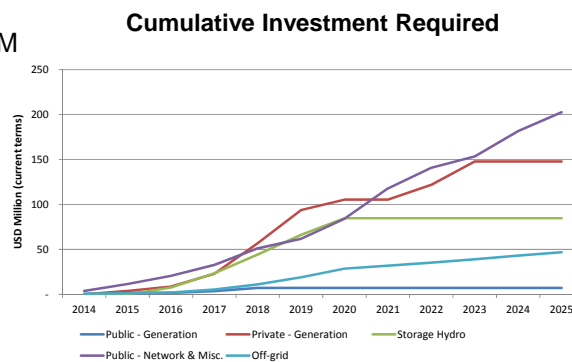


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III. SKEMA "ACCELERATED SII: EBT PORTION" (3/5) – FUNDING REQUIRED THROUGH 2020

- Private Generation: USD 105.3 M
 - PLTS: USD 36.1 M
 - PLTMH: USD 9.0 M
 - PLTB: USD 42.0 M
 - PLT Biomass: USD 18.1 M
- Public Generation: USD 6.9 M
 - PLTMH: USD 1.5 M
 - PLT Biomass: USD 5.4 M
 - PLTD/MG: None
- Storage hydro: USD 84.7 M
- Public Network & Misc: USD 80.7 M
- Off-grid/Mini-grid: USD 27.9 M
- **TOTAL: USD 305.5 M new investment by 2020**



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III. SKEMA “ACCELERATED SII: EBT PORTION” (4/5) – ANNUAL FUNDING REQUIRED THRU 2020

Project	MW	2015	2016	2017	2018	2019	2020	Total
Electrification Ratio		29%	31%	35%	40%	45%	51%	
Renewable Share		32%	45%	42%	58%	73%	100%	
Public Generation	1.6	1.5	-	2.1	3.3	-	-	6.9
PLTMH	0.6	1.5	-	-	-	-	-	1.5
PLTD/MG	-	-	-	-	-	-	-	-
PLT Biomass	1.0	-	-	2.1	3.3	-	-	5.4
Private Generation	27.4	3.8	4.9	14.3	34.0	36.8	11.5	105.3
PLTMH	4.4	3.8	2.2	0.9	1.1	0.5	0.4	9.0
PLTB	10.0	-	-	-	16.3	25.8	-	42.0
PLTS	10.0	-	2.7	13.3	16.6	3.5	-	36.1
PLT Biomass	3.0	-	-	-	-	7.0	11.1	18.1
PLTA Bendungan	8.5	-	7.5	15.8	20.8	22.0	18.6	84.7
MV/LV Infra & Conn's.		5.3	6.9	2.1	15.6	1.0	10.2	41.2
HV Infrastructure		-	-	1.5	3.7	7.3	12.2	24.7
Studies & Control Sys.		4.1	4.3	4.5	1.6	-	-	14.5
Network + Misc.		9.4	11.2	8.1	20.9	8.3	22.4	80.3
Off-Grid & Mini-Grids		0.7	0.7	3.4	5.6	8.0	9.6	27.9
TOTAL (Excl. existing)	37.5	15.3	24.3	43.6	84.6	75.1	62.1	305.1

- “Public” includes projects implemented by PLN with APLN, APBN or APBD funding
- Large storage dam at Maidang excluded due to resettlement
- Annual values are stated as nominal USD, in millions
- Costs are based on overnight capital costs in ADB Mid-Term Report and AFD Storage Hydro Assessment, with 4.7 to 5.8% annual inflation, depending on the year

Compares to investment of USD 49.6 million under BAU

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III. “ACCELERATED SII: EBT PORTION” (5/5) – SCENARIO DETAILS THROUGH 2020

Project	MW	2015	2016	2017	2018	2019	2020	Total	Comments
Electrification Ratio		29%	31%	35%	40%	45%	51%		Includes grid & off-grid supply
Renewable Share		32%	45%	42%	58%	73%	100%		Reported for grid supply only
Public Generation	1.6	1.5	-	2.1	3.3	-	-	6.9	
Lokombo C	0.4	1.0	-	-	-	-	-	1.0	Under development
Umbu Wangu	0.2	0.5	-	-	-	-	-	0.5	Under development
PLTMH	0.6	1.5	-	-	-	-	-	1.5	
New PLTD	-	-	-	-	-	-	-	-	Not added
Waingapu PLTMG	-	-	-	-	-	-	-	-	Now scheduled in RUPTL, but dropped
PLTD/MG	-	-	-	-	-	-	-	-	
Tana Rara, STe	1.0	-	-	2.1	3.3	-	-	5.4	Project near HTI, but could represent project
PLT Biomass	1.0	-	-	2.1	3.3	-	-	5.4	proposed for SBD
Private Generation	27.4	3.8	4.9	14.3	34.0	36.8	11.5	105.3	
Wanakaka	1.5	2.3	-	-	-	-	-	2.3	Under development
Harunda	1.4	1.5	-	-	-	-	-	3.0	Under development
Wanakaka II	0.6	-	0.4	0.6	0.4	-	-	1.4	
Soru	0.4	-	0.3	0.4	0.3	-	-	0.9	Under development
Kanangar	0.2	-	-	-	0.2	0.2	0.2	0.6	Under development
Maidang	0.3	-	-	-	0.2	0.3	0.2	0.7	
PLTMH	4.4	3.8	2.2	0.9	1.1	0.5	0.4	9.0	
Hambapraing	10.0	-	-	-	16.3	25.8	-	42.0	Project currently under discussion
PLTB	10.0	-	-	-	16.3	25.8	-	42.0	
Hambapraing2	2.0	-	2.7	4.2	-	-	-	6.9	Project that has been tendered
Tanjung Sasar	2.0	-	-	2.8	4.4	-	-	7.2	Notional project only. Tender not yet scheduled
Kulangawa2	2.5	-	-	3.5	5.5	-	-	9.1	Notional project only. Tender not yet scheduled
Bilacenge	1.5	-	-	-	2.2	3.5	-	5.7	Notional project only. Tender not yet scheduled
Pandawai	2.0	-	-	2.8	4.4	-	-	7.2	Notional project only. Tender not yet scheduled
PLTS	10.0	-	2.7	13.3	16.6	3.5	-	36.1	
Rakawatu, STi	3.0	-	-	-	-	7.0	11.1	18.1	Notional project near HTM
Kapohak Penang, STi	-	-	-	-	-	-	-	-	Notional project near HTM. Starts after 2020
PLT Biomass	3.0	-	-	-	-	7.0	11.1	18.1	
Praikalala + Kadahang	8.5	-	7.5	15.8	20.8	22.0	18.6	84.7	Projects identified by AFD Study w/no resettlement
PLTA Bendungan	8.5	-	7.5	15.8	20.8	22.0	18.6	84.7	To be determined whether public or private
MV/LV Infra & Conn's.		3.5	4.9	6.2	13.3	3.5	10.2	41.6	
HV Infrastructure		-	-	1.5	3.7	7.3	12.2	24.7	
Studies & Control Sys.		4.1	4.3	4.5	1.6	-	-	14.5	
Network + Misc.		7.6	9.1	12.2	18.5	10.8	22.4	80.7	
New Mini-Grid		0.2	0.2	2.8	4.9	7.2	8.7	23.9	Assumes "Low Cost" Scenario from Mid-Term Rep.
New Off-Grid		0.5	0.5	0.6	0.7	0.8	0.9	3.9	Assumes "Low Cost" Scenario from Mid-Term Rep.
Off-Grid & Mini-Grids		0.7	0.7	3.4	5.6	8.0	9.6	27.9	
TOTAL (Excl. existing)	37.5	13.6	22.2	47.8	82.3	77.6	62.1	305.5	

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IV. RINGKASAN

For 2020	BAU	95% Electrification	100% Renewable
Renewable Portion	43%	65%	100%
Electrification Ratio	34%	95%	51%
Public Investment	USD 13.0 M	USD 210.6 M	USD 87.6 M
Private Investment	USD 53.4 M	USD 189.9 M	USD 189.9 M

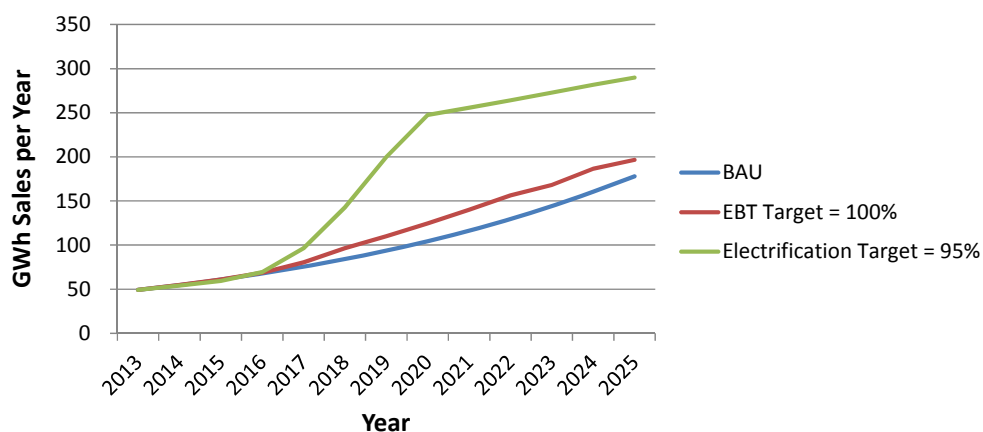
Note: Investment figures exclude off-grid (USD 27.9 M), since it is not known whether this will be public or private. PLTA Bendungan assumed private.

- There is a trade-off between the electrification ratio target and the renewable supply target
- In either case, a huge amount of public investment is required compared to BAU – mostly for network (→ PLN)
- Achieving the SII targets depends strongly on rate of PLN connections
- Immediate action required

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IV. RINGKASAN – Tantangan utk Pencapaian 95% Rasio Elektrifikasi



95% electrification ratio by 2020 requires 2.5 times as much energy as the business-as-usual case

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V. RUPES COMPONENTS

- Off-grid supply
- Grid supply
 1. LV/MV network extension
 2. HV network
 3. PLTM Bendungan
 4. PLTB
 5. PLTS
 6. PLTBm
- For each component:
 - Candidates to implement (who?)
 - Time required (when?)
 - Prerequisites and dependencies (how?)



V. RUPES COMPONENTS – Alternatif Pendanaan Investasi PLN





V. RUPES COMPONENTS – Current & Planned PLN PMN

2015

Program Kegiatan	PMN (Rp Trilyun)
PLTA Jatigede (Uang muka)	0.26
PLTU Grati (Uang muka)	0.57
PLTU Lontar Extension (Uang muka)	1.0
PLTA Upper Cisokan (Uang muka)	0.47
PLTG Gorontalo Peaker	1.81
PLTD Wilayah Perbatasan & Pulau Terluar (diluar Uang muka)	0.36
Trafo Tenaga	0.53
Jumlah	5.0

2016

Program Kegiatan	PMN (Rp Trilyun)
Distribusi untuk pengembangan rasio elektrifikasi (Luar Jawa Bali)	5.6
PLTGU Lombok Peaker	0.2
PLTGU Muara Kerang	0.7
PLTGU Jawa 2 Tj Priok	1.5
Pengembangan Transmisi	2.0
Jumlah	10.0

- LisDes mechanism no longer utilized
- PMN for PLN is set year-by-year as part of APBN process
- PMN funds are earmarked for specific uses

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V. RUPES COMPONENTS – Off-grid Supply

Candidate	Timeline	Issues & Dependencies
PLN	<ul style="list-style-type: none"> • 1 year to budget & plan • 1 year to specify, procure and award • 4-6 years to install (~17,000 HH in low cost scenario) 	<ul style="list-style-type: none"> • Funding; 2016 budgeting at advanced stage • PLN averse to off-grid systems (investment needed, subsidy impact, HR capacity)
Pemda	<ul style="list-style-type: none"> • 1 year to budget (DAK?) & plan • 1 year to specify, procure and award • 4-6 years to install (~17,000 HH) 	<ul style="list-style-type: none"> • Funding; 2016 APBN/D at advanced stage • Must be done at provincial level (Law 23/2014) • Limited capacity to implement
Private (incl. NGO)	<ul style="list-style-type: none"> • 1 year to plan & budget under existing regulation, or develop under new regulation • 1 to specify, procure and award • 4-6 years to install (~17,000 HH) 	<ul style="list-style-type: none"> • Business model and level/form of subsidy to be determined • Requires either new regulation or work with DPRD-P under PP 14/2012.

Proposal: utilize private sector for off-grid supply

- Decide on regulatory framework: existing or new
 - Existing: approval by DPRD-P for tariff (PP 14/2012)
 - New: Download "Access Report" at <http://castlerockasia.com/sumba/sii.html>
- If existing, first-come-first-served or tender? If tender, who conducts?
- Budget and administer subsidy

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V. RUPES COMPONENTS – LV/MV network extension

Candidate	Timeline	Issues & Dependencies
PLN	<ul style="list-style-type: none">1 year to budget & plan1 year to specify, procure and award4 years to implement	<ul style="list-style-type: none">Coordination with generation developmentSource of funds2016 budgeting at advanced stagePLN currently plans around 2,500 additional HH connections per year for Sumba (8% growth rate in new connections).Achieving 95% electrification ratio by 2020 requires up to 30,000 connections per year (14% growth rate)

- No choice but PLN
- Need to engage PLN and DJK regarding funding – unlikely that PLN would budget scale-up from own resources.
- Could be financed by PMN or directly by multi- or bi-lateral agency
- Rate of PLN grid extension will determine
 - Electrification ratio
 - Generation needs → share of supply that can be served by EBT



V. RUPES COMPONENTS – HV network

Candidate	Timeline	Issues & Dependencies
PLN	<ul style="list-style-type: none">1 year to budget & plan for system control study1 year to procure & implement system control study1 year to budget HV network1 year to specify, procure and award HV network2 years to construct and commission	<ul style="list-style-type: none">Coordination with generation developmentFunding2016 budget at advanced stage

- HV network is essential for high renewable penetration on Sumba
- HV grid should be specified based on system control study
- No choice but PLN
- Need to engage potential funding sources:
 - Control system study
 - Development partners – grant could accelerate timing
 - PLN and DJK commitment required, whether funded from outside grant or own budget
 - HV grid construction: PLN and DJK to commit and source funds



V. RUPES COMPONENTS – PLTM Bendungan

Candidate	Timeline	Issues & Dependencies
PLN	<ul style="list-style-type: none"> 1 year to budget & plan 1 year to specify, procure and award 3 years to construct 	<ul style="list-style-type: none"> Important resource for network operations Funding 2016 budgeting at advanced stage
Private	<ul style="list-style-type: none"> 1 year to procure 1 year for FS, permits & PPA 1 year for financial close 3 years to construct 	<ul style="list-style-type: none"> Need further studies (e.g. geology) Relatively complex project – suggest tendering by Pemda Coordination with network development

- Key generation resource for network operation
 - Pemda tender for izin lokasi suggested if private
- Praikalala and Kadahang projects assumed
- Maidang project remains a possibility – large contribution to EBT target but land access/resettlement an issue
- Permen 19/2015 tariff: US cents 15.0/kWh (years 1-8), 9.4/kWh (years 9-20)
- Proposal: Check with PLN/DJK, but be prepared for private

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V. RUPES COMPONENTS – PLTM Bendungan oleh Swasta

No	Task	Duration (months)	Year																							
			Year 1				Year 2				Year 3				Year 4				Year 5				Year 6			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Preparation & conduct of tender for license	12	■	■	■	■																				
2	Preparation of Feasibility Study and EPC Tender Documents	16					■	■	■	■	■	■	■													
3	Permitting, land acquisition/access	6					■	■	■	■	■	■														
4	PPA	19.5								■	■	■														
5	Funding	6.5									■	■	■	■												
6	Detailed design, Procurement and construction by EPC contractor	33													■	■	■	■	■	■	■	■	■	■	■	■

Assumptions

- Private developer
- Tendering of location permit by Pemda – to get best developer

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V. RUPES COMPONENTS – PLTS & PLTB

Candidate	Timeline	Issues & Dependencies
Private	<ul style="list-style-type: none">• 1 year to budget & plan• 1 year to specify, procure and award• 2 years to construct	<ul style="list-style-type: none">• 2016 APBN at advanced stage• Coordination with grid development• Regulatory basis

- Grid connected wind and solar PV for private
- Assumed projects
 - PLTB: Hambapraing
 - PLTS: Several sites around Sumba which should be developed under single package
- Prerequisites:
 - Needs regulation (wind, new grid PV siting)
 - Must be coordinated with HV network development



V. RUPES COMPONENTS – PLTBm

Candidate	Timeline	Issues & Dependencies
PLN	<ul style="list-style-type: none">• 1 year to budget & plan• 1 year to specify, procure and award• 2 years to construct• ??? years to secure fuel supply?	<ul style="list-style-type: none">• 2016 budget at advanced stage• Fuel supply• Network
EBTKE / Pemda	<ul style="list-style-type: none">• 1 year to budget & plan• 1 year to specify, procure and award• 2 years to construct• ??? years to secure fuel supply?	<ul style="list-style-type: none">• Fuel supply• Network• O&M
Private	<ul style="list-style-type: none">• 2 years to construct• ??? years to secure fuel supply?	<ul style="list-style-type: none">• Fuel supply• Network

- Fuel security key issue
- Network
 - Coordination
 - Strengthening also likely required
- Proposal: rely on private – project in Lamboya with supply from HTI?



V. RUPES COMPONENTS – Institutional & Physical Dependencies

- PLN / DJK
 - Due to investment required, needs to go to Minister, Directors & Commissioners
 - System control & HV line for EBT target – essential!
 - LV/MV lines for electrification target
 - DJK and MoF involvement required if PMN or other APBN is to be considered
- Private
 - Wind & PV
 - Regulations required
 - Coordination with network development
 - PLTBm
 - Coordination with network development
 - Fuel security
 - PLTM Bendungan – essential!
 - Geological study
 - Coordination with network development
 - Support by Pemda



VI. PROPOSED NATIONAL STRATEGIC INFRASTRUCTURE PROJECT

- “Sumba Iconic Island Power System Backbone”
- Proposed through P2EBT for inclusion on National Strategic Project list
- Builds on requests from Bupati Sumba Timur and Bupati Sumba Tengah to Minister ESDM
- Four components (total investment USD 126.9):
 - East-west HV line (PLN; USD 43.5 jt)
 - PLTM Bendungan Praikalala (3.5 MW; Private; USD 23.6 jt)
 - PLTM Bendungan Kadahang (5 MW; Private; USD 26.8 jt)
 - PLTB Hambapraing (10 MW; Private; USD 33 jt)



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APPENDIX D: MONITORING AND EVALUATION DOCUMENTATION

Asian Development Bank

Monitoring and Evaluation Framework for
Sumba Iconic Island

Final Report

22 January 2014

Prepared for: Government of
Indonesia and Asian
Development Bank

Prepared by: PT Castlerock
Consulting

PT Castlerock Consulting Pte Ltd
Graha Iskandarsyah, 7th floor
Jl. Iskandarsyah Raya No. 66C
Jakarta 12160
Indonesia
Tel: +62 21 270 2404
Fax: +62 21 270 2405
www.castlerockasia.com



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1. INTRODUCTION

1.1 BACKGROUND

1.1.1 Overview on Sumba Iconic Island Initiative

Sumba Iconic Island initiative was launched through the effort of HIVOS at the Indonesia-Netherlands Joint Energy Working Group in 2010. This program is aimed at developing a “model” island supplied entirely by renewable energy. With this initiative, Sumba Island, located in Eastern Nusa Tenggara Province of Indonesia, has been selected as a pilot example of scaling up access to energy by renewable resources utilization due to its existing energy profile:

- Low level of access to modern energy (less than 30%)
- High dependence on fossil energy (Diesel)
- Various types of renewable energy resources exist: hydro, solar, wind, and biomass resources

Sumba Iconic Island initiative sets ambitious targets to (i) reach 95% electrification ratio and (ii) meet 100% energy demand in Sumba Island by 2025.

The institutional structure of Sumba Iconic Island initiative is officially established by Director General of New and Renewable Energy and Energy Conservation (*Direktur Jendral Energi Baru dan Terbarukan dan Konservasi Energi, EBTKE*), Decree No. 602 K/73/DJE/2013. The structure consists of a Steering Committee, an Organization Committee and three Working Groups of which members include representatives from the following institutions: Ministry of Mineral Resources (MEMR), Bappenas (the National Development Planning Board), Provincial government of Eastern Nusa Tenggara (*Pemerintah Daerah/Pemda NTT*), district level governments of Sumba (East Sumba, Central Sumba, West Sumba and South West Sumba), PLN, the Agency for the Assessment and Application of Technology (*BPPT*), Pertamina (principal through its Corporate Social Responsibility program), HIVOS, Local NGOs and civil society groups, and development partners, including ADB. The focus of Working Groups are (i) Policy, (ii) Supply & Utilization of Energy, and (iii) Cooperation & Funding.

Sumba Iconic Island Road Map was formally released during a “National Seminar & Stakeholder Meeting on Sumba” on February 13-15, 2013 in Jakarta. This Road Map distinguishes 15 activities classified by renewable energy technologies of which each activity is divided into a uniform 5 sub-activities, namely, (a) Component A: renewable energy technology Installation; (b) Component B: supporting regulations and policies; (c) Component C: institutional framework and stakeholder roles; (d) Component D: investment and funding; and (e) Component E: research and development. List of activities included in the Road Map is given in Exhibit 1.1.

Exhibit 1.1: Activities of Sumba Iconic Island Road map

Road Map Activities
(1) Grid Wind Energy
- IPP Wind Energy
(2) Non Grid Wind Energy
(3) Available feedstock for biofuels
(4) Off-grid household systems



(5) Off-grid communal hydropower
(6) Communal off-grid PV
- Grid-connected PV
- IPP grid-connected PV
- Small scale communal PV
(7) Grid integration & extension
(8) Small-scale grid hydropower
(9) Household biogas
(10) ICS (Indonesia Cooking Stove)
(11) New feedstock for biofuels
(12) Biofuel (Ethanol)
(13) Biomass (Boiler-Turbine)
(14) Biomass gasification
(15) Waste stream biogas

1.2 CONSIDERATIONS IN DEVELOPING MONITORING AND EVALUATION (M&E) FRAMEWORK FOR SUMBA ICONIC ISLAND

It was identified in the inception phase of the ADB Technical Assistance to “Scale Up Energy Access in Eastern Indonesia” as well as by previous HIVOS’ works on implementation of certain renewable energy technologies that a structured M&E framework is required to track progress against plans through a feedback cycle system and evaluate the impact of the Sumba Iconic Island program.

In general, development of Monitoring and Evaluation (M&E) framework for a program is conducted in parallel with or follows the program planning development. Often, the program is initiated and funded/sponsored by a single institution that already has the logical framework and M&E templates to follow. Developing M&E Framework for Sumba Iconic Island program is somewhat unique because:

- Although it is currently an official program coordinated under the Ministry of Energy and Mineral Resources, Directorate General of New Renewable Energy and Energy Conservation (*EBTKE*) and initiated by HIVOS, Sumba Iconic Island consists of various renewable energy programs/projects developed and funded/sponsored by various stakeholders: government agencies, academics, and private institutions. This is demonstrated by the Road Map (briefly described in chapter 1, and presented in Appendix A).
- The level of awareness of those stakeholders regarding importance of M&E activities varies. Some stakeholders sponsoring a project under Sumba Iconic Island has its own M&E method. For example, PLN, the state-owned electricity company, has its own monitoring protocol to regularly assess and record the performance of its power plants operation. The project developed under National Government budget, such as the Solar PV system, is handed over to the community after construction period is completed. There is no established procedures to monitor the performance of Solar PV system after it is being handed over.



- The program has released Road Map (Appendix A) consisting of 15 different activities in development of renewable energy resources utilization. Despite its role as a main reference documents, the Road Map needs to be regularly updated to ensure that those accommodated in the Road Map are activities that are practically feasible to be implemented. Currently, there is no regular schedule for Road Map update.
- Currently, Sumba Iconic island program does not have systematic documentation, reporting and record keeping in place.
- Unlike other programs where indicators of targeted goals are set, Sumba Iconic Island has not yet defined the program goals' indicators. Current goals are expressed as:
 - o Achieve 100% energy demand through renewable energy sources by 2025; and
 - o Achieve 95% electrification ratio by 2025

The vision and mission do not clearly specify type of energy demand (thermal or electricity, or both) that need to be met by renewable energy sources by 2025. The Road map lists down detailed activities that are on-going and to be implemented, but it does not either defines whether all activities listed will meet 100% energy demand in Sumba island by 2025 or projects the total energy demand by 2025 in Sumba.

1.3 OBJECTIVES AND SCOPE

By considering the above conditions, this M&E Framework is developed as a basic tool to implement monitoring and evaluation activity at a program level by developing the program logic, log frame and the M&E plan for Sumba Iconic Island at a program level. The basis of this M&E framework and the institutional framework for implementation of M&E activity is the Sumba Iconic Island Road Map and The decision of Director General, *EBTKE*, MEMR 602 K/73/DJE/2013 regarding the institutional structure of the Sumba Iconic Island initiative.

It is to be noted that the scope of this current report does not include the development of M&E plan at the project level but it serves as a guide to develop M&E plan for each of activity listed in the Road Map.

1.4 APPROACH/METHODOLOGY

The methodology for this assignment is delineated as follows:

A. Desktop Studies

1. Conduct desktop studies on development of M&E framework for program level
2. Review the on-going and previous studies on Sumba Iconic Island (e.g., Inception report of the ADB TA, studies commissioned by HIVOS on Solar Home Systems, SEHEN, grid-connected study and socio-economic survey), as well as and the current Road Map for each sub-activities to:
 - Identify the current target and assess whether current target is realistic and reachable;
 - Assess options for monitoring and evaluation indicators and the basis for the Key Performance Indicators (KPI, e.g, number of installation, size of installed capacity, number of people with increased access to electricity, etc), type of data required to calculate or estimate the indicators and source of data.



- Develop the draft Program Logic and Logical Framework of Sumba Iconic island as a basis for M&E Framework

B. Conduct Field Visit to:

1. Discuss with the key stakeholders to present the program logic and the institutional framework for M&E Implementation, as well as identify the responsible institution/personnel in-charge to implement M&E for each sub-activities. This institutional in-charge will be responsible to develop a detailed M&E Plan.

During the visit to Jakarta, meeting was held with EBTKE, HIVOS, Winrock, Sewatama and IBEKA, while the program logic and the draft institutional framework were presented to all relevant stakeholders during regular meeting (*Rapat Pleno*) of Sumba Iconic Island in Kupang, on 3-4 October 2013. The appointment of institutions and personnel for M&E implementation were made and is presented in chapter 4 of this report.

2. Assess the capacity of the local government for further implement the M&E.
3. Gauge the actual conditions of the previous renewable energy technologies that have been implemented
4. Ensure that type of data required for monitoring and evaluation purpose are available and could be collected

C. Analysis and report writing to finalize M&E Framework for the Sumba Iconic Island program:

- a. Re-define a realistic target for each sub-activity based on findings in field visit
- b. Develop a complete M&E Table and set the methodology (data sources, algorithm, and means of verification to define or calculate/estimate the KPI
- c. Determine the schedule and frequency of data evaluation
- d. Document the M&E plan into a High-Level M&E Framework document which include an M&E Log Frame for Sumba Iconic Island
- e. Develop the TOR for development of detailed M&E for sub-activities to be included in the Framework

D. Discussion and Presentation of the M&E Framework to stakeholders and get the engagement of the stakeholders to prepare a detailed M&E plan for each sub-activities.



2. PRINCIPLES OF MONITORING AND EVALUATION

2.1 IMPORTANCE OF MONITORING AND EVALUATION

A monitoring and evaluation (M&E) framework supports project or program implementation by setting up a guidelines, determining proper indicators and means of verification to monitor project or program process and outputs and evaluate goals and objectives. While monitoring provides real-time information on ongoing program or project implementation required by management, evaluation provides more in-depth assessments. M&E framework is inseparable from the project or program planning process.

2.1.1 Monitoring

Monitoring is the ongoing process by which stakeholders obtain regular feedback on the progress being made towards achieving their objectives. It involves routine collection and analysis of information to track progress against set plans and check compliance to established standards. It helps identify trends and patterns, adapt strategies and inform decisions for project/program management. Focus of monitoring activities is geared toward lower-level objectives, i.e., short to medium term outcomes.

2.1.2 Evaluation

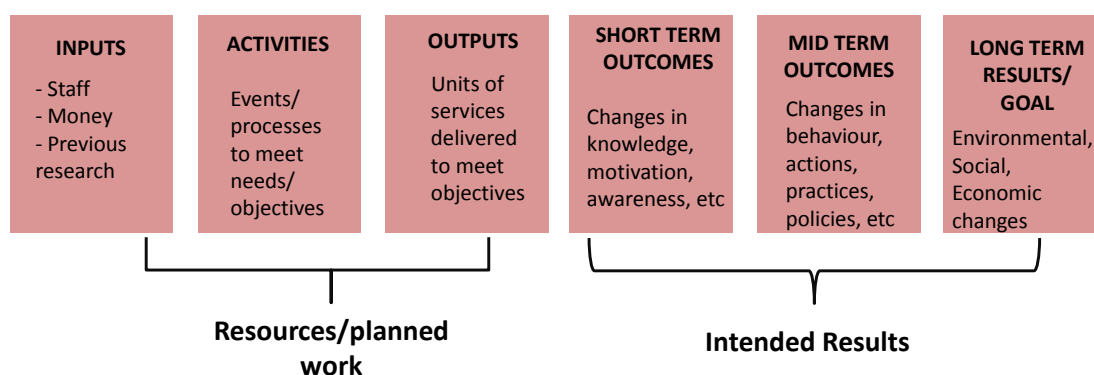
Evaluation is conducted to assess the outcome and/or impact of a project or program over a long-term period, e.g., > 5 years from the start of a project or a program. When the evaluation is conducted, the project or program may or may not be completed, depending on the period length of the project or program. The aim is to determine the relevance and fulfilment of objectives, developmental efficiency, effectiveness, impact and sustainability. An evaluation should provide information that is credible and useful through identifying the impacts of activities conducted and assessing the impacts' worth. Findings from evaluation allow project/program stakeholders to learn from experience. Hence, evaluation is often conducted towards the end or after the completion of a project or a program to incorporate lessons learned for future interventions.

2.2 KEY STEPS IN DEVELOPMENT OF M&E FRAMEWORK

2.2.1 Create Program Logic

A program logic delineates a linear sequence of steps taking place for a project or a program to meet its desired outcomes and it forms the conceptual basis of M&E Framework. This often consists of identifying the inputs, activities, outputs, and outcomes (immediate/short-term, medium and long term outcomes). A program logic provides a road map for a project or a program of which the progress, e.g., whether the project or program is on track or deviate, can be monitored.

Program Logic is built upon a project plan and is not intended to replace a detailed project plan. A project plan will generally have more detailed steps and tasks than a program logic. Exhibit 2.1 illustrates a general program logic sequence flow.



2.2.2 Prepare a complete program logic framework

After activities, outputs, outcomes, objectives/intended results/goals are established in a logic frame, a complete logical framework needs to be prepared as the basis of M&E Framework:

- Insert all inputs into the log frame:* This could include various technical support, human resources, financial resources, equipment, etc
- Define proper indicators for all outputs/outcomes and intended results/goals:* Indicators serve as parameters to track progress and measure results which allow to take corrective action to improve service delivery. Establishing indicators follows a simple and logical procedure by identifying parameters to measure the outcome and intended results/goal. An example of indicators for a program in power sector is as follows:

Goal: A program has the goal to increase electricity generation and electricity access from renewable energy sources in a certain district in Indonesia.

Indicators:

- No of installed power generation capacity (MW) run by renewable resources
- No. of power generated (MWh) annually from power plants run by renewable resources
- Increased number of household with access of electricity from renewable resources

The number of indicators per output/ outcome and intended results/goal depends on the strength of the indicator to capture the achievement. It is preferable to:

- Enumerate indicators, where applicable
- Measure the indicators against a baseline. In general, a baseline study is conducted to gather baseline information. Project or program intervention can later be measured against baseline information.

- Assign means of verification (MoV) to all indicators:* means of verification (MoV) for all indicators are required to enable indicators to be justified and verified. The MoV consist of data sources from where indicators are obtained or estimated/calculated to monitor progress and evaluate impacts. Two types of data sources are commonly used: secondary data sources (Literatures, references, published statistical data, etc) and primary data sources (survey results, questionnaire responses, interview and meeting results, etc).



- d) *Indicate timeframe and persons responsible for data collection:* Time frame and person responsible to gather data for all indicators should be clearly assigned. Some indicators may need to be collected monthly while others may only need to be gathered annually. Indicative timeframe will support in project planning and consistent data collection.
- e) *List assumptions for the project/program's success:* Careful program logic planning does not guarantee successful achievement of all goals in a project/program. Hence, all assumptions relating risks and mitigation action to overcome the risks associated to project/program's success must be listed. An example is given in exhibit 2.2 below.

Exhibit 2.2: Example of Assumptions: Risks and Risk Mitigation

<i>Risks</i>	<i>Mitigation</i>
Unfavorable weather condition might lead to low generation of hydropower resulting into power overloads	More investments in power sources to cope with the increased demand
Short period of operation of individual solar PV installation due to lack of maintenance	Proper training for operation and maintenance for the beneficiaries during installation period
Lack involvement of local government creates delay in project construction due to unclear permitting issues	Proper engagement of local government through training and focus group discussion on renewable energy projects

2.2.3 Establishment of Institutional Framework for M&E implementation

For a program comprising several projects, of which an M&E framework at the program level consist of M&E plan of several projects, it is important to define a framework which provides a guideline for M&E implementation. The framework describes:

- The institution and personnel responsible for coordinating and managing the whole M&E framework
- The institution and personnel responsible to complete the M&E plan at the project level for each project in the program
- Type and data to be gathered from each M&E plan
- Documentation and Reporting procedures for the overall M&E framework, including the timeframe for documenting and reporting

Data Tool Guide: A Data tool collection is a guide on how to use all the data collections tools stipulated in the logic framework of a project. This could be inserted as a part of the Institutional Framework. The guide describes:

- different type of tools to gather data, e.g, whether the data is collected through secondary sources or primary sources, and the method/approach/design used;
- the procedure to use the tool
- the timeframe to use the tool (approach/method/design)
- person responsible for using the tools; and
- indicator the tool collects



3. LOG FRAME DEVELOPMENT FOR SUMBA ICONIC ISLAND

3.1 PROGRAM LOGIC OVERVIEW

The program logic is developed based on the Sumba Iconic Island Road Map and the decision of Director General, DGNREEC, MEMR 602 K/73/DJE/2013 as basis and it is illustrated in Exhibit 3.1, and it is described below. The earlier version of the program logic was shared with the relevant shareholders in regular meeting (*Rapat Pleno*) of Sumba Iconic Island in Kupang, on 3-4 October 2013. Feedback were received and is incorporated in this program logic.

Inputs: Inputs for the Sumba Iconic Island Initiative consists of:

- The personnel time of the related stakeholders listed in the Road Map which is spent in regular meetings of Sumba Iconic Island Initiative
- Investments from private stakeholder such as investment of 500 kW wind power plant by Sewatama and Solar PV-Hybrid installation by Bakrie Power
- Technical Assistance Support funded by Asian Development Bank (ADB) to scale up electricity access from renewable sources
- Installation of renewable energy projects (e.g., solar PV mini-grid, Solar Home System, etc) funded through National Budget
- Financial contribution from Local Budget (District Budget)

Activities: Each activity listed The Road Map are classified into five categories: (A) Development of renewable energy technology/Installation; (B) Formulation of supporting regulations and policies; (C) Development of institutional framework and definition of stakeholder roles; (D) Investment and funding and (E) Research and Development. The activities of the program logic of Sumba Iconic Island are then designed according to these five categories as it is intended to prepare an M&E framework at the program level. Considering the importance of capacity building activities in this initiative, a new category, capacity building activities for technical and non-technical issues (F), is introduced as a new category to be included in this program logic and the Road Map.

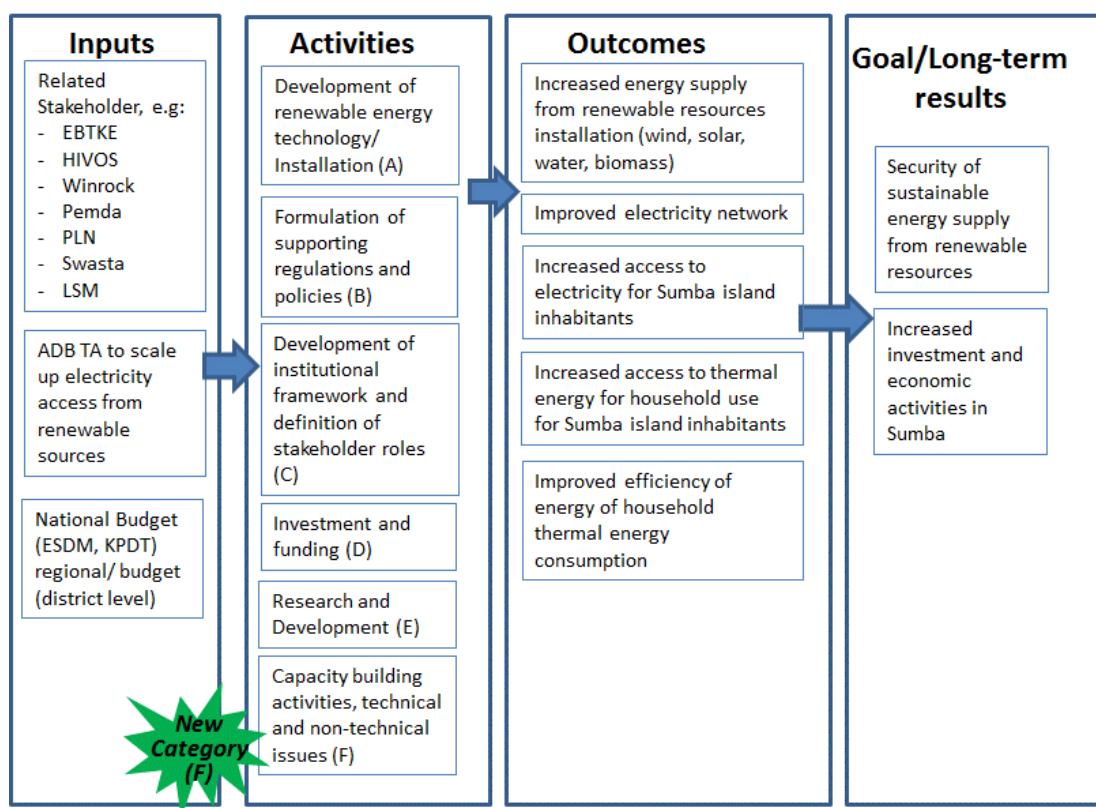
Outcomes: Outcomes define the results that are expected to be achieved through Activities over a short to medium term period, i.e., 1 to 5 years. For Sumba Iconic Island initiatives, the overall outcomes of the programs are:

1. Increased energy supply from renewable resources installation (wind, solar, water, biomass)
2. Improved electricity network
3. Increased access to electricity for Sumba island inhabitants
4. Increased access to thermal energy for household use for Sumba island inhabitants
5. Improved efficiency of energy utilization/consumption

Goal/long-term results: it is expected that beyond five (5) years since the program started, the impacts of the program are: (i) security of sustainable energy supply from renewable resources; and (ii) Increased investment and economic activities in Sumba.



Exhibit 3.1 Program Logic of Sumba Iconic Island



3.2 LOGICAL FRAMEWORK FOR SUMBA ICONIC ISLAND

Exhibits 3.2, 3.3, and 3.4 are the logical framework (herein after referred to as “log-frame”) as the basis of M&E Framework. This consist of 3 (three) sub-log frames to monitor the progress of Activities (Exhibit 3.2, and Appendix A), to assess the Outcomes (Exhibit 3.3 and Appendix A), and to evaluate the Long-term Results (impact) (Exhibit 3.4 and appendix A) of Sumba Iconic Island program. Indicators to be monitored or evaluated are assigned for each activity component A, B, C, D, E and F. Means of verification for each indicators of each log frame (Activities, Outcomes or Long-Term Results) indicates what to be verified (“data sources”), who verify (“person/institution responsible to capture data”) and when it is verified (“time frame and frequency”).

A reference list of activities to be conducted and to be completed (“target of activities”) is required to monitor and to keep the track the progress of on-going activities as well as to assess the implementation of the completed project. Road Map, as the official living document containing all projects to be implemented in Sumba Iconic island program, becomes the main reference source. The means for verifications are records that have been collected in two stages: at the project level (sub-activity) which are reported to complete the monitoring templates at the program level. The records collected at the project level is based on log-frame of each project, which will need to be developed further.

Considering that one of the key objectives of ADB TA is to elevate the Road Map from a collection of pilot projects to a coherent, least-cost plan, the log frame will follow any adjustment that may take place in the Road Map due to inclusion of the least-cost plan



results. This will include the reference list/target of activities, and the reference target of expected completed projects.

While the monitoring of activities and assessment of outcomes are proposed to be conducted bi-annually in this Framework, the long-term results or impacts are measured against the targeted indicators (or the projection of the targeted indicators) and is proposed to be conducted at the earliest five years after the Road Map was issued (proposed to be conducted at the earliest in 2018).

The proposed indicators to measure the long-term results in securing sustainable resources are the electrification ratio as defined in the Road Map, and the electrification rate (increase of household with access to grid connection). In electrification ratio, the household with access to electricity from non-grid connection, such as SEHEN is included, while the electrification rate takes into account solely the household with connection to grid. The indicators for non-electricity energy utilization from renewable resources are the justified completed and operational household thermal energy project included in the Road Map such as the Improved Cooking Stove (ICS).

The log frame does not contain the activities related to biofuel as the indicator and activities listed in the Road Map regarding biofuel is either (i) no longer valid; or (ii) unclear target and definition of achievement in the Road map. Therefore, it is necessary to re-confirm with the key stakeholders whether activities related to bio-fuel implementation is practical and realistic to be included in the program.



Exhibit 3.2: Logical Framework to Monitor Progress of Activities

SUMBA ICONIC ISLAND	Description	Indicators	Means of verification			Assumptions
			Data Sources	Person/institution responsible to collect or capture data	Time Frame and frequency	
Activities	Development of renewable energy technology/ Installation (A)	1. No. of renewable energy power projects* by private sectors 2. Installed capacity (kW) of renewable energy power projects developed by private sectors 3. Number of on-going renewable energy power projects being developed by PLN 4. Installed capacity (kW) of on-going renewable energy power projects being developed by PLN 5. Number of on-going solar PV (centralized and SHS) being developed funded MEMR and State Ministry for Development of Disadvantaged Regions, SMDRR 6. Installed capacity of on-going solar PV (centralized and SHS) (kWp) being developed funded by National Budget (MEMR and State Ministry for Development of Disadvantaged Regions, SMDRR) 7. Number of biogas digester being developed (on-going) by community, supported by (i) NGO; and (ii) national government 8. Number of improved cookstoves being constructed by community, supported by (i) NGO; and (ii) national government 9. Total kilometers of 20 KV lines and 70 KV lines of grid	Reference on targeted activities: No. of project listed in the Road Map. Proposed alternative: projection of number of installation based on least-cost plan from study carried out under TA ADB Data of on-going project: Completed Monitoring template "Activity" section A Reference on on-going project: completed Monitoring Plan template "Activity" section A for each sub-activity level	POKJA II, led by Pak Sulaiman, and Pak Budhi Dharma (ESDM provinsi NTT). Data gathering at project/sub-activity level supported by Universitas Nusa Cendana, and TA ADB personnel on-site (castlerock)	Minimum the information is updated twice a year, discussed and agreed during the bi-annual meeting of each working group (<i>Rapat Pleno</i>)	
	Formulation of supporting regulations and policies (B)	No. of supporting regulations and policies currently being developed to facilitate the installation and operation of renewable energy projects**, this include policies and regulations regarding feed-in tariff, removal of imported custom duties for renewable energy equipment, and incentives/fiscal policies for renewable energy projects	Reference on targeted activities: - List of number of policies and regulations to facilitate, including incentives, given in the Road Map Data of on-going project: Completed Monitoring template "Activity" Section B Reference on on-going project: completed Monitoring Plan template "Activity" section B for each sub-activity level	POKJA I, led by Pak Budiman (DGNRECE/EBTKE), Pak Tondo (Research and Development Agency, MEMR/ Balitbang ESDM), and Pak Suwondo (DGNRECE/EBTKE) Data gathering at project/sub-activity level supported by Universitas Nusa Cendana, and TA ADB personnel on-site (castlerock)	Minimum the information is updated twice a year, discussed and agreed during the bi-annual meeting of each working group (<i>Rapat Pleno</i>)	
	Development of institutional framework and definition of stakeholder roles (C)	1. Number of licenses, permits and commercial transaction agreement for renewable energy project development being processed by the local government 2. Number of regular meetings on Sumba Iconic island implementation expected to be organized, involving national and local government representatives 3. Number of institutions/institutional framework developed to support Sumba Iconic island implementation	Reference on targeted activities: - Type of licences and permits listed in the Road Map - List of Meetings and discussions with local government and national government classified in category C in the Road Map Data of on-going project: Completed Monitoring template "Activity" section C Reference on on-going project: completed Monitoring Plan template "Activity" section C for sub-activity level	POKJA I, led by Pak Budiman (DGNRECE/EBTKE), Pak Tondo (Research and Development Agency, MEMR/ Balitbang ESDM), and Pak Suwondo (DGNRECE/EBTKE) Data gathering at project/sub-activity level supported by Universitas Nusa Cendana, and TA ADB personnel on-site (castlerock)	Minimum the information is updated twice a year, discussed and agreed during the bi-annual meeting of each working group (<i>Rapat Pleno</i>)	
	Investment and funding (D)	1. Investment of renewable energy power projects* by private sectors (in IDR and US\$) 2. Investment of renewable energy power projects* being developed by PLN (in IDR and US\$) 3. Amount of funding for on-going solar PV (centralized and individuals) by national budget (MEMR and State Ministry for Development of Disadvantaged Regions, SMDRR) (IDR and US\$) 4. Amount of funding for improved cookstoves being constructed by community (IDR and US\$) 5. Amount of funding for biogas digester being developed (on-going) by community (IDR and US\$) 6. Amount of investment estimated for building 20 KV lines and 70 KV lines of grid extension (IDR and US\$)	Reference on targeted activities: Baseline reference is required (not yet conducted) Data of on-going project: Completed Monitoring template "Activity" section D Reference on on-going project: completed Monitoring Plan template "Activity" section D for each sub-activity level	POKJA III, led by Ibu Fitri (DGNRECE/EBTKE) and Ibu Gita Meidita (Secretariat/Hivos) Data gathering at project/sub-activity level supported by Universitas Nusa Cendana, and TA ADB personnel on-site (castlerock)	Minimum the information is updated twice a year, discussed and agreed during the bi-annual meeting of each working group (<i>Rapat Pleno</i>)	
	Research and Development (E)	Number of research and development activities being conducted in renewable energy** technology development (including Feasibility Study, financial and economic assessment, conceptual development, etc)	Reference on targeted activities: No. of research and development activities listed in the Road Map under category E Data of on-going project: Completed Monitoring template "Activity" section E Reference on on-going project: completed Monitoring Plan template "Activity" section E for each sub-activity level	POKJA II, led by Pak Sulaiman, and Pak Budhi Dharma (ESDM provinsi NTT). Data gathering at project/sub-activity level supported by Universitas Nusa Cendana, and TA ADB personnel on-site (castlerock)	Minimum the information is updated twice a year, discussed and agreed during the bi-annual meeting of each working group (<i>Rapat Pleno</i>)	
	Capacity building activities, technical and non-technical issues (F)	Number of capacity building activities being conducted to empower national government, local government and communities	Reference on targeted activities: No. of capacity building listed in the Road Map Data of on-going project: Completed Monitoring template "Activity" section F Reference on on-going project: completed Monitoring Plan template "Activity" section F for each sub-activity level	POKJA III, led by Ibu Fitri (DGNRECE/EBTKE) and Ibu Gita Meidita (Secretariat/Hivos) Data gathering at project/sub-activity level supported by Universitas Nusa Cendana, and TA ADB personnel on-site (castlerock)	Minimum the information is updated twice a year, discussed and agreed during the bi-annual meeting of each working group (<i>Rapat Pleno</i>)	

Note: *Scope of renewable energy technology covered: (Solar PV, Wind, mini/micro-hydro, biomass small scale power plants)

**Scope of renewable energy technology covered: (Solar PV, Wind, mini/micro-hydro, biomass small scale power plants, biogas digester for household and improved cooking stoves)



Exhibit 3.3 Logical Framework to Assess the Outcome

SUMBA ECONOMIC ISLAND	Description	Indicators	Means of verification			Assumptions
			Data Sources	Person/institution responsible to collect or capture data	Time Frame and frequency	
Outcomes	Increased energy supply from renewable resources installation (wind, solar, water, biomass)	1. Number of installed capacity of power plants run by renewable resources (mini/micro hydro, wind, solar PV/hybrid, biomass) (kW), installed by private sectors, PLN, and related Ministries (MEMR and SMDDR) 2. Operating hours of completed and commissioned renewable energy power projects as listed in 1. (in kWh)	Reference on targeted activities: No. of project installed capacity target listed in the Road Map. Proposed alternative: projection of number of installation based on least-cost plan from study carried out under TA ADB Data of completed project: Completed Monitoring template section "Outcomes" on (1) records on installed capacity of completed renewable energy projects, which has been included as a part of planned projects in the Road Map; (2) records on operation hours of completed projects as listed in (1), in kWh Reference on completed project: completed Monitoring Plan template section "Outcomes" for each sub-activity level on (1) records on installed capacity of completed renewable energy projects, which has been included as a part of planned projects in the Road Map; (2) records on operation hours of completed projects as listed in (1), in kWh	Led by secretariat, supported by POKJA II, Undana and TA ADB personnel on-site (Castlerock)	Minimum the information is updated twice a year, discussed and agreed during the bi-annual meeting of each working group (Rapat Pleno)	Risks: poor performance of renewable energy power projects due to weather fluctuation (less water flow, low wind speed, overcast sky) Mitigation: weather fluctuation has been taken into account in the feasibility study and design of the projects
	Improved electricity network	Total kilometers of 20 KV lines and 70 KV lines of grid extension being constructed	Reference on targeted activities: length of grid extension (20 KV and 70 KV) with the timeframe given in the roadmap. Proposed alternative: the targeted grid extension, 20 and 70 KV will be updated based on the least-cost study carried out under ADB TA Data of completed project: Completed Monitoring template for "Outcomes" on records on completed works on grid extension obtained from interview with PLN personnel in-charge for grid connection work in Sumba (to be confirmed with PLN) Reference on completed project: interview with PLN personnel in-charge for grid extension work in Sumba, and PLN project report on grid extension work	Led by secretariat, supported by POKJA II, Undana and TA ADB personnel on-site (Castlerock)	Minimum the information is updated twice a year, discussed and agreed during the bi-annual meeting of each working group (Rapat Pleno)	
	Increased electricity access in Sumba island	Increased electrification ratio (Percentage of household with access to electricity).	Reference on targeted activities: The baseline reference for electrification ratio is the electrification ratio in 2012 Data of completed project: Completed Monitoring template for "Outcomes" on	Led by secretariat, supported by POKJA II, Undana and TA ADB personnel on-site (Castlerock)	Minimum the information is updated twice a year, discussed and agreed during the bi-annual meeting of each working group (Rapat Pleno)	This is estimated for each district in Sumba by the following algorithm: electrification ratio = number of household with access to electricity/total number of household
	Increased access to thermal energy for household use for Sumba island inhabitants	Number of biogas digester completed and operated by community, supported by (i) NGO; and (ii) national government	Reference on targeted activities: - Number of biogas digester targeted to be installed as listed in the Road Map and according to the timeline stated in the Road Map. Data of completed project: Completed Monitoring template for "Outcomes" on records on numbers of biogas digester completed and operated by community, supported by (i) NGO; (ii) national government Reference on completed project: completed Monitoring Plan section "Outcomes" for each sub-activity level on numbers of biogas digester completed and operated by community, supported by (i) NGO; (ii) national government, distinguished per district in Sumba Island	Led by secretariat, supported by POKJA II, Undana and TA ADB personnel on-site (Castlerock)	Minimum the information is updated twice a year, discussed and agreed during the bi-annual meeting of each working group (Rapat Pleno)	
	Improved efficiency of energy of household thermal energy consumption	Number of improved cookstoves completed and operated by community, supported by (i) NGO; and (ii) national government	Reference on targeted activities: - Number of improved cookstoves targeted to be installed as listed in the Road Map and according to the timeline stated in the Road Map. Data of completed project: Completed Monitoring template for "Outcomes" on records on numbers of improved cookstoves completed and operated by community, supported by (i) NGO; (ii) national government Reference on completed project: completed Monitoring Plan section "Outcomes" for each sub-activity level on numbers of improved cookstoves completed and operated by community, supported by (i) NGO; (ii) national government, distinguished per district in Sumba Island	Led by secretariat, supported by POKJA II, Undana and TA ADB personnel on-site (Castlerock)	Minimum the information is updated twice a year, discussed and agreed during the bi-annual meeting of each working group (Rapat Pleno)	



Exhibit 3.4 Logical Framework to Evaluate the Long-Term Results (beyond 5 years)

SUMBA ICONIC ISLAND	Description	Indicators	Means of Verification			Assumptions
			Data Sources	Person/institution responsible to collect or capture data	Time Frame and frequency	
Long-term results (beyond 5 years)	Security of sustainable energy supply from renewable resources	1. Electrification ratio, measured against target 2. Increased electrification rate, measured against target 3. Proven operating hours of completed and commissioned renewable energy power projects defined by source of energy (small-hydro, biomass, small wind, solar PV) 4. Proven number of installed capacity of power plants run by renewable resources (mini/micro hydro, wind, solar PV/hybrid, biomass) (kW), installed by private sectors, PLN, and related Ministries (MEMR and SMDOR) 5. Diesel fuel savings as a result of increased renewable energy power generation (small hydro, biomass, wind, solar PV) installation being operated (in Ton of Oil Equivalent, TOE) 6. percentage of renewable energy generated through PLN network vs the total renewable energy generation (estimated based on generation [MWh]) 7. Proven number of biogas digester completed and operated by community, supported by (i) NGO; and (ii) national government 8. kerosene or diesel fuel savings as a result of utilization of biogas for household purposes (and small industry, if any) 9. Proven number of improved cookstoves completed and operated by community, supported by (i) NGO; and (ii) national government 10. Kerosene or diesel fuel savings as a result of improved cookstoves completed and operated by community supported by (i) NGO; and (ii) National government (Oil Equivalent, TOE)	Reference target and baseline: 1. 90% electrification ratio 2. for electrification rate: (i) baseline reference need to be estimated (determination of baseline reference year: same year as baseline reference for electrification ratio); (ii) target reference for electrification rate by 2020 needs to be determined 3, 4, and 5: Proven operating hours should be verified to ensure that each installation is working well for at least 3 years from the commissioning date Source of data to measure results: The completed monitoring template section "Outcome" for all indicators (program level), that have been completed bi-annually, for the past five years Reference for measuring results: Field evaluation of the operation carried out at project level (Solar, biomass (power and thermal), hydro, wind,) by a consultant or an independent third party to verify the documented records on operating installations	Supervised by Secretariat, a consultant or an independent third party is engaged to measure results, supported by Undana (to be confirmed with stakeholders)	Conducted after 5 years of Sumba Iconic Implementation (five years after the issuance of the Road Map: in 2018) --> to be confirmed and verified with stakeholders	Definition of electrification ratio = number of household with modern access to electricity/total number of household, in this context, the household with access to electricity from non-grid connection, such as SEHEN is included Definition of electrification rate = number of household with access to grid electricity connection/total number of household
	Increased investment and economic activities in Sumba taking into account the sustainable socio-environment aspects of Sumba livelihood	1. Increased household income/per capita, measured against target and reference (baseline) 2. Proven amount of investment on renewable energy in Sumba (in US\$) 3. Number of local people hired to manage and maintain the renewable energy project (i.e. in micro hydro project, and if possible by gender) 4. Amount of GHG emissions reductions achieved as a direct result of initiatives to reduce emissions, in metric tons of CO2 equivalent 5. Conservation area or area of protected forest being changed in use (in m2) due to (i) Renewable projects being constructed and operated in that area; and (ii) grid extension development	Reference target and baseline: 1. defined and determined from the socio-economic study conducted by Hivos (need confirmation from the stakeholders) 2. defined through environmental baseline study (to be confirmed who and when it could be conducted, maybe UNDANA?) 3. target is yet to be defined (TBD) Source of data and reference to measure results: -Secondary socio-economic data (such as Susenas data) on household income -Results on socio-economic survey conducted by a consultant or an independent party after 5 years of the Sumba Iconic Road Map issuance	Supervised by Secretariat, a consultant or an independent third party is engaged to measure results, supported by Undana (to be confirmed with stakeholders)	Conducted after 5 years of Sumba Iconic Implementation (five years after the issuance of the Road Map: in 2018) --> to be confirmed and verified with stakeholders	



4. INSTITUTIONAL FRAMEWORK

4.1 M&E ORGANIZATION FOR SUMBA ICONIC ISLAND, DOCUMENTING AND REPORTING

The organization structure for M&E activities is developed based on the Decision of Director General, *EBTKE*, MEMR 602 K/73/DJE/2013 and is illustrated in Exhibit 4.1. POKJA I coordinates M&E activity for component B and C, POKJA II for component A and E, and POKJA III for component D and F. Secretariat, as stated in the Decision, is responsible for facilitating and coordinating the M&E and reporting for Sumba Iconic Island program. The reporting flow to organization committee and to the steering committee mimic the reporting flow for other activities of Sumba Iconic Island.

Steering Committee					
Organization Committee					
Secretariat					
POKJA I		POKJA II		POKJA III	
Formulation of supporting regulations and policies (B)	Development of institutional framework & definition of stakeholder roles (C)	Development of renewable energy technology/ Installation (A)	Research and Development (E)	Investment and funding (D)	Capacity building activities, technical and non-technical issues (F)

Energy sources	Activity in Road Map	No.
Wind Energy	Grid Wind Energy (PLTB Grid)	1
	IPP grid wind energy	1
	Non-grid wind energy	2
Mini/Micro hydro	Off-grid hydro power	5
	Small scale hydro power	8
Solar Energy	Small Scale Communal PV	6
	Grid-connected PV	6
	IPP Grid connected PV	6
	Small Scale Communal PV	6
Bioenergy: Biomass	biomass boiler-turbine	13
	biomass gasification	14
Bioenergy: Biogas	Indonesia Cookstove	10
	Household Biogas (HH Biogas BIRU)	9
	Biogas waste stream	15
Bioenergy: Biofuel	Available feedstock for biofuel	3
	new feedstock for biofuel	11
	Ethanol development	12
Electricity Network Expansion	Off-grid household system	4
	Grid integration and extension	7



Exhibit 4.1 M&E Organization Structure for Sumba Iconic Island

Roles and responsibilities for POKJA, Secretariat, Organization Committee and Steering Committee is illustrated in Exhibit 4.2.

In step 1, each POKJA assigns the personnel in charge for M&E Framework. This was conducted during the regular meeting (*Rapat Pleno*) of Sumba Iconic Island in Kupang, on 3-4 October 2013. Currently, POKJA I consist of representative from EBTKE (bio-energy divisions) , and the Research and Development Agency, MEMR; POKJA II consists of representative of Energy and Mineral Office of East Nusa Tenggara Province and PLN Eastern Nusa Tenggara, and POKJA III consists of representative from EBTKE (Bio-



energy and New and other Renewable Energy Divisions), and a representative from NGO. These personnel will be responsible to lead the development of the M&E plan for each activity of Sumba Iconic Island at the project level. The personnel appointed from each POKJA may change and the continuity of the information collection, data dissemination and record keeping rely with the Secretariat.

In Step 2, the first assignment for each personnel in charge for M&E for each POKJA is to lead the preparation the log-frame and M&E Plan (including forms and monitoring template at project level) relevant to each POKJA activity component (A, B, C, D, E or F) at the project level. This will be done through a Training/Workshop and the results will be the basis of the M&E plan for each activity which will then need to be updated regularly. Each POKJA will also need to complete the monitoring template form for the program level. The completed information gathered from this forms will be used to update the Road Map bi-annually. The reference for the monitoring forms at the program level are the information gathered at project level.

Secretariat (Step 3) plays an important role in the M&E Framework to coordinate the M&E activity of POKJA, coordinate the data gathering at the project level as well as conduct the review and analysis of M&E activity that will be reported to the Organization Committee. The secretariat will also need to manage, disseminate and responsible for record keeping of M&E data. Organization committee is responsible to review reports delivered by the secretariat and hand the results of the review to the Steering Committee that will adjust the strategy of the program based on M&E findings.

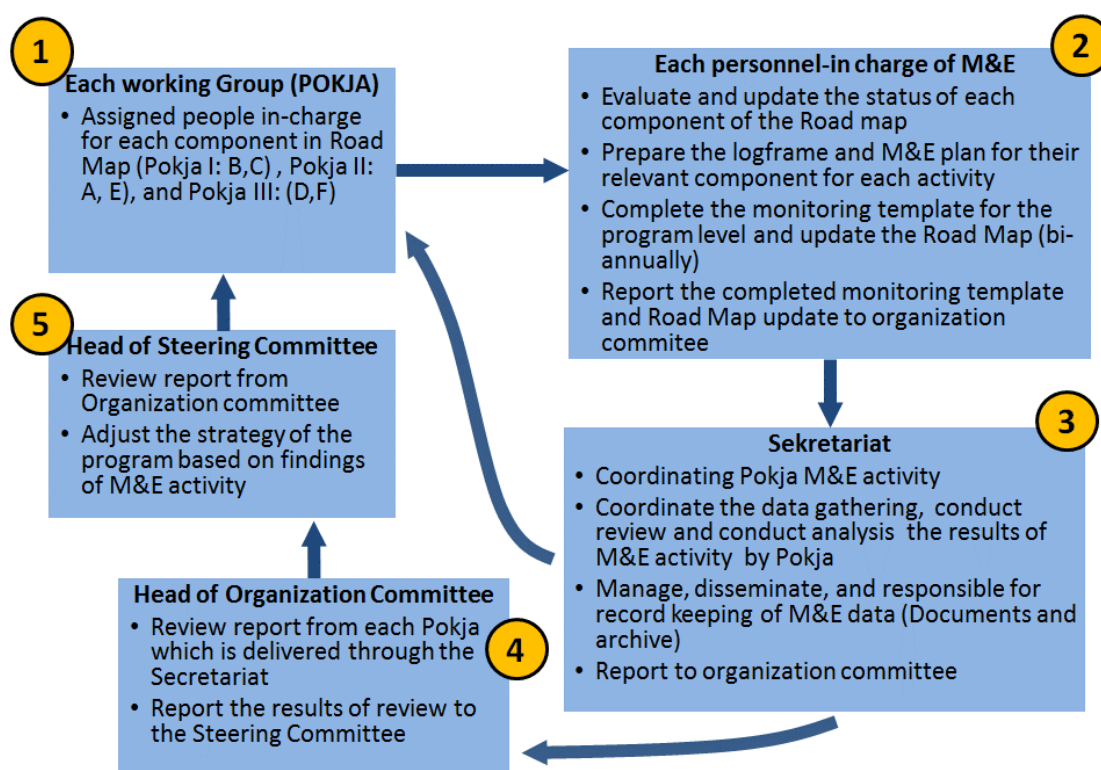


Exhibit 4.2 Roles and Responsibilities in M&E Organization Structure



4.2 TYPE OF DATA AND TIME FRAME/FREQUENCY FOR M&E AT PROGRAM LEVEL

4.2.1 Activities and Outcomes

In collecting data to monitor Activities, as per stated in Exhibit 3.2, log-frame to monitor progress of Activities, each POKJA will be responsible to complete information according to relevant component (A,B,C,D,E and F) that they are assigned to. As mentioned in the previous chapter, reference lists of activities to be conducted (“target of activities”) are taken from the Road Map as the benchmark to monitor the progress of on-going activities.

Appendix B contains a sample of Monitoring form to monitor the progress of Activities for POKJA I, POKJA II and POKJA III. Besides the information on the on-going activities as indicated, other information that need to be prepared beforehand is the baseline information. The baseline data contained in Appendix B are still need to be confirmed with the stakeholder during the meeting for discussing indicators and baseline. Moreover, and some of the baseline information are need to be assessed through baseline study. The main source of information will be the monitoring forms at project level. During the meeting with EBTKE, It is proposed that the Baseline reference year is the launch of Sumba Iconic Island, i.e. 2011.

In monitoring the Outcomes, the main responsible POKJA is POKJA II as Outcomes are focused only on the completed and implemented projects, while all the supporting components to support projects construction and implementation (Component B, C, D, E and F) are already monitored in “Activities”.

The proposed mandated frequency of monitoring the activities and outcomes are conducted bi-annually following the schedule of bi-annual meeting (*Rapat Pleno*) of Sumba Iconic Island. It is understood that each POKJA may have more numbers of meeting in addition to *Rapat Pleno*, however, the monitoring results under other meetings are not proposed to be a mandatory reporting.

4.2.2 Long-Term Results

In evaluating the long-term results, the sustainability and impacts the completed and projects that are being operated are assessed. The sustainability is evaluated through the status of the completed projects and their operation and maintenance condition, the operation management, and the cost effectiveness analysis. The impact of Sumba Iconic Island is measured by the increase of household income against the baseline reference. For this, information from the socio-economic baseline survey initiated by HIVOS could be used as the reference baseline. It is proposed that the measurement of long term result be conducted five years after the launch of Sumba Iconic Island Road Map, i.e., in 2018.

In evaluating long term results, it is proposed that a third party or a consultant conducts the impact study. Type of data required for the study at the project level may be quite exhaustive. Hence, for cost effectiveness, the impact study may be carried out for selected project. Below is the type of data required to be gathered for the Sumba Iconic island impact assessment. This data may also be gathered during the implementation of M&E activities at the project level:

- Data on operations and management:
 - o Operational records to provide a review of operational performance for renewable energy projects conducted as a part of Sumba iconic island initiative
 - o Organization and management structure, associated staffing requirements and management activities of



- Standard operational procedures document
- Social and environmental impact evaluation
- Existing Monitoring and evaluation plan and documentation on the evaluation and monitoring activities that have been conducted.
- Data on economic benefits:
 - Number of households receiving energy supplies provided by the renewable energy project and the use to which this service is being put (e.g. lighting, phone charging, etc.), and the type and quality of energy services that have been displaced (e.g. kerosene lighting)
 - Household income and expenditure survey report(s) and any socio-economic assessments on energy consumption by on-grid and off-grid households in the location and the resultant impacts of electrification on their energy consumption. In this case, data from national survey (SUSENAS) by National Statistic Office (BPS) may be indispensable
 - What kind of new economic activity has been enabled by the provision of electricity supply
 - Other tangible and non-tangible benefits received by Sumba community



5. NEXT STEPS

While this report has delineated the tasks to be conducted at the program level of M&E Framework for Sumba Island Initiative, several steps are still required to complete the framework:

1. Considering the size and various activities conducted under the Sumba Iconic Island Initiative, this M&E framework at the high level are still need to be completed by the detailed monitoring plan at the project level.
2. Detailed M&E plan is proposed to be developed and confirmed by each POKJA, under a training/workshop. This training/workshop is also intended to introducing and familiarizing the M&E framework (Log frame, Institutional Framework, and Monitoring templates at program level) for the POKJA representative in –charge of M&E activities.
3. Once the detailed M&E Plan is developed, another training will be organized for the Local Pemda (at district level) and the TA ADB personnel in Sumba, to implement the M&E activity at the project level
4. Certain baseline assessment needs to be conducted. This include:
 - a. The reference baseline assessment for electricity ratio and electricity rate. The electrification ratio and electrification rate for Sumba Island by 2013 need to be defined and stipulated to avoid different interpretation.
 - b. Assessment of what have been existed, implemented and operated prior to the reference baseline date (i.e. 2013). A baseline study is proposed to be conducted to evaluate the number of grid connected hydro and solar, as well as off-grid hydro and solar, which have been constructed and operated prior to 2013. The baseline study will also need to indicate the number of installation which have been constructed but is not yet operated. The baseline study will be mostly a desktop study as most information regarding baseline information above have been incorporated during the inception phase and the previous work conduct by HIVOS.
5. As raised in the inception report, the Road Map will need to be updated by a coherent, least-cost plan. Since the M&E framework is based on the Road Map, further results on the least-cost plan work will also need to be integrated in the M&E Framework.



APPENDIX A: LOGFRAMES



APPENDIX B: SAMPLE OF MONITORING FORMS

LOGFRAME KEGIATAN (1)

SUMBA ICONIC ISLAND	Penjelasan	Indikator	Cara Verifikasi			Asumsi
			Sumber Data	Orang/lembaga yang bertanggung jawab untuk mengumpulkan atau menyajikan data	Jangka Waktu dan Frekuensi	
Kegiatan	Implementasi Penyediaan Energi (komponen A)	(1) Jumlah proyek pembangkit listrik energi terbarukan (PLT Bayu, PLTMH, PLT biomassa, PLTS) yang sedang dibangun oleh investasi swasta murni atau NGO/Masyarakat/Donor	Acuan target kegiatan:	POKJA II, dipimpin oleh Pak Sulaiman, dan Pak Budhi Dharma (ESDM propinsi NTT). Pengumpulan data pada tingkat proyek/sub-kegiatan diawasi oleh POKJA II	Pemuktahiran data dilakukan minimum dua kali setahun, didiskusikan dan disepakati pada saat pertemuan dua tahunan di setiap PokJa (Rapat Pleno)	
		(2) Kapasitas terpasang (kW) dari proyek pembangkit listrik energi terbarukan yang dibangun oleh (PLT Bayu, PLTMH, PLT biomassa, PLTS) yang dibangun oleh investasi swasta murni atau NGO/Masyarakat/Donor	Jumlah proyek yang ditetapkan dalam Road Map. Alternatif yang diusulkan: proyeksi jumlah instalasi berdasarkan rencana berbiaya terendah hasil studi yang dilakukan oleh TA ADB			
		(3) Jumlah proyek pembangkit listrik energi terbarukan (PLT Bayu, PLTMH, PLT biomassa, PLTS) yang sedang dibangun dibangun oleh PLN	Data proyek berjalan: Lembar pemantauan bagian A tentang "kegiatan" yang telah dilengkapi			
		(4) Kapasitas terpasang (kW) dari proyek listrik energi terbarukan (PLT Bayu, PLTMH, PLT biomassa, PLTS) yang dibangun oleh PLN				
		(5) Jumlah pembangkit listrik energi terbarukan (PLT Bayu, PLTMH, PLT biomassa, PLTS) yang sedang dibangun dan didanai oleh APBN dan/atau APBD	Acuan untuk proyek berjalan: lembar rencana pemantauan bagian A tentang "kegiatan" yang telah dilengkapi untuk setiap tingkat sub-kegiatan			
		(6) Kapasitas terpasang (kW) pembangkit listrik energi terbarukan (PLT Bayu, PLTMH, PLT biomassa, PLTS) yang sedang dibangun dan didanai oleh APBN dan/atau APBD				
		(7) Jumlah instalasi biogas yang sedang didistribusikan kepada masyarakat dengan pendanaan dari (i) APBN ; (ii) APBD; (iii) LSM; (iv) Swasta; (v) Swadaya Masyarakat; (vi) kerjasama multipihak				
		(8) Ukuran digester biogas (dalam m ³) yang sedang didistribusikan kepada masyarakat dengan pendanaan dari (i) APBN ; (ii) APBD; (iii) LSM; (iv) Swasta; (v) Swadaya Masyarakat; (vi) kerjasama multipihak				
		(9) Jumlah kompor hemat energi yang sedang didistribusikan kepada masyarakat dengan dukungan dari (i) APBN ; (ii) APBD; (iii) LSM; (iv) Swasta; (v) Swadaya Masyarakat; (vi) kerjasama multipihak				
		(10) Jumlah proyek penanaman bahan baku minyak nabati yang sedang dirintis, didanai oleh APBN dan/atau APBD, swasta, dan LSM				
		(11) Jumlah (unit) fasilitas Produksi Bahan Bakar Nabati yang sedang dibangun dan didanai oleh APBN dan/atau APBD, swasta, dan LSM				
		(12) On-grid: Panjang jaringan distribusi tegangan menengah (20 KV dan 70 kV) yang dibangun dengan Anggaran PLN, APBN				
		(13) Off-grid: Panjang jaringan distribusi tegangan rendah dan tegangan menengah (20 KV) yang dibangun dengan Anggaran PLN, APBN dan APBD, swasta, dan LSM				
	Perumusan peraturan dan kebijakan terkait (B)	(1) Jumlah peraturan dan kebijakan <u>tingkat nasional</u> , dalam bentuk insentif/kebijakan fiskal, dan kebijakan teknis untuk memfasilitasi pembangunan dan pengoperasian proyek-proyek energi terbarukan **, (contoh: pembebasan bea masuk, feed-in tariff, dst)	Acuan target kegiatan: - daftar sejumlah kebijakan dan peraturan untuk memfasilitasi kegiatan, termasuk pemberian insentif, seperti tertuang dalam Road Map Data kegiatan yang sedang berlangsung: Lembar pemantauan bagian B tentang "kegiatan" yang telah dilengkapi	POKJA I, dipimpin oleh Pak Budiman (DGNREEC/EBTKE), Pak Todo (Balitbang ESDM), dan (DGNREEC/EBTKE) Pengumpulan data pada tingkat proyek/sub-kegiatan diawasi oleh POKJA I	Pemuktahiran data dilakukan minimum dua kali setahun, didiskusikan dan disepakati pada saat pertemuan dua tahunan di setiap PokJa (Rapat Pleno)	
		(2) Jumlah peraturan dan kebijakan <u>tingkat daerah</u> untuk memfasilitasi pembangunan dan pengoperasian proyek-proyek energi terbarukan (contoh: kebijakan pemerintah daerah untuk pemanfaatan energi dari EBT, kebijakan pembentukan badan usaha/koperasi/unit khusus untuk pengelolaan EBT)	Acuan untuk proyek berjalan: lembar rencana pemantauan bagian B tentang "kegiatan" yang telah dilengkapi untuk setiap tingkat sub-kegiatan			
Keterlibatan dan peran para pihak terkait (C)	(1) Jumlah perijinan, sertifikat dan perjanjian transaksi komersial untuk proyek energi terbarukan. Perjanjian transaksi komersial tidak hanya terbatas pada PPA tapi juga dapat termasuk perjanjian jual beli bahan baku untuk produksi bioetanol/biofuel	Acuan target kegiatan: - jenis lisensi dan izin yang ditetapkan dalam Road Map - daftar pertemuan dan diskusi yang dilakukan dengan pemerintah daerah dan nasional dan termasuk dalam kategori C di Road Map	POKJA I, dipimpin oleh Pak Budiman (DGNREEC/EBTKE), Pak Todo (Balitbang ESDM), dan (DGNREEC/EBTKE) Pengumpulan data pada tingkat proyek/sub-kegiatan didukung oleh pihak yang ditunjuk oleh penanggung jawab monev dalam POKJA I	Pemuktahiran data dilakukan minimum dua kali setahun, didiskusikan dan disepakati pada saat pertemuan dua tahunan di setiap PokJa (Rapat Pleno)		
	(2) Jumlah pertemuan berkala yang membahas pelaksanaan proyek Sumba Iconic Island di tingkat pusat (nasional) dan daerah	Data proyek berjalan: Lembar pemantauan bagian C tentang "kegiatan" yang telah dilengkapi				
	(3) Jumlah lembaga yang mendukung SII	Acuan untuk proyek berjalan: lembar rencana pemantauan bagian C tentang "kegiatan" yang telah dilengkapi untuk setiap tingkat sub-kegiatan				
	(4) Jumlah produk lembaga terkait yang mendukung SII, produk yang memperkuat hubungan kelembagaan (contoh: SK, MoU, Nota kesepahaman, dan dokumen-dokumen lain) dan mekanisme koordinasi yang disusun untuk mendukung pelaksanaan proyek Sumba Iconic Island					

LOGFRAME KEGIATAN (2)

SUMBA ICONIC ISLAND	Penjelasan	Indikator	Cara Verifikasi			Asumsi
			Sumber Data	Orang/lembaga yang bertanggung jawab untuk mengumpulkan atau menyajikan data	Jangka Waktu dan Frekuensi	
Kegiatan	Investasi, pendanaan dan promosi (D)	(1) Nilai pendanaan proyek pembangkit listrik energi terbarukan (PLT Bayu, PLTMH, PLT biomassa, PLTS) yang sedang dibangun oleh investasi swasta murni atau NGO/Masyarakat/Donor (dalam IDR dan US\$)	Acuan target kegiatan:	POKJA III, dipimpin oleh Ibu Fitria (DGNREEC/EBTKE) dan Ibu Gita Meidita (Sekretariat/Hivos) Pengumpulan data pada tingkat proyek/sub-kegiatan didukung oleh pihak yang ditunjuk oleh penanggung jawab movev dalam POKJA III	Pemuktahiran data dilakukan minimum dua kali setahun, didiskusikan dan disepakati pada saat pertemuan dua tahunan di setiap PokJa (Rapat Pleno)	
		(2) Nilai pendanaan proyek pembangkit listrik energi terbarukan (PLT Bayu, PLTMH, PLT biomassa, PLTS) yang sedang dibangun dibangun oleh PLN (dalam IDR dan US\$)	acuan baseline diperlukan (masih belum dilaksanakan)			
		(3) Nilai pendanaan pembangkit listrik energi terbarukan (PLT Bayu, PLTMH, PLT biomassa, PLTS) yang sedang dibangun dan didanai oleh APBN dan/atau APBD (dalam IDR dan US\$)	Data proyek berjalan: Lembar pemantauan bagian D tentang "kegiatan" yang telah dilengkapi			
		(4) Nilai pendanaan instalasi biogas yang sedang didistribusikan kepada masyarakat dengan pendanaan dari (i) APBN ; (ii) APBD; (iii) LSM; (iv) Swasta; (v) Swadaya Masyarakat; (vi) multi stakeholder (dalam IDR dan US\$)	Acuan untuk proyek berjalan: lembar rencana pemantauan bagian D tentang "kegiatan" yang telah dilengkapi untuk setiap tingkat sub-kegiatan			
		(5) Nilai pendanaan fasilitas Produksi Bahan Bakar Nabati yang sedang dibangun dan didanai oleh APBN dan/atau APBD, swasta, dan LSM				
		(6) On-grid: Nilai pendanaan jaringan distribusi tegangan menengah (20 KV dan 70 kV) yang dibangun dengan Anggaran PLN, APBN				
		(7) Off-grid: Nilai pendanaan jaringan distribusi tegangan rendah dan tegangan menengah (20 KV) yang dibangun dengan Anggaran PLN, APBN dan APBD, swasta, dan LSM				
		PROMOSI:				
		(1) Jumlah penayangan informasi SII melalui media (TV, cetak, elektronik)				
		(2) Jumlah kegiatan diseminasi informasi melalui acara-acara publik (contoh: pameran, workshop, FGD, acara kesenian, dll)				
Kegiatan	Penelitian dan Pengembangan (E)	(1) Jumlah lokasi penyebaran informasi melalui pemasangan tulisan SII (kantor pemerintah, fasilitas publik, pilot proyek/demonstrasi plot, dll)				
		(4) Jumlah berdasarkan jenis materi promosi (Poster, banner, leaflets, dst)				
	Kegiatan pengembangan kapasitas yang mendukung program SII (F)	(1) Jumlah per jenis kegiatan penelitian dan pengembangan yang dilakukan untuk penerapan teknologi energi terbarukan** (jenis kegiatan termasuk studi kelayakan, penilaian keuangan dan ekonomi, pengembangan konsep, dll)	Acuan target kegiatan: jumlah kegiatan penelitian dan pengembangan seperti tercantum dalam Road Map dibawah kategori E	POKJA II, dipimpin oleh Pak Sulaiman, dan Pak Budhi Dharma (ESDM propinsi NTT).	Pemuktahiran data dilakukan minimum dua kali setahun, didiskusikan dan disepakati pada saat pertemuan dua tahunan di setiap PokJa (Rapat Pleno)	
		(2) Jumlah hasil/produk kegiatan penelitian dan pengembangan yang dilakukan untuk penerapan teknologi energi terbarukan** (termasuk studi kelayakan, penilaian keuangan dan ekonomi, pengembangan konsep, dll) yang dipublikasikan (Media, laporan, dll)	Data kegiatan penelitian dan pengembangan yang sedang dibangun: Lembar pemantauan bagian E tentang "kegiatan" yang telah dilengkapi Informasi mengenai pelaksana kegiatan penelitian dan pengembangan mengacu kepada Road Map Acuan untuk proyek berjalan: lembar rencana pemantauan bagian E tentang "kegiatan" yang telah dilengkapi untuk setiap tingkat sub-kegiatan	Pengumpulan data pada tingkat proyek/sub-kegiatan didukung oleh pihak yang ditunjuk oleh penanggung jawab movev dalam POKJA II		
Kegiatan	Kegiatan pengembangan kapasitas yang mendukung program SII (F)	(1) jumlah (berdasarkan bentuk kegiatan) pengembangan kapasitas mendukung pogram SII (contoh bentuk kegiatan: workshop dan pelatihan, pendidikan EBT di Sekolah Menengah Kejuruan (SMK) dalam bentuk kurikulum dengan muatan lokal, dll)	Acuan target kegiatan: - jumlah kegiatan pengembangan kapasitas seperti tercantum dalam Road Map Data kegiatan yang berlangsung: Lembar pemantauan bagian F tentang "kegiatan" yang telah dilengkapi	POKJA III, dipimpin oleh Ibu Fitria (DGNREEC/EBTKE) dan Ibu Gita Meidita (Sekretariat/Hivos)	Pemuktahiran data dilakukan minimum dua kali setahun, didiskusikan dan disepakati pada saat pertemuan dua tahunan di setiap PokJa (Rapat Pleno)	
		(2) jumlah orang yang dilatih (berdasarkan daerah, berdasarkan gender dan usia)	Acuan untuk proyek berjalan: lembar rencana pemantauan bagian F tentang "kegiatan" yang telah dilengkapi untuk setiap tingkat sub-kegiatan	Pengumpulan data pada tingkat proyek/sub-kegiatan didukung oleh pihak yang ditunjuk oleh penanggung jawab movev dalam POKJA III		
		(3) jumlah lembaga yang terlibat dalam kegiatan peningkatan kapasitas (sekolah, lembaga pemerintah, gereja, kelompok perempuan, dll)				

LOGFRAME CAPAIAN (1)

SUMBA ICONIC ISLAND	Penjelasan	Indikator	Cara Verifikasi			Asumsi
			Sumber Data	Orang/lembaga yang bertanggung jawab untuk mengumpulkan atau menyajikan data	Jangka Waktu dan Frekuensi	
Capaian	Implementasi penyediaan energi terbarukan dalam bentuk penyediaan listrik (angin/bayu, tenaga surya, air/hidro, biomassa)	(1) Kapasitas terpasang (kW) dari proyek pembangkit listrik energi terbarukan yang dibangun oleh (PLT Bayu, PLTMH, PLT biomassa, PLTS) yang dibangun oleh investasi swasta murni atau NGO/Masyarakat/Donor	Acuan untuk target pencapaian: jumlah proyek untuk memenuhi target kapasitas terpasang seperti ditetapkan dalam Road Map. Alternatif yang diusulkan: proyeksi jumlah instalasi berdasarkan rencana berbiaya terendah hasil studi yang dilakukan oleh TA ADB Data penyelesaian proyek: lembar pemantauan bagian "capaian" yang telah dilengkapi dan berisi catatan tentang (1) kapasitas terpasang pada proyek energi terbarukan yang telah diselesaikan, dan menjadi bagian dari perencanaan proyek didalam Road Map; (2) waktu operasional dari proyek yang telah diselesaikan seperti dimaksud dalam (1), dalam kWh	Dipimpin oleh sekretariat, didukung oleh POKJA II. Pengambilan dan pengkajian data diawasi oleh POKJA II	Pemuktahiran data dilakukan minimum dua kali setahun, didiskusikan dan disepakati pada saat pertemuan dua tahunan di setiap PokJa (Rapat Pleno)	Risiko: kinerja proyek pembangkit listrik energi terbarukan yang buruk akibat fluktuasi cuaca (kurangnya aliran air, rendahnya kecepatan angin, langit mendung) Mitigasi: fluktuasi cuaca telah dipertimbangkan dalam studi kelayakan dan rancangan proyek
		(2) Produksi energi dalam kilowatt hour (kWh) dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan didanai oleh investasi swasta murni atau NGO/Masyarakat/Donor				
		(3) Daya mampu dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan didanai oleh investasi swasta murni atau NGO/Masyarakat/Donor				
		(4) Kapasitas terpasang (kW) dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan dibangun/didanai oleh PLN				
		(5) Produksi energi dalam kilowatt hour dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan dibangun/didanai oleh PLN				
		(6) Daya mampu dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan dibangun/didanai oleh PLN				
		(7) Kapasitas terpasang (kW) dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan dibangun/didanai oleh APBN dan APBD				
		(8) Produksi energi dalam kilowatt hour dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan dibangun/didanai oleh APBN dan APBD				
		(9) Daya mampu dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan dibangun/didanai oleh APBN dan APBD				
	Implementasi penyediaan energi terbarukan dalam bentuk bahan bakar cair untuk kebutuhan transportasi dan lain-lain	(1) Jumlah (unit) fasilitas Produksi Bahan Bakar Nabati yang sudah selesai dibangun dan beroperasi, didanai oleh APBN dan/atau APBD, swasta, dan LSM		Dipimpin oleh sekretariat, didukung oleh POKJA II. Pengambilan dan pengkajian data diawasi oleh POKJA II		
	Pengurangan bahan bakar konvensional sebagai akibat pemanfaatan energi terbarukan (angin/bayu, tenaga surya, air/hidro, biomassa) untuk pembangkitan listrik	(1) Penghematan BBM yang disebabkan oleh pengoperasian pembangkit energi terbarukan (dalam Ton of Oil Equivalent, TOE) yang dibangun oleh pihak swasta atau LSM		Dipimpin oleh sekretariat, didukung oleh POKJA II. Pengambilan dan pengkajian data diawasi oleh POKJA II		
		(2) Penghematan BBM yang disebabkan oleh pengoperasian pembangkit energi terbarukan (dalam Ton of Oil Equivalent, TOE) yang dibangun oleh PLN				
		(3) Penghematan bahan bakar diesel sebagai hasil pengoperasian pembangkit listrik tenaga surya yang dikembangkan atas inisiatif ESDM, KPDT, dan kementerian lainnya (dalam Ton of Oil Equivalent, TOE)				

LOGFRAME CAPAIAN (2)

SUMBA ICONIC ISLAND	Penjelasan	Indikator	Cara Verifikasi			Asumsi
			Sumber Data	Orang/lembaga yang bertanggung jawab untuk mengumpulkan atau menyajikan data	Jangka Waktu dan Frekuensi	
Capaian	Pengurangan bahan bakar konvensional sebagai akibat pemanfaatan energi terbarukan untuk kebutuhan rumah tangga	(1) Penghematan minyak tanah sebagai hasil dari pemakaian bahan bakar biogas untuk kebutuhan rumah tangga (dalam TOE)		Dipimpin oleh sekretariat, didukung oleh POKJA II. Pengambilan dan pengkajian data diawasi oleh POKJA II		
		(2) Penghematan kayu bakar dan minyak tanah sebagai hasil dari pemakaian kompor hemat energi (improved cookstove) yang dioperasikan oleh masyarakat dengan dukungan (i) LSM dan/atau (ii) Pemerintah nasional/daerah (dalam ton of oil equivalent, TOE)				
	Perbaikan jaringan listrik	(1) On-grid: Panjang jaringan distribusi tegangan menengah (20 KV dan 70 kV) yang dibangun dengan Anggaran PLN, APBN, .	Acuan untuk target pencapaian: perluasan panjang jaringan listrik (20 KV dan 70 KV) dalam jangka waktu yang telah ditentukan dalam roadmap. Alternatif yang diusulkan: target perluasan jaringan listrik, 20 dan 70 KV akan dilakukan berdasarkan biaya terendah hasil studi yang dilakukan oleh TA ADB Data penyelesaian proyek: lembar pemantauan bagian "capaian" yang telah dilengkapi dan berisi catatan tentang pekerjaan yang telah dilakukan untuk keperluan perluasan jaringan listrik hasil wawancara dengan staff PLN yang bertanggung jawab dalam hal pemasangan jaringan listrik di Sumba (akan dikonfirmasi dengan PLN)	Dipimpin oleh sekretariat, didukung oleh POKJA II. Pengambilan dan pengkajian data diawasi oleh POKJA II	Pemuktahiran data dilakukan minimum dua kali setahun, didiskusikan dan disepakati pada saat pertemuan dua tahunan di setiap PokJa (Rapat Pleno)	
		(2) Off-grid: Panjang jaringan distribusi tegangan rendah dan tegangan menengah (20 KV) yang dibangun dengan Anggaran PLN, APBN dan APBD, swasta, dan LSM	Acuan untuk penyelesaian proyek: wawancara dengan staff PLN yang bertanggung jawab dalam hal perluasan jaringan listrik di Sumba, dan laporan proyek PLN tentang perluasan jaringan listrik			
	Penambahan akses listrik di pulau sumba	(1) Jumlah jumlah rumah tangga yang menerima akses listrik tersambung dengan grid atas prakarsa SII	Acuan untuk target kegiatan: Acuan baseline untuk rasio elektrifikasi adalah rasio elektrifikasi tahun 2012	Dipimpin oleh sekretariat, didukung oleh POKJA II. Pengambilan dan pengkajian data diawasi oleh POKJA II	Pemuktahiran data dilakukan minimum dua kali setahun, didiskusikan dan disepakati pada saat pertemuan dua tahunan di setiap PokJa (Rapat Pleno)	Perkiraan untuk setiap kabupaten/kota di Sumba dibuat dengan menggunakan algoritma berikut: rasio elektrifikasi = jumlah rumah tangga yang memiliki akses listrik/jumlah total rumah tangga
		(2) Jumlah rumah tangga yang menerima akses listrik yang tidak terkoneksi ke grid (sistem komunal atau sistem rumah tangga/individual) atas prakarsa SII	Data penyelesaian proyek: lembar pemantauan untuk "capaian" yang telah dilengkapi			
		(3) Rasio elektrifikasi (persentasi rumah tangga yang memiliki akses listrik)				
	Penambahan akses energi untuk penggunaan rumah tangga bagi penduduk	(1) Jumlah instalasi biogas yang didistribusikan ke rumah tangga dan beroperasi dengan pendanaan dari (i) APBN ; (ii) APBD; (iii) LSM; (iv) Swasta; (v) Swadaya Masyarakat; (vi) multi stakeholder	Acuan target pencapaian: '- jumlah tabung biogas yang ditargetkan untuk dibangun seperti ditetapkan dalam Road Map dan berdasarkan jangka waktu yang juga telah ditentukan dalam Road Map.	Dipimpin oleh sekretariat, didukung oleh POKJA II. Pengambilan dan pengkajian data diawasi oleh POKJA II	Pemuktahiran data dilakukan minimum dua kali setahun, didiskusikan dan disepakati pada saat pertemuan dua tahunan di setiap PokJa (Rapat Pleno)	
		(2) Ukuran digester biogas (dalam m ³) yang sudah didistribusikan kepada masyarakat dan beroperasi dengan pendanaan dari (i) APBN ; (ii) APBD; (iii) LSM; (iv) Swasta; (v) Swadaya Masyarakat; (vi) multi stakeholder	Data penyelesaian proyek: lembar pemantauan bagian "capaian" yang telah dilengkapi dan berisi catatan tentang jumlah instalasi biogas terpasang dan telah digunakan oleh masyarakat dengan dukungan dari (i) LMS (ii) pemerintah pusat			
		(3) Jumlah kompor hemat energi yang sudah didistribusikan kepada masyarakat dan beroperasi dengan dukungan dari (i) APBN ; (ii) APBD; (iii) LSM; (iv) Swasta; (v) Swadaya Masyarakat; (vi) multi stakeholder	Target pencapaian: jumlah kompor yang ditargetkan untuk diperbarui seperti ditetapkan dalam Road Map dan berdasarkan jangka waktu yang juga telah ditentukan dalam Road Map.			
		(4) Jumlah rumah tangga yang beralih dari penggunaan bahan bakar konvensional (minyak tanah atau kayu bakar) ke pemanfaatan biogas	Data penyelesaian proyek: lembar pemantauan bagian "capaian" yang telah dilengkapi dan berisi catatan tentang jumlah kompor yang telah disalurkan dan digunakan oleh masyarakat			
		(5) Jumlah rumah tangga yang beralih dari penggunaan bahan bakar konvensional (minyak tanah atau kayu bakar) ke pemanfaatan kompor hemat energi				

LOGFRAME HASIL JANGKA PANJANG (1)

SUMBA ICONIC ISLAND	Penjelasan	Indikator	Cara Verifikasi			Asumsi
			Sumber Data	Orang/lembaga yang bertanggung jawab untuk mengumpulkan atau menyajikan data	Jangka Waktu dan Frekuensi	
Hasil Jangka Panjang (diatas 5 tahun)	Keamanan pasokan listrik berkelanjutan dan berasal dari sumber daya terbarukan	(1) Rasio elektrifikasi (<i>electricity ratio</i>), diukur berdasarkan target	Target acuan dan baseline: 1. 90% rasio elektrifikasi; 2. untuk tingkat elektrifikasi: (i) acuan untuk baseline harus diperkirakan (penentuan tahun acuan baseline: tahun yang sama dengan acuan baseline untuk rasio elektrifikasi); (ii) target acuan untuk tingkat elektrifikasi pada tahun 2020 harus ditentukan	Diawasi oleh sekretariat, konsultan atau pihak ketiga yang independen yang terlibat dalam pengukuran hasil	Dilakukan setelah 5 tahun pelaksanaan Sumba Iconic Island (lima tahun setelah penerbitan road map: tahun 2018) → perlu konfirmasi dan verifikasi dengan pemangku kepentingan	Definisi rasio elektrifikasi = jumlah rumah tangga yang memiliki akses listrik/jumlah total rumah tangga, dalam hal ini, rumah tangga yang memiliki akses listrik namun tidak terkoneksi dengan jaringan listrik, seperti misalnya SEHEN juga dapat dimasukkan
		(2) Tingkat elektrifikasi (<i>electricity rate</i>), diukur berdasarkan target				
		(3) Kapasitas terpasang (kW) dari proyek pembangkit listrik energi terbarukan yang dibangun oleh (PLT Bayu, PLTMH, PLT biomassa, PLTS) yang dibangun oleh investasi swasta murni atau NGO/Masyarakat/Donor				
		(4) Produksi energi dalam kilowatt hour (kWh) dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan didanai oleh investasi swasta murni atau NGO/Masyarakat/Donor				
		(5) Daya mampu dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan didanai oleh investasi swasta murni atau NGO/Masyarakat/Donor				
		(6) Kapasitas terpasang (kW) dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan dibangun/didanai oleh PLN				
		(7) Produksi energi dalam kilowatt hour dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan dibangun/didanai oleh PLN				
		(8) Daya mampu dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan dibangun/didanai oleh PLN				
		(9) Kapasitas terpasang (kW) dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan dibangun/didanai oleh APBN dan APBD				
		(10) Produksi energi dalam kilowatt hour dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan dibangun/didanai oleh APBN dan APBD				
		(11) Daya mampu dari proyek pembangkit listrik energi terbarukan yang sudah beroperasi (PLT Bayu, PLTMH, PLT biomassa, PLTS) dan dibangun/didanai oleh APBN dan APBD				
	Penambahan akses energi untuk penggunaan rumah tangga bagi penduduk	(1) Jumlah instalasi biogas yang didistribusikan ke rumah tangga dan beroperasi dengan pendanaan dari (i) APBN ; (ii) APBD; (iii) LSM; (iv) Swasta; (v) Swadaya Masyarakat; (vi) multi stakeholder				
		(2) Ukuran digester biogas (dalam m ³) yang sudah didistribusikan kepada masyarakat dan beroperasi dengan pendanaan dari (i) APBN ; (ii) APBD; (iii) LSM; (iv) Swasta; (v) Swadaya Masyarakat; (vi) multi stakeholder				
		(3) Jumlah kompor hemat energi yang sudah didistribusikan kepada masyarakat dan beroperasi dengan dukungan dari (i) APBN ; (ii) APBD; (iii) LSM; (iv) Swasta; (v) Swadaya Masyarakat; (vi) multi stakeholder				
		(4) Jumlah rumah tangga yang beralih dari penggunaan bahan bakar konvensional (minyak tanah atau kayu bakar) ke pemanfaatan biogas				
		(5) Jumlah rumah tangga yang beralih dari penggunaan bahan bakar konvensional (minyak tanah atau kayu bakar) ke pemanfaatan kompor hemat energi				
	Implementasi penyediaan energi terbarukan dalam bentuk bahan bakar cair untuk kebutuhan transportasi dan lain-lain	(1) Jumlah (unit) fasilitas Produksi Bahan Bakar Nabati yang sudah selesai dibangun dan beroperasi, didanai oleh APBN dan/atau APBD, swasta, dan LSM				

LOGFRAME HASIL JANGKA PANJANG (2)

SUMBA ICONIC ISLAND	Penjelasan	Indikator	Cara Verifikasi			Asumsi
			Sumber Data	Orang/lembaga yang bertanggung jawab untuk mengumpulkan atau menyajikan data	Jangka Waktu dan Frekuensi	
Hasil Jangka Panjang (diatas 5 tahun)	Pengurangan bahan bakar konvensional sebagai akibat pemanfaatan energi terbarukan (angin/bayu, tenaga surya, air/hidro, biomassa) untuk pembangkitan listrik	(1) Penghematan BBM yang disebabkan oleh pengoperasian pembangkit energi terbarukan (dalam Ton of Oil Equivalent, TOE) yang dibangun oleh pihak swasta atau LSM				
		(2) Penghematan BBM yang disebabkan oleh pengoperasian pembangkit energi terbarukan (dalam Ton of Oil Equivalent, TOE) yang dibangun oleh PLN				
		(3) Penghematan bahan bakar diesel sebagai hasil pengoperasian pembangkit listrik tenaga surya yang dikembangkan atas inisiatif ESDM, KPDT, dan kementerian lainnya (dalam Ton of Oil Equivalent, TOE)				
	Pengurangan bahan bakar konvensional sebagai akibat pemanfaatan energi terbarukan untuk kebutuhan rumah tangga	(1) Penghematan minyak tanah sebagai hasil dari pemakaian bahan bakar biogas untuk kebutuhan rumah tangga (dalam TOE)				
		(2) Penghematan kayu bakar dan minyak tanah sebagai hasil dari pemakaian kompor hemat energi (improved cookstove) (dalam ton of oil equivalent, TOE)				
	Peningkatan investasi dan kegiatan ekonomi di Sumba dengan mempertimbangkan aspek sosial-lingkungan yang berdampak bagi mata pencaharian masyarakat di Sumba	(1) Rata-rata pendapatan rumah tangga/per kapita, diukur berdasarkan target dan acuan (baseline)	Target acuan dan baseline: 1. dijelaskan dan ditentukan berdasarkan kajian sosial-ekonomi yang dilakukan oleh Hivos (konfirmasi dari pemangku kepentingan diperlukan) 2. dijelaskan dalam baseline kajian lingkungan (perlu konfirmasi siapa dan kapan dapat dilakukan) 3. Targetnya masih harus ditentukan (TBD) Sumber data untuk mengukur hasil: -data sosial-ekonomi sekunder (seperti data Susenas) tentang pendapatan rumah tangga -hasil survei sosial-ekonomi yang dilakukan oleh konsultan atau pihak independen setelah 5 tahun road map Sumba Iconic Island diterbitkan	Diawasi oleh sekretariat, konsultan atau pihak ketiga yang independen yang terlibat dalam pengukuran hasil, dan dibantu oleh Undana (perlu konfirmasi dari pemangku kepentingan)	Dilakukan setelah 5 tahun pelaksanaan Sumba Iconic Island (lima tahun setelah penerbitan road map: tahun 2018) → perlu konfirmasi dan verifikasi dengan pemangku kepentingan	
		(2) Jumlah investasi untuk energi terbarukan di Sumba (dalam US\$)				
		(3) Jumlah rumah tangga yang memanfaatkan energi terbarukan untuk kegiatan ekonomi produktif (dihitung berdasarkan baseline)				
		(4) Jumlah UMKM (usaha mikro, kecil dan menengah)				
		(5) Perubahan tata guna lahan (Area konservasi, catchment area, area hutan lindung, dll) (dalam m ²) karena (i) proyek energi terbarukan yang dibangun dan dilaksanakan di area tersebut; dan (ii) pembangunan perluasan jaringan listrik				
		(6) Jumlah pengurangan emisi GRK yang dicapai karena adanya pemanfaatan energi terbarukan, dalam metric tons of CO2 equivalent				

6 (enam) Indikator Utama yang akan diusulkan kepada Streering Committee untuk dijadikan indikator utama Sumba Iconic Island



***ADB TA 8287-INO:
Scaling Up Renewable Energy Access in Eastern
Indonesia***

Rencana Implementasi Kegiatan Pemantauan dan Evaluasi untuk program Pulau Ikonik Sumba

Rapat



Agenda

- Kerangka Monev SII
 - Logframe SII
 - Kerangka institusional
- Tujuan rapat penentuan Indikator



Peran Pemantauan dan Evaluasi (*Monev*)

“Pengelolaan yang baik dilakukan melalui pemantauan yang terukur”

- Pengumpulan dan analisa informasi
 - Secara rutin;
 - Mengukur kemajuan dibandingkan dengan target;
- Hasil digunakan untuk menyesuaikan strategi
- Dilakukan untuk tujuan/target **jangka pendek** (*input, activities, output, certain outcomes*)
- Evaluasi
 - Perubahan dalam **jangka panjang**: Dampak, efisiensi dan efektivitas, keterkaitan (*relevance*) dan keberlanjutan (*sustainability*)
 - Biasanya dilakukan setelah program selesai berjalan
 - Hasil digunakan sebagai pembelajaran untuk intervensi di masa datang

Tujuan: kerangka *monev* untuk program Pulau Ikonik Sumba

Kegiatan Pengembangan Monev: yang sudah dilakukan

- **Studi awal**
 - Literatur tentang monev
 - Studi-studi terdahulu tentang energi terbarukan di Pulau Sumba (KEMA, Winrock)
 - inception report
- **Wawancara dengan pihak terkait**
 - Konfirmasi target/tujuan/kegiatan yang tercantum di dalam Road Map
 - EBTKE (Energi Baru dan Terbarukan, Bioenergi), HIVOS, Winrock, Sewatama, IBEKA
 - Pemda
 - Kunjungan ke daerah off-grid
- **Analisa**
 - Identifikasi sumber daya (*resources*) dan hasil (*results*) → RBM
 - Mengembangkan program logic (logframe) untuk Pulau Ikonik Sumba (high-level) (berdasarkan Road Map dan SK Dirjen)
 - Identifikasi indikator yang sesuai dengan visi dan misi Pulau Ikonik Sumba dan sejalan dengan tujuan Nasional, contoh:
 - Kapasitas terpasang pembangkit listrik energy terbarukan
 - Peningkatan jumlah masyarakat yang mendapatkan akses listrik
 - Identifikasi peran pihak terkait dalam kerangka Monev
 - Identifikasi dan membuat rancangan bagaimana data umumnya dikumpulkan, dikaji, dilaporkan dan disimpan



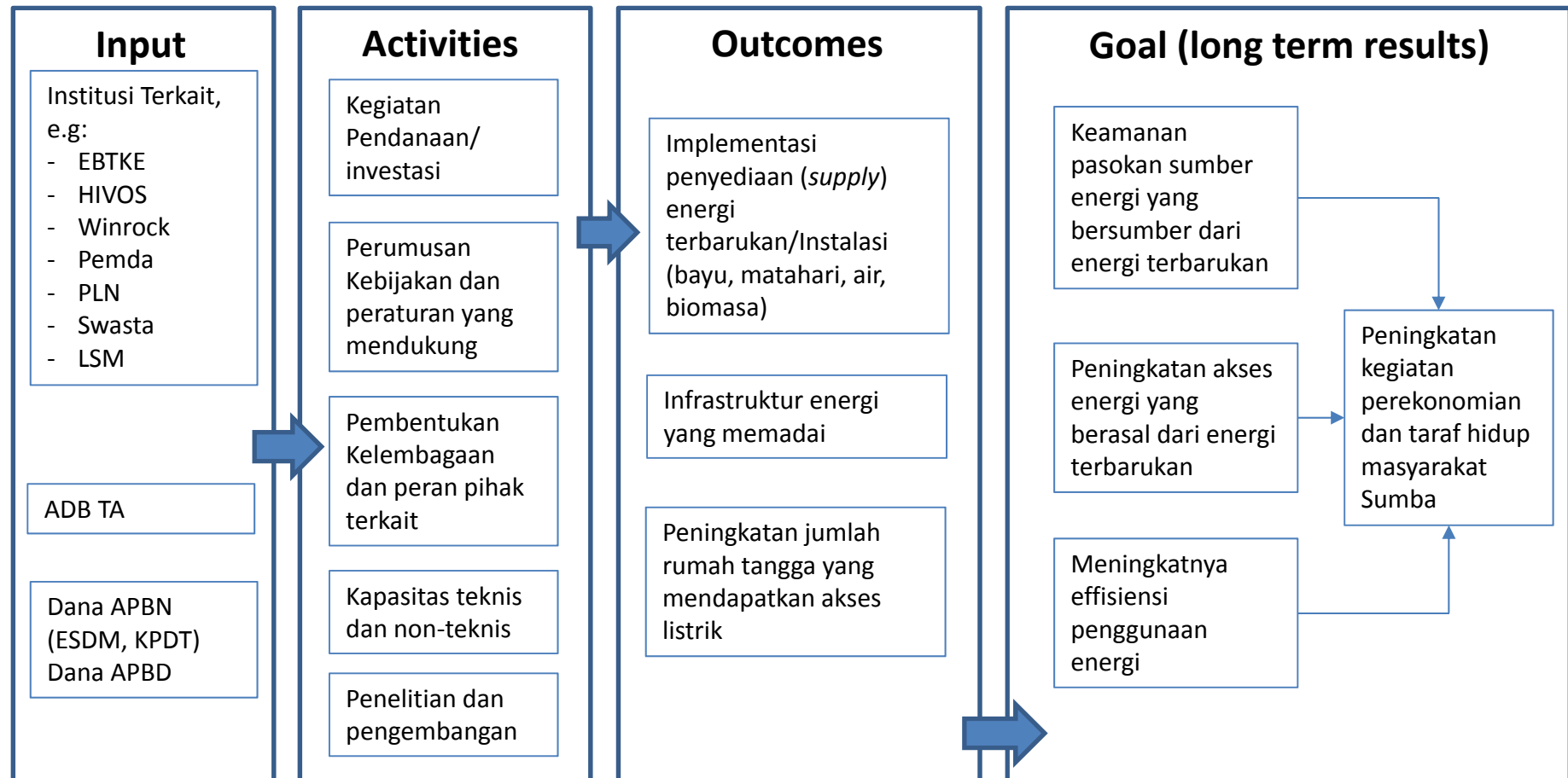
Pertimbangan dalam Pengembangan Kerangka Monev

- Perbedaan program Pulau Ikonik dengan program lainnya
 - Dimulai dari program-program yang sudah ada (bottom-up)
 - Inisiator adalah HIVOS, tetapi kegiatan yang dicakup di dalam program ini terdiri dari kegiatan-kegiatan yang berdiri sendiri, punya pendanaan masing-masing, dan sistem monev masing-masing
- Menggunakan Road Map dan Keputusan Dirjen ESDM no 602 K/73/DJE/2013 sebagai dasar Kerangka Monev
- Road Map sebagai “living document of wish lists” memerlukan perbaharuan (*updates*) terus-menerus → prioritas teknologi yang realistis
- Belum ada bentuk dokumentasi, alur informasi, dan penyimpanan dokumen yang sistematis
- Belum ada penetapan indikator, hanya tersirat pada visi dan misi
 - 100% energy terbarukan 2025? Listrik? Atau termasuk sector lainnya?
 - 95% rasio elektrifikasi pada tahun 2025: definisi rasio elektrifikasi?

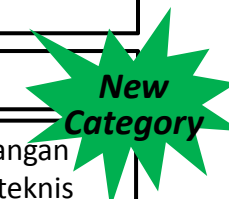
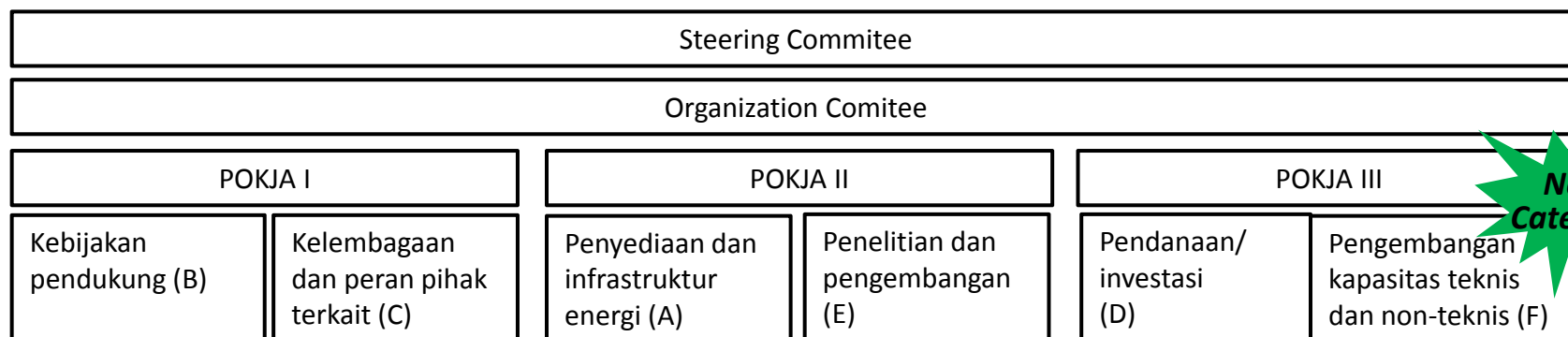
Pelaksanaan Monev akan menjadi tanggung jawab Tim pengembangan Pulau Ikonik Sumba (Iconic Island Task Force)



Pemetaan Kegiatan dan Tujuan Pulau Ikonik Sumba



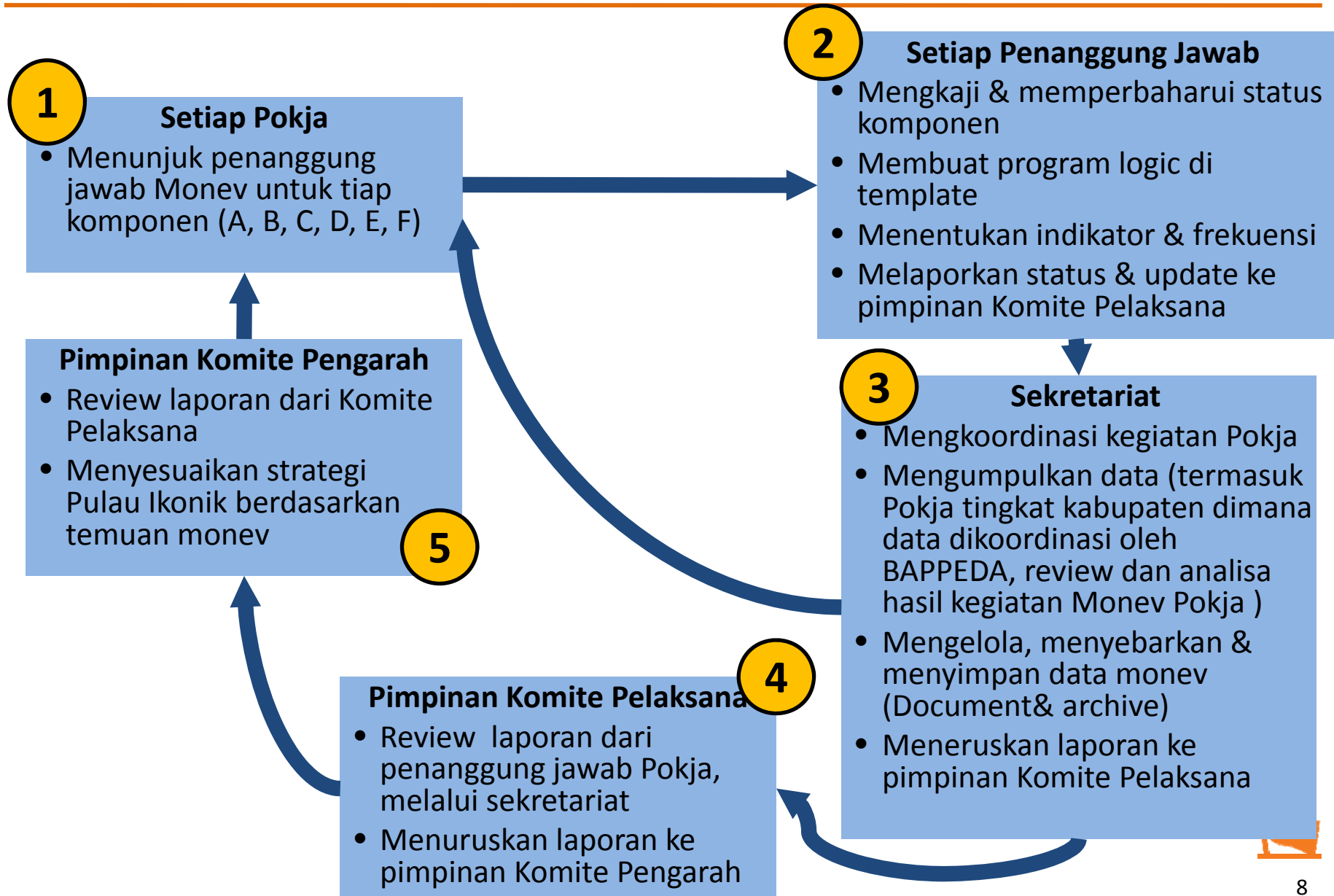
Struktur Kerangka Monev



Sumber energi	Kegiatan dalam Road map	No kegiatan
Wind Energy	Grid Wind Energy (PLTB Grid)	1
	IPP Wind Energy (PLTB IPP)	3
	PLTB Non-grid	2
Mini/Micro hydro	Pembangkit tenaga air Off-grid	5
	Tenaga Air skala kecil	8
Solar Energy	Small Scale Communal PV	6
		6
	PLTS-grid	6
		6
Bioenergy: Biomass	Bahan baku untuk bahan bakar hayati yang tersedia	3
	bahan Baku baru untuk bahan bakar hayati	11
	Boiler-turbin biomassa	13
	Gasifikasi biomassa	14
Bioenergy: Biogas	Indonesia Cookstove	10
	HH Biogas BIRU	9
	Aliran Limbah Biogas	15
Bioenergy: Biofuel	Bahan bakar hayati (ethanol)	12
Electricity Network Expansion	Tingkat HH off-grid	4
	Integrasi Penambahan grid	7



Kerangka Institusional Monev SII



Logframe Kegiatan, Capaian dan Hasil Jangka Panjang

- Lihat contoh print-out



Langkah Selanjutnya

- Mensosialisasikan Logframe final, menentukan angka indikator, dan *baseline* pada meeting indikator tanggal 11 Februari 2014
- Mengadakan pelatihan monev:
 - pengenalan kerangka monev SII,
 - memperkenalkan beberapa formula untuk menghitung indikator-indikator tertentu
 - pengisian form monev SII untuk tiap tiap POKJA
- Pengembangan rencana implementasi Monev
- Presentasi indikator final, baseline dan rencana implementasi monev pada rapat
- Sosialisasi dan pelatihan kepada pemerintah daerah dan CDF mengenai rencana implementasi monev, dan data yang harus dikumpulkan sebagai dasar pengisian formulir monev dan penentuan/perhitungan indikator
- Perlu dipikirkan untuk mengembangkan system database untuk pengumpulan dokumen (*archiving*) → siapa yang dapat mengambil peran ini?



Tujuan Rapat Pentuan Indikator

- Menyepakati indikator
- Menyepakati baseline
- Diskusi kesepakatan indikator saat ini
- Mengawali diskusi tentang 5 indikator besar sebagai turunan daripada indikator visi dan misi sebagai bahan diskusi dan penetapan oleh SC
- Penentuan tanggung jawab pengambilan data tingkat Kabupaten → Koordinasi dengan BAPPEDA



Metode Diskusi

- Pembagian kelompok: 3 Kelompok
- Masing-masing kelompok memiliki perwakilan Pokja I, Pokja II dan Pokja III
- Tiap-tiap kelompok menunjuk Notulen untuk pencatatan hasil diskusi kelompok
- Pleno setelah pembahasan indikator “kegiatan”
- Pleno setelah pembahasan indikator “capaian dan jangka panjang”



THANK YOU!



Tabel Draft Paparan SII Per Kabupaten

[illegible]

Aspek	Baseline 2011*		Realisasi 2012			Realisasi 2013			Realisasi 2014 (semester I, per 31 Juli 2014)			Catatan Tambahan (e.g, tantangan pelaksanaan, usulan/ Rekomendasi)	Rencana 2015
	Jml (unit)	Kapasitas terpasang (kW)	Jml (unit)	Kapasitas terpasang (kW)	Produksi energi (kWh)**	Jml (unit)	Kapasitas terpasang (kW)	Produksi energi (kWh)**	Jml (unit)	Kapasitas terpasang (kW)	Produksi energi (kWh)**		
tegangan Menengah													

Catatan: Road Map Pulau Ikonik Sumba merupakan acuan awal untuk pengisian form ini. Tetapi harus diingat bahwa Road Map tidak baku dan bersifat dinamis, dan akan dikinikan berdasarkan hasil pemantauan dan evaluasi.

*Data Produksi energi (kWh) untuk baseline dianggap (0) untuk tahun baseline, karena akhir tahun 2011 dianggap sebagai titik tolak perhitungan eneri yang di produksi untuk program Pulau Sumba Ikonik

**Diharapkan data diambil dari kWh meter dan dicatat tanggal pengukurannya, serta tanggal mulai kWh meter mulai berjalan (ada di kWh meter). Jika tidak diambil secara aktual, maka estimasi produksi listrik selama satu tahun dihitung dengan menggunakan persamaan sebagai berikut:

Produksi listrik/tahun (kWh) = kapasitas terpasang (kW) x faktor kapasitas (%) x 8760 (jam)

Keterangan:

1. Faktor kapasitas untuk tiap-tiap teknologi adalah sebagai berikut:

- PLT bayu: 20%
- PLTMH (Mini/mikro hidro): 40%
- PLT Biomassa: 80%
- PLTS: 20%

2. 8760 adalah jumlah jam dalam satu tahun

[illegible]

Aspek	Baseline 2011 (sebutkan yang sudah ada di tahun 2011)	Realisasi 2012	Realisasi 2013	Realisasi 2014	Catatan Tambahan (e.g, tantangan pelaksanaan, usulan/ Rekomendasi)	Rencana 2015
B. Kebijakan Pendukung						
Kebijakan teknis			-	-	-	-
Kebijakan Non-teknis			-	-	-	-
C. Kerangka Kelembagaan (Keterlibatan Para Pihak)						
Perijinan, sertifikat, dan perjanjian komersial						
Pertemuan berkala mengenai SII						-
Penyusunan MoU, SK, dll						
D. Investasi dan Pendanaan						
PLTS						
PLTB						
PLTMH						
Biomassa						
Biogas						
THE						
Jaringan listrik TM (off-grid)						

Aspek	Baseline 2011 (sebutkan yang sudah ada di tahun 2011)	Realisasi 2012	Realisasi 2013	Realisasi 2014	Catatan Tambahan (e.g, tantangan pelaksanaan, usulan/ Rekomendasi)	Rencana 2015
Jaringan listrik TM dan TR (off-grid)						
Promosi tentang SII						
E. Penelitian dan Pengembangan						
Jenis dan Jumlah Kegiatan Penelitian						

[illegible]

Terms of References

Consultant: Monitoring and Evaluation for Sumba Iconic Island for the year 2014

Background

Sumba Iconic Island of Renewable Energy is a program developed by the Directorate General of New and Renewable Energy, Ministry of Energy and Mineral Resources, Indonesia, with Hivos. This program intends to provide Sumba Island with electricity access from clean energy sources, namely, small scale hydro, wind and biomass energy. This program is expected to be a show case to other areas in Indonesia as an initiative to reduce people's dependence on fossil energy. To date, Sumba Iconic Island Road Map has been established. The Road Map contains the vision, mission, strategy, target, sub-activities according to type of technology (Biomass, Wind, Hydro, Solar), partnership and institutions involved in the program. The Monitoring and evaluation framework has been developed, including the M&E plan and M&E forms, but actual M&E implementation has not yet been conducted. Sumba Iconic Island is seeking a consultant to conduct the first M&E activity for the year 2011 to 2014. This will be done using a simplified M&E form that has been developed particularly for the initial M&E activity.

Objective

Objective of this assignment is to conduct the initial M&E activity for Sumba iconic island that cover data gathering/collection, Completing M&E forms, conducting analysis based on data collected and documenting analysis and data into a final M&E report. This M&E report should refer to the Sumba Iconic Island Roadmap.

Scope of Work

1. **Data collection:** Consultant will have to collect and gather data for Monitoring and Evaluation purposes with the objective of completing the simplified monitoring form
 - 1.1 Type of data to be collected:

Type of data to be collected by the consultant covers the subject listed below.

 - A. Installation and Operation of Renewable Energy Technologies
 - B. Supporting Policies
 - C. Institutions involved and their involvement
 - D. Investment and Funding
 - E. Research and Development
 - F. Capacity building

Details of data to be collected is provided in the simplified monitoring form.
 - 1.2 Institution to liaise with to collect data: The consultant will need to liaise with relevant stakeholders of Sumba Iconic island, i.e., the government institution at District (Kabupaten) and National level, private sectors, and non-governmental agencies to collect data from the data records. The institutions that they need to liaise with are but not limited to:
 - Badan Perencanaan daerah (District Planning Agency),
 - Dinas Energy dan Pertambangan (Office of Energy and Mining, District level),

- PLN Wilayah office at District, Provincial level
- Dinas Pertanian dan Peternakan (Office of agriculture and farming)
- Kementrian Energi dan Sumber Daya Mineral (ESDM) (Ministry of Energy and Mineral Resources)
- Kementrian Pembangunan Daerah Tertinggal (KPDT)
- Badan Pengkajian dan Penerapan Teknologi (BPPT)
- Non-Governmental Agencies having projects developed under Sumba Iconic Island
- Banks and private sectors having projects/activities developed under Sumba Iconic Island

1.3 Period of data: the Consultant will need to collect data from 2011 to 2014 (end of December 2013). The Baseline year for M&E activities is the year 2011.

2. **Completion of monitoring forms:** Consultant will have to complete the simplified monitoring form using the data that have been gathered/collected in scope of work 1.
3. **Data analysis:** Consultant will have to analyze the data and prepare the Monitoring and Evaluation report which reflects the analysis taken from the completed simplified monitoring and evaluation form. The analysis have to show the summary of the following:
 - A. the installed renewable energy technologies and the percentage of these that are still in operation,
 - B. any progress in promoting RE through new policies,
 - C. involvement of the institutions in Sumba Iconic Island activities,
 - D. Investment and funding materialized to promote, install and operate renewable energy technologies under the framework of Sumba Iconic island
 - E. New research and development taken to promote, install and operate renewable energy technologies under the framework of Sumba Iconic island
 - F. Capacity building activities taken to promote, install and operate renewable energy technologies under the framework of Sumba Iconic island
4. **Preparation and Finalisation of M&E report:** Consultant have to document the analysis conducted in Scope of Work 3 and the simplified monitoring form into a final Monitoring and Evaluation report.

Time schedule

This assignment is expected to be finalized within one month since the commencement of the work:

- The consultant will need to submit their draft report and present their draft results by 8 September 2014.
- HIVOS Secretariat will provide comments for revisions within two weeks since the submission of the draft report.

- Final report will need to be submitted by 26 September 2014 in Bahasa Indonesia and in English.

Expected output

The M&E final report for the Sumba Iconic Island shall be well-structured and clearly in English and in Bahasa Indonesia and have a maximum of 30 pages, excluding the annexes.

The report should contain:

- Executive Summary
- Description of the methodology deployed in gathering and analyzing data
- Summary of data collected and gathered
- Analysis of relevant data in a clear and readable manner
- Conclusion and recommendation
- Completed simplified M&E forms as annexes of the final report. The completed M&E form is completed in Bahasa Indonesia and does not need to be translated into English.

The final report will be available in hard copy (1 copy) and in electronic form (recorded in one CD). The report will be made available to and owned by Hivos.

Proposal Format

The proposal will contain the following:

- 1. Brief technical proposals:** Brief proposals which may not exceed 5 pages in length should set out: (i) relevant corporate capacities and experience to undertake the proposed assignment; and (ii) the methodology and approach that would be taken to undertaking the assignment.
- 2. Financial quotation.** A financial quotation should be submitted in Indonesian Rupiah (IDR) with VAT (PPN). The financial quotation should be based on all estimated costs of the assignment including:
 - a. Consulting fees to be charged based on their level of effort (man-days);
 - b. All reimbursable costs considered to be necessary to complete the assignment including as may be appropriate costs of report preparation in both English and Indonesian languages;
 - c. Stationery, communications and other costs including costs of travel and accommodation
- 3. Nominated Consultants / Curriculum Vitaes (CVs):** The CVs are attached in the technical proposal as appendix. Bidding companies have the flexibility of submitting one or more CVs for this assignment providing the CVs submitted demonstrate capacity for conducting M&E activities. Nominated consultant(s) must confirm their availability to work in this assignment. Each curriculum vitae submitted should not exceed 4 pages in length.

Note: Reimbursable costs will only be paid based on adequate documentation and receipts being provided and where HIVOS expenditure rules have been followed.

Proposal Submission date

Proposal will need to be submitted by 4 of August 2014, 5 pm West Indonesia time (WIB) in electronic format (pdf) to Gita Meidita: gmeidita@hivos.org.

Terms of References

Consultant: Monitoring and Evaluation for Sumba Iconic Island for the year 2015

Background

Sumba Iconic Island of Renewable Energy is a program developed by the Directorate General of New and Renewable Energy, Ministry of Energy and Mineral Resources, Indonesia, with Hivos. This program intends to provide Sumba Island with electricity access from clean energy sources, namely, small scale hydro, wind and biomass energy. This program is expected to be a show case to other areas in Indonesia as an initiative to reduce people's dependence on fossil energy. To date, Sumba Iconic Island Road Map has been established. The Road Map contains the vision, mission, strategy, target, sub-activities according to type of technology (Biomass, Wind, Hydro, Solar), partnership and institutions involved in the program. The Monitoring and evaluation framework has been developed, including the M&E plan and M&E forms, and a simplified M&E plan and report has been conducted in 2014. Sumba Iconic Island is seeking a consultant to conduct the 2nd M&E activity for the year 2011 to 2015, in a more comprehensive manner. The M&E template for data collection and presentation will be developed based on the M&E forms and data template that has been used for M&E implementation in 2014.

Objective

Objective of this assignment is to conduct the initial M&E activity for Sumba iconic island that cover data gathering/collection, Completing M&E forms, conducting analysis based on data collected and documenting analysis and data into a final M&E report. This M&E report should refer to the Sumba Iconic Island Roadmap.

Scope of Work

1. **Data collection:** Consultant will have to collect and gather data for Monitoring and Evaluation purposes with the objective of completing monitoring forms with reliable data and accountable datasources.
 - 1.1 Type of data to be collected:

Type of data to be collected by the consultant covers the subject listed below.

 - A. Installation and Operation of Renewable Energy Technologies
 - B. Supporting Policies
 - C. Institutions involved and their involvement
 - D. Investment and Funding
 - E. Research and Development
 - F. Capacity building

Details of data to be collected is provided in the monitoring form which could be reviewed from the M&E report in 2014.
 - 1.2 Institution to liaise with to collect data: The consultant will need to liaise with relevant stakeholders of Sumba Iconic island, i.e., the government institution at District (Kabupaten)

and National level, private sectors, and non-governmental agencies to collect data from the data records. The institutions that they need to liaise with are but not limited to:

- Badan Perencanaan daerah (District Planning Agency),
- Dinas Energy dan Pertambangan (Office of Energy and Mining, District level),
- PLN Wilayah office at District, Provincial level
- Dinas Pertanian dan Peternakan (Office of agriculture and farming)
- Kementrian Energi dan Sumber Daya Mineral (ESDM) (Ministry of Energy and Mineral Resources)
- Kementrian Pembangunan Daerah Tertinggal (KPDT)
- Badan Pengkajian dan Penerapan Teknologi (BPPT)
- Millenium Challenge Account (MCA)-Indonesia
- Non-Governmental Agencies having projects developed under Sumba Iconic Island
- Banks and private sectors having projects/activities developed under Sumba Iconic Island

1.3 Period of data: the Consultant will need to collect data from 2014 to 2015 (end of December 2013) and prepare assessment of progress of Sumba Iconic island from 2011 to 2015 by also reviewing and assessing the results of M&E in 2014 (review M&E 2014 report). The Baseline year for M&E activities is the year 2011.

2. **Completion of monitoring forms:** Consultant will have to complete the monitoring forms using the data that have been gathered/collected in scope of work 1. Consultants need to review and assess the M&E 2014 report to ensure that the forms used and data collected are consistent with those in 2014.
3. **Data analysis:** Consultant will have to analyze the data and prepare the Monitoring and Evaluation report which reflects the analysis taken from the completed monitoring and evaluation forms. The analysis have to show the summary of the following:
 - A. the installed renewable energy technologies and the percentage of these that are still in operation,
 - B. any progress in promoting RE through new policies,
 - C. involvement of the institutions in Sumba Iconic Island activities,
 - D. Investment and funding materialized to promote, install and operate renewable energy technologies under the framework of Sumba Iconic island
 - E. New research and development taken to promote, install and operate renewable energy technologies under the framework of Sumba Iconic island
 - F. Capacity building activities taken to promote, install and operate renewable energy technologies under the framework of Sumba Iconic island

4. **Preparation and Finalisation of M&E report:** Consultant have to document the analysis conducted in Scope of Work 3 and the monitoring forms into a final Monitoring and Evaluation report.

Time schedule

- **Submission Date:**

The proposal must be submitted by 31 April 2015, at 17:00 WIB to(insert person in charge, contact address, phone and email).

Commented [U1]: Need to be defined by EBTKE

- **Expected implementation timeline**

- o The commencement of work is expected to be on 1st of June 2015
- o This assignment is expected to be finalized within six (6) month since the commencement of the work:
- o The consultant will need to submit their 1st draft report report by 31st of August 2015 and present their draft results by 30 7 September 2014.
- o Final report will need to be submitted by 26 September 2014 in Bahasa Indonesia and in English. This will be presented at the 9th Plenary Meeting (*rapat Pleno*) in October.
- o Final presentation will be conducted in November 2015 (presentation to OC's to accommodate inputs from the plenary meeting)

Proposal Format

The proposal will contain the following:

1. **Brief technical proposals:** Brief proposals which may not exceed 10 pages in length should set out: (i) relevant corporate capacities and experience to undertake the proposed assignment; and (ii) the methodology and approach that would be taken to undertaking the assignment.
2. **Financial quotation.** A financial quotation should be submitted in Indonesian Rupiah (IDR) with VAT (PPN). The financial quotation should be based on all estimated costs of the assignment including:
 - a. Consulting fees to be charged based on their level of effort (man-days);
 - b. All reimbursable costs considered to be necessary to complete the assignment including as may be appropriate costs of report preparation in both English and Indonesian languages;
 - c. Stationery, communications and other costs including costs of travel and accommodation
3. **Nominated Consultants / Curriculum Vitae (CVs):** The CVs are attached in the technical proposal as appendix. Bidding companies have the flexibility of submitting one or more CVs for this assignment providing the CVs submitted demonstrate capacity for conducting M&E activities. Nominated consultant(s) must confirm their availability to work in this assignment. Each curriculum vitae submitted should not exceed 4 pages in length.
4. **Language:** The Final M&E report needs to be written in both Bahasa Indonesia and English

Note: Reimbursable costs will only be paid based on adequate documentation and receipts being provided.

Commented [U2]: Subject to EBKTE rules

Expected output

The M&E final report for the Sumba Iconic Island shall be well-structured and clearly in English and in Bahasa Indonesia and have a maximum of 30 pages, excluding the annexes.

The report should contain:

- Executive Summary
- Description of the methodology deployed in gathering and analyzing data
- Summary of data collected and gathered
- Analysis of relevant data in a clear and readable manner
- Conclusion and recommendation
- Completed M&E forms as annexes of the final report. The completed M&E form is completed in Bahasa Indonesia and does not need to be translated into English.

The final report will be available in hard copy (1 copy) and in electronic form (recorded in one CD). The report will be made available to and owned by Directorate General New Renewable Energy and Energy Conservation.