Gold Standard for the Global Goals

TEMPLATE

KEY PROJECT INFORMATION & PROGRAMME DESIGN DOCUMENT (POA-DD)

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VERSION **2.2**

RELATED SUPPORT

- Programme of Activity requirements
- TEMPLATE GUIDE Key Project Information & PoA Design Document v.2.2.1

This document contains the following Sections

Key Project Information

SECTION A– General description of PoA
SECTION B - Management System and Inclusion Criteria
SECTION C – Demonstration of additionality
SECTION D – Duration of PoA
SECTION E - Outcome of Stakeholder Consultations

0 – Contact information of coordinating/managing entity and responsible person(s)/ entity(ies)
Appendix 2 - Design Changes

KEY PROJECT INFORMATION

GS ID of Programme	GS 1172
Title of Programme:	Indonesia Domestic Biogas Programme of Activities (IDBP)
Type of PoA	☒Non – Forestry and/or Non -AGR PoA ☐Forestry and/or AGR PoA
VPAs scale included in the PoA *Note that same PoA can included VPAs of different scales. Please select all applicable.*	☐Microscale ☒Small scale ☐Large scale
Start Date of POA	24/10/2009
Date of Design Certification	24/10/2013
Start date of crediting cycle of PoA	31/05/2011
Version number of the PoA-DD	0.45
Completion date of the PoA-DD	27/11/2024
Coordinating/managing entity	PT. Biru Karbon Nusantara
Project Participants and any communities involved	Yayasan Rumah Energi
Host Country (ies)	Indonesia
Activity Requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Other Requirements applied	☒ Programme of Activities requirements and procedures
Methodology (ies) applied and version number	Technologies and Practices to Displace Decentralized Thermal Energy Consumption, Version 3.1 Methodology for animal manure management and biogas use for thermal energy generation, Version 1.1

Product Requirements applied	☒ GHG Emissions Reductions & Sequestration ☐ Renewable Energy Label ☐ N/A

REAL CASE VPAS (ALL REAL CASE VPAS INCLUDED IN THE POA)

GS ID	POA GS ID
GS1174	GS 1172 VPA-1 Indonesia Domestic Biogas Programme of Activities (IDBP)
GS5303	GS 1172 VPA-2 Indonesia Domestic Biogas Programme of Activities (IDBP)

SECTION A. General description of PoA

A.1.Purpose and general description of the PoA

Almost half of the global population still depends on combusting solid fuels on open fires to meet basic cooking and heating needs. Indoor air pollution caused by the combustion of these fuels for cooking is one of the ten major threats to health globally, causing almost two million deaths annually. Like many other developing countries, Indonesia still faces high rates of firewood and charcoal usage for cooking purposes. This unsustainable burning of biomass contributes to significant greenhouse gas emissions (GHG) and is one of the drivers behind the high rates of deforestation witnessed over the years.

To provide a clean and sustainable solution to the present situation, the IDBP will install biodigesters at households, local communities, SMEs ('users') currently using non-renewable biomass (NRB) and fossil fuels as their main source of cooking fuel. The biodigesters will be fed with manure mixed with water, which will undergo anaerobic digestion and produce biogas that is channelled directly to a cook stove. This biogas produced replaces the combustion of NRB and fossil fuels, thereby reducing carbon dioxide (CO_2) emissions. The biodigesters also reduce methane (CH_4) emissions by diverting manure that would otherwise decompose without the capture and use of the methane. The technical specification of the biodigester used in this PoA shall comply with the related technical requirement under IDBP.

The IDBP started implementation of biodigesters on 24 October 2009, following an agreement reached between the Royal Netherlands Embassy to support the Indonesian Ministry of Energy and Mineral Resources in rolling out a national biodigester initiative. A first Voluntary Project Activity (VPA-1 GS1174) was retroactively included to cover the emission reductions that have been generated up to two years prior to the registration date of this PoA. In 2017, the second Voluntary Project Activity (VPA-2 GS5303) was included in the programme, accommodating all new digesters installed from 02/01/2017 onwards.

In February 2021, YRE and Hivos signed MoU to transfer the facility management, disbursement and MRV from Hivos to YRE. It also stated Hivos transfers the full responsibility for the management of Carbon Fund, ownership of the VER and MRV

responsibilities of the PoA and VPAs to YRE. And in January 2022, Hivos sent a letter to Gold Standard to inform about the handover of CME function from Hivos to YRE with the supporting document: Cover Letter signed by Hivos and YRE. In February 2022, Gold Standard confirmed the changes in the registry accounts of IDBP. To comply with the Presidential Regulation 98/2021 about Carbon Economic Value which regulates the provision for conducting carbon trading system must be in the form of a business entity, YRE established PT. Biru Karbon Nusantara (PT. BKN) as a company who will continue manage carbon fund of IDBP. In October 2023, YRE sent a letter to Gold Standard to inform about the handover of CME function from YRE to PT. BKN. Also in October, Gold Standard confirmed the changes in the registry accounts of IDBP. In 2023 PT. Biru Karbon Nusantara (PT. BKN) became the new official project representative of the IDBP PoA and Yayasan Rumah Energi (YRE) as the PoA implementer. Since the PoA's first crediting period is lapsing on 31 May 2025, this new PoA-DD serves to provide the new documentation for the PoA's second crediting period which will run between 1 June 2025 to 31 May 2030.

The Coordinating/Managing Entity (CME) of this Programme of Activities (PoA) is PT. BKN. Upon sale of the biogas system, users will sign a Household Agreement, transferring the rights of the generated emission reductions to PT. BKN. The revenue generated from the subsequent sale of carbon credits will be used to subsidise the investment costs of the biodigesters, making them more affordable. Users will be provided with training on the use of the systems and the proper application of slurry to agricultural land. The unique serial number of each installation will be recorded.

This PoA contributes to sustainable development in several ways:

1. Environmental

- Reduced GHG emissions;
- Reduced deforestation and forest degradation in areas where NRB is used as a source of fuel. This contributes to the overall stability of forest ecosystems, which support biodiversity and watersheds;
- Improved soil conditions where digester slurry is applied to agricultural land.

2. Social
   - Reduced combustion of firewood and fossil fuels reduces indoor air pollution, thereby increasing respiratory health of users, particularly women and children who spend a large portion of their time indoors.
3. Economic
   - Reduced end-user expenses due to reduced expenses on the purchase of biomass and fossil fuels, as well as healthcare-related expenses;
   - The use of the slurry as an organic fertiliser on agricultural soils can significantly improve soil quality and offset costs that would otherwise be incurred in the purchase of chemical fertilisers. The nutrient value of the slurry produced has also been shown to be higher than raw manure.

(i) The policy/measure or stated goal that the PoA seeks to promote.

The IDBP will implement biodigesters across Indonesia. The biogas produced will be used for cooking and will replace the use of firewood, charcoal, or fossil fuels such as kerosene or LPG.

(ii) A framework for the implementation of the proposed PoA and inclusion of VPAs in the PoA

VPAs included in the PoA cover the installation of fixed-dome type biodigesters of up to and including 12m^3 in households that, before the implementation of the project activity, were using non-renewable biomass (NRB) and fossil fuels as their main source of cooking fuel (baseline). The biodigesters are fed with manure mixed with water, which undergoes anaerobic digestion and produces biogas that is channeled directly to a cook stove. This biogas produced replaces the combustion of NRB and fossil fuels, thereby reducing carbon dioxide (CO_2) emissions. The biodigesters also reduce methane (CH_4) emissions by diverting manure that would otherwise decompose without the capture and use of the methane (baseline). The technical specification of the biodigester technologies of VPAs shall comply with the specifications detailed in section A.2.

(iii) Confirmation that the proposed PoA is a voluntary action by the coordinating/managing entity.

The CME of the programme is PT. BKN. PT. BKN does not have any legal or other obligations to further spread the use of biodigesters. Therefore, all its activities are

undertaken purely voluntarily. Refer to Section B.1 further information on the implementation framework of this PoA and the main responsible actors.

A.2. Physical/ Geographical boundary of the PoA

The boundary of the PoA is the national boundaries of the Republic of Indonesia (host party).

Figure 1: Geographical boundary.

The programme targets all regions in the country. VPAs are confined to the host party. The geographical boundary of each VPA will be described in the respective VPA-DD.

A.3. Technologies/measures

The technology implemented under the IDBP covers biodigesters fed with a mixture of water and animal manure that is anaerobically digested. The capacity of the biodigesters ranges from 1m^3 to 100 m^3, below the capacity threshold imposed by the applicable methodology. The generated biogas is intended for use as fuel for cooking. There are two types of biogas systems that will be initially introduced by this PoA. These are not exclusive to the IDBP, and other biogas technologies may be included in later stages.

- Fixed-dome biodigesters (Figure 2: This model is constructed with bricks and stone masonry. The fixed-dome technology has a proven durability, and can be

installed underground, saving space and protecting the installation. Materials for its construction can be sourced locally.

- Plastic bag biodigester (Figure 3): This model constitutes a plastic biodigester composed of a large bag that is typically stored above-ground.

The use of both biodigester models is simple:

1. Collect manure and mix with water according to the type of manure used and biodigester model
2. Feed this mix into the biodigester.
3. Both biogas and sludge are produced.

The biogas is used as cooking fuel. The build-up of gas will push out slurry through the exit pipe of the biogas system and is a fertiliser that can either be applied directly to crops or composted with other organic material. Maintenance needs are limited since the biodigesters have no moving parts. Over time, some indigestible material can build up in the digester, limiting the reactor volume. This issue is solved simply by scooping the indigestible material out and re-filling the biodigester with manure.

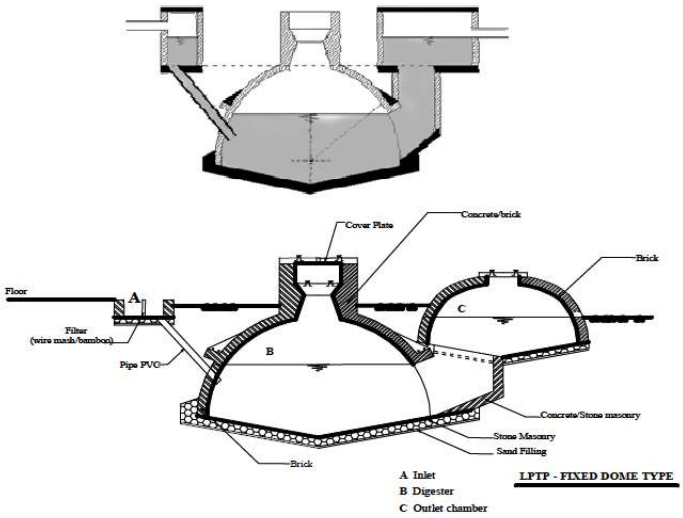


Figure 2: Example of a fixed-dome biodigester model.

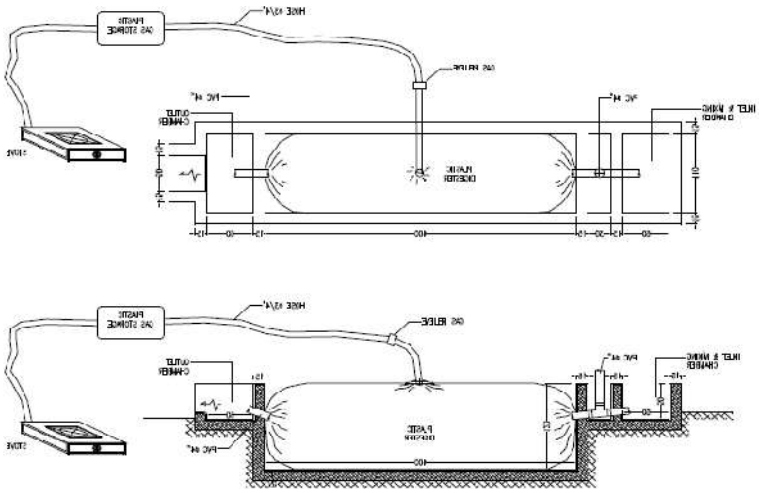


Figure 3: Example of a plastic biodigester model.

A typical VPA consists of a set of biodigesters with the capacity of up to 100 m3 installed at households, local communities, SMEs that breed cattle or other farm animals in Indonesia. This means that there are three distinct baseline scenarios applicable, depending on the targeted user group. A VPA can include more than one baseline scenario and therefore target different user groups. The input for the biodigesters is manure and water. Each biodigester will be given a unique serial number, which will be recorded in the CME database. Upon installation, users will sign a Household Agreement confirming that they transfer the rights to the emission reductions to the CME. VPAs shall be developed following small-scale guidelines. Small-scale VPAs are subject to the thresholds set forth by the CDM; 15 MW (45 MW thermal) for the renewable energy component and an emissions cap of 60,000 tCO2e for the methane avoidance component.

VPAs will be automatically eligible for Gold Standard Certification if they are prepared in line with approved Gold Standard Activity Requirements, which include the Gold Standard methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption", Version 3.1, and "Methodology for animal manure management and biogas use for thermal energy generation", Version 1.1, as well as any future updates of these methodologies applicable upon inclusion or crediting updates of VPAs.

A.4. Target/Indicator for each of the minimum three SDGs targeted by the PoA

SDGs assessment is conducted at the VPA level. CME shall provide the information in the VPA DD and may also summarize the outcome in the Table below.

Table 1: SDGs targeted in the PoA.

SUSTAINABLE DEVELOPMENT GOALS TARGETED	MOST RELEVANT SDG TARGET	SDG IMPACT **INDICATOR (PROPOSED OR SDG INDICATOR)**
13 Climate Action (mandatory)	13.2 Integrate climate change measures into national policies, strategies and planning	Amount of GHGs emissions avoided or sequestered
1. No poverty	1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day	Average household savings i.e., decrease in expenditure on basic service such cooking, lighting, drinking
2. Zero hunger	2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality	Land area (hectares) under improved or new soil conservation practices as a result of project activity
5. Gender equality	5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate	Average time saving associated with cooking time and fuel collection
5. Gender equality	5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life	Number of women serving in managerial/ leadership /ownership role

7. Affordable and clean energy	7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	Number of beneficiaries: Households
7. Affordable and clean energy	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	Total thermal energy produced: Renewable
8. Decent work and economic growth	8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	Number of individuals provided with access to finance

A.5. Coordinating/managing entity

The IDBP is run by PT. Biru Karbon Nusantara, who acts as the CME of this PoA.

A.6. Funding sources of PoA

The PoA is supported through public funding from a number of sources. From 2017 to 2018, the contribution came from the Government of the United States, which channels finance through the Millennium Challenge Programme. A trustee institution formed by the Government of Indonesia (MCA Indonesia) acts as the implementer of aid programme.

Another co-funder of the PoA was Energising Development (EnDev). EnDev is an energy access partnership currently financed by seven donor countries: the Netherlands, Germany, Norway, Australia, United Kingdom, Switzerland and Sweden. Contribution from the EnDev Program ended in December 2020, hence since 2021 the PoA is mostly supported with carbon funds and Corporate Social Responsibility (CSR) funds. Further to this, additional funding is delivered by the Netherlands Directorate-General for International Cooperation (DGIS) and Millennium Challenge Account Indonesia (MCA-I).

The carbon credits to be generated by the VPAs inscribed in this PoA shall not be transferred, directly or indirectly, to meet the GHG reduction requirements of any of these public funders. The PoA is located in Indonesia, which is part of the OECD

Development Assistance Committee's ODA recipient list. A written declaration of IDBP's non-use of ODA has been issued and submitted to the Gold Standard Foundation, attached in an annex to the PoA-DD.

SECTION B. MANAGEMENT SYSTEM AND INCLUSION CRITERIA

B.1.Management System

The operational and management plan lays out the framework to ensure that programme execution and operation achieves real and measurable emission reductions and supports the verification process. The entities involved in the PoA and their tasks are defined below.

(i) A clear definition of roles and responsibilities of personnel involved in the process of inclusion of VPAs, including a review of their competencies.

The CME (PT. Biru Karbon Nusantara): Responsible for overall programme execution and management, raising awareness, promotion, capacity building, quality control, extension services, general monitoring and reporting. It will liaise with financial institutions to determine terms and conditions for loans to programme participants, and management of subsidies. It will also be responsible for investing the carbon revenues in the project to enhance the dissemination of biodigesters. It will fulfil the following tasks:

- General management of the programme, including its carbon asset management and coordination of the contributions of all entities involved;
- Draft monitoring reports for all VPAs in accordance with the methodology version applied in time of inclusion of the VPA of the methodology "Technologies and practices to displace decentralized thermal energy consumption"(Version 3.1) and "Methodology for animal manure management and biogas use for thermal energy generation" (Version 1.1), or any future versions of these methodologies if applicable;
- Coordinate and communicate with the validator/verifier and the Gold Standard Foundation;
- Maintain a system for management and record keeping for each VPA under the PoA;
- Coordinate quality control check of the technology implemented;
- Prepare monitoring reports for carbon credit verification and issuance;
- Request the Gold Standard Foundation to issue carbon credits into a registry account.

Users: End-users will purchase the biodigester, treat animal waste with it, reduce NRB and/or fossil fuel use, and ensure effective destruction of methane through

appropriate biogas use. Furthermore, they can use or sell bio-fertiliser produced as a by-product of the digestion process. They will support monitoring efforts required by the programme and will transfer the title to the generated emission reductions to the CME. There are three distinct groups of users targeted under this PoA:

1) Households: Individual houses inhabited by dairy farmers or other types of farmers.
2) Communities: Aggregation of individuals living or meeting in a particular place or area, such as schools, farmer communities, or other social venues.
3) SMEs: Domestic firms with an annual turnover of up to 300 million Rupiah, as defined by the Indonesian Law of Micro, Small and Medium Enterprises from 2008.

Technology Suppliers: Suppliers are responsible for providing reliable biogas technologies and providing/arranging after-sale services for users. In doing so, they will prepare Household Agreements and Completion Reports and arrange for after-sales service for users and assist in PoA monitoring at the request of PT. Biru Karbon Nusantara.

VPA implementing entity: The VPA implementing entity is the party that is in charge for realising a particular VPA. While this role can be performed by the CME, other parties can join the programme and set up new VPAs. Yayasan Rumah Energi (YRE) will be in charge of implementing individual VPAs, but other organisations may also join the programme over time.

(Micro) finance institutions (M)FIs): (M)FIs involved in this PoA will act as loan provider.

(ii) Records of arrangements for training and capacity development for personnel.

The operation of the programme, including the installation and commissioning of the biodigesters will be carried out as per the procedure outlined below.

Table 2: General operational framework & responsibilities

	CME	Supplier	End-User	DOE
Registration of PoA	✓			✓
1) Complete Pre-Construction Form		✓		
2) Complete Household Agreement		✓		

3) Construction of biodigester		✓		
4) Complete Completion Report		✓		
5) Enter data into database	✓			
6) Operation of biodigesters			✓	
7) Complete Monitoring Report(s)	✓			
8) Verification				✓

1. Pre-construction Form: The pre-construction phase is a time where the CPO (Construction Partner Organizations) as supplier surveys the potential household and establishes the eligibility of the household to become a biodigester user. The gathered information is included in the Pre-construction Form. The information in the form is used to ensure that the household receives the appropriate size of biodigester given the household size and the amount of farm animals kept. After the form is filled in, the CPO will submit the form to IDBP for approval.
2. Household Agreement: Supplier and user in each VPA shall sign a 'Household Agreement', which is the sales contract covering the biodigester. The supplier is responsible for ensuring that the information is correct and complete. The Household Agreement will, at least, contain the following data, in addition to specific sales and financing arrangements:
    - A unique serial number of the implemented biodigester. The serial number shall either be physically attached to or integrated in the biogas system or recorded in the User's Manual.
    - Date of installation (day when construction of the biodigester begins);
    - Name of the user;
    - Address of the user;
    - Mobile phone number/landline of the user (if available);
    - Type and size (m^3) of the biodigester;
    - Typology of the user: household, community and SMEs;
    - Acknowledgement that the user is aware that the installation is operating as part of a PoA, and confirmation that they are not taking part in another registered PoA;
    - Confirmation from the user that his participation in the PoA is voluntary;
    - A confirmation that the user assigns the right and title to the generated emission reductions to PT. Biru Karbon Nusantara;
    - Signature of the user;
    - Name, company, contact details and signature of the supplier.

3. Installation: Supplier will install the biodigester, or have a specialised installation company do so. The installation is finalised by filling and inoculating the biodigester.
4. Commissioning: One week after installation, the supplier shall commission the biodigester by:
    - Handing over the biogas appliances;
    - Checking sufficient flow of gas;
    - Instructing the user to contact the supplier should any maintenance be needed. Contact details of the supplier shall be provided;
    - Instructing the user to contact the supplier should the biodigesters be removed;
    - Providing user training on the proper application of slurry to agricultural land;
    - Providing user training on how to record the quantity of manure fed into the biodigesters;
    - Providing user training on the operation and maintenance of the biogas system, and, if applicable, the water collection facility;
    - Filling out the 'Completion Report', which will contain the following data:
        - A unique serial number of the implemented biogas system. The serial number shall either be physically attached to or integrated in the biogas system or recorded in the User's Manual.
        - Date of completion, which will be equal to the start date of emission reduction generation;
        - Confirmation that the user has been given training on the proper application of slurry to soils and how to record the quantity of manure fed into the biodigester, confirmation that the user assigns the right and title to the generated emission reductions to the CME, confirmation of the acknowledgement that the user is aware that engagement in the programme is voluntary; and confirmation of the acknowledgement that the user is aware that the installation is operating as part of the programme.
        - Name and signature of user;
        - Name and signature of commissioner.

It will be the responsibility of the supplier to ensure that data recorded in the 'Completion Report' is correct and complete.

1. Data entry: The supplier shall input data to database online provided by the CME. In the database online it also record the photos of Household Agreement, and the photos of biodigester. It will be the CME's responsibility to ensure that data is entered

correctly and to follow-up with the supplier if there are errors or missing data. The database will not allow double-entries of the serial numbers. All original hard copies are filed and stored.

2. Operation of biodigester: The end-user will have been provided with the contact details of the supplier should the system need maintenance at any time during the project. It will be the user's responsibility to use the biogas system as instructed during commissioning.
3. Monitoring report: The CME will be responsible for the production of periodical monitoring reports, which will be verified by the VVB.
4. Verification: The VVB will verify monitoring reports and can perform a site visit of each VPA included in the PoA.

(iii) A procedure for technical review of inclusion of VPAs;

The CME shall have a procedure for technical review of inclusion of VPAs to ensure that each VPA meets all requirements and eligibility criteria before its inclusion in the registered PoA. The Program Manager at IDBP will be responsible for the technical review of inclusion of VPAs. The CME shall assign dedicated staff for the management of the record keeping system, and as such it will manage and maintain a digital database with all biogas systems in the PoA, with a clear division between the different VPAs. For each biodigester installed, the CME shall also keep a paper copy of the 'Household Agreement' and the 'Completion Report' that is provided by the suppliers.
The staff responsible for sales and commissioning shall ensure the accuracy of the dates in both documents. Hard copies of both documents will be kept at the office of the CME, and all dates entered into the IDBP database.
The record keeping database will be used to record the results of all monitoring, thereby avoiding double counting, with all data stored to be kept for at least two years after the crediting period or the last issuance of carbon credits for the project activity. The database shall be updated annually and covers the following data:

- Records of arrangements for training and capacity development for, as proven through issuance of a certificate to all constructors – annually;
- The number of jobs generated through the IDBP – annually;
- Sales records – annually.

(iv) Procedure to avoid double counting.

Double counting will be avoided by keeping a record of the serial number of each biogas installation in an online database operated and maintained by the CME, clearly divided per VPA. The data included in the database is detailed above (see '3. Commissioning'). This data can be used by the CME and VVB to identify and locate each individual biodigester installed. The results of all monitoring will also be recorded in the online database.
The CME must annually check the systems through sampling to ensure that:

- The recorded address at which the biodigesters are installed is still correct;
- The biodigesters are still operational (as part of the monitoring procedure);
- Serial numbers are unique and correspond with the numbers on the installed systems.

This quality control procedure for carrying out this check will be performed in line with the Quality Control Manual. If systems are no longer in operation the system will be listed as no longer functional and the reason recorded in the database. Also, if certain biodigesters are not used, only the used biodigesters will be taken into account when defining the emission reductions. If the address is found to no longer comply with the database and the user is found to be different to that listed in the 'Household Agreement, the new user will be asked to sign and complete the Household Agreement and, if willing to do so, will undergo commissioning. All new details will be recorded in the database. Where the new user does not wish to sign such contract or does not fit the criteria outlined, the system will be listed as no longer operational in the database and no emission reductions from that system will be accounted for.
There are two situations in which the address or serial number of the biodigester may change:

- A biodigester is replaced. The user will contact the supplier, as indicated during commissioning, who will record the case of a biodigester that needs replacing, and will enter the new serial number into the database, or inform the CME that this needs to be done;
- A biodigester is moved to a different location. During commissioning, the user will have been directed to contact the supplier should a biodigester be moved. If the user is found to differ from that registered in the database the new address will be recorded in the database and a new Household Agreement and Completion Report completed.

A record of old data will be kept alongside a description of the circumstances under which changes were made.

(v) Records and documentation control process for each VPA under the PoA

The contracts of all contracted entities will state the involvement of their activities as part of a PoA. All users will also acknowledge they are aware of this as part of the Household Agreement. The PoA will follow strict quality control procedures to ensure commissioned biodigesters meet the specific construction quality standards pursued under the IDBP. Both the constructors and their supervisors will be trained to apply the quality standards enforced by the programme. To further minimise the risk of commissioning ineligible biodigesters, each province that participates in the PoA will have at least one well trained quality inspector who is responsible for checking the biodigesters a) during the construction phase and b) upon commissioning. The selection of the checked biodigesters will be based on a random sample basis. The sampling will be representative of constructor, plant size, and the cluster area. The quality standards enforced under the programme have to be fully met by each commissioned biodigester, otherwise the constructors are penalised and requested to repair the defaults.

(vi) Measures for continuous improvements of the PoA management system

Reviewing and continually improving IDBP's operations
The management of the CME will be responsible for ensuring that there is continual improvement in IDBP's operations. The management of the CME will make his/her decisions based on feedback from the field staff. The management of the CME will be regular communication with the field staff.

Corrective measures will be taken depending on issues raised (e.g. software issues will be corrected by the software developer, operational procedures for the field staff will be modified adhoc, etc.).

The management of the CME is committed to identifying opportunities for improvement and supporting their implementation. In order to identify areas for improvement, besides regular feedback from the Field Staff, the following issues will be discussed during Programme Meetings which will be held twice a year:

- Any inefficiencies in operation and management (e.g. in recording data or transferring data to database);
- Opportunities to employ better methods;
- Control of planned and unplanned changes.

In addition to that, when special technical issues need to be undertaken in regard to the carbon component, the issues will be discussed at Quality Inspection meetings which are also held once a year. Any improvements in the management system shall be checked against the POA-DD and VPA-DDs to ensure there is no conflict.

Reviewing and continually improving the Gold Standard process
The Gold Standard expert will follow the latest developments in the Gold Standard and where necessary will provide advice on updating procedures to comply with new rules and regulations under the Gold Standard. The expert will also critically assess the monitoring and verification processes and will advise management on updating and improving processes for the collection of data and reporting. Finally, the expert will be in charge of renewing crediting periods for VPAs and updating the baseline for the PoA where deemed necessary.

B.2.Application of methodologies

(i) Selected GHG baseline and monitoring methodologies

The PoA (and its VPAs) applies all baseline and monitoring procedures according to the guidelines laid out in either of the methodologies entitled:

- Technologies and practices to displace decentralized thermal energy, Version 3.1
- Methodology for animal manure management and biogas use for thermal energy generation, Version 1.1

Technologies and practices to displace decentralized thermal energy, Version 3.1

This methodology is applicable to programs or activities introducing technologies and/or practices that reduce or displace greenhouse gas (GHG) emissions from the thermal energy consumption of households, communities and SMEs. This includes biodigesters. To be eligible, the following applicability criteria apply:

Table 3: Eligibility criteria under methodology Technologies and practices to displace decentralized thermal energy, Version 3.1.

Condition	Justification
1. Clearly identifiable project boundary: The project boundary can be clearly identified, and the biodigesters counted in the project are not included in another voluntary market or CDM project activity (i.e. no double counting takes place). Project proponents must have a survey mechanism in place together with appropriate mitigation measures so as to prevent double-counting in case of another similar activity with some of the target area in common.	The project boundary is the physical, geographical site of the methane recovery and combustion systems The mitigation measures to prevent double-counting are presented in Section B.3 of this PoA-DD.
2. Limited level of energy output per biodigester: The biodigesters each have continuous useful energy outputs of less than 150 kW_{th} per unit (defined as total energy delivered usefully from start to end of operation of a unit divided by time of operation).	The maximum energy output of the biodigesters implemented in the project activities is 31.94 kW_{th}, below the indicated 150 kW_{th} limit per unit. The largest biodigester type implemented in this PoA, the 100 m^3 unit, is estimated to produce up to 30 m^3 of biogas per day. This amounts to a maximum output of 31.94 kW_{th}, which is below the established threshold of 150 kW_{th}. The calculation is presented in Equation 1 below.
3. Continued use of baseline technology: The use of the baseline cookstoves as a backup in parallel with the new, biogas fuelled cook stoves introduced by the project activity is permitted as long as a mechanism is put into place to encourage the removal of the old technology and the definitive discontinuity of its use. The project documentation must provide a	Section B.2 provides an overview of how this parameter is monitored.

Condition	Justification
clear description of the approach chosen and the monitoring plan must allow for a good understanding of the extent to which the baseline cook stove is still in use after the introduction of the improved technology. The success of the mechanism put into place must therefore be monitored, and the approach must be adjusted if proven unsuccessful.	
4. Settling of ownership rights over generated emission reductions: The project proponent must clearly communicate to all project participants two whom the ownership rights of the emission reductions resulting from the project activity belong. This must be communicated to the technology producers and the retailers of the by contract or clear written assertions in the transaction paperwork.	As set out in the operational and management plan explained in Section B.1 of this PoA-DD, each end users of a biodigester will be asked to read and sign a contract stating that they agree to transfer the ownership rights of the emission reductions generated by the biodigester technology to PT. Biru, the CME of the programme. Copies of these signed contracts will be kept by the CME.
5. Use of new biomass feedstock Project activities making use of a new biomass feedstock in the project situation (e.g. shift from non-renewable to green charcoal, plant oil or renewable biomass briquettes) must comply with relevant Gold Standard specific requirements for biomass related project activities, as defined in the latest version of the Gold Standard rules.	This applicability criterion is not applicable as no new biomass feedstock is used in the project scenario.

Equation 1: Maximum thermal capacity calculation for the maximum size biodigester implemented under the PoA.

$$\mathbf{Th_{cap}} = \frac{\mathbf{E}}{\mathbf{t}} \quad where \ \mathbf{E} = \eta * \ \mathrm{H_b} * \mathrm{V_b}$$

Where:	Value:	Source:
t = hours/day usage	2.74	IDBP Biogas User Survey 2016[1]
η = efficiency of stove	50%	Indonesian Government standard on stove efficiency
H_b = heat of combustion per unit volume of biogas	21.0 MJ/m^3	Derived from IPCC defaults[2]
V_b = volume of biogas	30 m^3/day	Data provided by PT. Biru Karbon Nusantara[3]
E = Energy available from the biogas system	315 MJ/day	Calculated
E_{th} =	87.5 kWh/day	1 MJ = 0.2778 kWh
Th_{cap} =	31.94 kW_{th}	Given a 2.74 hour/day usage

Methodology for animal manure management and biogas use for thermal energy generation", Version 1.1

This methodology applies to the fraction of the manure[4], which would decay anaerobically in the absence of the project activity and reduced fuel use as established by a survey. This methodology will be used in addition to the "Technologies and Practices to Displace Decentralised Thermal Energy Consumption (TPDDTEC) v3.1" methodology for biogas generation and application for thermal energy project activities, originally adopted under the IDBP PoA.

To be eligible, the following applicability criteria apply:

Table 4: Eligibility criteria of applied methodology

[1] As per Gold Standard confirmation by email, the parameter 't' can be fixed at value 2.74 to enable the definition of the threshold of a VPA. See email communication dated 11 April 2016.
[2] Methane has an energy value of 37.78 MJ/m^3; thus, biogas at 55% CH_4 has an energy value of 21 MJ/m^3.
[3] Cow dung produces approximately 40 litres biogas per kg. Each m3 capacity of the biodigester needs 7.5 kg dung per day. Given a maximum 100 m3 biodigester allowed under this PoA, 750 kg of cow dung per day is required. This translates into 30 m3 of gas produced per day. See Document Biogas_as_renewable_energy _2005.pdf, pages 79 and 140.
[4] Co-digestion of manure with other organic waste streams such as agricultural residue, kitchen food waste, fresh septic tank sludge etc. is permitted.

Condition	Justification
1. General applicability: This methodology applies only to the fraction of the manure, which would decay anaerobically in the absence of the project activity established by a survey.	The fraction of manure that would decay anaerobically in the absence of the project is 100% and will be determined by a survey.
2. Method for baseline emission reduction quantification: Where annual emission reduction for methane recovery component is higher than five tonnes of CO_2eq per biodigester the AWMS method 2 shall be applied.	The annual emission reduction for the methane recovery component is lower than 5 tonnes of CO_2eq per biodigester, therefore the AWMS method 1 is applied.
3. AWMS method 1 project boundary: The category is limited to measures at individual households, small farms (e.g., installation of a domestic biogas digester) or livestock farms or institutional settings.	The domestic biodigesters are solely installed in individual households.
4. AWMS method 1 digestate handling: The digestate must be handled aerobically. In soil application of the final digestate, proper conditions and procedures (resulting in negligible methane emissions) must be ensured.	The digestate is a fertiliser that can either be applied directly to crops or composted with other organic material and will therefore be handled aerobically.
5. AWMS method 1 biogas capture: The biogas captured from the biodigesters is utilized (e.g., combusted or burnt for thermal applications).	The biogas is used as cooking fuel.
6. Project developer and participants representation: The activity is implemented by a project developer and can include additional project participants listed in Appendix 2 of the PDD template. The individual households may be represented collectively by community organizations,	PT. BKN is the project developer and YRE is the implementer of the project. Individual households do not act as project participants.

Condition	Justification
etc., but do not individually act as project participants.	
7. Project incentive mechanisms: The developer must design incentive mechanism(s), which should be effective as fast as possible, for the displacing the use of inefficient baseline stoves or cooking practices by the project cooking devices for daily usage and describe the incentive mechanism(s) in the PDD/VPA-DD at the time of validation.	Carbon finance from the program help households to have biodigesters. Every biodigester households received a subsidy (25 - 30%) from the programme. The households also receive regular repairing services free of cost.
8. Double counting handling: To avoid double counting or double claiming, the project developer must: a) clearly communicate its ownership rights and intention of claiming the emission reductions resulting from the project activity to the following parties by contract or clear written assertions in the transaction paperwork: all other project participants; project technology manufacturers; and retailers of the project technology; and b) inform and notify the end users that they cannot claim emission reductions from the project, and c) exclude from the project activity, any biodigester and cookstoves that are included in any other voluntary market or CDM or Article 6 based mechanisms project activity/PoA and strive not to displace the cooking devices of another CDM or	PT. BKN has agreements with each household defining the rights of beneficiaries including PT. BKN's ownership rights and intention of claiming the emission reduction from the digesters. The agreements also state that users cannot claim emission reductions from the VPA. The PoA does not include any biodigester that is registered under any other voluntary market or CDM or Article 6 based mechanisms.

Condition	Justification
voluntary project/PoA. See data and parameters not monitored, Avoidance of double counting or double claiming with other mitigation actions, for details on this demonstration.	
9. Compliance with national, sub-national or local regulations: The project shall not undermine or conflict with any national, sub-national or local regulations or guidance for animal waste management, thermal energy supply or fuel supply or use. The project shall document the national, regional and local regulatory framework for provision of animal waste management and thermal energy services of the type the project provides in the project boundary (parameter BGTA 3).	The project is in line with all applicable regulations for animal waste management, thermal energy supply or fuel supply or use.
10. Replacement technologies: If the expected or remaining technical life of project technology (parameter BGTA 5) is shorter than the crediting period, the project developer shall describe measures to ensure that end users are provided or can purchase replacement technology of comparable service and quality level at the end of the technical life, by either replacing with comparable or better technology, or retrofitting essential parts with performance guarantee.	The technical life of the project technology exceeds the crediting period.
11. Geographical project boundary: The project boundary is the physical, geographical sites of:	The project boundary is set to include the geographical area of the households where the biodigesters are installed, including

Condition	Justification
a) The livestock; b) Animal manure management systems; c) Biogas utilization for thermal applications; Digestate treatment, usage and/or disposal (where appliable).	their livestock and manure management system, the biogas cookstove and biodigester.
12. Fuel production and collection area project boundary: The project developer shall also include clear description of target area and fuel production and collection area in the project boundary in the PDD/VPA-DD. a) The project boundary is the physical, geographical sites of the project technologies/practices including the fuel collection and production area, where: i. baseline fuel is woody biomass (including charcoal), the project boundary also includes the area within which this woody biomass is grown and collected. For other fuels such as fossil fuel e.g., Coal, LPG, Kerosene, the boundary can be ignored. ii. project activity uses processed fuels, this boundary also includes the baseline and project fuel production (e.g., charcoal, plant oil) and solid waste and effluents disposal or treatment facilities associated with fuel processing.	The project boundary includes the areas where the baseline fuel is collected, and the areas where methane would have been decaying in absence of the project activity. Please see section B.4, describing the baseline scenario.

Condition	Justification
iii. project activity introduces the use of a new biomass feedstock into the project situation, the fuel production and collection area are the area within which this new biomass is produced, collected and supplied. b) The target area is the region(s) or town(s) where the considered baseline scenario(s) are deemed to be uniform across project area.	

(ii) Any methodologies or methodological tools to which the selected methodologies refer, where applicable:

- Standard for sampling and surveys for CDM project activities and programme of activities (version 3.0)
- TOOL 30 - Calculation of the fraction of non-renewable biomass (version 4.0)
- GS SDG Impact Tool (version 1.1)
- Gold Standard for the Global Goals Community Services Activity Requirements (version 1.2)
- Methodological Tool: Demonstration of Additionality of Small-scale Project Activities (version 13.1)

B.2.1. Multiple technologies/measures

The PoA shall use the biodigester technology described in section A.2 quantifying emission using either the Technologies and Practices to Displace Decentralized Thermal Energy, Version 3.1, or the Methodology for Animal Manure Management and Biogas Use for Thermal Energy Generation, Version 1.1. Each VPA must use only one of these methodologies to obliterate cross-effects from multiple methodologies. The CME also records the unique IDs of biodigesters installed under each VPA in the IDBP database.

B.3.Eligibility criteria for inclusion of a VPA in the PoA

Conditions to check how VPAs will meet the eligibility criteria as per GS4GG Principles & Requirements

As per section 3.1.1 of GS4GG Principles and Requirements, version 1.2.

Table 5: Eligibility conditions as per GS4GG Principles & Requirements.

No.	ELIGIBILITY CRITERION	DESCRIPTION/ REQUIRED CONDITION	MEANS OF VERIFICATION/SUPPORTING EVIDENCE FOR INCLUSION
(a)	**Types of Projects:** Eligible projects shall include physical action/implementation on the ground. Pre-identified eligible project types are identified in the Eligibility Principles and Requirements section.	Project is pre-identified as eligible by being referenced in Gold Standard Activity Requirements. According to the activity requirements, paragraph 3.1.1: "Methane recovery project activities shall be eligible for emission reductions from both methane avoidance (including from the flared biogas fraction) and non-renewable fuel substitution as long as evidence is provided on time for validation to demonstrate that the system was designed in a way to at least make use of some of the biogas recovered for the delivery of energy services (e.g. electricity, heat)"	Verifiable evidence: • VPA-DD (implementation schedule on the ground)
(b)	**Location of Project:** Projects may be located in any part of the world	All biogas systems listed in a VPA are installed within the geographical boundaries of Indonesia. Each biodigester in a VPA has a unique serial number that is recorded in the User's Manual	Verifiable evidence: • Completion Report; • Household Agreement; • IDBP Database; or • User's Manual.

		and/or engraved or permanently attached as a nameplate which confirms the location of the biodigester. The serial numbers are listed in the IDBP database.	
(c)	**Project Area, Project Boundary and Scale:** The Project Area and Project Boundary shall be defined. Projects may be developed at any scale although certain rules, requirements and limitations may apply under specific Activity Requirements, Impact Quantification Methodologies and Products Requirements. In order to avoid double counting the Project shall not be included in any other voluntary or compliance standards programme unless approved by Gold Standard (for example through dual certification). Also, if the Project Area overlaps with that of another Gold Standard or other voluntary or compliance standard programme of a similar nature, the project shall demonstrate that there is no double counting of impacts at design and performance certification (for example use of similar technology or practices through which the potential arises for double counting or	All biogas systems listed in a VPA are installed within the geographical boundaries of Indonesia. The biodigesters are uniquely identified and defined in an unambiguous manner by providing the serial number of the systems installed. The serial numbers are listed in the IDBP database. It avoids double counting. Participating users must confirm that they are not taking part in other registered PoAs through signing of a Household Agreement for each biodigester. VPAs must be registered in the National Registration System of Indonesia (SRN) as per Presidential Regulation 98/2021. IDBP has already registered in the Gold Standard, thus registration in the SRN is through mutual recognition process with corresponding adjustment to prevent double counting of impacts. Double counting has been included as part of the	Verifiable evidence: • IDBP Database; • Completion Report; or • Household Agreement.

	misestimation of impacts amongst projects)	monitoring plan (see B.7.1).	
(d)	**Host Country Requirements:** Projects shall be in compliance with applicable Host Country's legal, environmental, ecological and social regulations.	All VPAs under the IDBP shall comply with: • Indonesian Law 6/2023 regarding environmental management • Regulation of the Minister of Agriculture of Indonesia No. 1011/Permentan/OT.140/7/2014 that regulates waste processing units for farmers to produce biogas and organic fertilizer. • Regulation of the Minister of Energy and Mineral Resources (MEMR) of Indonesia No. 36/2018 which regulates the design, capacity, and construction of household-scale biodigester. • Presidential Decree No. 98/2021 regarding climate change mitigation and actions project registration. • Regulation of the Minister of Environment and Forestry (MoEF) of Indonesia No. 21/2022 concerning the implementation of carbon economic value through carbon trading activities.	Verifiable evidence: • VPA-DD

(e)	**Contact Details:** As part of the Project Documentation the Project Developer shall provide (i) name and (ii) contact details of all Project Participants; AND in case of an organisation (iii) the legal registration details and (iv) documentation by the governing jurisdiction that proves that the entity is in good standing (defined as being a legal or other appropriate entity registered in or allowed to operate within the required jurisdiction and with no evidence of insolvency or legal/criminal notices placed against it or any of its Directors). Gold Standard retains the right (at its own discretion) to refuse use of the Standard where reputational concerns are highlighted	Contacts of each VPA Project Developer will be included in each VPA-DD.	Verifiable evidence: • VPA-DD
(f)	**Legal Ownership:** Full and uncontested legal ownership of any Products that are generated under Gold Standard Certification, (for example carbon credits) shall be demonstrated. Where such ownership is transferred from project beneficiaries this must be demonstrated transparently and with full, prior and informed consent (FPIC).	The individuals responsible for the biodigesters are individual users of the biogas equipment. Each biodigester user as IDBP's beneficiary agrees by a 'Household Agreement' to transfer the ownership title of the generated emission reductions to the project developer, which is PT. Biru Karbon Nusantara. Each biodigester user will be asked to read and sign	Verifiable evidence: • Household Agreement

	Note that for certain Project types there is a requirement for full and uncontested legal land title/tenure to be demonstrated. These are contained within specific Activity or Product Requirements. All projects shall immediately report to Gold Standard any land title/tenure disputes arising.	a contract stating that they ask a construction partner to build them biodigester in compliance with the IDBP technology design, both biodigester user and the construction partner agree to transfer the ownership rights of the emission reductions generated by the biodigester technology to PT. Biru Karbon Nusantara, as well as allow PT. Biru Karbon Nusantara to act on their behalf in receiving emission reduction rights and the carbon fund generated. Copies of these signed contracts will be kept by the project developer. Hence, the project developer is the sole legal owner of the carbon rights.
(g)	**Other Rights:** As well as legal title and ownership, the Project Developer shall also demonstrate where required uncontested legal rights and/or permissions concerning changes in use of other resources required to service the Project (for example, access rights, water rights etc.). Any known disputes or contested rights must be declared immediately to Gold Standard by the Project Developer and resolved prior to further project	Not Applicable

implementation in affected areas.

~~*b.*~~ *Conditions to check how VPAs will meet the General Eligibility criteria of the applicable Activity Requirements*

As per section 3 of Community Services Activity Requirements, version 1.2.

Table 6: Eligibility criteria as per Community Services Activity Requirements.

No.	ELIGIBILITY CRITERION	DESCRIPTION/ REQUIRED CONDITION	MEANS OF VERIFICATION/SUPPORTING EVIDENCE FOR INCLUSION
1	**Types of Projects:** Pre-identified CSA project types are noted below. Project Developers may submit new project types to Gold Standard for approval following the Principles & Requirements	Project is pre-identified as eligible by being referenced in Gold Standard Community Services Activity Requirements, v1.2, section 3.1.1, item (c) "Waste management and handling: All waste management activities that deliver energy or a usable product with sustainable development benefits such as composting, biogas etc."	Verifiable evidence: • VPA-DD
2	**Project area, boundary and scale:** Area and Boundary shall be defined in line with the applicable Impact Quantification Methodologies and Product Requirements.	All biogas systems listed in a VPA are installed within the geographical boundaries of Indonesia. VPAs shall issue emission reductions less than or equal to 60,000 tCO_{2eq} per annum.	Verifiable evidence: • IDBP Database; • Completion Report; or • Household Agreement.
3	**Project area, boundary and scale**: Certain Impact Quantification methodologies allow projects to account Suppressed Demand	Not applicable	

	scenario when establishing a baseline. In such cases, the application of Suppressed Demand baseline is limited to Small Scale and Microscale Projects. Where a Suppressed Demand baseline is applied, it is not possible to 'stack' Gold Standard Certified Impact Statements or Products as the definition of the baseline may be contradictory		
4	**Legal Ownership:** (a) Projects involving the distribution of a large number of devices for services such as heating, cooking, lighting, electricity generation, water treatment technology such as water filter, etc. shall provide a clear description of the ownership of the Products that are generated under Gold Standard Certification all along the investment chain. In line with the FPIC requirement, the proofs that end-users are aware of and willing to give up their rights on Products shall be provided (b) The transfer of Product ownership shall be discussed during local stakeholder consultations for projects.	The individuals responsible for the biodigesters are individual users of the biogas equipment. Each biodigester user as IDBP's beneficiary agrees by a 'Household Agreement' to transfer the ownership title of the generated emission reductions to the project developer, which is PT. Biru Karbon Nusantara. Each biodigester user will be asked to read and sign a contract stating that they ask a construction partner to build them biodigester in compliance with the IDBP technology design, both biodigester user and the construction partner agree to transfer the ownership rights of the emission reductions generated by the biodigester technology to PT. Biru Karbon Nusantara, as well as	Verifiable evidence: • Household Agreement

	allow PT. Biru Karbon Nusantara to act on their behalf in receiving emission reduction rights and the carbon fund generated. Copies of these signed contracts will be kept by the project developer. Hence, the project developer is the sole legal owner of the carbon rights.

~~e.~~ *Conditions to check the start dates of VPA through documentary evidence*

A first Voluntary Project Activity (VPA-1 GS1174) was retroactively included to cover the emission reductions that have been generated up to two years prior to the registration date of this PoA. In 2017, the second Voluntary Project Activity (VPA-2 GS5303) was included in the programme, accommodating all new digesters installed from 02/01/2017 onwards. Verifiable evidence for the start dates of these VPAs are the VPA DDs.

~~i.~~ *Conditions to ensure that real case and its regular VPAs systematically demonstrate additionality*

This is explained under section C. Demonstration of Additionality.

~~h.~~ *Condition to ensure that the real case VPA and its regular VPAs meet the applicability criteria of selected methodology of combination of methodologies*

These conditions are explained under section B.2. Application of Methodologies.

SECTION C. DEMONSTRATION OF ADDITIONALITY

All Gold Standard activities need to demonstrate to be additional, meaning that their impact in terms of climate mitigation and sustainable development is beyond those that would have occurred in the absence of the certified Gold Standard project. The demonstration for the continued need for carbon revenues for this PoA is structured along the following three identified barriers:

- *Barrier 1: Continued affordability barrier on the household level*, whereby it is crucial that the PoA continues to deliver the guarantees and free-of-charge repair and maintenance services to ensure effective use of the project technology throughout the duration of programme;
- *Barrier 2: Continued capacity barrier on the household level*, whereby it is vital that the PoA continues to train both masons and households on the use and maintenance of the project technology to secure a maximum lifetime of the units included in respective VPAs;
- *Barrier 3: Access to finance barrier on the overall PoA-level*, whereby restricted commitments from public donors and development organisations are insufficient to support the programme's overheads and general management expenses.

Barrier 1: Continued affordability barrier on the household level

With a cost of IDR 11,000,000 (EUR 663) for the average size biodigester implemented under this programme (6m^3), the payback period of over 10 years is far too long for the average household and is thus financially not the most accessible and attractive option for the target households. The targeted households lack the cash to cover the upfront payment associated with the purchase of the biodigester and can only do so if supported by the subsidy payment and micro-credit in combination with the free-of-charge repair and maintenance services that continue to be offered under this PoA.

Individual households lack the financial credibility to access credit to finance the biodigester. The PoA enables these households access to micro-credit through the programme's affiliation with financial institutions. The provision of the IDR 2 million subsidy payment, the free-of-charge repair and maintenance services, and the

guaranteed high quality of the biodigester reduces upfront and future costs associated with the purchase and maintenance of the biodigester. This in turn reduces the indebtedness and credit risk of the participating households, giving the affiliated financial institutions firmer security regarding the credit they extend. Without these components supported under the PoA, the affiliated financial institutions are unwilling to extend micro-credit loans to the target users as the outstanding credit risk and collection expenses are considered too high when the full cost of the biodigester is considered. The biodigester is not considered as collateral by banks and given the lack of history of a commercial market for domestic biodigesters in Indonesia, banks are reluctant to offer loans covering the entire investment cost.

Without the anticipated revenues earned through the sale of carbon credits, the CPO network (which are based not farther than a one-hour travel for biogas users), the 3-year free-of-charge repair and maintenance services and the quality guarantee are not sustainable. It is therefore apparent that without the continued support of carbon revenues, households a) will encounter an affordability barrier; and b) for existing biodigesters are likely to stop using the units the moment that an element of the technology wears down, forcing households to turn back to their dependence on fossil fuel and non-renewable biomass to meet their thermal energy demands.

Barrier 2: Continued capacity barrier on the household level
Implementation of the biodigester technology across Indonesia has also been limited due to limited knowledge of households on the existence, operation and maintenance of the technology. In the baseline scenario, households collect biomass and source fossil fuel from the marketplace, which has been the habitual norm for centuries. Switching to renewable biogas and continuing its usage once the biodigester is in place is hampered by the general lack of understanding of how the systems can benefit households, as well as traditional objections to the application of animal manure for domestic cooking purposes. Limited understanding of the biogas technology on the household level is caused by the lack of organisational efforts to:

i. educate households on the practical advantages of the technology;
ii. assist households in the purchase and installation of the systems;
iii. provide maintenance and repair services.

The PoA has an ongoing need for carbon revenues as it continues to build capacity on both the household level and the market level. On the household level, the PoA continues to provide training to all users upon commissioning. Furthermore, a three-year repair and maintenance guarantee is provided upon commissioning, therefore increasing the household's understanding and acceptance of the new technology. On the market level, the PoA provides training to constructors (masons) to ensure a quality protocol is followed upon installation of biodigesters in the field. The PoA follows strict quality control procedures and requires 49 quality standards to be fully met by the constructors before a biodigester can be commissioned. Furthermore, training is extended to supervisors which upon the reception of a certification are in the position to overlook implementation of the PoA through its VPAs. Quality control, provision of guarantees and capacity building on the user level all enable the capacity barrier to be overcome.

Barrier 3: Access to finance barrier on the overall VPA-level
As described in Section A.5, the PoA is supported through Official Development Assistance from several sources. Despite this assistance, this funding is of short-term and unpredictable nature. This makes it challenging to meet the continuous budget needs and to ensure a stable delivery of the support activities pursued under the PoA. Carbon revenues have played a significant role in sustaining the activities implemented under the PoA during its first seven years of operations. The provision of donor funding remains unstable and mostly requires the availability of co-financing funds, which are difficult to secure. Carbon funds replace at least part of these required funds and allow for the continued provision of repair and guarantee services across the nine provinces covered by the VPAs.

The existence of these three different barriers demonstrates the continued additionality of the PoA.

Assessment and demonstration of additionality for a typical VPA
Demonstration of additionality on the VPA level will be conducted using the 'Guidelines on the Demonstration of Additionality of Small-Scale Project Activities' (EB 83 annex 14, Version 10.0). Each VPA has to determine additionality depending on its characteristics. To this end, the VPAs are classified into retroactive small-scale VPAs and regular small-scale VPAs.

Approach 1: Demonstration of additionality for retroactive small-scale VPAs.

To demonstrate additionality for retroactive small-scale VPAs, paragraph 1 of the Guidelines on the Demonstration of Additionality of Small-Scale Project Activities' (EB 83 annex 14, Version 10.0) shall be followed. This approach requires the provision of an explanation that shows how the project activity would not have occurred anyway due to the existence of a barrier that hinder implementation. For the demonstration of additionality the Annex 34 of EB 35 "Non-binding best practice examples to demonstrate additionality for SSC project activities" may be used for reference, with focus on varieties of barriers. Therefore each retroactive VPA shall elaborate on at least one barrier that prevents project implementation without carbon revenues.

The following outlines how the additionality argument of a typical VPA can be structured. While the additionality argument on VPA-level should follows the same steps, the assessment may focus only on one of the presented barriers.

i. Access to finance barrier

The project activity proponent shall indicate that the user targeted under the VPA could not access appropriate capital without consideration of the carbon credit revenues at the VPA level.

The project activity shall demonstrate that Indonesian households, communities, SMEs face an access to finance barrier due to their low purchasing power and the high investment costs of the biodigesters. The project activity shall indicate that the investment costs on the user level are significant and constitute a high payback period in terms of cash savings from baseline fuel. Evidence shall be provided on how the VPA helps overcome the access to finance barrier by:

a. indicating that the project activity subsidises part of the investment cost of the biodigesters, thereby lowering the payback period;
b. indicating that the project activity facilitates access to micro finance loans to users

ii. Technological barrier

The project proponent shall indicate that a less technologically advanced alternative to the VPA involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions.

The biodigester technology is not difficult to operate on the condition that the end-user is properly trained and after-sales services, including maintenance and repair are

offered at an affordable rate or free of charge. Evidence shall be provided on how the VPA helps overcome the technology barrier by:

a. indicating that the project activity employs staff trained in delivering the technology;
b. indicating that the project activity offers a guarantee covering free-of-charge maintenance services for at least the initial years of operations;
c. indicating that the project activity shall indicate that adequate training is provided to the end-users, helping the targeted users overcome the technology barrier.

iii. Other barriers

The project proponent shall indicate that other barriers such as prevailing practice, institutional barriers or limited information, managerial resources, organisational capacity, or capacity to absorb new technologies, exist and can be overcome by the project activity.

VPAs successfully demonstrating compliance with at least one of the listed barriers shall be defined as additional.

Approach 2: Demonstration of additionality for regular small-scale VPAs

To demonstrate additionality for regular small-scale VPAs, either a UNFCCC-approved or a Gold Standard-approved additionality tool can be used to demonstrate project additionality. TOOL32 (Methodological tool: Positive lists of technologies Version 04.0) lists technologies that confer automatic additionality to CDM project activities and CDM programmes of activities (PoAs) that apply them. Under TOOL 32, when applying baseline and monitoring methodologies that refer to this tool, project activities and PoAs are deemed automatically additional if they exclusively apply the technologies listed under section 5 of tool and demonstrate that they fulfil the related conditions specified in the same section.

Section 5.3. of the tool which includes a positive list for technology/measure used by household, communities and SMEs is applicable to this PoA. Section 5.3. states, "digesters used in biogas generation from anaerobic treatment wastes (e.g., kitchen, vegetable, animal and farm) where the resulting biogas is used for heat production for cooking purpose."

SECTION D. DURATION OF PoA

D.1. Date of first submission of PoA to Gold Standard

01/02/2012

D.2. Duration of the PoA

31/12/2037, 28 years, 456 months
The maximum total duration of the Transitioning PoA shall be 28 years as envisaged at time of registration under an earlier version of Gold Standard.

SECTION E. OUTCOME OF PoA LEVEL STAKEHOLDER CONSULTATION

E.1.Summary of stakeholder consultation at PoA Level

Most of the comments IDBP received during the Local Stakeholder Consultation conducted in February 2012 from the participants were positive. The questions raised by the participants were mostly related to possibilities of biogas implementation; whether the areas can be expanded, to build bigger size digester or to use biogas to power generator. Some participants also asked about the subsidy rate and mechanism that are being implemented by IDBP, while others sought clarification about the possibility of partially financing biogas programme by making use of the provincial government fund. One participant also asked about the operation and maintenance system in the case of a community-operated bio-digester. The responses given to those questions were straight to the point as IDBP already has clear policies on how to deal with the above issues.

Below lists the assessment of all comments received, as presented in the LSC report:

Table 7: Assessment of comments received.

Stakeholder comment	Yes/ No?	Explanation (Why? How?)
Q1: *How long is the period during which a user is required to repay the biodigester purchase? What does the subsidy mechanism look like? When does the user get the return of investment, in terms of fishery and agricultural benefits?*	Yes	**A1:** The benefits of biogas may not be apparent immediately for the user, because the user must invest a considerable amount of money upfront, and not every user is ready to do this. For instance, a user who is ready to invest in a biodigester through credit will need to spend IDR 150,000 (around EUR 12.00) as a monthly instalment for three years. The user usually repays the instalment to their cooperative in cash, or in the form of milk price deduction that is paid by the cooperative to the user.
Q2: *The biogas development is currently implemented in some parts of Indonesia only. Can it be*	Yes	**A2:** The target for biogas implementation is not limited to the initial set of provinces only, but all of Indonesia. However, as this is only

Stakeholder comment	Yes/ No?	Explanation (Why? How?)
implemented nationwide? From the side of the government, the need for new renewable energy is increasing. Unfortunately, inadequate action is occurring on this front.		the initial stage of the biogas programme and the responsibility to implement biogas programme does not solely rely on the central government. That is why provincial governments are invited to this kind of meetings, so that they can share the result of the meetings to the other local authorities. The provincial government can allocate a part of their budget for biogas development. IDBP expects to expand into Sumatra island, because it has a lot of potential. At this stage, MCC also already stated that they are interested to do a pilot project in Jambi, therefore IDBP will also explore about the next working areas with MCC. It is expected that in the future there will be increasingly more provinces where biogas is implemented.
Q3: *In Central Java, the electrification ratio is 76.63%. Many hamlets still do not have access to electricity. The awareness meetings about biogas benefits are really needed. The level of awareness of the people is still low; therefore collaboration between the provincial and the central government as well as PT. Biru Karbon Nusantara is necessary.*	Yes	**A3:** Technically, it is possible to convert biogas into electricity, but it requires high biogas input. It should also be remembered that the gas quality from biogas – in unprocessed conditions - contains a high level of sulphur and water particles thus making it corrosive to the appliances.
Q4: *Can IDBP build bigger size bio-digesters, such as 20 m3, and make it not limited to cattle manure but also use it for tempeh waste? There are demo plots done by other stakeholders in some areas in Central Java that make use of tempeh waste.*	Yes	**A4:** IDBP has been thinking about bigger biogas digester, and there is a possibility of building bigger biodigester systems in 2012 (between 20 m3 and 50 m3). Currently, IDBP still focuses on domestic biogas, which is for the household. IDBP will consider it again, as it is also related with the interest of the programme and SNV as the technical

Stakeholder comment	Yes/ No?	Explanation (Why? How?)
		partner. IDBP will keep tracking biogas technology developments.
Q5: *Can the level of IDBP subsidy rate be increased? For instance, the subsidy for small size biodigester is IDR 2 million (around EUR 170), but can bigger sized biodigesters qualify for a higher subsidy rate?*	Yes	**A5:** IDBP does not intend to change the subsidy rate because the digester size should match with the user's need for biogas. For instance, a user who has 4 to 5 family members and owns 10 cows could build but does not need a 8 m3 biodigester, because the energy need for the whole family will be met with a 6 m3 digester. By providing a flat subsidy rate, IDBP encourages people to use the energy as efficient as possible.
Q6: *There are 1,500 dairy farmers in Tandangsari, Sumedang, West Java. Only 40 of them have biogas. At the moment, the dairy cow market is not good. The fodder price is increasing, living cost is also increasing and the economy in general is not good. How can we increase the dairy cow market like in Malaysia?*	No	**A6**: Irrelevant to IDBP.
Q7*: In 2005, the Indonesian government adopted a target to increase the use of new renewable energy up to 17%. In Buru Island, Maluku, cattle rearing is done extensively, and the cattle are kept in a communal stable. Can we extend the IDBP programme to Maluku?* *Furthermore, If we want to promote biogas, how can we explain to the farmers to make use of the manure (that can be used as biogas and bio-slurry)? Because often the farmers bring the manure to the field, mix it*	Yes	**A7:** Communal stable for cattle is a common practice. In the case of Buru Island, the energy access can be integrated with that agricultural system. It is in the best interest of IDBP to ensure that the users can get optimum benefits from biogas. Therefore, although it is known that communal systems often do not work very well due to social factors (technically it is feasible), the IDBP is considering building a number of communal plants, so manure of these communities can be used for biogas and eventually for fertiliser. As for centralised biogas, it depends on the distance between the stable and the houses. In principle, a biogas

Stakeholder comment	Yes/ No?	Explanation (Why? How?)
with hay and then burn it. Is it possible to build a centralised biogas plant there?		digester can be built up to 100 meters from the house(s). Maluku may be considered in the later stage of the programme if adequate funding is available.
***Q8:** Biogas is already present in South Sulawesi. The IDBP is very good there. In South Sulawesi, the electrification rate is 85%, therefore biogas is needed. There are 1 million cattle in South Sulawesi. The target is to increase the number up to 2 million. However, the achievement to build biogas is still difficult because there is no credit access. So it is suggested that:* *1) The subsidy should be given from the government (from the provincial budget);* *2) The number of trainings for biogas should be increased as well. The provincial government could finance this;* *Biogas appliances should only be obtained locally, from Indonesia.*	Yes	**A8:** There are many other sources of energy that can increase the electrification level, such as micro hydro, solar, geothermal. Biogas is certainly only one of them. The provincial government is welcome to use their own budget to develop the biogas sector employing the concept of IDBP, with a focus on strengthening biogas service providers through training. Credit access is one of IDBP's biggest challenges. Local governments are welcome to play a role in enhancing access to credit. As for locally made biogas appliances, it should be remembered that it is crucial to maintain the quality of the biodigesters. Until now, all but one of the appliances are already made locally. The local main gas valve does still not meet IDBP quality standards. IDBP keeps on looking for local manufacturers, including local workshops and technical schools. Until there is a good quality of locally-made appliances, IDBP will only use imported ones to maintain the quality.
***Q9:** What does the carbon trade look like? What will happen with the carbon credit?*	Yes	**A9:** The carbon trade is aimed at obtaining revenues, which are subsequently pumped back into the programme. PT. Biru Karbon Nusantara will have the responsibility to ensure that the programme's carbon credits are sold on the carbon market and will also have the responsibility to meet monitoring demands resulting from the carbon mechanism under the Gold Standard. PT.

Stakeholder comment	Yes/ No?	Explanation (Why? How?)
		Biru Karbon Nusantara has initiated the development of the mechanism as it sees IDBP as a long-term programme which will in the long run result in considerable carbon emission reductions, which will support the programme financially and make it self-reliant, reducing the need of external funding.
Q10: *The central government is actively promoting the biogas programme, but there is a lack of coordination with the provincial government. Not to mention that there is still a programme that builds biogas by using grants (fully-subsidized biodigesters). The grant system is ruining the market. The central and provincial government must have one policy only. The collaboration must be intensified. What will the central government do post-2012 in this respect?*	Yes	**A10:** It is true that there still exist communication problems between the provincial and central government. This is because the provincial government has the freedom to make their own plans. However, the central government always tries to coordinate in relation to biogas development with the provincial government. At the moment the central government intends to work on a regulation framework in the form of a Ministerial Decree so that the National Budget can be used for subsidy.
Q11: *What can be done to ensure that there is no problem in operation and maintenance of a communal biodigester?*	Yes	**A11:** The owners of IDBP biodigesters are thoroughly trained, ensuring that they understand how to handle their plant, but they will also get after sales services to ensure that the systems are kept operational. In the case of communal systems this will also be done and the communal aspects will be given special attention to make sure that the group manages their plant jointly in the right way.
Q12. *Some farmers still dispose bio-slurry to the gutter and river thereby polluting the water and destroying the environment. Does*	Yes	**A12.** As part of the IDBP programme, biogas users are entitled to receive knowledge on the advantages of bio-slurry. The programme intensively cooperate with its

Stakeholder comment	Yes/ No?	Explanation (Why? How?)
IDBP have any training to provide to biodigester users so that they know the advantages of the bio-slurry?		business partner, herein KBSS Setia Kawan, to ensure that all users should receive the training accordingly.

Due to the overall positive feedback from the Local Stakeholder Consultation, the response rate to the first Feedback Round conducted in April 2012 was small. Out of the 68 contacted stakeholders, three responded. One inquiry concerned the clarification as to which entity would be in charge of managing the carbon funds generated under the PoA. The other two responses were confirmations that the programme's social and environmental benefits are clear and that the stakeholders are in full support of the PoA. As none of the comments raised concerns, no alteration to the programme design were required.

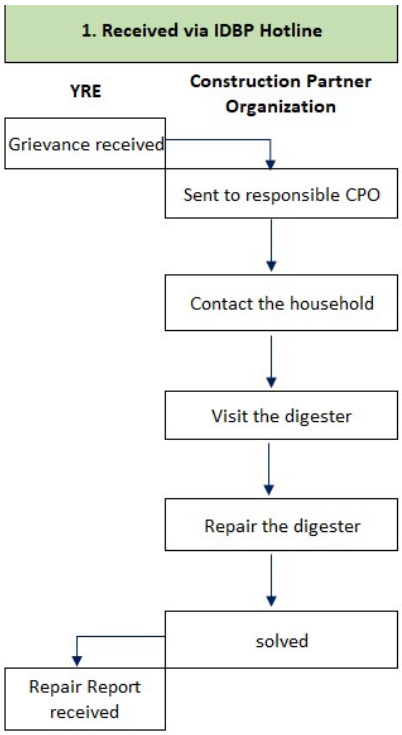
Results were similar for the second Feedback Round conducted in October 2016. Three responses were received, one praising the positive impact of the programme, and another two asking whether more biodigesters would be installed in urban areas and how the programme could further engage micro-finance institutions to further close the access to finance barrier for the farmers. The responses from PT. Biru Karbon Nusantara included that IDBP is working on research and development digester for urban waste treatment and is already actively collaborating with several micro-finance institutions.

E.2.Consideration of stakeholder comments received

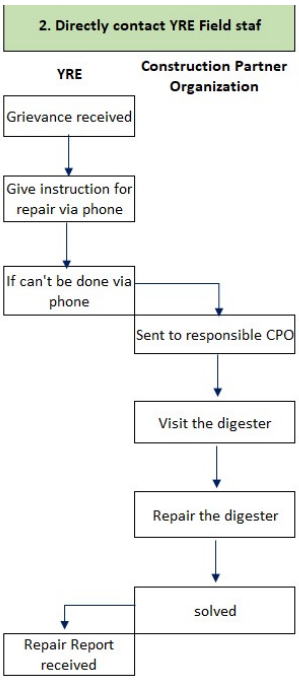
PT. Biru Karbon Nusantara understands and fully agrees with all the comments received. IDBP already pro-actively pursues all of the mentioned areas of operations to which the comments relate. IDBP will continue its active work on all these fronts to further improve the reach, effectiveness and customer satisfaction of the programme. Alterations to the programme design based on the comments received are therefore not required.

E.3.Final Continuous Input / Grievance Mechanism at PoA Level

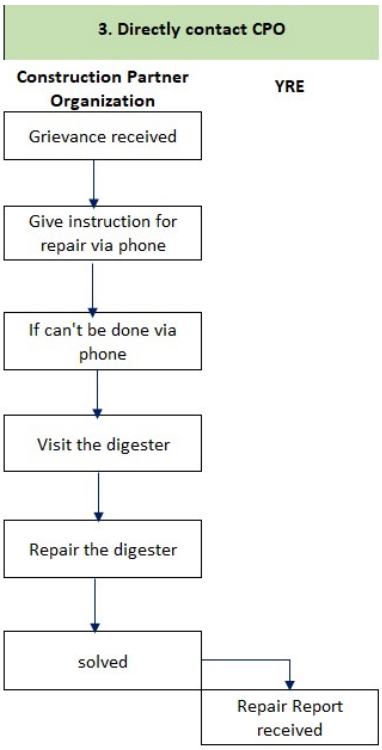
Table 8: Methods for continuous input/grievance mechanisms at PoA level.

METHOD	INCLUDE ALL DETAILS OF CHOSEN METHOD (S) SO THAT THEY MAY BE UNDERSTOOD AND, WHERE RELEVANT, USED BY READERS.
Continuous Input / Grievance Expression Process Book (mandatory)	Complaints or any other concerns can be stated and will be filed directly at the head office of PT. BKN or YRE. For users of biodigesters, the grievances are received, responded, and addressed through 1. IDBP Hotline, 2. Directly contact YRE Field officer, and 3. Directly contact the CPO. 1. IDBP Hotline: IDBP has one Hotline with active phone number and WhatsApp. Grievances might be received through messages and/or phone calls to the Hotline from households. YRE will assign responsible CPO to follow up the grievance. CPO will contact the household directly to confirm the grievance and to determine visit date for repairment/service. After the service or repairment is done and solved, CPO needs to report back to YRE with proof of photos (during service process or after the service/repairment). Below is a flow of how grievances are received and handled through this channel:  2. Directly contact YRE Field Officer: Grievances might be received through messages and/or phone calls by the Field Officer from households. Field officer will give instructions and

recommendations for self-repairment over the phone to households. In the event that biogas installation problem could not be done by the household themselves, YRE will assign responsible CPO to follow up the grievance and to determine visit date for repairment/service. After the service or repairment is done and solved, CPO needs to report back to YRE with proof of photos (during service process or after the service/repairment). Below is a flow of how grievances are handled through this channel:



3. Directly contact the CPO: Household might deliver their grievances directly to CPO through messages and/or phone calls. CPO will give instructions and recommendations for self-repairment over the phone to households. In the event that biogas installation problem could not be done by the household themselves, CPO will determine visit date for repairment/service. After the service or repairment is done and solved, CPO needs to report to YRE with proof of photos (during service process or after the service/repairment). Below is a flow of how grievances are handled through this channel:



GS Contact (mandatory)	help@goldstandard.org
Other	YRE/PT.BKN: Phone: +62878-84168863 Email: info@birukarbon.id

APPENDIX 1 - CONTACT INFORMATION OF COORDINATING/MANAGING ENTITY AND RESPONSIBLE PERSON(S)/ ENTITY(IES)

CME and/or responsible person/ entity	☒CME ☐Responsible person/ entity for application of the selected methodology(ies) and, where applicable, the selected standardized baseline(s) to the PoA
Organization	PT. Biru Karbon Nusantara
Street/P.O. Box	TB. Simatupang Street Kav. 36
Building	Sovereign Plaza fl. 21
City	South Jakarta
State/Region	Jakarta
Postcode	12430
Country	Indonesia
Telephone	+6287 8416 8863
E-mail	info@birukarbon.id
Website	www.birukarbon.id
Contact person	Chabi Batur Romzini
Title	Director
Salutation	Mrs.
Last name	Romzini
Middle name	Batur

APPENDIX 2 - DESIGN CHANGES

A2.1. Details of proposed or actual design change

The PoA allows the application of the "Methodology for Animal Manure Management and Biogas use for Thermal Energy Generation (version 1.1)" and the "Technologies and Practices to Displace Decentralised Thermal Energy Consumption (TPDDTEC) v3.1" methodology.

A2.2. Describe the Impacts of design change on the following

a. Additionality

The design change does not impact the project additionality.

b. Applicability of methodology and other methodological regulatory documents with which the project activity has been certified

New VPAs under this PoA will apply the "Methodology for Animal Manure Management and Biogas use for Thermal Energy Generation (version 1.1)". This methodology replaces the application of the "Technologies and Practices to Displace Decentralised Thermal Energy Consumption (TPDDTEC) v3.1" methodology for biogas generation and application for thermal energy project activities, originally adopted by the PoA.

c. Compliance with the monitoring plan of the applied methodology

The design change does not impact the compliance with the monitoring plan of the applied methodology.

d. Level of accuracy and completeness in the monitoring of the project activity compared with the requirements contained in the registered monitoring plan

The design change does not impact the level of accuracy and completeness in the monitoring of the project activity compared with the requirements contained in the registered monitoring plan.

e. Scale of the project activity

The design change does not impact the scale of the project activity.

f. Stakeholder consultation

The design change does not impact the stakeholder consultation.

g. Sustainable development criteria

The design change does not impact the sustainable development criteria.

a. Safeguarding assessment

The design change does not impact the safeguarding assessment.

b. Compliance with applicable legislation

The design change does not impact the compliance with applicable legislation.

Revision History

Version	Date	Remarks
2.2	14 April 2023	Integrated the design change memo as annex of the document. Editorial changes
2.1	31 May 2022	Editorial changes and revisions
2.0	04 May 2022	Key Project Information table revised to cater for the following information: - Scale of PoA - Title and GS ID of all real case VPAs included in the PoA A new Management System section included Safeguarding Principles Assessment section removed Outcome of PoA Level Stakeholder Consultation section revised in the following manner: - Justification for Stakeholder Consultation at PoA Level Only section removed A new Consideration of Stakeholder Comments Received section added
1.1	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Inclusion criteria table added Clarification on POA level LSC and Safeguard Principles Assessment Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on Stakeholder Consultation information required Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.0	10 July 2017	Initial adoption