

ANNEX R – PASSPORT TEMPLATE

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SECTION A. Project Title

Title: Indonesia Domestic Biogas Programme of Activities (IDBP) (ID 1172), VPA-2(GS 5303)

Date: 14 October 2016

Version no.: 1.0

SECTION B. Project description

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) was retroactively included to cover the emission reductions that have been generated up to two years prior to the registration date of this PoA, which occurred on 31/05/2013.

The second VPA (VPA-2) described in this VPA-DD targets the same programme and includes biogas digesters installed from 01/01/2017 onwards. The inclusion of a second VPA into the registered PoA was needed due to VPA-1 reaching its small-scale methodology threshold limit as defined under the CDM. As such, VPA-2 represents a continuation of the existing IDBP programme, and does not differ in terms of target geographical area, technology type, or end-user type.

As the first VPA, VPA-2 covers the installation of fixed-dome type biodigesters of up to 12 m³ in households that prior to the implementation of the project activity were using non-renewable biomass (NRB) and fossil fuels as their main source of cooking fuel. The biodigesters are fed with manure mixed with water, which undergo anaerobic digestion and produce biogas that is channeled directly to a cook stove. This biogas produced replaces the combustion of NRB and fossil fuels, thereby reducing carbon dioxide (CO₂) emissions. The biodigesters also reduce methane (CH₄) emissions by diverting manure that would otherwise decompose without the capture and use of the methane. The technical specification of the biodigester used in VPA-2 shall comply with the related technical requirement under IDBP, and is further outlined in Section A.5 of this PDD.

Table 1 below shows a tentative schedule for the implementation of this VPA. Biodigesters can be included in this VPA until the small-scale methodology threshold limit applicable under the CDM is reached¹. This number is not known ex-ante, and the actual number of biodigesters will therefore be confirmed upon verification. This infers that the actual rate of implementation, as well as the resulting emission reduction potential, may deviate from the presented figures as long as all eligibility criteria of the VPA are met.

¹ Small-scale VPAs are subject to the thresholds set forth by the CDM; 15 MW (45 MW_{th}) for the renewable energy component and an emissions cap of 60,000 tCO₂e for the methane avoidance component

Table 1: Forecasted annual implementation schedule of VPA-2 (01/01/2017 – 31/12/2023)

Period	Number of biodigesters in VPA-2 (cumulative)
01/01/2017 – 31/12/2017	3,000
01/01/2018 – 31/12/2018	6,000
01/01/2019 – 31/12/2019	9,500
01/01/2020 – 31/12/2020	13,000
01/01/2021 – 31/12/2021	16,500
01/01/2022 – 31/12/2022	20,000
01/01/2023 – 31/12/2023	0
Total: 20,000	


Estimated project start date:

The starting date of this VPA is 01/01/2017.

SECTION C. Proof of project eligibility

C.1. Scale of the Project

Please tick where applicable:

Project Type	Large	Small
	<input type="checkbox"/>	<input checked="" type="checkbox"/>

C.2. Host Country

The VPA-2 is located in the Republic of Indonesia, which is a Non-Annex 1 Country under the Kyoto Protocol

C.3. Project Type

Please tick where applicable:

Project type	Yes	No
Does your project activity classify as a Renewable Energy project?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does your project activity classify as an End-use Energy Efficiency Improvement project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does your project activity classify as waste handling and disposal project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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Please justify the eligibility of your project activity:

According to the Gold Standard guidance, the VPA-2 is considered eligible if all of the following conditions are satisfied:

- *Scale of the activity:* The VPA-2 is a small-scale project activity and shall therefore adhere to the small-scale programme rules listed in Annex F of the Gold Standard Toolkit.
- *Host country:* The VPA-2 is located in the Republic of Indonesia, which is a Non-Annex 1 Country under the Kyoto Protocol;
- *Type of activity:* The project activity of VPA-2 classifies as a Renewable Energy project. In accordance with Annex C to the Gold Standard Toolkit, biogas project activities shall be eligible for emission reductions from both methane avoidance and non-renewable fuel substitution as long as at the time of validation it can be proven that the system is designed in a way to make use of some of the biogas recovered for the delivery of energy services. The biodigesters implemented in this VPA-2 deliver renewable biogas for cooking purposes, which is combusted to generate heat.
- *Greenhouse gases:* The emission reduction of greenhouse gases (GHG) intended to be achieved by the VPA-2 includes methane (CH₄) and carbon dioxide (CO₂), two GHGs that are eligible under Gold Standard;
- *Official Development Assistance:* Official Development Assistance (ODA) is used for the partial financing of the VPA-2. The credits to be generated by VPA-2 are not transferred, directly or indirectly, to meet the funder's GHG reduction requirements. A written declaration of the PoA's appropriate use of ODA has been issued and submitted to the Gold Standard Foundation, attached in an annex to the PoA-DD.
- *Timeframe:* The VPA-2 intends to start on 1 January 2017 and is a regular activity.
- *Previous announcement:* The feasibility study for the IDBP drafted in January 2009 identifies carbon finance as an important mechanism to ensure the long-term feasibility of the programme which suffers from lack of funding and revenues. VPA-2 is a continuation of the same programme and targets the same end-user group.
- *Other certification schemes:* No credits related to GHG reductions of this VPA-2 are otherwise committed under another mechanism other than the Gold Standard one. Therefore, no double counting will occur from the issuance of Gold Standard carbon credits originating from this VPA-2.

Pre Announcement	Yes	No
Was your project previously announced?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>Explain your statement on pre announcement</p> <p>The feasibility study for the IDBP drafted in January 2009 identifies carbon finance as an important mechanism to ensure the long-term feasibility of the programme which suffers from lack of funding and revenues. The programme was announced to go ahead in May 2009, following the provision of funding to kick-start implementation. The effort to include carbon finance into the IDBP commenced in parallel to early programme implementation. The units included in this VPA-2 represent the continuation of this programme and were planned from the onset of the programme launch.</p>		

C.4. Greenhouse gas

[See Toolkit 1.2.d]

Greenhouse Gas	
Carbon dioxide	<input checked="" type="checkbox"/>
Methane	<input checked="" type="checkbox"/>
Nitrous oxide	<input type="checkbox"/>

C.5. Project Registration Type

Project Registration Type	
Regular	<input checked="" type="checkbox"/>

Pre-feasibility assessment	Retroactive projects (T.2.5.1)	Preliminary evaluation (eg: Large Hydro or palm oil-related project) (T.2.5.2)	Rejected by UNFCCC (T2.5.3)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If Retroactive, please indicate Start Date of project activity dd/mm/yyyy: _____

SECTION D. Unique project identification

D.1. GPS-coordinates of project location

	Coordinates
Latitude	0.7893° S
Longitude	113.9213° E



Explain given coordinates

The given GPS coordinates indicate the country boundary for Indonesia. Only units included within the boundary of Indonesia are eligible for VPA-2.

All of the biodigesters implemented under this VPA will have a unique serial number that will be recorded in the CME's database. Each entry will be clearly divided and it will not be possible to make the same serial number entry twice. The numbers will be recorded in the User's Manual that will enable the verifier to identify systems listed in the database. The database will further include information regarding the address of the installed biodigester, information on the owner, and its operational status.

D.2. Map



SECTION E. Outcome stakeholder consultation process

E.1. Assessment of stakeholder comments

The stakeholder process was conducted on the PoA level.

Most of the comments IDBP received 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:

Stakeholder comment	Yes/ No?	Explanation (Why? How?)
Q1: <i>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?</i>	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 IDR150,000 (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: <i>The biogas development is currently implemented in some parts of Indonesia only. Can it be implemented nationwide? From the side of the government, the need for new renewable energy is increasing. Unfortunately, inadequate action is occurring on this front.</i>	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 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: <i>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 Hivos is necessary.</i>	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: <i>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.</i>	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 partner. IDBP will keep tracking biogas technology developments.
Q5: <i>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</i>	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

<i>qualify for a higher subsidy rate?</i>		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: <i>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?</i>	No	A6: Irrelevant to IDBP.
Q7: <i>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?</i> <i>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 with hay and then burn it. Is it possible to build a centralised biogas plant there?</i>	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 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.

<p>Q8: <i>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:</i></p> <ol style="list-style-type: none"> <i>1. The subsidy should be given from the government (from the provincial budget);</i> <i>2. The number of trainings for biogas should be increased as well. The provincial government could finance this;</i> <p><i>Biogas appliances should only be obtained locally, from Indonesia.</i></p>	<p>Yes</p>	<p>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.</p> <p>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.</p>
<p>Q9: <i>What does the carbon trade look like? What will happen with the carbon credit?</i></p>	<p>Yes</p>	<p>A9: The carbon trade is aimed at obtaining revenues, which are subsequently pumped back into the programme. Hivos 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. Hivos 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-</p>

		reliant, reducing the need of external funding.
<p>Q10: <i>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?</i></p>	Yes	<p>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.</p>
<p>Q11: <i>What can be done to ensure that there is no problem in operation and maintenance of a communal biodigester?</i></p>	Yes	<p>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.</p>
<p>Q12. <i>Some farmers still dispose bio-slurry to the gutter and river thereby polluting the water and destroying the environment. Does IDBP have any training to provide to biodigester users so that they know the advantages of the bio-slurry?</i></p>	Yes	<p>A13. 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 business partner, herein KBSS Setia Kawan, to ensure that all users should receive the training accordingly.</p>

Hivos 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.2. Stakeholder Feedback Round

Please describe report how the feedback round was organised, what the outcomes were and how you followed up on the feedback.

The Stakeholder Feedback Round for VPA2 is not required, as the LSC was conducted on the programme level. This was confirmed by the Gold Standard, as per email communication dated 05/12/2016. For voluntary reasons, the CME wished however to allow stakeholders to provide feedback on the design of the proposed VPA2. As such, the CME organised a LSC Feedback Round, commencing on 20 October 2016. The invitation was circulated in both Indonesian and English.

The following steps were carried out:

1. The LSCR, VPA-DD and VPA Passport were made publically available via a link to the Gold Standard Registry and on the BIRU website. Hard copies have also been made available at a location
2. Records of any feedback received during the 2-month period have been stored
3. Two reminder notifications were sent out to stakeholders prior to the end of the Feedback Round. The first one on 24/11/2016, followed by a second one on 15/12/2016
4. A summary table of all feedback received was prepared upon completion, and features in this report (see below).

The following feedback was received from stakeholders:

Name of Invitee	Organisation	Comment received	BIRU Programme's response
Rusfadia Saktiyanti Jahja (28/11/2016)	University of Jakarta	1. The BIRU Programme is really good because it encourages people to use renewable energy, a topic which has does not receive much attention from the government.	1. The BIRU Programme is designed to provide energy to those in most need, and aims to trigger a sustainable biogas sector. Its focus is not only in East Indonesia, but countrywide. Having said this, Hivos and BIRU is

		<p>But I was wondering if these efforts could also be replicated in urban settings like in Jakarta. Hivos currently focused on Eastern Indonesia and rural areas. I understand it is because of economic reason and users can produce more biogas through dung. In Jakarta, however, there is a lot of waste that is currently not treated. This represents an opportunity for Hivos.</p> <p>2. Many farmers still struggle to receive access to credit to finance the installation of new biodigesters. How can Hivos support these types of households with accessing finance?</p>	<p>working on research and development digester for urban waste treatment. We need financial support to continue carrying this research further. We expect also the research to recommend a different design for urban areas that we currently apply in rural areas.</p> <p>2. We are aware of the fact that access to finance by farmers is a key barrier. This is also partially linked to the low financial literacy of target users. Most of potential users are not considered bankable by financial institutions. Hivos strives to improve this situation. Carbon finance is one way of achieving this. Furthermore, Hivos has also established cooperation with financial institutions to provide credit to build digester, including the Rabobank Foundation. Another example is through Kiva (one of lending organization from USA) who provided credit for user in Central Java, D.I. Yogyakarta, South Sulawesi, Lampung and West Nusa Tenggara. Since 2016 we also cooperate with Credit Union. Going forward, we plan to also approach other financial institution like Central Java Bank</p>
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			and Bank Syariah Mandiri.
Pius Ginting (15/12/2016)	WALHI	I really appreciate the continuation of BIRU programme for households and its scale-up in years to come. This programme is useful for GHG emission reduction and also good for rural health where domestic pollution from firewood will cause many health problem in Indonesia.	Recognised.

E. 3. Discussion on continuous input / grievance mechanism

Discuss the Continuous input / grievance mechanism expression method and details, as discussed with local stakeholders.

	Method Chosen (include all known details e.g. location of book, phone, number, identity of mediator)	Justification
Continuous Input / Grievance Expression Process Book	The book is stationed at the provincial offices (PBPO)	While users are likely to have mobile phones, it is important to provide access to a physical log book. The provincial offices of the IDBP offer a convenient location for these log books, allowing users in the area easy access.
Telephone access	+62 (0)81280302020	The provided number is a mobile phone number to enable users to either call or text their comments to IDBP. Mobile phone use is the primary means of communication nationwide, especially since landlines are expensive.

Internet/email access	info@rumahenergi.org karbon@rumahenergi.org	Increasingly more Indonesians have access to the internet and prefer electronic communication to traditional means. For these stakeholders, contact by email is made possible.
Nominated Independent Mediator (optional)		

All issues identified during the crediting period through any of the Methods shall have a mitigation measure in place. The identified issue should be discussed in the revised Passport and the corresponding mitigation measure should be added to sustainability monitoring plan in section G.

SECTION F. Outcome Sustainability assessment

F.1. 'Do no harm' Assessment

Safeguarding principles	Description of relevance to my project	Assessment of my project risks breaching it (low/medium/high)	Mitigation measure
1.	VPA-2 encourages the construction and operation biodigesters fed by livestock manure at the households, local communities and SMEs. It therefore improves the quality of life of users through the provision of clean, renewable energy nationwide. The installation of biodigesters relies on individual voluntarily investment in a biodigester at a discounted rate. The voluntary nature of this purchase ensures that the individual dignity, cultural property and uniqueness of indigenous peoples are respected.	Low	Not applicable
2.	VPA-2 does not impose any need for involuntary resettlement.	Low	Not applicable
3.	Under the VPA-2, biodigesters are installed directly adjacent to the user on a voluntary basis, and no damage or removal of any critical cultural heritage will take place.	Low	Not applicable

Labour Standards			
4.	VPA-2 generates employment for locally trained contractors and constructors to carry out the dissemination, installation and maintenance of the biodigesters. VPA-2 respects these employees' freedom of association and their right to collective bargaining.	Low	Not applicable
5.	All those employed by VPA-2 are adults, who are voluntarily engaging in the support of the project activity through legal employment.	Low	Not applicable
6.	All those employed by VPA-2 are adults who are voluntarily engaging in the support of the project activity through legal employment. No forms of child labour are tolerated.	Low	Not applicable
7.	VPA-2 is all-inclusive, installing biodigesters at users with two or more cattle. Additionally, VPA-2 is co-managed by Hivos, an organisation which has an expertise and track record in ensuring discriminatory behaviour is not tolerated. As a result, all eligible users are included in VPA-2, regardless of gender, race, religion, sexual orientation or any other basis. VPA-2 helps to increase gender equality through reducing the time needed for biomass/fuel collection. This is traditionally a woman's role, thereby allowing them to spend more time on other activities.	Low	Not applicable
8.	VPA-2 involves the installation of biodigesters ranging from 4m ³ to 12m ³ . It employs trained contractors and constructors, who are supported by IDBP ensuring that installation of the biodigesters is done in a safe manner and minimises risk to workers. VPA-2 does not expose workers to unsafe or unhealthy work environments.	Low	Not applicable
Environmental Protection			
9.	VPA-2 takes a precautionary approach with regard to environmental challenges and is not complicit in practices contrary to the precautionary principle. VPA-2 helps to reduce threats or harm to human health through reducing smoke inhalation at the users' premises, diverting manure from entering water ways and promoting the use of organic	Low	Not applicable

	fertiliser (digester slurry) over manufactured fertilisers, thereby also reducing damage to the local environment whilst increasing crop productivity.		
10.	VPA-2 does not involve and is not complicit in the conversion or degradation of critical natural habitats. Furthermore, the use of biogas helps to reduce the use of firewood, thereby containing deforestation in the project area.	Low	Not applicable
Anti-corruption			
11.	All transactions, including subsidy disbursement, are recorded and carried out in a transparent and traceable manner. Accounting by an external third party occurs on an annual basis. All financial transactions are available to project beneficiaries and legal authorities. VPA-2 thereby minimises the possibility of corruption occurring within its scope of operation.	Low	Not applicable

F.2. Sustainable Development matrix

Insert table as in section D3 from your Stakeholder Consultation report (Sustainable Development matrix).

Indicator	Mitigation measure	Relevance to achieving MDG	Chosen parameter and explanation	Preliminary score
Gold Standard indicators of sustainable development.	If relevant copy mitigation measure from "do no harm" –table, or include mitigation measure used to neutralise a score of ‘–’	Check www.undp.or/mdg and www.mdgmonitor.org Describe how your indicator is related to local MDG goals	Defined by project developer	Negative impact: score ‘–’ in case negative impact is not fully mitigated score 0 in case impact is planned to be fully mitigated No change in impact: score 0 Positive impact: score ‘+’
Air quality	None necessary	MDG 5: Improve maternal health VPA-2 reduces indoor air	As indicated by the participants of the LSC meeting, there can be a positive impact on the air quality through a	0

		pollution through the implementation of the biodigester technology.	reduction of indoor air pollution, thereby improving general health conditions at the users' premises. This is however difficult to assess directly and will therefore not be monitored as part of VPA-2.	.
Water quality and quantity	None necessary	<p><i>MDG 7: Ensure environmental sustainability</i></p> <p>VPA-2 contributes to environmental sustainability by limiting the amount of manure dumping in local waterways, hereby preventing ground water contamination.</p>	As indicated by the participants of the LSC meeting, there can be a positive impact on environmental sustainability through a reduction of manure dumping into local waterways, thereby reducing ground water contamination. This is however difficult to assess directly and will therefore not be monitored as part of VPA-2.	0
Soil condition	None necessary	<p><i>MDG 7: Ensure environmental sustainability</i></p> <p>VPA-2 reduces the need for artificial fertilisers, which are more harmful to the environmental integrity than organic fertilisers.</p>	<p><u>Baseline:</u></p> <p>Continuous harvesting of land causes deterioration of soil conditions. Only the better-off users can afford to purchase artificial fertiliser, which is becoming increasingly more expensive. This means harvest is not optimal.</p>	+

		<p><i>MDG 1: Eradicate extreme poverty and hunger</i></p> <p>Use of digester slurry generated under VPA-2 on agricultural soils increases soil fertility and improves crop harvest. The additional yield can either be consumed or sold.</p>	<p><u>Parameter:</u> Application of final biodigester slurry on agricultural fields, collected through the annual Biogas User Survey.</p> <p><u>Explanation:</u> The application of sludge increases the organic content and fertility of soils, thereby increasing crop yields.</p>	
Other pollutants	None necessary	No other pollutants are identified.	No other pollutants are identified	0
Biodiversity	None necessary	<p><i>MDG 7: Ensure environmental sustainability</i></p> <p>VPA-2 contributes to the containment of deforestation and forest degradation due to substitution of non-renewable biomass with renewable energy.</p>	As indicated by the participants of the LSC meeting, there can be a positive impact on biodiversity through a reduction in deforestation due to a reduced dependence on firewood. This is however difficult to assess directly and will therefore not be monitored as part VPA-2.	0
Total Score:	+1			
<i>Social Development</i>				
Quality of employment	None necessary	<p><i>MDG 1: Eradicate extreme poverty and hunger</i></p> <p>VPA-2 provides quality training in</p>	<p><u>Baseline:</u> Limited training and employment opportunities.</p> <p><u>Parameter:</u> Number</p>	+

		<p>line with IDBP quality standards, thereby generating quality employment helping to reduce poverty.</p>	<p>of employees attending vocational and Health and Safety training programs, as proven through issuance of a certificate to all constructors, collected by the IDBP database.</p> <p><u>Explanation:</u> Those attending the trainings will acquire technical skills and knowledge. Furthermore, participation in the Health and Safety training will ensure that the employment positions created secure safe working conditions, thereby ensuring a good quality of employment.</p>	
Livelihood of the poor	None necessary	<p><i>MDG 1: Eradicate extreme poverty and hunger</i></p> <p>VPA-2 helps to alleviate poverty through the creation of employment. Users will have a lower annual expenditure due to a reduced need to purchase non-renewable biomass, fossil fuels and artificial fertilisers,</p>	<p><u>Baseline:</u> Health issues related to respiratory diseases are occurring. Additionally, users, and especially women, experience limited available time due to the need to invest time in firewood collection and cooking.</p> <p><u>Parameter:</u> Improvement of living conditions in terms of health</p>	+

		<p>therefore leaving more income available for other purposes (eg. healthcare). Reduced smoke inhalation also improves respiratory health.</p>	<p>benefits, collected through the annual Biogas User Survey.</p> <p><u>Explanation:</u> Improved perceived health conditions by the users are an indication of improved livelihood of the poor.</p>	
Access to affordable and clean energy services	None necessary	<p><i>MDG 1; MDG 5; MDG 7:</i></p> <p>VPA-2 helps to reduce poverty through reducing fuel purchasing costs; better indoor air quality reduces maternal and child respiratory stress; reduction in use of non-renewable biomass as a fuel helps to reduce deforestation and forest degradation locally.</p>	<p><u>Baseline:</u> Combustion of LPG, kerosene and firewood lead to particulate matter and carbon monoxide pollution and deforestation, and therefore do not provide clean energy services. Also, prices of all fuels are increasing, presenting a rising financial burden to users.</p> <p><u>Parameter:</u> Number of biogas units installed, in use and operating, collected by the IDBP database.</p> <p><u>Explanation:</u> The number of operational and in-use biogas units indicates that the VPA-2 has successfully promoted access to affordable and clean energy services, increased users' general</p>	+

			wellbeing and contributed to the containment of deforestation and forest degradation.	
Human and institutional capacity	None necessary	<p><i>MDG 3: Promote gender equality and empower women</i></p> <p>VPA-2 offers training for women in marketing and monitoring the biodigesters. VPA-2 will also make more time available for women as fuel will no longer need to be collected and cooking is faster.</p>	<p><u>Baseline:</u> Women spend much of their time collecting firewood and cooking, and have little spare time to undertake activities that stimulate personal and entrepreneurial development.</p> <p><u>Parameter:</u> Number of women attending trainings, collected through the annual Biogas User Survey.</p> <p><u>Explanation:</u> Training programmes will develop transferrable vocational skills, thereby allowing women to access better-paid employment. Certificates will be issued to all training attendees.</p>	+
Total Score:	+4			
<i>Economic and technological development</i>				
Quantitative employment and income	None necessary	<p><i>MDG 1: 1B: Achieve decent employment for women, men and</i></p>	<p><u>Baseline:</u> Limited training and employment opportunities</p>	+

generation		<p><i>young people</i></p> <p>VPA-2 creates employment opportunities and provides trainings, to date directly employing 53 persons while engaging another 475 certified constructors in the construction process.</p>	<p>currently exist in the target regions outside of farming.</p> <p><u>Parameter:</u> Number of constructors employed, collected by the IDBP database.</p> <p><u>Explanation:</u> The number of jobs created through VPA-2 indicates quantitative employment and income generation benefits.</p>	
Balance of payments and investment	None necessary	<p><i>MDG 8: Develop a global partnership for development</i></p> <p>VPA-2 facilitates foreign investment in Indonesia through the integration of ODA finance.</p>	<p>As indicated by the participants of the LSC meeting, it is difficult to prove the positive impact of VPA-2 on the balance of payments and investments. The impact is therefore assumed to be neutral.</p>	0
Technology transfer and technical self-reliance	None necessary	<p><i>MDG 8: Develop a global partnership for development</i></p> <p>VPA-2 promotes knowledge sharing to realise domestic implementation of quality standard biogas plants. Training provided to constructors builds on best</p>	<p><u>Baseline:</u> Limited training opportunities and transfer of technology in the biogas sector, both on the constructor and user levels.</p> <p><u>Parameter:</u> Number of constructors trained and users attending the operation and</p>	+

		case practices gathered from projects operational elsewhere in the world.	<p>maintenance training, collected by the IDBP database. Furthermore, the number of general trainings given to entities outside of the programme will also be tracked by the IDBP.</p> <p><u>Explanation:</u> VPA-2 builds vocational knowledge in the domestic biogas sector, which was previously absent. This increases technical self-reliance. Furthermore, offering training to entities outside of the programme is also an important step to promote knowledge sharing necessary to build a sustainable biogas market.</p>	
Total Score:				+2
				+7
Justification choices, data source and provision of references				
Air quality	<p>In the baseline scenario the use of biomass and fossil fuels for user cooking leads to considerable contamination of the indoor environment with particulate matter and carbon monoxide (CO), causing respiratory health problems. This is confirmed by numerous sources². Resulting respiratory health problems are a serious issue on across the globe. Recent statistics indicate that in 2004, indoor air pollution resulting</p>			

² GTZ. Biogas Digest – Volume III. Available at: <http://www.gtz.de/de/dokumente/en-biogas-volume3.pdf>

	from the combustion of solid and fossil fuels was responsible for an estimated 2 million deaths worldwide ³ . As it is difficult for IDBP to prove the exact positive impact VPA-2 has on air quality, it is assumed to be neutral.
Water quality and quantity	Diverting livestock waste to the biodigesters implemented under VPA-2 can have a positive effect on the quality of water ways due to a reduced prevalence of manure disposal in water ways. ⁴ However, since this has not been established as a dominant form of disposal the effect is considered minor. Additionally, reduced indoor combustion of fossil fuels and biomass will result in a cleaner premise, and therefore less use of water for cleaning at user level. But since the biodigesters require the addition of water the impact on the quantity of water used is also considered to be neutral.
Soil condition	The biodigesters implemented under VPA-2 will produce slurry as part of the anaerobic digestion of waste. This slurry has a higher fertility than direct application of manure to the field ⁵ and is provided free of charge to users as a bi-product of biogas production. In many cases across Indonesia the purchase of chemical fertilisers is not financially feasible for users, and soils can become degraded due to continued harvests ⁶ . The application of slurry to agricultural soils can therefore help to improve soil condition through increasing organic content.
Other pollutants	No other pollutants are identified. This indicator is therefore assumed to be neutral.
Biodiversity	Current local rates of forest destruction exceed the maximum replacement rate, leading to deforestation and forest degradation. A recent study provides detailed insight into the rates of deforestation in Indonesia between 1990 and 2005 ⁷ . During that period, 21.32 million ha of forest had been cleared, which represents 17.6% of total national coverage. This is a strong indication that removal of forests in an unsustainably manner is occurring rapidly, and open forest and scrub coverage are decreasing with high rate of depletion. A report published by the Food and Agriculture Organization of the United Nations (FAO) attributes part of the deforestation to firewood collection by households ⁸ . As it is difficult for IDBP to prove the exact positive impact VPA-2 has on biodiversity, it is assumed to be

³ WHO (2010) Health in the green economy: Co-benefits to health of climate change mitigation. Available at: http://www.who.int/hia/hgebrief_henergy.pdf

⁴ See for example: <http://www.mda.state.mn.us/protecting/conservation/practices/digester.aspx>

⁵ See for example: Kurchania, A.K. and Panwar, N.L. (2011) Experimental investigation of an applicator of liquid slurry, from biogas production, for crop production, *Environmental Technology*, 32 (8), p. 873 – 878.

⁶ Stott, D.E., Mohtar R.H, and Steinhardt, G.C (2001) Sustaining the Global Farm: Rainfall-runoff harvesting for controlling erosion and sustaining upland agriculture development. p. 431-439.

⁷ Hansen, M.C. *et al.* (2009) Quantifying changes in the rates of forest clearing in Indonesia from 1990 to 2005 using remotely sensed data sets. *Environmental Research Letters*

⁸ FAO (1997) Regional Study on Wood Energy Today and Tomorrow in Asia: Regional Wood Energy Development Programme in Asia.

	neutral.
Quality of employment	VPA-2 aims to install several thousands of biodigesters and will require constructing and monitoring effort by local staff. VPA-2 shall create quality job opportunities. ⁹ All staff will be supported by vocational training sessions supported by the programme. On completion of these trainings, all attendees will receive a certificate proving their attendance and skills gained. Furthermore, as part of the trainings, all staff will undergo a Health and Safety training.
Livelihood of the poor	<p>VPA-2 shall improve the livelihood of the poor through reducing user energy costs in the long term and freeing up time for other income generating activities through a reduced need to spend time collecting firewood. Users on average spend IDR 930,000 (EUR 80) on cooking fuels per year or an average of 20 hours collecting firewood per week¹⁰. This is particularly relevant for women, whose role it is traditionally to collect firewood¹¹. Additionally, since women tend to constitute the larger percentage of those living in poverty¹², each project activity shall also help to promote gender equality through the active employment of women. This will also benefit the programme as a whole since women, as the primary users of cooking fuels, will be more effective at marketing the biogas installations, and associated cook stoves, to other women.</p> <p>VPA-2 shall also benefit the quality of life of the poor, particularly women and children, through improved health (less smoke inhalation), less time spent on cleaning soot from the user, collecting fuel and cooking. This will free up time for other activities.</p>

SECTION G. Sustainability Monitoring Plan

Copy Table for each indicator

No	GS-03
Indicator	Soil condition
Mitigation measure	<i>n/a</i>
Chosen parameter	Number of users applying the final biodigester slurry on agricultural land.

⁹ See: Feasibility of a national programme on domestic biogas in Indonesia. SNV. (2009)

¹⁰ IDBP Baseline Survey (2012).

¹¹ WHO (2006) Fuel for Life: Household Energy and Health: Section 2, p.19. Available at: <http://www.who.int/indoorair/publications/fflsection2.pdf>

¹² UN Women. Women, Poverty and Economics. Available at: http://www.unifem.org/gender_issues/women_poverty_economics/

Current situation of parameter		No slurry is used as fertiliser on agricultural land.
Estimation of baseline situation of parameter		No slurry remains used as fertiliser on agricultural land.
Future target for parameter		A portion of the users apply biodigester slurry on agricultural land.
Way of monitoring	How	Collected through the annual Biogas User Survey.
	When	Annually
	By who	External consultant specialised in surveying

No		GS-06
Indicator		Quality of employment
Mitigation measure		<i>n/a</i>
Chosen parameter		Quality of employment refers to changes compared to the baseline in the qualitative value of employment, such as whether the jobs resulting from the project activity are highly or poorly qualified, temporary or permanent. The proportion of employees attending vocational training and Health and Safety programs, as proven through issuance of a certificate to all constructors, will be monitored.
Current situation of parameter		A historical lack of demand for biogas systems has meant that few constructors have the knowledge required to adequately build, market and maintain a reliable system.
Estimation of baseline situation of parameter		Limited training and employment opportunities continue to exist.
Future target for parameter		New certificates issued by the programme as implementation figures grow. The proportion of employees attending vocational training programs, as proven through issuance of a certificate to all constructors, will be monitored.
Way of monitoring	How	Collected through by the IDBP Database. All vocational training and Health and Safety training attendees will be issued with a certificate proving their attendance, and a record of their names, contact details and gender, will be kept as part of the CME's consolidated monitoring database.
	When	Annually
	By who	IDBP staff

No		GS-07
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Indicator		Livelihood of the poor
Mitigation measure		<i>n/a</i>
Chosen parameter		Livelihood of the poor refers to changes compared to the baseline in living conditions, access to healthcare services including affordability and poverty alleviation. To indicate improvement, as part of the Biogas User Survey users will be asked whether they have perceived an improvement in their living conditions after the installation of the biodigester.
Current situation of parameter		Health issues related to respiratory diseases are occurring. Additionally, users, and especially women, experience limited available time due to the need to invest time in firewood collection and cooking. Overall, current livelihood of the poor is inadequate and can be enhanced.
Estimation of baseline situation of parameter		Health issues related to respiratory diseases continue to occur. Additionally, users, and especially women, continue to experience limited available time due to the need to invest time in firewood collection and cooking. Livelihood of the poor will remain unchanged.
Future target for parameter		Householders perceive an improvement in living conditions as a result of the installation of biogas digesters.
Way of monitoring	How	Collected through the annual Biogas User Survey. To indicate improvement, as part of the Biogas User Survey the following question will be included: "Do you feel that your living conditions have a) improved, b) stayed the same, c) worsened; since the installation of the biogas digester?" <i>and</i> "To what activities do you allocate the spare time created after the installation of the biogas digester?"
	When	Annually
	By who	External consultant specialised in surveying

No		GS-08
Indicator		Access to affordable and clean energy services
Mitigation measure		<i>n/a</i>
Chosen parameter		Access to energy services refer to changes in unsustainable energy use. This will be monitored through the number of biogas units commissioned.
Current situation of parameter		Combustion of LPG, kerosene and firewood lead to particulate matter and carbon monoxide pollution and deforestation, and therefore do not provide clean energy services. Also, prices of all fuels are increasing, presenting a rising financial burden to users.
Estimation of baseline situation of		Combustion of LPG, kerosene and firewood continues to lead to

parameter		particulate matter and carbon monoxide pollution and deforestation, and therefore fails to provide clean energy services. Also, prices of all fuels continue to increase, presenting a rising financial burden to users.
Future target for parameter		The commissioning of several thousands of biodigesters per project activity.
Way of monitoring	How	Collected through by the IDBP Database. The unique serial number of each installation will be recorded upon commissioning and entered into the electronic database, with clear divisions between VPAs. This will allow a count of the number of systems commissioned.
	When	Annually
	By who	IDBP staff

No		GS-09
Indicator		Human and institutional capacity
Mitigation measure		<i>n/a</i>
Chosen parameter		Changes compared to the baseline in education and skills, gender equality and empowerment. Women spend much of their time collecting firewood and cooking, and have little spare time to undertake activities that stimulate personal and entrepreneurial development. The number of women attending the Operation and Maintenance training as well as the bio-slurry utilization training will be monitored.
Current situation of parameter		Women spend much of their time collecting firewood and cooking, and have little spare time to undertake activities that stimulate personal and entrepreneurial development.
Estimation of baseline situation of parameter		Women continue to spend much of their time collecting firewood and cooking, and remain with little spare time to undertake activities that stimulate personal and entrepreneurial development.
Future target for parameter		New women receiving training as the programme grows. The number of women attending trainings will be monitored.
Way of monitoring	How	Either confirmed through the IDBP Database or carried out as part of the annual Biogas User Survey conducted by the IDBP.
	When	Annually
	By who	External consultant specialised in surveying; IDBP staff

No		GS-10
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Indicator		Quantitative employment and income generation
Mitigation measure		<i>n/a</i>
Chosen parameter		The number of jobs generated by within the IDBP as well as the number of constructors employed will be monitored. To evidence income generation, the amount of users selling biodigester slurry on the market will be monitored.
Current situation of parameter		Limited training and employment opportunities currently exist in the target regions outside of farming. Also, farmers have low income generation capacity from farming activities alone.
Estimation of baseline situation of parameter		Limited training and employment opportunities as well as income generation capacity continue to exist in the target regions outside of farming.
Future target for parameter		New jobs created through the programme as implementation figures grow, as well as a growing amount of farmers selling biodigester slurry on the market.
Way of monitoring	How	Employment records and through the IDBP Database; Biogas User Survey. Through the Biogas User Survey, the amount of users selling biodigester slurry on the market will be monitored.
	When	Annually
	By who	External consultant specialised in surveying; IDBP staff

No		GS-12
Indicator		Technology transfer and technological self-reliance
Mitigation measure		<i>n/a</i>
Chosen parameter		Refers to changes compared to the baseline in activities that build usable and sustainable know-how in a region/country for a technology, where know-how was previously lacking. The number of constructors trained and users attending the operation and maintenance training will be monitored.
Current situation of parameter		Limited training opportunities and transfer of technology in the biogas sector, both on the constructors and user levels.
Estimation of baseline situation of parameter		Limited training opportunities and transfer of technology in the biogas sector continues, both on the constructors and user levels.
Future target for parameter		New jobs created and trainings organised through the programme as implementation figures grow.
Way of monitoring	How	Records will be kept of all staff and their attendance at the vocational training programmes including general training extended to entities outside of the programme. All attendees will be issued with a

		certificate proving attendance and skills gained. Monitoring of this parameter will be combined with the monitoring of GS- 10. A record of all training held, and attendees, will be kept in the IDBP Database.
	When	Annually
	By who	External consultant specialised in surveying; IDBP staff

Additional remarks monitoring

All monitoring scheduled to be conducted on an annual basis will be carried out following statistically sound sampling methods laid out in the 'Technologies and Practices to Displace Decentralized Thermal Energy Consumption - 11/04/2011' methodology.

SECTION H. Additionality and conservativeness

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This section is only applicable if the section on additionality and/or your choice of baseline does not follow Gold Standard guidance

H.1. Additionality

Gold Standard guidance is followed.

Please refer to the VPA2-DD for details on the additionality assessment (see Section D.2).

H.2. Conservativeness

Gold Standard guidance is followed.

Please refer to the VPA2-DD for details of the baseline calculations.

ANNEX 1 ODA Declaration