



Annual Report 2018

Indonesia Domestic Biogas Program

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CONTENTS

Abbreviations	
Executive Summary	
1. Introduction	
2. Program Objectives	
3. Institutional Setting	
4. Overview January – December 2018	
4.1. Development of Demand Side	
4.2. Development of Supply Side	
4.3. Development of Enabling Environment	
5. Biogas User Survey (BUS) 2018	
6. Geotagging Activity	
7. Bio-slurry Value Creation	
8. Gold Standard Carbon Certification	
9. Challenges & Lessons-Learned	
10. Way Forward	
Annex	

ABBREVIATIONS

APBD	<i>Anggaran Penerimaan dan Belanja Daerah</i> (Regional Budget)
APBN	<i>Anggaran Penerimaan dan Belanja Negara</i> (State Budget)
ASS	After Sales Service
Bappenas	<i>Badan Perencanaan Pembangunan Nasional</i> (National Development Planning Agency)
BIRU	<i>Biogas Rumah</i> (Domestic Biogas)
BSM	<i>Bank Syariah Mandiri</i> (State Sharia Bank of Mandiri)
BSNI	<i>Badan Standarisasi Nasional Indonesia</i> (National Standardization Agency of Indonesia)
BS EN	British adoption of a European (EN) standard
BoQ	Bill of Quantity
CPO	Construction Partner Organization
CSR	Corporate Social Responsibility
CUCO	Credit Union Counselling Office
DAK	<i>Dana Alokasi Khusus</i> (Special Allocation Fund)
DGNREEC	Directorate General of New, Renewable Energy and Energy Conservation
DME	Dymetil Ether
DOE	Designated Operational Entity
EnDev	Energizing Development
EUR	Euro
FGD	Focus Group Discussion
GADING	Gathering and Dissemination of Information and Green Knowledge for a Sustainable Integrated Farming Workforce in Indonesia (an MCA-I funded project)
GIZ	Gesellschaft für Internationale Zusammenarbeit (Agency for International Cooperation)
GIS	Geospatial Information System
HIVOS	Humanist Institute for Cooperation with Developing Countries
IDBP	Indonesia Domestic Biogas Program
INOFICE	Indonesian Organic Farming Certification
INKOPDIT	<i>Induk Koperasi Kredit</i> (Credit Unions)
INSTIPER	<i>Institut Pertanian Stiper</i> (Yogyakarta Agriculture Institute of Stiper)
JARGAS	<i>Jaringan Gas</i> (gas distribution network)
KEN	<i>Kebijakan Energi Nasional</i> (National Energy Policy)
KIVA	US-based non-profit organization, the world's first online lending platform connecting online lenders to entrepreneurs
KOBO	A suite of tools for field data collection for use in challenging environments
KUR	<i>Kredit Usaha Rakyat</i> (Credit for small-medium enterprise)
LPG	Liquefied Petroleum Gas
LPO	Loan Partner Organization
LPDB	<i>Lembaga Pengelolaan Dana Bergulir</i> (Revolving Fund Management Institute)
MCA-I	Millennium Challenge Account - Indonesia
MEMR	Ministry of Energy and Mineral Resources
MFI	Micro Finance Institutions
NBPSO	National Biogas Program Support Office
NGO	Non-Governmental Organization
NTB	<i>Nusa Tenggara Barat</i> (West Nusa Tenggara Province)
NTT	<i>Nusa Tenggara Timur</i> (East Nusa Tenggara Province)
PBPO	Provincial Biogas Program Office
PC	Provincial Coordinator
PE	Poly-Ethylene

QC	Quality Control
QI	Quality Inspector
RBF	RABO Bank Foundation
R&D	Research and Development
RPJMN	<i>Rencana Pembangunan Jangka Menengah Nasional</i> (National Medium Term Development Plan)
RUEN	<i>Rencana Umum Energi Nasional</i> (National Energy Masterplan)
SDG	Sustainable Development Goal
SME	Small-Medium Enterprise
SNI	<i>Standar Nasional Indonesia</i> (Indonesian National Standard)
SNV	A Netherlands Development Organization
SOP	Standard Operating Procedure
TARO	An application online integrated to web database called Salesforce to help field officer to collect construction and monitoring data
TOT	Training of Trainers
TERANG	Investing in Renewable Energy for Rural, Remote Communities (an MCA-I funded project)
VER	Voluntary Emissions Reductions
VPA	Voluntary Project Activity
YRE	<i>Yayasan Rumah Energi</i> (Rumah Energi Foundation)

Executive Summary

Program Name : Indonesia Domestic Biogas Program
Reporting Period : 01 January 2018 - 31 December 2018

Over the past nine-and-a-half years, IDBP project recorded the constructions of 23,816 domestic digesters in 12 provinces of Indonesia. A joint study conducted in 2017 by Hivos-YRE revealed that apart from total recorded number every year, there are 30% non-counted digesters, built by individual masons or IDBP partners who were no longer associated with IDBP, yet constructing the same/similar concrete digester model for their customers. The DGNREEC-MEMR final counting by the end of 2018, support this assumption. The Ministry recorded a total number of 43,836 digesters by December 2018, of which accounted for IDBP's and other similar construction under Special Allocation Fund (*Dana Alokasi Khusus/DAK*) and State Budget (*Anggaran Penerimaan dan Belanja Negara/APBN*) funding and the fiber glass type constructed by PT SWEN who claimed to have built 10,000 units.

In the early times of market penetration, concrete digesters were half of current price with Nestlé providing the non-commercial loan. This condition has boost the adoption of domestic biogas. In the past few years, the cost went double, farmers own less cattle, and funding from Nestlé or other dairy cooperatives only available in limited number. In current situation where government fund is accessible through DAK, APBN and APBD, cattle farmers rely more on government's biogas installation program which is fully funded rather than self-financing or accessing credit for the construction of the biogas. Based on our experience, a fully funded Government Project needs to be equipped with a thorough planning on users' profile, needs assessment, operation and maintenance plan to ensure the biogas operates within its maximum lifetime and minimizes the risk of non-performance of the constructed biogas. Exceptions for joint funding or cost-sharing between the government, IDBP and the community do exist in particular in West Nusa Tenggara Province.

In 2018, Gol has decided to discontinue financing through DAK, thus resulting to less support from Gol for biogas financing. Beyond 2018, Government's support on DAK are yet to be seen. Thus, working with more financial institution as the commercial bank would be the next target for IDBP in addition to the existing partnership with other credit providers such as MFI/CUCO, particularly in the context of supporting the CPOs to obtain working capital funds. Collaboration with MFI is still being pursued to help users' a affordability-to-pay. Another innovation in funding aspect would be sought by joint funding or cost sharing between parties which needs to be advocated aggressively based on IDBP's lessons learned in West Nusa Tenggara.

Regarding the increasing cost of materials for the construction of concrete biogas, IDBP is anticipating this situation by way of providing a more affordable digester model through design innovations and seeking support from private companies to play in the biogas sector in order to scale up both through technology innovations and the expanding the potential beneficiaries. IDBP will continue to supervise the quality assurance in order to maintain high functioning rate, adapting to and promoting the technology consistently, facilitating financial access based on data, user profile to mitigate risks and advocate for strategic policies that can boost biogas deployment nationally. Furthermore, lessons learned from different MFIs and borrowers regarding risk assessments, borrower profile and loan repayment capacity are valuable for IDBP in designing its next strategy. Advocacy strategies involve stringent measures and MRV on emission reduction from agriculture sector, mandatory bio-waste management at local level, better planning on government biogas projects, government facilitated credit schemes (KUR) and carbon incentives.

The biogas sector has begun contributing to jobs creation along the sector's value-chain that involved construction team or business manager, as well as supply-chain actors that include brick makers, sand collector and appliances producers. As shown by our data, jobs creation is not only proven by additional number of CPOs but also from the growing business of the existing CPOs as shown in the number of new biogas built initiated by the CPOs, the ability of the CPOs to gain access to credit for biogas construction, the market outreach by the CPOs and the transaction in bio-slurry business. The idea behind building a capacity of CPOs is to deploy local SMEs as market mover at grass-root level. Hence, capacity building

will be a long-term process for these CPOs. Further improvements including amongst others strengthening market analysis of the CPOs through spatial data and increasing project bankability will be the next support.

1 Digester Construction												
1.1	Number of digesters in year											
1.2	Number of people gaining access to clean cooking energy	113,428 people have gained access to clean energy for cooking resulting from the construction of 23,816 units of digesters. In 2018 alone, 4,995 people have gained access to clean energy for cooking from 1,370 units of digesters.										
1.3	Number of digesters per size of digester	Province	2009 – 2017	2018	2m ³	4m ³	6m ³	8m ³	10m ³	12m ³	20m ³	Total
		Lampung	493	25	1	394	63	36	9	15	-	518
		West Java + Banten	1,384	41	-	411	936	85	21	87	1	1,542
		Central Java + D.I. Yogyakarta	3,316	13	-	740	2,265	336	126	181	1	3,649
		East Java	7,998	157	-	160	4,036	2,836	637	486	-	8,155
		Bali	1,190	32	-	770	350	83	16	3	-	1,222
		NTB	4,600	419	-	4,826	123	12	2	56	-	5,019
		South Sulawesi	2,313	282	-	1,679	872	23	9	12	-	2,597
		NTT (Sumba)	1,035	81	-	635	423	45	8	5	-	1,116
		Total	22,446	1,370	1	9,615	9,068	3,456	828	846	2	23,816

1.4	Funding sources for digesters																																																																																		
		<table border="1"> <thead> <tr> <th rowspan="2">Year</th> <th rowspan="2">Gov't 100%</th> <th rowspan="2">Gov't + user</th> <th rowspan="2">Comp's 100%</th> <th rowspan="2">Comp's + user</th> <th colspan="2">100% paid by user</th> </tr> <tr> <th>Cash</th> <th>Credit</th> </tr> </thead> <tbody> <tr> <td>2009 -2017</td> <td>2,351</td> <td>7,015</td> <td>42</td> <td>773</td> <td>5,160</td> <td>7,021</td> </tr> <tr> <td>2018</td> <td>615</td> <td>457</td> <td>17</td> <td>19</td> <td>118</td> <td>146</td> </tr> <tr> <td>Total</td> <td>3,045</td> <td>7,475</td> <td>59</td> <td>792</td> <td>5,278</td> <td>7,167</td> </tr> </tbody> </table>					Year	Gov't 100%	Gov't + user	Comp's 100%	Comp's + user	100% paid by user		Cash	Credit	2009 -2017	2,351	7,015	42	773	5,160	7,021	2018	615	457	17	19	118	146	Total	3,045	7,475	59	792	5,278	7,167																																															
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2.2	Job Creation	<p>There are 99 jobs created in 2018 resulting from the program. Jobs are calculated from:</p> <ul style="list-style-type: none"> Total new CPO member: supervisor (1), mason (1), assistant mason (1) = 5 new CPO X 3 = 15 Total number of new people in bio slurry business = 15 Total number of people in supply chain (brick maker, material supplier, stove supplier); 5% x 1370 = 69 																																																																																	



1. Introduction

The Annual 2018 Indonesia Domestic Biogas Program Report (IDBP Report), will give an overview on the domestic biogas sector development in particular on how the supply, demand and enabling indicators have been progressing.

Over the last 6 (six) years Yayasan Rumah Energi (YRE) has been implementing Indonesia Domestic Biogas Program (IDBP), and running the National Biogas Program Support Office (NBPSO) as well as the Provincial Biogas Program Offices (PBPO) to maintain IDBP partners consistency in: (i) quality assurance of digesters when penetrating the early stage of the market; (ii) biogas promotion and (iii) after sales service.

Apart from consistent and regular demand, supply and enabling environment related activities, during 2018 implementation period the team organized the geo-tagging activities to record GIS data of 17,000 digesters in 10 (ten) provinces which includes collecting data on the functionality and performance status of these digesters.

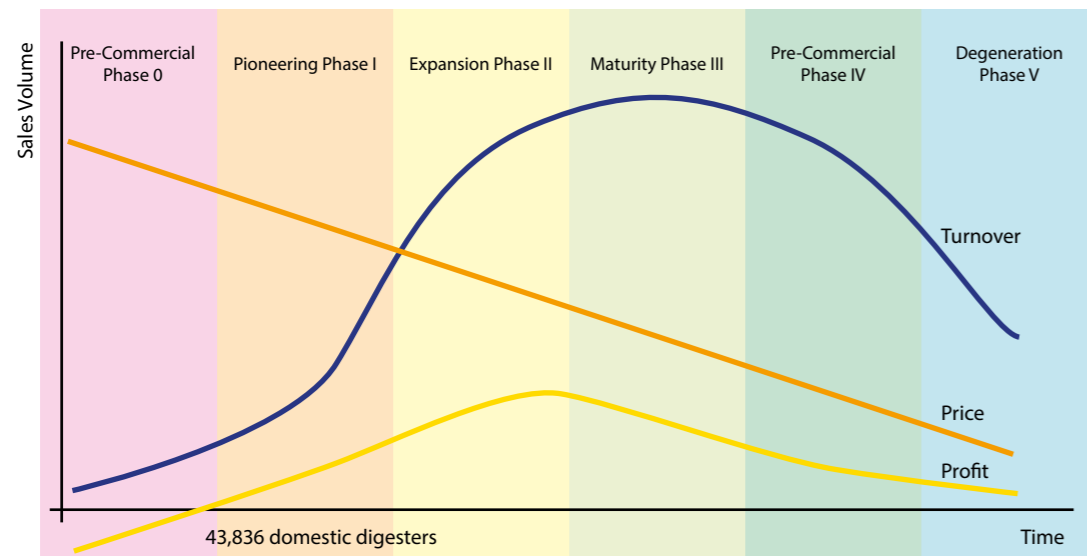
By the end of 2018, a total of 22,363 BIRU digesters have their GIS position recorded by the NBPSO (*more detail of geo-tagging activity as described in chapter 6*).



Picture 1. Location of Domestic Biogas in IDBP GIS Database 2018

The National Energy Policy (*Kebijakan Energi Nasional/KEN*) sets a target of 489.8 million cubic of biogas in 2025 where as by 2018 the DGNREEC-MEMR recorded 25.266 million cubic of biogas are in operation. As the current achievement is way below the 2025 target, policy advocacy to both central and local government is a priority specifically on how domestic biogas is placed within the energy mix in competition with LPG, Dymetil Ether (DME) and gas distribution network (*jaringan gas/jargas*) proven by a roadmap for transition or a spatial data and the contribution of domestic biogas to relieving the pressure to the State Budget (APBN) from importing LPG and inefficiency in distributing subsidized LPG. According to the Biogas User Survey (BUS) conducted in 2018, the use of biogas reduces the use of LPG in the amount of 5,6 kg/month.

The Ministry of Energy and Mineral Resource (MEMR), in particular the Directorate of Bioenergy, Directorate General of New, Renewable Energy and Energy Conservation (DGNREEC- MEMR) had consolidated the national domestic biogas population data from IDBP, APBN/APBD, DAK, other ministries and private companies. By the end of December 2018, there are 43,836 digesters that were recorded under DGNREEC- MEMR database which represents the total number of domestic biogas in Indonesia including a fiberglass model, while BIRU database shows the total number of 23,186 constructed units by the end of December 2018.



Picture 2. Market Development stage of Domestic Biogas Sector in Indonesia - 2018

Looking at Picture 2, the current situation shows that the cost of materials for concrete digesters is increasing in the majority of the sites. This condition is exacerbated by the inefficiency in subsidized LPG distribution enjoyed by those who are not eligible. Furthermore, there are a couple of options in tackling the high cost which are to have better the user profiling (i.e.: cattle farmers) reduce the cost of through new technology and/or materials for more affordable biogas, incentive schemes to trigger market development.

Based on the study conducted by SNV Netherlands Development Organization in the year of January 2009, IDBP indicates that the potential for domestic biogas market in Indonesia could reach 1,000,000 units of digesters coming from 15,6 million cattle which would account to 2 million m³ of biogas in comparison to the 489,8 million m³ of biogas mandated by the National Energy Masterplan (*Rencana Umum Energi Nasional/RUEN*) by 2025 as part of the 23% renewable energy target set by the KEN. This means that to achieve these targets by 2025, biogas would not only aim to replace LPG by targeting markets beyond farmers and cattle farmers but it has to scale up through a more advanced technology such as compressed bio-natural gas, variety of feedstocks and eyeing for cattle industry, etc.

In order to scale up and expand the current market, businesses would need to be involved to be able to tackle the increasing cost of concrete digesters by way of preparing the market and incentives. On the other hand, by 2018 the total consumption of LPG had reached 6.9 million MT/year, coupled with the lack of monitoring oversight on the distribution of subsidized LPG leads to an assumption that majority of the population including farmers/dairy farmers' households had access to LPG, apart from using re woods for cooking. Given the fact that 4 MT LPG/ year is imported, conversion to biogas for farmers' households should reduce the state burden of import and subsidy.

The above Picture 2 shows that due to heavily subsidized imported LPG, IDBP has not been able to reach the potential number of the market. Onwards, IDBP will continue the advocacy effort to reduce dependency on imported LPG with the hope that with the decreasing number of imported LPG the demand for bio-digester will grow.

2. Program Objectives

Overall objectives:

To contribute to economic prosperity, and support the development of a green economy and mitigation of climate change in Indonesia through the scale up of a national biogas sector development program, to improve waste management and emission reduction in the livestock and dairy sector.

Specific objective:

To promote the development of a market-oriented domestic biogas sector that provides access to affordable clean energy for livestock and dairy farmers through dissemination and application of biogas technologies with support to finance and enabling policy environment.



Picture 3. A bio-digester user in Central Java Province



3. Institutional Setting

In the framework of localizing management, by 19th November 2012 Hivos transferred the IDBP's mandate to Yayasan Rumah Energi (YRE) through a sub-grant contract as the only direct implementing partner. As IDBP's partner organization, YRE is responsible for implementing the field task and gradually taking over the key responsibilities of IDBP. Hivos is focusing the role on project monitoring and evaluation, supervising the implementation of IDBP and strengthening YRE as an institution.

By implementing IDBP from 2013 – 2018, YRE has been able to build expertise in domestic biodigester engineering, potential user profiling, building the capacity of Construction Partner Organization (CPOs), facilitating access to credits, user behaviors, adapting new monitoring and evaluation tools and other sector development activities. The organization has also developed other programs and services that can be used as leverage to the sector development, namely Climate Smart Agriculture which is a byproduct of the IDBP program itself emphasizing the food, energy and water nexus and circular economy at grassroots level. The foundation is also engaging private sectors to support domestic biogas adoption through business models that are benefiting companies' business as well as supporting the foundation itself. As an example, YRE has been partnering with Perum Jasa Tirta II which is a State Water Company with a goal of reducing water pollution from cattle manure to the Citarum watershed. This new approach taken by YRE is aimed at campaigning biogas as a solution to an ongoing operational problem faced by corporations. Furthermore, with this cooperation model, steps for scaling up would only make sense for the company. YRE's business wings are also taking part in the supply chain of domestic biogas sector, whether in construction of the digesters or production and marketing of bio-slurry.

The significant change in terms of institutional development for the IDBP program would be the gradual transfer of responsibility from Hivos to YRE to sustainably run the program. To pursue this, YRE is persistently built the discussion with the local government as well as with related stakeholders for having a written agreement i.e. Memorandum of Understanding (MoU) with provinces/districts where IDBP is implemented. Endorsement of local governments will allow continuous discussion among stakeholders to jointly support the sector development. Until December 2018, two draft of MoUs were under review between YRE and the Government of South Sulawesi and Banten Province. Furthermore, it is also important to reach out to wider audience to increase the profile of IDBP.

New players in the sector ranging from SME to industrial level businesses, NGOs and communities are the key elements in ensuring successful sector development strategies. The strategies are to include advocacy to Ministries and local governments; investment opportunities for affordable technologies; promotion and campaigns to users in collaboration with NGOs and communities. Additionally, the role of CPOs as the main driver of biogas market expansion is the core of institutionalization of the IDBP program.

4. Overview January – December 2018

4.1 Development of Demand Side

No.	Indicator
4.1.1	Product and service diversity
4.1.2	Market penetration & systems in use
4.1.3	Willingness to pay
4.1.4	Consumer awareness & Perception

4.1.1 Product and Service Diversity

Mini Domestic Biogas (*Biomiru*)

Responding to market demand for more affordable biodigesters, IDBP introduced a new model, which could save of up to 70-80% construction cost. This new design will be suitable to match the need of farmers with less affordability due to smaller numbers of the required livestock. The design is suitable for using poly-ethylene material that is easy to find and available all over the country. This new model, named *Biomiru (Biogas Mini Rumah)* could last for 10 years' lifetime with one single burner stove of 50% efficiency level.

The design of the bio-digester tank will start from 600 liter up to 2,000 liter, the smaller one will generate approximately 200-300 liter of biogas for 30-40 minutes of cooking, and the large one will generate approximately 500-600 liter of biogas for 50-90 minutes of cooking.

Biomiru will be introduced and trained to partners in 2019. Masons, supervisors and IDBP engineers would be involved in a series of *Biomiru* 'Training of Trainers'.



Picture 4: Design of Biomiru



No.	Materials/ labours	Pc	BioMiRu		
			650 Lt.	1,000 Lt.	2,000 Lt.
1	Water tank - PE	Pc	1	1	1
2	PVC Pipe - 4	Pc	1	1	1
3	PVC Pipe - 1/2	Pc	3	3	3
4	PVC Edge - 4	Pc	5	5	5
5	Bracket - 4	Pc	4	4	4
6	Elbow - 1/2	Pc	10	10	10
7	Fittings PVC - 1/2	Pc	6	6	6
8	Plastic Pipe 2 mm	Mtr	2	2	2
9	Stoves 1 burner	Pc	1	1	1
10	Hose Pipe	Pc	1	1	1
11	Manometer	Pc	1	1	1
12	Fiberglass Glue	Pc	1	1	1
13	Multipurpose Glue	Pc	2	2	2
14	Sealant	Pc	1	1	1
15	Cement	Pc	2	3	3
16	Brick	Pc	300	500	700
17	Sand	M3	1	1,5	2
18	Gravel	M3	1	1,5	2
19	MS rod (8 mm - SNI)	Kg	13	14	15
20	Water Drain	Pc	1	1	1
21	Ballvalve	Pc	4	4	4
22	Mason	Person	2	2	2
23	Labor	Person	2	2	2

No.	Materials/ labours	Pc	BIRU					
			2 m ³	4 m ³	6 m ³	8 m ³	10 m ³	12 m ³
1	Bricks	Pc	1.000	1.500	1.700	2.000	2.200	2.500
2	Sand	M ³	2,0	4	4,8	5,4	5,8	6,2
3	Gravel	M ³	1,0	1,5	1,7	1,9	2,1	2,3
4	Cement (50 Kg)	Bag	12	14	17	21	24	28
5	MS rod (8 mm - SNI)	Kg	15	16	19	21	26	30
6	Emulsion paint	Litter	0,5	1	1,5	2	2,5	3
7	Fittings PVC	Pc	8	10	10	10	12	12
8	Gas pipe (PVC), 1/2 inchi	Mtr	12	12	12	12	12	12
9	Water drain	Pc	1	1	1	1	1	1
10	Gas tap	Pc	1	1	1	1	2	2
11	Hose pipe	Mtr	1	1	1	1	2	2
12	Taflon tape	Pc	1	2	2	2	2	2
13	Inlet pipe (PVC) - 4 inchi, @ 4 m length	Mtr	2	2	2	2	2	2
14	Manometer	Pc	1	1	1	1	1	1
15	Stove (1 burner)	Pc	1	1	1	1	2	2
16	Main gas pipe	Pc	1	1	1	1	1	1
17	Mixer	Pc	-	-	1	1	1	1
18	Masons	Person	8	9	10	11	12	13
19	Labours	Person	17	19	21	23	25	27
20	Miscellaneous	LS	1	1	1	1	1	1

Picture 5: Comparison of BoQ BIRU biodigester Vs BoQ of BioMIRU

Stove Modification

IDBP collaborated with INSTIPER Yogyakarta and conducted training on modifying conventional stove to biogas stove to achieve 50% thermal efficiency. The training was divided into theoretical and practical exercise in the workshop. There were 9 (nine) supervisor representatives of 10 (ten) IDBP provinces and IDBP Quality Inspectors participated in the one-day training in Yogyakarta. The skill of modifying common stove can overcome limited supply of biogas stove in each province. The training was equipped by a manual.

The modifying common stove is based on a single or double burners LPG stoves that was modified in a nozzle part. A LPG stove nozzle part is smaller than the biogas stoves, thus overhaul of this section is needed to get a level of thermal efficiency. The procedure of the overhaul is guided by the trainer from INSTIPER Yogyakarta which referred to the KIWA GASTEC CERTIFICATION, and thermal efficiency formula BS EN 484 : 1998.

The modifying stoves is also tested in laboratory of Instiper Yogyakarta, the thermal efficiency should not be less than 50%. The result test shows that the modifying stoves is more than 50% efficiency, as follows:



Picture 6. Modified biogas stove results



Picture 7: Trainer from INSTIPER demonstrate how to modify LPG stove to be Biogas stove

In order to improve the capacity of the supervisors in stove modification, IDBP conducted a technical training called 'Biogas Stove Modification' which aimed to equip and improve the technical capability of biogas stoves modification, and providing some services which related with biogas installation (i.e. replacing a broken stove, piping, etc.). By this training, it is expected that technical matter regarding the biogas stove will no longer become an issue.

4.1.2 Market Penetration and System in Use

In 2018, there are 1,370 new users that gained access to IDBP/BIRU domestic biogas. To enhance the market penetration and to create more demand on domestic biogas in 2018, IDBP partners and staff conducted series of socialization events targeting dairy/livestock farmers, academia, private companies and local governments. A total of 72 (seventy-two) socialization/awareness meetings were conducted in 2018. IDBP team has been actively in uencing the public to gain support for biogas development in Indonesia, and continuously encouraging our construction and/or lending partners to be more motivated by supporting the partners in conducting socialization and promotion.

The key takeaways from the market penetration strategies are: i) using spatial data to analyze market potential based on cattle ownership; ii) better user profile into a more detailed assessments including willingness and ability to pay; iii) user experience and behaviors. These elements will then help IDBP to an effective market penetration approach based on the demand data from users.

Province	Number of Meeting
Lampung	4
Banten + West Java	7
Central Java + DIY	7
East Java	5
Bali	20
NTB	1
NTT (Sumba)	3
South Sulawesi	8
Jakarta	17
Total	72

Table 1: Number of Socialization Meeting to Promote Biogas and/or Bio-slurry for the period of January – December 2018
(For details of List of Socialization and Awareness Meeting per month please see Annex 3)



STORY 1

Investing in Renewable Energy for Rural, Remote Communities (TERANG)

TERANG Project, supported by *Millennium Challenge Account Indonesia (MCA-I)*, is implemented in 3 (three) provinces: NTB, NTT and South Sulawesi. TERANG project rationale is to provide access to sustainable energy for livelihood improvement and contributed to Green-House-Gas (GHG) emission reduction in Indonesia. The strength of TERANG project is the relevance to the national policy, local governments and community needs. Yayasan Rumah Energi as one of Hivos' consortium in implementing IDBP Program in TERANG Project..

In March 2018, IDBP finalized the implementation of TERANG Project, with following results:

- 2,541 units digester
- 12,705 people use the RE installation (direct and indirect users)
- 2,616 people trained on biogas business (mason training, bio-slurry, O&M, and gender)
- 21 people gained temporary employment generated in power plant construction



Mason Training in South Sulawesi



Government Consultation Meeting in NTB



Gender and Socio safety training in Sumba, NTT



Launching biogas development campaign in District of Pangkepene Kepulauan, South Sulawesi

4.1.3 Willingness to Pay

From 1.370 units constructed in 2018, 45% users received full assistance from government funding through local government budget (APBD) or DAK, 42% users share the costs with government (DAK/APBD) or private companies' grant through CSR program, and 12.6% financed their biodigesters independently through credit and cash.

Province	BIRU bio-digesters 2018	Gov't 100%	Gov't + user	Comp's 100%	Comp's + user	100% paid by user	
						Cash	Credit
Lampung	25	11	0	0	3	5	6
Banten + West Java	41	12	0	15	3	5	6
Central Java and Yogyakarta	333	311	2	1	2	17	0
East Java	157	1	2	1	8	13	132
Bali	32	25	0	0	0	7	0
NTB	419	253	165	0	0	1	0
NTT (Sumba + Flores)	82	0	10	0	0	71	1
South Sulawesi	282	0	278	0	4	0	0
Central Borneo	1	0	0	0	0	0	1
Total	1372	613	457	17	20	119	146
Percentage	100%	45%	33%	1,2%	7.9%	8.6%	4%

Table 2: No. of bio-digesters built in 2018; fully funded by government, partly funded or 100% paid by new biogas users.

The category of "100% cash" means the total cost of bio-digester is fully-funded by the user after reduced with the subsidy from IDBP amounting EUR 60.6.

The category of "loan" means the bio-digester is funded through a credit scheme from cooperatives supported by MFIs that has collaborated with IDBP i.e.: Nestlé and/or Rabobank Foundation.

The funding by Government and Company (through CSR) divided into 2 schemes: fully funded or co- sharing; fully funded means there is no cash or in-kind contribution from the user, while co-sharing means there is contribution from more than 1 party (government/company + user + IDBP).

Government Support

It is obvious, that government procurement for domestic biogas in 2018 (78%) is a major funding sources for construction of bio-digesters. In 2018, the Government spent a total of EUR 642,809 for domestic biogas. This figure was a slight increase in comparison to EUR 450,620 that was spent in 2017.

However, Gol recently stipulates that Special Allocation Fund (DAK), which was one of the primary funding for biogas, would be completely cut-off effectively January 2019 until a new decision is issued by the Government. Collaboration models between IDBP, government, private sector and community funding are being evaluated and explored to find a more sustainable and efficient business models. Based on our observations, the higher the stakes that are owned by the community/households of potential users, the utilization of the installations become more effective. This is where spatial data becomes helpful on where funding and what kind of joint funding should be done. As an example, government's funding is reduced as the willingness and ability to pay of the household increases.

Another example is where CSR funding is most effective to households that do not have the ability to pay due to low income or high cost due to geographical location but have the willingness to pay whereas private sector co-funding is most efficient if it is linked to the companies' operation as what can be seen in West Java.

Contribution from Gol - 2018	Province	IDR	EUR
Ministry of Energy, and Mineral Resources	South Sulawesi	1,912,681,310	115,920
Public Work and Housing, Energy, Resources and Mineral Agency	D.I. Yogyakarta	3,141,806,269	190,412
Animal Husbandry Bandung District	Jawa Barat	72,000,000	4,364
Food Security Agency Bandung District	Jawa Barat	33,000,000	2,000
Energy, Resources and Mineral Agency	Jawa Barat	24,000,000	1,454
Integrated Agriculture System	Bali	309,500,000	18,758
Village Allocation Fund	Lampung	110,000,000	6,666
Energy, Resources and Mineral Agency Sumbawa District	Nusa Tenggara Barat	770,000,000	46,667
Energy, Resources and Mineral Agency	Nusa Tenggara Barat	3,987,700,000	241,679
Animal Husbandry Agency North Lombok District	Nusa Tenggara Barat	840,000,000	50,909
Environmental Agency Central Lombok District	Nusa Tenggara Barat	123,000,000	7,454
Kataka Village Allocation Fund	Nusa Tenggara Timur	52,659,000	3,192
Total		10,606,346,579	642,809

Table 3: Government Agencies Financial Contribution (DAK) for Biodigester Construction in 2018

Private Companies Contribution

In 2018, two big companies were supporting IDBP West Java Province and South Sulawesi Province. The JOB (Joint Operation Body) Pertamina and Medco at Tomori well in Banggai – Central Sulawesi is working with YRE to build 20 domestic biodigesters and an integration of Agriculture and Fishery programs. Farmers who live close to the oil well were involved in capacity building to utilize bio-slurry in vegetable garden, vermi-composting and accessing clean energy for cooking.



Picture 8: Poster of Independent Village program through Biogas Technology in Banggai, Central Sulawesi



Picture 9: Mason, Supervisor & Village Representative

In 2018, Perum Jasa Tirta (PJT) II, a state-owned company based in West Java Province, is continuing the second phase of the agreement with YRE by adding 10 (ten) additional bio-digesters for dairy farmers in Pangalengan, the center of dairy industry in South Bandung. The business model developed with PJT II, is aimed at shifting farmers' habit of dumping the cow dung into the river to managing the cow dung as a valuable commodity. PJT II's main business is supplying water to Jakarta, therefore good water quality is crucial for the company's business. YRE's business strategy is to utilize bio-slurry fertilizer and other organic products reach its maximum value, which will increase additional value of maintaining the operation of these bio-digesters. A similar principle can be a basic business model to be developed with future prospective corporate partners.



Picture 10: Construction of biodigester in partnership with PJT II at Padamukti - West Java

4.1.4 Consumer Awareness & Perception

In IDBP's annual activity of Biogas User Survey (BUS) 2018, the result of user's satisfaction level shows the number of 95%, mostly due to decreasing complaint numbers from neighbors regarding cattle waste pollutant and the co-benefits arising from the gas and additional income from bio-slurry. The survey indicates that around 62% of users are using bio slurry as an organic fertilizer.

Motivations of users to build bio-digester are mostly due to the efficiency of time spent for cooking with biogas instead of firewood and reducing HH's expenditure for cooking and fertilizer. Women were motivated as they say having bio-digester will allow them more time to taking care of the family and socialize with the community. This point shows that the common perception of the hassle and process of having to operate and maintain biogas still leaves time for social and economic activities of the households.

STORY 2

Biogas: A Life-Changing Experience

Pak Solikhan, a dairy farmer in Ngantang, East Java decided to have bio-digester in 2015. Before having bio-digester, for his household's cooking needs, Pak Solikhan used 5 tank of 3kg LPG in a month. It was a challenge for Pak Solikhan to access the LPG tank from the seller in his hilly village with his prosthetic legs. By having bio-digester, it benefits him from the difficulties of purchasing LPG.



Picture 11: One of BIRU User

4.2 Development of Supply Side

No.	Indicator
4.2.1	Suppliers & Business Networks
4.2.2	Sales Volume
4.2.3	Supply Chain
4.2.4	Warranties
4.2.5	Entrepreneurial Skills: <ul style="list-style-type: none"> No. of user training No. of other training

4.2.1 Supplier & Business Networks

In 2018, PBPOs successfully engaged 5 (five) new partners including individual entrepreneurs. 50 (fifty) CPOs signed an agreement with YRE to continue the cooperation in developing domestic biogas market in particular for the quality assurance activities. Although the CPO numbers have not increased in great numbers in some provinces, the quality of work and the growth of business are being monitored constantly by the PBPO. Trainings on technical updates, quality assurance, by-products and business model canvas were also given to the top CPOs in the hope that their business will continue to grow. Several CPOs such as Trukajaya in East Java for EXXON company and CPO in Bali for Danone Group have been successfully implementing CSR program for the companies. YRE have listed down the top 10 CPOs based on their quality of work as references for future users and/or partners.

Province	2016		2017		2018	
	No. of CPO	No. of biodigester	No. of CPO	No. of biodigester	No. of CPO	No. of biodigester
Bali	4	121	3	147	3	32
Central Java & D.I. Yogyakarta	12	759	9	483	8	333
West Java & Banten	3	103	2	44	2	41
East Java	16	371	13	408	11	157
Lampung	5	110	5	64	3	25
NTB	6	977	5	291	6	419
NTT (Sumba)	4	161	4	389	6	81
South Sulawesi	14	941	16	470	11	282
Total	64	3543	57	2296	50	1370

Table 4: Number of Construction Partner Organization having agreement with Rumah Energi in 2016-2018

4.2.2 Sales Volume

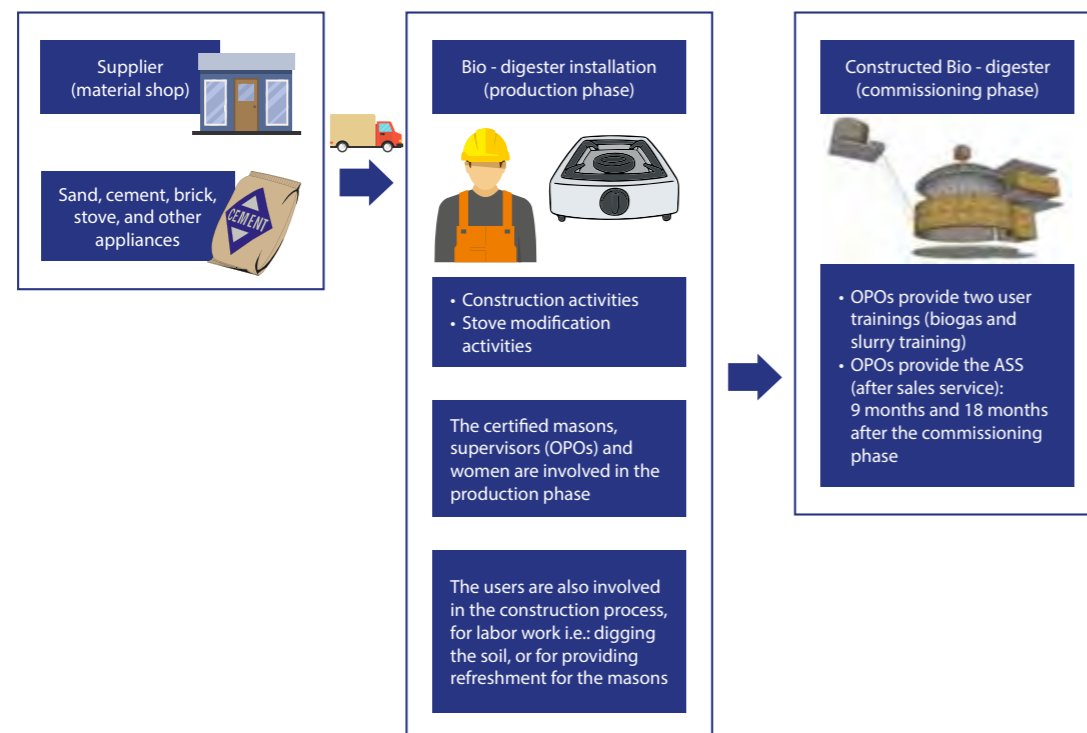
In 2018, from 1,370 units constructed there are 76 units self-funded by users and 44 units constructed in East Java partly subsidized by Nestlé.

Province	CPO Name	Units
Bali	UD. Cahaya Wana Bakti	10
	Yayasan Sastra Loka Samgraha	4
East Java	CV. Mitra Bumi Abadi	8
	KAN Jabung	3
	CV. Karsa Tead Mandiri	3
	KUD Tani Wilis	25
	KUD Sumber Makmur	8
Lampung	Regol Mason Group	3
NTB	Sangkareang Mason Group	1
South Sulawesi	CV. Resky Utama Masagena	3
	CV. Ritma Green Sinergy	1
West Java	Yayasan Kontak Indonesia	7
Total		76

Table 5: Number of digester self-funded by users per CPO

4.2.3 Supply Chain

IDBP has succeeded in developing complete supply chain system—from upstream to downstream—in order to ensure the development of market-based biogas sector. The supply chain includes not only the raw materials of the product (sand, cement, brick, stove and other appliances, etc.), but also the provision of local skills, knowledge and expertise through the engagement of 50 Construction Partners Organization (CPOs) and certified masons, as shown in below diagram:



In regards to sustainability, IDBP should maintain the quality of constructed bio-digester as stipulated in the document of Indonesian National Standard (SNI 7826:2012 and SNI 7927:2013). Thus, the quality of raw materials (sand, cement, brick stone, etc.) is inevitable for ensuring the good quality of biogas installation. There is zero tolerance to any local materials shop which does not meet with the criteria. IDBP is partnering with at least 3 to 5 local materials shops in each province which are able to meet the minimum material standard as issued by IDBP.

4.2.4 Warranties

To meet the minimum quality standard, the bio-digester built by IDBP partners must comply with SNI 7826: 2012 (Indonesia National Standard) in compliance to the procedure of concrete fixed-dome bio-digester installation. In obtaining appropriate standards, Quality Inspector conducts regular inspection to each bio-digester built by IDBP partners. In 2018, IDBP staff has inspected 593 units of bio-digesters out of 1370 (or 43%).

Inspection during the construction (unit)	Inspection after the construction (unit)
43	550

The inspection target in IDBP proposal is 45% of the total bio-digester built in the current year, and the total inspections conducted by QI is 98% of the target in the proposal.

Another inspection activity conducted by CPO who are responsible for after sales services, after 9 months and 18 months. By 2018, CPO had inspected the quality of 15,710 bio-digester units and the rest were inspected by independent surveyor during geotagging activities conducted during July-December 2018.

Year	Number of biodigester built in year	Total of biodigester in year	Total of biodigester Quality Check	Completed ASS1	Completed ASS2	Total of After Sales Service Check
2009	62	62	62	62	62	62
2010	1,586	1,648	1,642	1,586	1,586	1,648
2011	2,995	4,643	4,597	2,982	2,982	4,630
2012	3,339	7,982	7,795	3,279	3,279	7,909
2013	3,269	11,251	10,835	3,216	3,216	11,125
2014	2,973	14,224	13,280	2,877	2,877	14,002
2015	2,383	16,607	13,686	2,151	2,151	16,153
2016	3,543	20,150	13,855	2,466	2,466	18,619
2017	2,296	22,446	15,174	1,588	1,588	20,207
2018	1,370	23,816	22,363	302	0	20,509

Table 6. Number of Quality Inspection and After Sales Service Quality Check

4.2.5 Entrepreneurial Skills

In 2018, IDBP partners continuously build the capacity of users in operating their domestic bio-digesters properly as part of the warranty effort and to utilize bio-slurry as an incentive to maintain the operation and sustainability of the bio-digester.

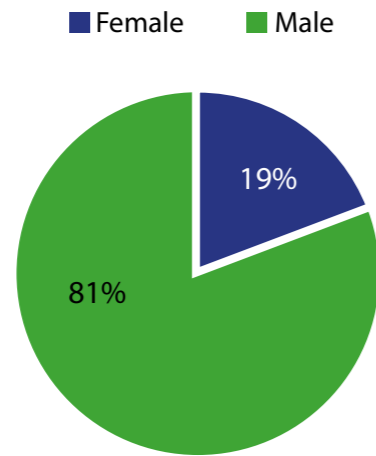
User Training

IDBP provides assistance to biogas users through a series of user training activities which aimed to equip users on how to use and maintain a bio-digester properly. Thus, each biogas user is able to get an advantage and utilize it optimally.

In 2018, there were 736 users (or 54 % of constructed digesters) who received user training; the number consists of 598 male and 138 female participants. The low number of conducted user training mainly caused by internal challenges faced by the CPOs due to lack of resources, while at the same time these CPOs still needs to conduct other important assignments of Geotagging activity and pursuing the completion of construction as targeted by IDBP. Nevertheless, a quick know-how on the operation and maintenance of the digester and the stove is directly informed to the users right after the construction is completed.

A complete version of user training will be conducted after the bio-slurry is produced—normally around 3 (three) months after installation. The continuation of user training has been planned to be conducted in the beginning of year 2019.

USER TRAINING PARTICIPANT



Picture 12: Percentage Male vs. Female participant of User Training



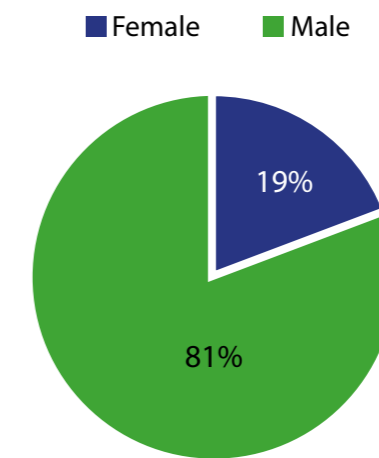
Picture 13: Biogas Digester Users in Pinrang, South Sulawesi received user training for Operation and Maintenance of biogas

Bio-slurry Training

Another training provided by IDBP is the slurry training activity which aim to equip users on how to treat and use the biogas residue called bio-slurry as soil fertilizer. In 2018, there were 736 biogas users who had received user training which consist of 598 male and 138 female participants.

As a follow up to the bio-slurry training, we have monitored the number of CPOs and biogas users that get into the bio-slurry business. Based on the data, the bio-slurry business contributes to an additional amount of IDR 330.000. Despite some of the challenges in marketing bio-slurry and paradigm change of the farmers, these users would play an instrumental role in campaigning for the benefits of using bio-slurry to increase yield and better-quality products.

BIOSLURRY TRAINING PARTICIPANT



Picture 14: Percentage of Male vs. Female participant of Bio-slurry Training



Picture 15: Biogas users practicing mixing coconut water with bio-slurry to produce organic fertilizer from bio-slurry

4.3 Development of Enabling Environment

No.	Indicator
4.3.1	Policy – Stakeholder Engagement
4.3.2	Access to finance
4.3.3	Quality regulations, norms and standards
4.3.4	Market Information

4.3.1 Policy – Stakeholder Engagement

For the last 3 years, IDBP has been working with national and provincial governments to maximize the mobilization of state budget and regional budget (APBN & DAK). For this purpose, series of consultation meetings has been conducted both with national and local governments.

In 2018, IDBP has conducted 12 (twelve) consultation meetings with local and national government to continuously push the agenda on domestic biogas sector (*for the details of consultation meetings provided in Annex 4*). The consultation meetings discuss the target of achieving biogas development in collaboration with the government. Among the topics in the discussion is the obstacles encountered by IDBP CPOs or the non-technical use of the digester due to various factors.

IDBP has been providing incentives in the form of subsidies for each bio-digester being built by the CPOs, as well as providing support for promotions and user trainings. Partnerships with Kiva, Rabobank Foundation, Nestlé, and Credit Union are aimed at introducing and stimulating appetite of the MFIs in providing financing to biogas program as described in sub chapter 4.3.2.

YRE's role is to introduce the technology, business model and providing data of potential borrowers which in this case are CPOs, CPIs and/or users. As part of piloting and capacity building of the MFIs in biogas financing, our observation shows that the MFIs are still very conservative in their risk assessment with some requiring collaterals due to the ability of the borrowers to repay based on credit history. Thus, these Micro Finance Institutions (MFIs) were providing non-commercial loan where support from IDBP is still needed whether through guarantee scheme or supporting the collection of debt repayment and subsidy. Thus, consistent capacity building to the MFIs and risk mitigation strategies will need to be discussed regularly between the MFIs with IDBP.

STORY 3

Focus Group Discussion Stakeholders' Cooperation on Domestic Biogas Program Bogor, 11 October 2018

Phasing out of IDBP program funding both from donor and government will impact the market development of domestic biogas sector in Indonesia. The FGD aims to provide outputs including; (i) information disbursement on IDBP implementation; (ii) commitment and cooperation within all stakeholders; (iii) data base coordination and compilation; (iv) gathering recommendation from stakeholders regarding the implementation strategy and drafting of the initial Biogas Stove Roadmap as one of the focus activities in the RPJMN 2020 – 2024.

Participants:

DGNREEC-MEMR, Ministry of Agriculture, Hivos, Yayasan Rumah Energi, National Development and Planning Agency/Bappenas, Coordinating Ministry of Economics, Ministry of Environment and Forestry, Ministry of Social Affairs, Ministry of Villages, Disadvantaged Regions and Transmigration, Ministry of Cooperatives and Small Medium Enterprises, Indonesia Biogas Society/*Masyarakat Biogas Indonesia*, and CPO & LPO.



All FGD participants



Program Development Manager Green Society Hivos SEA - explaining IDBP market development stage



Panelist of FGD: Bappenas, DGNREEC-MEMR, HIVOS SEA

4.3.2 Access to Finance

In 2018, IDBP lending partners had financed 11% or 146 farmers' bio-digesters from the total of bio-digesters built by IDBP's Construction Partners during the year. Various lending partners, including Nestlé's CSR, Rabobank Foundation, Credit Unions Network and Dairy Cooperatives have disbursed EUR 53,299 loans to 146 farmers in 2018. Since the beginning of the program, the loan for domestic biogas has supported 9,045 farmers (38% of total domestic biogas construction 2009-2018) or a total of EUR 2,589,175.

Biogas Credit Provider	Number of Borrowers (Person)			Biogas Loans Disbursement (EUR)		
	2016	2017	2018	2016	2017	2018
KIVA	35	25	0	9,939	5,253	0
Credit Union	7	2	2	1,369	738	1,212
Rabo(Bank) Foundation	59	54	12	24,506	28,559	5,498
Nestlé	282	238	131	88,390	77,479	46,360
KAN Jabung – East Java	4	108	1	1,830	27,307	229
Others	6	0	0	2,114	0	0
Total	393	427	146	128,148	138,598	53,299

Table 7: Progress of Biogas Loan Contribution in 2016 – 2018

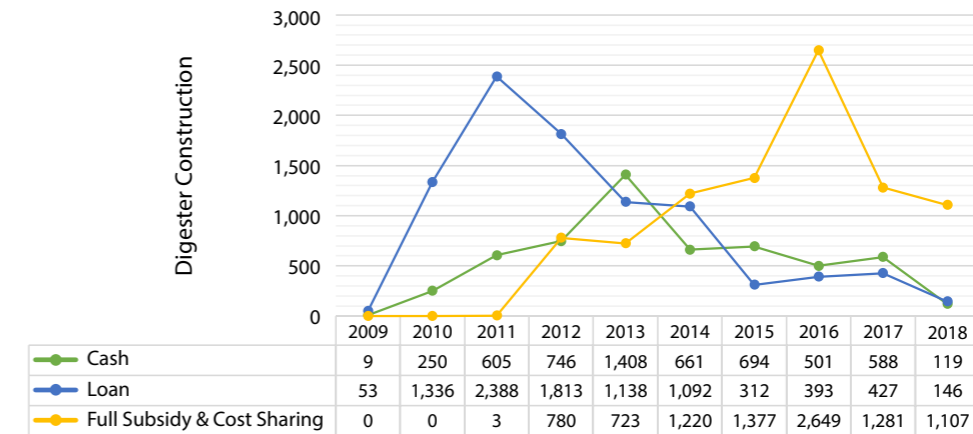
IDBP found out that the widespread supply of fully-subsidized bio-digesters from the Government, minimum support of biogas marketing efforts from MFIs, lack of business/management capacity building among the MFIs, lack of financial literacy skill/low saving behavior among the farmers have contributed to the declining number of bio-digesters through credit in 2018. Moreover, the prospective farmers were considered credit unworthy cannot access the biogas loans due to other outstanding loans. As a result, the farmers would be much preferably to wait for full subsidy scheme or pay in cash, instead of taking loans in bio-digester constructions.

IDBP and YRE saw that many MFIs partners/LPOs were needed to increase the management, accounting and administration skills with an integrated system by using Management Informational System. The integrated system is expected to reduce the level of Non-Performing Loans/NPLs arising from arrears of biogas loans repayment. Along with those factor, lack of capacity building trainings from the MFIs to its biogas user members had contributed on many cases of delinquencies in the biogas loan repayment, as well. Some skills of financial literacy, household finance management were needed to reduce low saving behavior and increase the ability to repay biogas loans among the farmers.

In 2018, IDBP found out many cases of delinquencies in biogas loan repayment with the Dairy Cooperatives network (collaboration with Nestlé and RBF) due to management and low saving behavior issues. Even though repayments method with daily milk deposits was considered to be a safer method than cash basis. However, IDBP also has some good examples of a smooth biogas loan repayment with savings and loan cooperatives. It is because most saving and loans cooperatives (Credit Unions and Sharia-based Cooperatives) have the basic training program continuously to the members. Nevertheless, biogas loan disbursement through savings and loans cooperatives provides less development output than dairy cooperatives/productive cooperatives output so far.

In a broader scale, IDBP found out there was lack of policy supports from the Gol to provide incentives, such as: tax deductions, interest subsidy, revolving funds, etc. to the FIs to support biogas sector in 2018. In particular, the financial institutions have to bear their own portfolio risk to disburse their own funding. Those factors would lead the MFIs or commercial banks to become highly selective to channel more loans for the construction of bio-digesters.

DOMESTIC BIOGAS FINANCING SCHEME



Picture 16: Trend of Biogas Financing Scheme 2009 - 2018

As described in the Picture 6 in regards to the demand for more loans for the development of domestic biogas sector, IDBP is actively seeking new approaches and strategies to increase demand for loan in 2019. IDBP will also change overview, policies and approaches by more involving LPOs as one of main actor in developing the biogas market. The YRE, INKOPDIT/CUCO, RABO (Bank) Foundation and Nestlé CSR have agreed that Biogas Loan Providers Institutions/LPOs were suggested to become active marketers for this technology. Promotion of biogas technology and loan schemes would be delivered through more continuous socialization to members/customers and their implementing partner's network.

Sustainability education to improve managerial skills, saving habit and financial literacy of the farmers would be the priority of IDBP LPO partners. In 2019, YRE has agreed with the RBF and INKOPDIT/CUCO to work together to improve the sustainable training-capacity of MFIs and potential user members. YRE and RBF is seeking cooperation in developing Knowledge Management tools that can be implemented to increase the management, accounting and administration skills for RBF partners and other prospective MFIs, as well. The collaboration with INKOPDIT/CUCO will be focused on prospective user's capacity building, as well as provides their existing capacity building services to the Primary CUs in their networks.

The capacity building efforts is expected to increase the MFIs capabilities, rate of biogas loans repayment and reduce Non-Performing Loan (NPL) risks. The provision of loan and savings package schemes for bio-digesters (credit program and commercial) will be carried out gradually. In terms of product development, IDBP is underway to provide cheap and reliable bio-digester type that can be marketed through commercial/program loan schemes in 2019.

Furthermore, IDBP is still seeking cooperation with related ministries and commercial banks to provide working capital loans and biogas loans through the commercial and/or program/CSR schemes to the LPOs or CPOs. IDBP dan YRE saw the opportunity from the soft loan program of Revolving Fund Management Institute/LPDB of the Ministry of Cooperatives and SMEs that can be allocated in biogas credit schemes through cooperation with selected dairy/productive cooperatives. Meanwhile, IDBP still has to increase the capacity of its CPOs/RESCOs to become more creditworthy, as well. IDBP and YRE would continuously advocate Gol in providing incentives and facilities to the financial institutions involvement in the biogas sector. All of those efforts are expected to increase the demand for biogas loan in 2019 onwards.

4.3.3 Quality Regulations, Norms and Standards

A good quality of biogas installation is necessary in order to produce and optimize the production of cooking gas. Thus, IDBP and the government of Indonesia have established a regulation that stipulates on the SOP/procedure of building and operating biogas system.

The SOP is registered as Indonesian National Standard (SNI. 7826:2012) which stipulates on the know-how of building and installing fixed dome biogas with the concrete material. This SOP is completed with another registered standard of SNI. 7927:2013 on the supporting appliances for biogas installation.

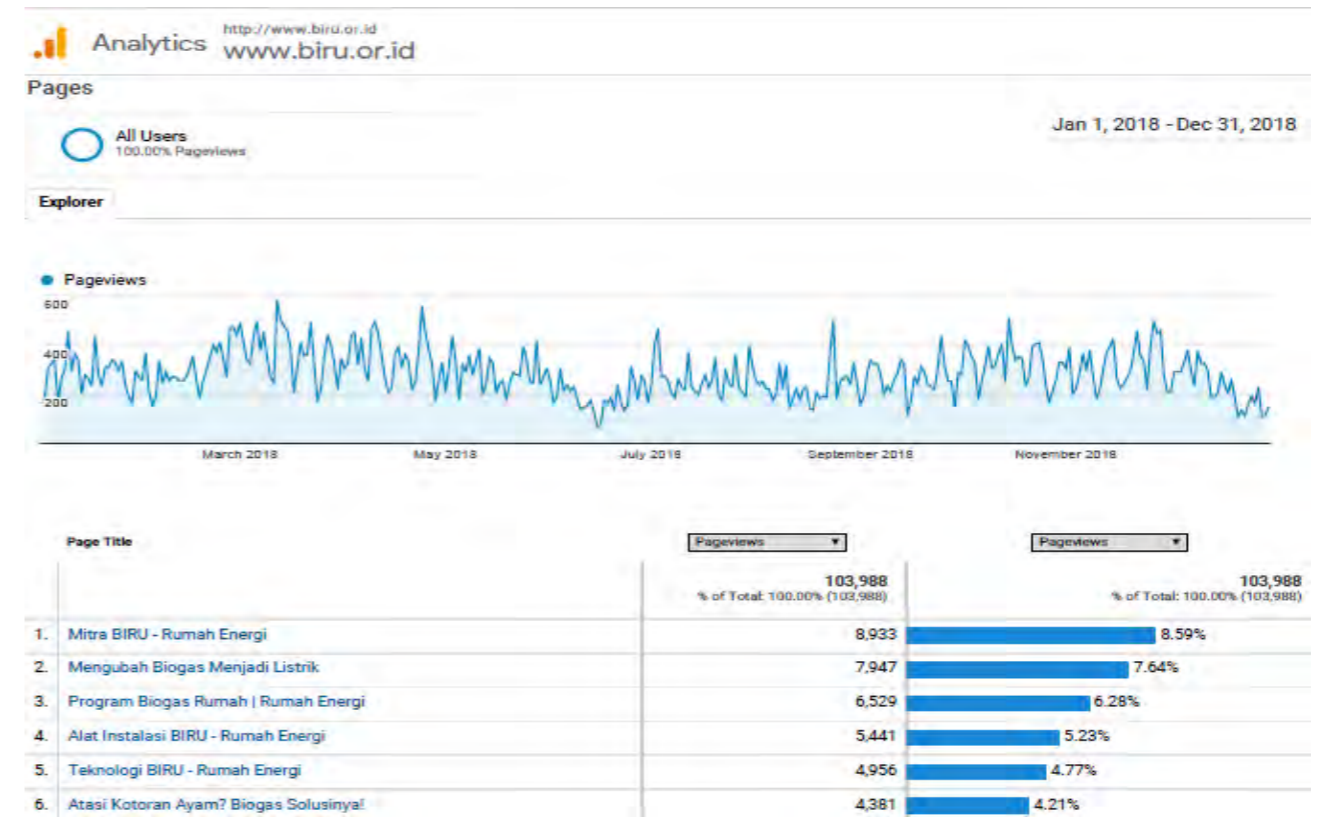
In addition, under the collaborative work with DGNREEC-MEMR, IDBP had become a trusted partner for the technical aspect of biogas and had been involved in a special task force developing many regulations related to biogas installation, i.e.: liquid waste biogas type and high pressure biogas installation type. Recently, IDBP is working closely with MEMR and related stakeholders for the standardization of low pressure biogas installation.

4.3.4 Market Information

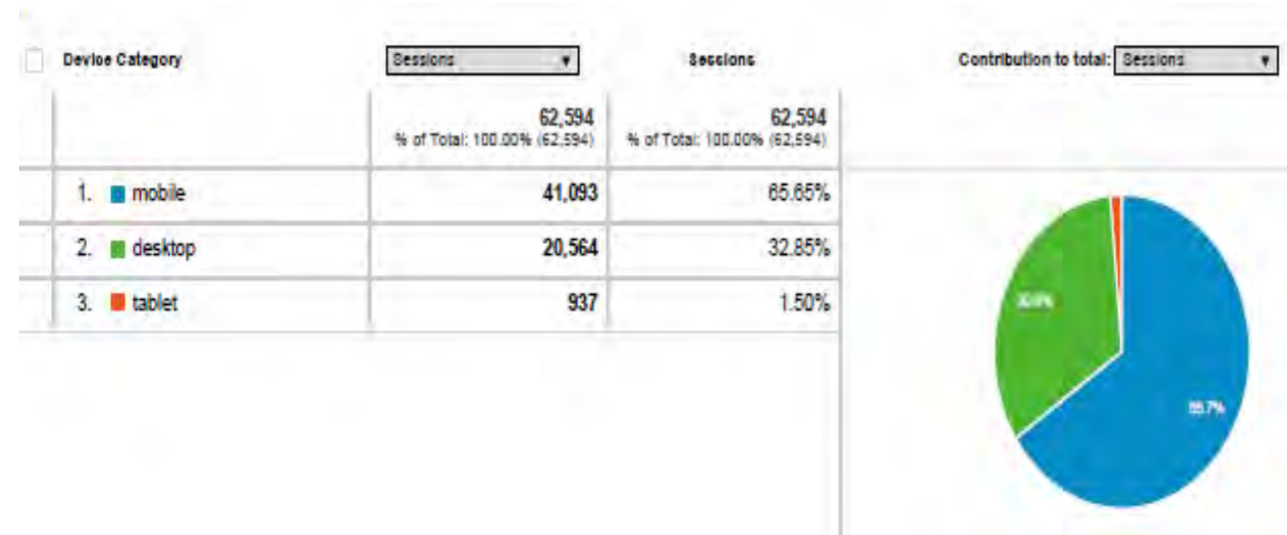
Media Promotion

In IDBP's business plan, the spearhead of biogas promotion are the CPOs. The market penetration assumed a sufficient and continuous investment of CPOs can contribute to extensive promotion to target farmers.

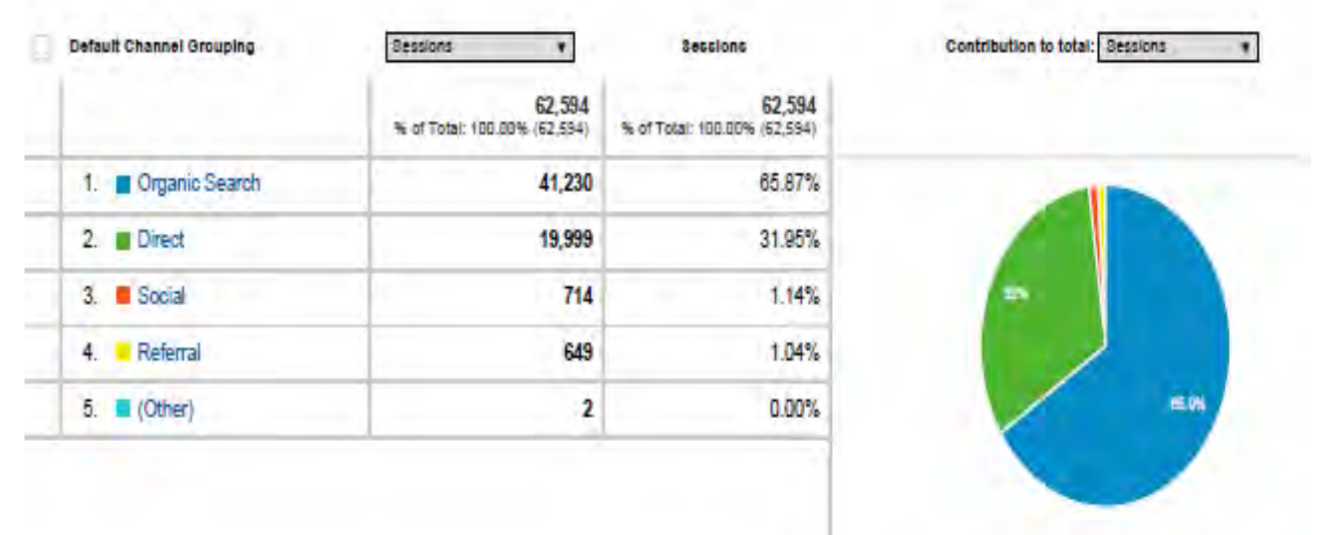
Due to investment challenges, CPOs still need support for an effective socialization method that requires lower cost to attract new users. IDBP is starting to develop short videos where CPOs can use it to share via WhatsApp or other media to reduce the cost of gathering potential users for promotional events. Improvement of promotion strategies also includes digitization of promotional packages in a less-than-a-minute videos. Website of www.biru.org is mostly accessed by mobile phone as seen in Picture 10 below supports the digitalization marketing strategy.



Picture 18: www.biru.org page title viewed in 2018



Picture 17: Overview by User per Device Category



Picture 19: Default Channel Grouping of www.biru.org visit

From January to December 2018, www.biru.org had 103,988 viewers with the highest interest of IDBP partners, deploying biogas technology for electricity and biogas installation.

Editorial Meeting

For the first time in IDBP period, editors from various online and offline media were invited in an editorial meeting to increase exposure of the program. The event was held on 19th of November 2018 in Jakarta.

STORY 4

Increasing Public Awareness on Domestic Biogas through Media Gathering Editorial Meeting - Jakarta, 19 November 2018

IDBP hosted 18 editors from national reputable media to share information and experience in developing domestic biogas sector in Indonesia. Editors were introduced to the multi-benefit of adopting bio-digesters. The program gained positive feedback through several media exposures.



The workshop agreed on several follow-ups:

- To run workshop for journalist in project area
- Inviting journalist to conduct field visits to IDBP locations
- Fellowship program for journalist to conduct in-depth coverage of IDBP program and its role in achieving SDGs goals.

Eighteen (18) media participating in the Editorial Meeting event:

- Pos Kupang
- Viva.co.id
- Fajar Makassar
- Tempo
- Suara Merdeka
- CNN Indonesia TV
- Tribun Lampung
- Independen.id
- Kedaulatan Rakyat
- Equatorial
- Bali Post
- Kompas
- Lombok Post
- Akurat.co
- Radar Banten
- NatGeo
- DAAI TV
- Gatra

5. Biogas User Survey (BUS) 2018

Every year, IDBP conducts the bio-digester survey activity called Biogas User Survey (BUS) which aims to get information on user satisfaction level and to get information of the number of bio-digester in use. The survey is conducted by Jakarta Research Institute (JRI Research). In 2018, there are 255 households were used as BUS samples that owns bio-digester since 2009 – June 2018 with the following sample distribution:

Year of Usage	Completion date of biogas plant construction	Total completed interview
Year – 1	July 2017 – June 2018	28
Year – 2	Jan 2017 – June 2017	25
Year – 3	July 2015 – June 2016	32
Year – 4	July 2014 – June 2015	26
Year – 5	July 2013 – June 2014	27
Year – 6	July 2012 – June 2013	29
Year – 7	July 2011 – June 2012	31
Year – 8	July 2010 – June 2011	32
Year – 9	Nov 2009 – June 2010	25
Total Households	255	

Table 8: Distribution samples per year BUS 2018

The result of BUS described as follows:

a. User Satisfaction

Level of user satisfaction that is shown by BUS 2018 reaches **95%** user satisfaction to own, use, and utilize the slurry as a soil fertilizer purpose.

b. Motivation of User – build bio digester

The most prominent as motivating factor for having bio-digester was because of subsidy provided (39% samples). The next driving factors for having bio-digester are the need to have “faster cooking” (29% samples), reduction in household expenditure (28%), interest to use bio-slurry for fertilizer (25%), the need to improve the hygiene of barn (23%) and the less effort to have energy (20%).

In regards to motivation to own biogas plant, the survey only targeted to the users of Year-1 up to Year-4 of usage. This question is no longer asked to the old users.

	Total	Year of Use			
		Y-1	Y-2	Y-3	Y-4
BASE: Total user Y-1 to Y-4	79	18	20	23	18
Subsidy provided	39%	39%	40%	43%	33%
Faster cooking	29%	28%	40%	22%	28%
Reduction in household expenditures (oil fuel, fertilizer, etc.)	28%	33%	20%	30%	28%
Use of bio-slurry as fertilizer	25%	28%	25%	17%	33%
Improve hygiene of barn	23%	28%	20%	26%	17%
Less effort to have energy	20%	17%	25%	22%	17%

Table 9: Motivation for installing biogas digester

c. Benefit of Bio-digester

- After having biogas plant, reduction in household expenditure is considered as the biggest motivation they get from biogas utilization (55%).
- Furthermore, the use of bio-slurry as fertilizer is considered as the most benefiting component from biogas plant by 5% of total households.
- Unfortunately, none of older users (year 7 to year 9) who support this purpose as the most benefit of biogas utilization.

	Total	Year of Use								
		Y-1	Y-2	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9
BASE: Total HHS	255	28	25	32	26	27	29	31	32	25
Reduction in household expenditures (oil fuel, fertilizer, etc.)	55%	61%	52%	56%	54%	37%	52%	52%	66%	64%
More safety	10%	11%	4%	13%	4%	11%	21%	10%	9%	4%
Faster cooking	9%	4%	8%	9%	12%	7%	7%	13%	9%	16%
Less effort to have energy	6%		20%	3%	4%	15%	3%	6%		8%
Reliable energy supply	5%	11%			4%	7%	7%	10%	6%	4%
Reduction in firewood collection	5%	4%		6%	8%	7%	7%	3%	6%	4%
Use of bio-slurry as fertilizer	5%	4%	12%	9%	8%	7%	3%			

Table 10: Most benefit of biogas plant

d. Benefit received, in relation with gender equality

- Almost all households (88%) believe that mainly women are benefiting most from the use of bio-digester in their household.
- Most of female and some male said that after having biogas, they now have spare time that can be spent to take care of the family better, to help their spouse in doing house-works and for recreational activities (sightseeing, watching TV, etc.). They also use their spare time for chatting or getting around with neighbors, and to do other social activities and income generating activity.

Have better allocation time for:	Male / female
• Chat with neighbors	36% / 39%
• Income generating activity	41% / 33%
• Recreation	46% / 49%
• Social activity	41% / 38%
• Helping spouse	44% / 55%
• Education (attending course, go to school again, accompany the kids when studying, etc.)	27%/31%
• Take care of the family better	58%/59%

Table 11: Users who mentioned have more spare time for doing other activity

Impact of bio-slurry on agriculture production

Regarding the use of bio-slurry as fertilizer, apparently, the most noticeable impacts toward their plants are:

- The soil looser and more fertile (93%)
- Quality of their harvest results better (90%)

Impact on energy, emission reduction and environment

The biogas program is not only to support biogas users about environment friendly management of livestock waste, but also to reduce the use of fossil fuels and firewood, avoid greenhouse gas emission, deforestation and global warming.

From this survey, it is revealed that utilization of biogas has been effectively reducing the use of fossil-fueled stoves such as LPG and kerosene stove, with a reduction of 18% and 12% respectively. After having biogas, only less than 1% of biogas users still use kerosene stove and that the use of firewood stove becomes no longer common for cooking meals and heating meals (decrease of 62% and 44% respectively). For some users, the uses of firewood stove for boiling water for bath, drink, other cow rearing purpose and for cleaning milk cans are replaced by the use of biogas stove.





6. Geotagging Activity

Since the inception of IDBP in 2009, the program is supposed to check the quality of at least 27% of the biodigester built under the program. This goal was set in the first proposal of IDBP as advised by SNV (which had done the feasibility study for this project in 2008). Over time the project succeeded to reach 45% of biodigesters checked (during construction, after construction or after ASS had taken place, as proposed in the same IDBP proposal of 6 April 2009).

In the process of enhancing the quality and modernization of data collection and processing system of IDBP, TARO works and Salesforce were introduced to improve the data reliability. An effort was undertaken (as was also done in an earlier stage of the program) to have routine collection of biodigester coordinates by both Quality Inspectors and CPOs (Construction Partner Organizations), but the first effort failed due to technicalities and cost of applications. A second effort had more effect. Currently all Quality Inspectors are marking all biodigesters which undergo a quality inspection. An effort to also include CPOs in the marking of biodigesters did not work out. The result is that the coordinates of almost all 40 to 45% of all biodigesters which have undergone an inspection are included in the IDBP database.

Preparation for this activity began in May 2018, coordination with the provincial team to choose the surveyor that have the capability such as ability to use a smartphone because the activity uses an online form called KOBO Toolbox. While the provincial team prepared the surveyor, the database team prepared which ID-plants was the target of this activity. From the total of 23,500 units that constructed until June 2018, there are 16,653 biodigesters targeted of this activity. The number comes from biodigester that constructed from 2009 until June 2017 which do not have coordinates:

Province	Number of biodigester targeted	Number of Surveyor
Lampung	66	1
West Java	929	2
Central Java and Yogyakarta	1,919	3
East Java	7,563	10
Bali	1,129	3
South Sulawesi	1,071	5
NTB	3,051	5
Sumba	925	6
Total	16,653	35

Table 12: Number of biodigester targeted for Geotagging activity and number of surveyor per province



Picture 20: Geotagging result on map

The objective of this activity is not only to have the coordinates of each bio-digester, but also to have the operational status of bio-digesters. Thus, the activity is also considered as After Sales Service of IDBP.

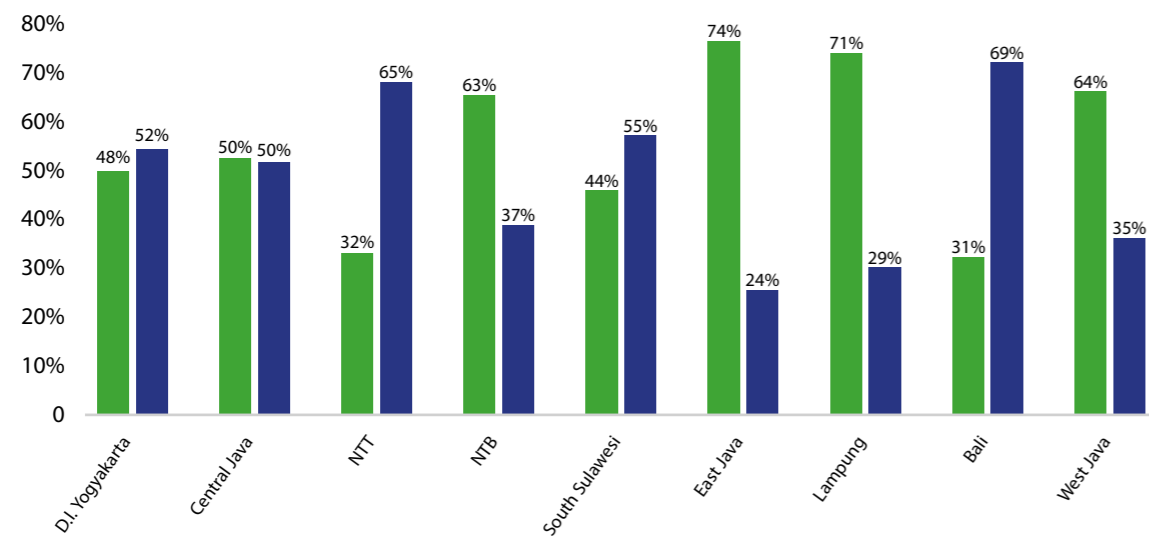
The outputs expected from this activity are as follows:

- Bio-digester coordinates
- The functionality of the bio-digester
- The reason of non-functional bio-digester: technical or non-technical problem
- The utilization of bio-slurry

Below are the results of geotagging activity from week IV of July until December 2018:

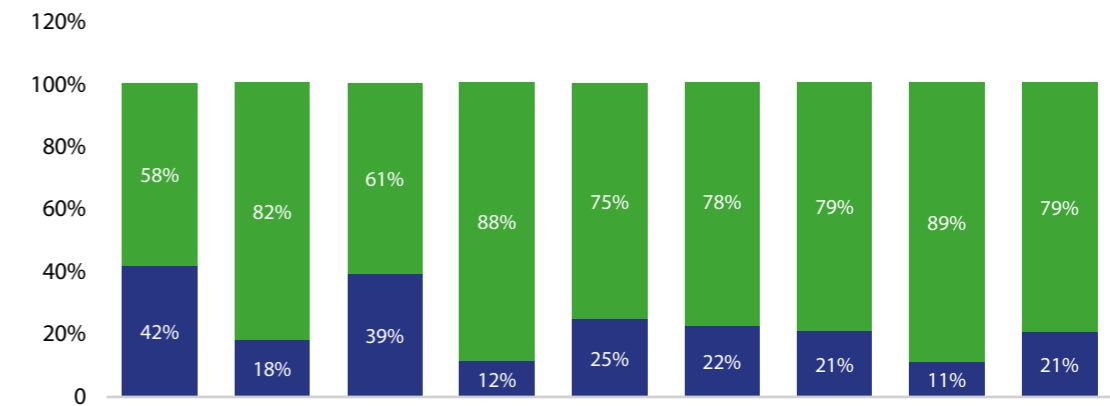
Province	# of survey	Functioning		Non-Functioning		Bioslurry Utilization	Bioslurry for Business
		Yes	No	Technical	Non-Technical		
D.I.Yogyakarta	976	467	509	213	296	299	3
Jawa Tengah	940	473	467	85	382	246	4
NTT	747	237	488	192	296	145	14
NTB	2876	1808	1067	123	944	629	6
Sulawesi Selatan	1167	513	641	160	479	199	22
Jawa Timur	7207	5301	1752	394	1358	1787	51
Lampung	66	47	19	4	15	41	2
Bali	799	246	553	61	492	237	0
Jawa Barat	524	333	182	38	144	80	2
Total	15302	9425	5678	1270	4406	3663	104

Table 13: Result of Geotagging Activity until December 2018



Picture 21: Functioning biodigester VS Not-functioning biodigester

From 15,302 units bio-digester surveyed until December 2018, there are 37% non-functioning bio-digesters and 22% of its non-functioning are due to technical problem, i.e. broken pipe, broken stove, leakage on dome, etc.



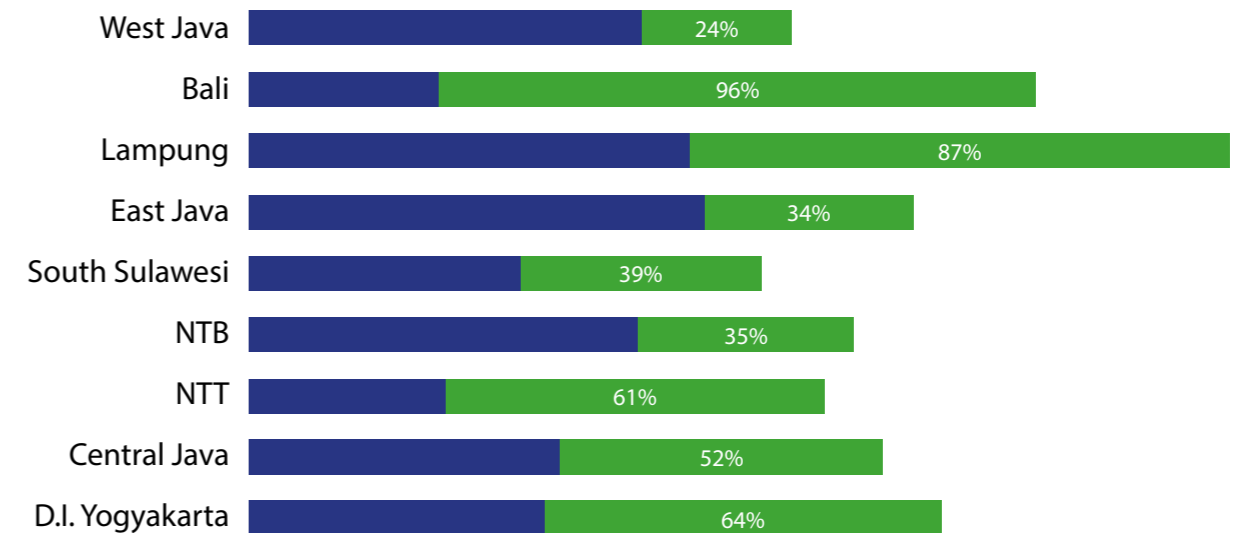
Picture 22: Non-functioning because technical problem VS non-functioning with nontechnical problem

The sustainability of bio-digester utilization by the user is very important. To ensure this, IDBP is currently in an effort for revitalization of broken bio-digester which will be conducted in collaboration with the reliable CPOs. However, this effort needs to be supported by the good-will of the users as well as ensuring them to continuously use the biogas after revitalization.

For non-functioning bio-digester due to non-technical problem, IDBP would seek for:

- Develop mutual commitment with the user documented in a form of written agreement for re-functioning of the bio-digester either by re-owning the livestock or obtaining cattle dung from the neighbors;
- IDBP will support the users who do not have livestock or those who have trouble finding animal waste by providing training on producing artificial feedstock in order to ensure the continuous utilization of the bio-digester.

Bio-slurry Utilization

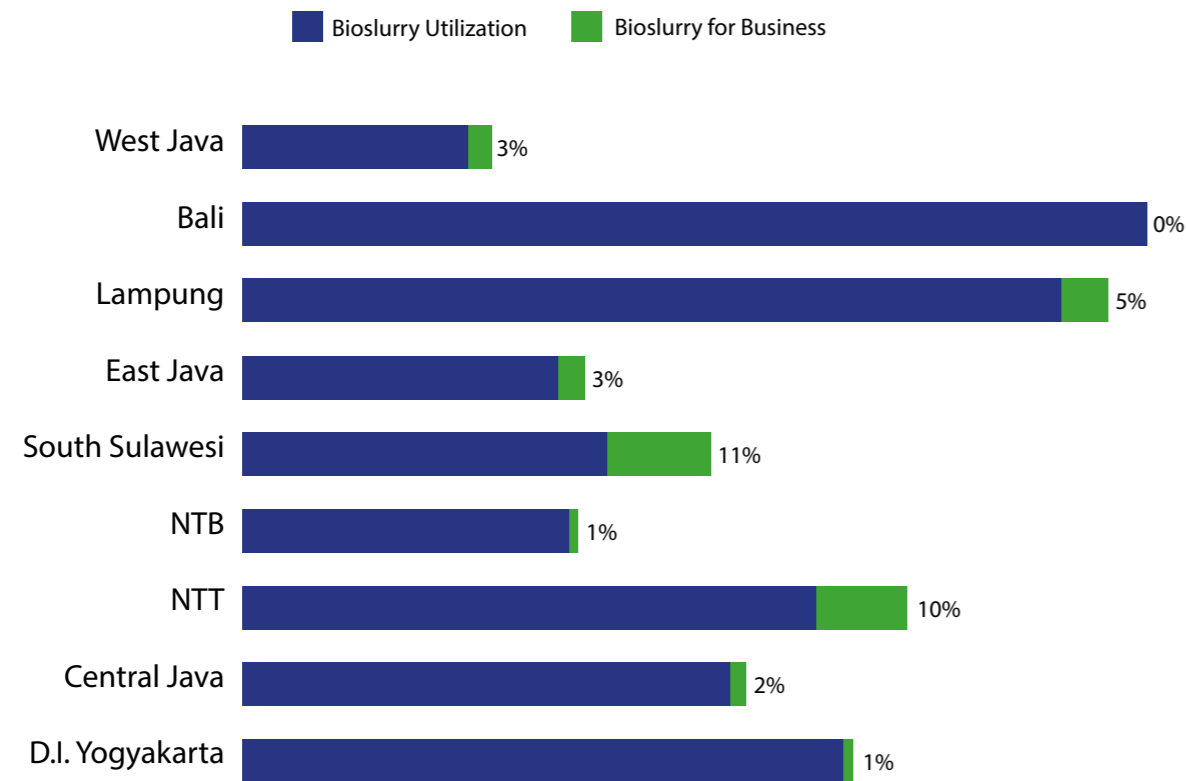


Picture 23: Percentage of user with bio-slurry utilization

The above table shows that the highest use of bio-slurry is in Bali Province (96%) while the lowest rate of slurry utilization is in West Java (24%).

The following table shows the figure for bio-slurry utilization in each province, which categorized as:

- those who apply bio-slurry for own-use, and
- those who apply bio-slurry for business purpose.



Picture 24: Percentage of user who have bio-slurry for business

7. Bio-slurry Value Creation

To increase market penetration, promotion is re-designed following users' perception. Based on the result of Biogas User Survey (BUS) in recent years, users are willing to have bio-digesters not only for access to clean cooking but also for the bio-slurry. Bio-slurry has been introduced to potential customers through its quality as an "instant" fertilizer with same quality of composted cow dung that needs longer process to be available. For commercial value, IDBP has formulated and certified the bio-slurry fertilizer. Organic certification alone is not sufficient for bio-slurry fertilizer to be commercialized. It still needs the selling permit from GoI. YRE is planning to register the solid bio-slurry fertilizer for selling permit (*Ijin Edar*) in 2019.

Bio-slurry Certification



Picture 25: Certificate Organic Fertilizer from Inoffice

No. Lab : L-0123/07/2018

Hasil Analisis Pupuk Cair Organik

Pengirim : Yayasan Rumah Energi
 Alamat : Jl. Pejaten Barat No.30A, Ragunan, Pasar Minggu, Jakarta
 Tanggal Masuk : 9 Juli 2018
 Jenis Bahan : Pupuk Cair Organik (Bio-Slurry Cair Diperkaya)
 Bentuk : Cair

No.	Parameter	Satuan	Hasil	Metode
1.	C-organik	%	1,53	Walkley & Black
2.	pH	-	6,02	Elektrometry, pH meter, (1:5)
3.	Total :			
	N	%	0,28	Kjeldahl, Titrimetry
	P ₂ O ₅	%	0,34	Oksidasi Basah, HNO ₃ + HClO ₄ , mofhidovanadat, Spectrometry
	K ₂ O	%	0,35	Oksidasi Basah, HNO ₃ + H ₂ O ₂ , AAS - Flamephotometry
4.	Asam Humat	%	0,30	Gravimetri
5.	Mikroba Fungsional*)			
	<i>Azotobacter</i> sp.	CFU/ml	1,20 x 10 ⁷	Total Plate Count (TPC)
	<i>Lactobacillus</i> sp.	CFU/ml	2,65 x 10 ⁶	Total Plate Count (TPC)
	Pelarut P	CFU/ml	1,50 x 10 ⁷	Media Pikovskaya

Picture 26: Component table of Bio-slurry



Picture 27: Packaging of Bioslurry

Bio-slurry Promotion

In 2018, bio-slurry were promoted through several strategic events including:

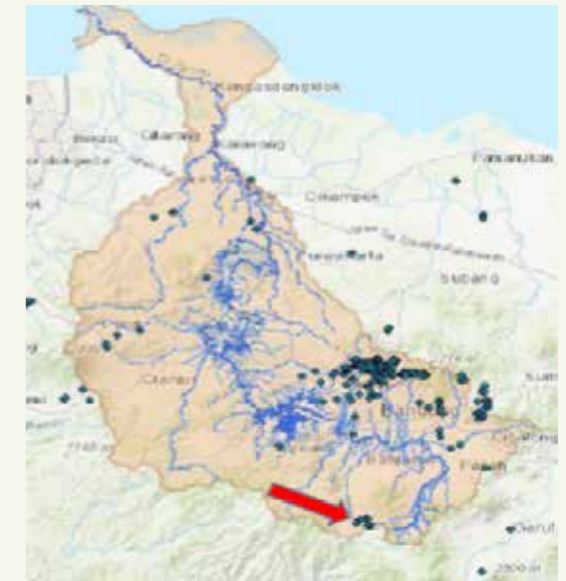
- Citarum Expo - Bandung, 19th February 2018 (exhibition)
- Bio Slurry in Adaptation to Climate Change (exhibition) - North Lombok - June 2018
- Bio Slurry in Adaptation to Climate Change (exhibition) - Jakarta, 31st of August 2018
- Hivos' 50th Anniversary – booth exhibition - Jakarta, 19th October 2018

STORY 5

Vermi-composting in Padamukti Village, West Java a Story of Bio-slurry Value Creation

Padamukti village, located in the South of Bandung, is part of villages in the other dairy centre area after Lembang in the North part of the city. Both areas are still polluting Citarum River with the cow dung waste, and PJT II main agenda is to promote the zero waste through biogas.

Farmers were granted with digesters and facilitated with skill to produce high quality fertilizer from solid and liquid bio slurry and cow dung fermentation. Vermicomposting is fit with the plan and significantly has created new jobs in Padamukti and neighboring villages.



Digesters in North and South of Bandung



STORY 6

**Gathering and Dissemination of Information and Green Knowledge
for Sustainable Integrated Farming Workforce in Indonesia
(GADING)**

GADING Project was supported by *Millennium Challenge Account - Indonesia* (MCA-I) and implemented in the provinces of NTB, NTT, West Java and D.I. Yogyakarta. The project focused on the adoption of the integrated farming and waste management systems based on the optimized use of bio-digestate and high-nutrient Lemna (duckweed) as organic fodder and fertilizer. To support adoption, the project team provided technical assistance to 835 selected beneficiaries consisting of lead farmers, women and vulnerable group and facilitated the establishment of 694 aquaculture ponds and 25 demo-plots in 4 targeted provinces.

GADING project also produced several knowledge products that consisted of 9 research reports related to bio-slurry and Lemna in collaboration with university partners; 6 learning modules on various topics (gender inclusivity for community development, bio-slurry management, bio-slurry and Lemna, organic stock fodder, aquaculture and small business planning) that were developed together with academics based on each training topics. The project ended in February 2018.



Modules produced during GADING Project

8. Gold Standard Carbon Certification

IDBP has been registered as a Voluntary Gold Standard Program of Activities in 2013. It has been found that each bio-digester reduced emissions by approximately 3.2 tonnes of CO₂e per year. Gold Standard is a well-respected carbon standard registration and verification organization set up by NGOs such as WWF in order to provide a carbon credit system for voluntary carbon emission reduction and the sustainability of projects in developing countries. Verification means a project and its design have been assessed by an independent third party. Registration means the project has been registered in a database or as a certified standard, like Gold Standard (see <https://registry.goldstandard.org/projects/details/1619>).

Obtaining carbon credits is made possible under strict standards and regulations, including the obligatory of annual monitoring of the project, emission audits and Kitchen Performance Test surveys. Hivos routinely undertakes these obligations making use of external agencies.

Since the start of the registration Hivos has received **EUR 1,338,643** of carbon credits (in 2018 the amount was **EUR 368,995**). The funds are pumped back into biogas activities and form an important part of the co-financing provided for the EnDev funds to implement the BIRU program. The majority of the funds is used to provide investment incentives to the farmers, while a minor part is used for the carbon sales activities, for monitoring, audits, consulting and various surveys (such as Biogas User Survey and Kitchen Performance Tests) and for various project costs that are not covered by EnDev or other donors.



9. Challenges & Lesson Learned

The biggest challenge in promoting demand for domestic biogas is the willingness to pay from potential customers and maximum utilization of the biogas as triggered by internal and external factors. While promoting demand, supply and enabling factors in the domestic biogas sector development, the program encounters challenges namely: LPG subsidies as most biogas users such as farmers and dairy farmers are eligible for subsidized LPG; the current concrete fix-dome price; unavailability of commercial lending partners are part of the barriers.

Since 2018, the number of new biogas development has slowed down as Government support from DAK (*Dana Alokasi Khusus*) has decreased significantly in comparison to previous years, as seen in South Sulawesi, West Nusa Tenggara and Central Java. Another factor resulting the decline in the number of achievements of the bio-digester is the series of earthquakes in West Nusa Tenggara Province during the period of mid-2018, which had an impact on the decline in funding for the biogas construction due to swift-allocation of provincial and district budget being changed for disaster response funds. The declining number of users who obtain biogas through credit scheme is caused by the lack of users who are eligible to access credit/non-bankable users and also because of the limited financial institutions that are willing to launch biogas loans owing to conventional risk assessments. The increase of raw material prices has also caused a decline in purchasing power and the desire of people to own bio-digester.

Functioning Rate

The 2018 Biogas User Survey (BUS) indicates that 88.4% functioning rate from the installations and a 3% drop due to technical issues, which is mostly caused by broken stove due to poor maintenance by users. Many problems arise due to lack of insufficient maintenance i.e.: non-replacement of broken stove, leakage on piping, non-regular cleaning on outlet, not filling the bio-digester regularly which results to non-performing biogas. Users are informed that replacement and repair are CPO's responsibility under a warranty scheme of 3 (three) years and beyond the period user has to pay with their own fund. Information about CPO contacts were written in the manual book. After several years, the manual are often lost, which makes user had difficulty to contact their CPO for repair and replacement. CPOs had also been reminded that contact number information is crucial to maintain functioning rate and was suggested to use sticker with their contact number attached to every new stove. In 2018, 9 (nine) people were trained to modify common stove into biogas stove. This skill overcome the bottleneck in stove replacement. Therefore, the next step is to establish a Biogas Service Center where users can get better access to maintenance services, spare parts and appliances.

High rate of non-technical issues this year, based on record is due to cow trading and were not yet replaced with new stock. Other reason is due to feeding problem that caused by lacking of water supply. The other technical gap to maintain high functioning rate is limited investment of CPOs for stocking spare parts and accessories including; stove, lamp, main tap, etc. To overcome this gap, IDBP is planning to focus on building the capacity of certain CPOs in high-density bio-digesters area to improve their business planning to be able to provide spare parts continuously. modifications of common stove to become biogas stove are also part of increasing functioning rate. Mitigation plan to overcome these issues: PCs are working closer with CPOs to repair damaged digester and the user must sign a statement of willingness to use the bio-digester again.



10. Way Forward

1. Focusing in selected provinces to strengthen the market development for biogas sector by establishing Biogas service center and creating value and supply chain for biogas business model.
2. Having spatial data to support analysis of potential market and to better profiling potential users as Guidance to CPOs and IDBP.
3. Policy advocacy to local governments from different angles namely: i) mandatory bio-waste management and monitoring; ii) GHG emission performance; iii) utilization of bioenergy performance iv) user profile and planning of local government biogas program v) resiliency in agriculture through the use of bio-slurry.
4. IDBP identifies the future market segment who need more affordable bio-digesters. Concrete fix dome for the last 9 years has proven its quality, in every BUS Survey, less than 5% technical problem is reported. In 2018, IDBP begun with design and prototype of more affordable bio-digester named Biomiru which is going to be launched and trained in 2019.
5. Advocacy with local and national government is still to be pursued in 2019 particularly to get support in financial access, giving example of current non-commercial loan scheme to be developed in commercial financial sector and reallocation State Budget from inefficiencies in subsidized LPG to biogas.
6. Facilitating the CSR/companies gathering to expose the biogas sector development and support needed from companies in win-win business model, that in the same time will increase sustainability of YRE who carry out the mission.
7. Continue the value creation of bio-slurry by getting trading permit and more extensive promotion as well as more collaboration with private companies.



Annex 1: IDBP Office addresses

BIRU OFFICE			
No	Province	Address	Contacts
1	Jakarta	Jl. Pejaten Barat No. 30 A Jakarta 12550	Ph : +62 21 7821090 +62 21 7821086 Fax : +62 21 7804443
2	West Java	Perum Panorama B1 Cinanjung, Tanjungsari Sumedang Jawa Barat	
3	Central Java	Jl. Diponegoro no 17 RT 005 RW 009 Karang Anom Klaten Utara 57437, Jawa Tengah	Ph / Fax : +62272-325968
4	East Java	Jl. Klampok Kasri 2F No. 39 Malang 65115	
6	West Nusa Tenggara & Bali	Graha Permata Kota Blok CA No. 72 Selagalas, Mataram, Nusa Tenggara Barat	Ph / Fax : -
7	South Sulawesi	Jl. Todopuli Raya Timur Kompleks Villa Surya Mas Blok E/03 Kel. Borong Kec. Manggala Kota Makassar - SULAWESI SELATAN	Ph / Fax : +62 411 831044
8	Lampung	Perumahan Griya Kencana Blok B8 Jl. Raden Gunawan II, Kelurahan Rajabasa Pemuka Kecamatan Rajabasa, Bandar Lampung	Ph : +62-721 8012903 +62-81218120545
9	Sumba	Jln Palapa no 31, Matawai Kecamatan Kota Waingapu - Kabupaten Sumba Timur, Nusa Tenggara Timur	Ph / Fax : 0387 61865 0387 61865

Annex 2: Construction Partner Organization

Business Type	No	CPO Name and Location	Biodigester Construction		
			2016	2017	2018
Small Medium Enterprise	1	CV. Bina Energi Mandiri Persada (Central Java)	40	74	NA*
	2	CV. Qaryah Thayyibah (Central Java)	14	4	NA
	3	CV. H&B PUTRA MANDIRI	26	6	1
	4	CV. Karsa Tekad Mandiri	13	22	6
	5	CV. Fitria Jaya Abadi	3	9	NA
	6	CV. Nur Indah Karya	49	34	10
	7	CV. PRATAMA BUTITI JAYA	96	8	NA
	8	CV. Mega Mulya	59	1	NA
	9	CV. Rezky Utama Masagena	24	135	68
	10	CV. Rehan Putra Palbon	45	2	1
	11	CV. Ritma Green Sinergy	197	23	13
	12	CV. Mitra Artha Utama	3	NA	NA
	13	CV. Mitra Bumi Abadi	62	40	23
	14	CV. Palapa Abadi	211	44	101
	15	Dewata Mason Group (Bali)	18	76	6
	16	Abadi Mason Group	0	NA	NA
	17	Boyolali Mason Group	1	NA	NA
	18	Persada Mason Group	0	6	NA
	19	Langit Biru Mason Group	38	19	1
	20	Sumber Makmur Mason Group	0	NA	NA
	21	Harapan Bersama Mason Group	25	8	7
	22	Regol Mason Group	66	4	NA
	23	Sangkareang Mason Group (NTB)	188	71	121
	24	Paroso Mason Group	81	42	9
	25	Mitra Sarana Kuba Mason Group	109	37	24
	26	Manjadda Mason Group	153	14	50
	27	Mabarakka Mason Group	13	0	13
	28	Tanjung Sari mason Group	68	13	NA
	29	Mandiri Mason Group	88	88	75
	30	Rumah Hijau Organik Mason Group	NA	27	8
	31	CV. Rizki Abadi	NA	26	26
	32	Mitra Sarana Energi (CPI)	NA	6	216
	33	Berkah Energi (CPI)	NA	NA	3
	34	Ujung Berung Mason Group	NA	NA	10
	35	Chera Mason Group	NA	NA	1
	36	Pahadang Madangu Mason Group	NA	NA	6
	37	CV. Wahana Rizki	NA	NA	138

Business Type	No	CPO Name and Location	Biodigester Construction		
			2016	2017	2018
Cooperative	38	Koperasi Andini Luhur	4	NA	NA
	39	KUD Tani Makmur	20	9	4
	40	KPSP Setia Kawan	4	NA	NA
	41	KUD Semen	15	8	4
	42	Koperasi SAE Pujon	16	42	25
	43	KUD Tani Wilis	43	45	41
	44	KUD Sri Wigati	7	NA	NA
	45	KAN Jabung	48	110	19
	46	KUD Sumber Makmur Ngantang	82	32	31
	47	KSU Bulu Saukang	82	18	2
	48	P4 Safana Cakrawala	37	2	NA
	49	UD. Bontomarannu	74	2	0
	50	KSU Faeyza Jaya Bersama	28	21	NA
	51	Koperasi Jasa Peduli Kasih	38	40	30
	52	Yayasan Manikaya Kauci	67	37	4
	53	LKM Rukun Makmur	3	NA	NA
	54	Yayasan Trukajaya	17	8	2
	55	Yayasan Suara Bhakti	3	6	1
	56	LSPI At - Tayseer	8	NA	NA
	57	Pusat Inkubasi Bisnis Usaha Kecil (Pinbuk)	602	323	106
	58	Yayasan Sion	9	21	4
59	Lembaga Pengembangan Teknologi Pedesaan (LPTP)	32	35	0	
60	Lembaga Pendidikan dan Pemberdayaan Anak Bangsa (LPPAB)	11	4	0	
61	Lembaga Pengkajian Kemasyarakatan dan Pembangunan (LPKP)	10	69	3	
62	Lembaga Pengembangan Pertanian Nahdatul Ulama (LPP-NU)	7	31	8	
63	Yayasan Lembaga Pembinaan Masyarakat Desa (YLPMDD)	9	12	10	
64	Yayasan Mitra Membangun Masyarakat Sejahtera (YM3S)	139	NA	NA	
65	Yayasan Sumberdaya dan Lingkungan untuk Pelestarian Pembangunan (YSLPP)	205	120	0	
66	Yayasan Forum Perempuan Sumba (Foremba)	6	NA	NA	
67	Yayasan Harapan Sumba	47	99	0	
68	Lembaga Sosial Waimaringi	70	223	36	
69	Yayasan Kontak Indonesia	32	31	31	
70	Yayasan Petta Haji Hasbullah	40	36	50	
71	Yayasan Prakarsa Swadaya Masyarakat (YPSM)	2	2	NA	
72	Yayasan Sastra Loka Samgraha	36	34	22	
73	MPM Muhammadiyah Luwu Timur	NA	37	NA	
		Total number of CPOs in the agreement with IDBP	64	57	50
		Total Number of bio-digester built by all CPOs	3543	2296	1370

*NA = No Agreement with IDBP in that year

Annex 3: List of Socialization and Awareness Meetings in 2018

Month	Socialization/Awareness Meeting	Organizer
January	-Focus Group Discussion "Citarum Harum" Program in Pangalengan with Koperasi Peternak Bandung Selatan and Energy and Mineral Resources Office of West Java	PBPO –West Java and Bandung Farmers' Cooperative
	-Discussion on Credit scheme for biogas	NBPSO - Inkopdit
	- Hivos Learning event (Domestic Biogas exhibition)	NBPSO - Jakarta
	- Socialization to member of PKMS, Ngronggot Nganjuk	CV MBA (CPO)
	-Monthly Routine socialization to members	KAN Jabung
February	- Socialization in Bumi Mas Village, East Lampung	PBPO – Lampung
	- BIRU Exhibition at Koperasi Peternak Sapi Saluyu, Kuningan, West Java	PBPO West Java
	- Exhibition of livestock waste management in "Citarum Harum" Program	PBPO – West Java and PJT II
March	- International Symposium on Eco City Bogor	NPBSO - Jakarta
	- Exhibition in Energy and Mineral Resources Office of West Java	PBPO – West Java
	- Socialization to farmer group of Puspa Mekar Cooperative	PBPO – West Java
	- Socialization to candidat user in Pangalengan, West Java	PBPO – West Java
	- Social Accountability in SDGs Implementation, Oxfam Jakarta	NPBSO - Jakarta
	-Socialization to community of Priest Paroki Manola	PBPO – Sumba
April	- BIRU Learning Event in South Sulawesi	PBPO – Makassar
	- Development of Business Model of Renewable Energy (Biogas) for Direktorat General Pengembangan Desa Tertinggal	NBPSO – Jakarta
	- Guest Lecture at University of Indonesia - "Kesejahteraan Sosial dan Isu Lingkungan Hidup"	NPBSO – Jakarta
	- Socialization at Zeni Kodam III Siliwangi, Bandung	PBPO – West Jaav
	- Bio Energy Workshop Green Win in Bali	PBPO – Bali
May	- Focus Group Discussion at Bappenas	NBPSO – Sure.co
	- Focus Group Discussion with Ministry of Energy, Resources and Mineral to prepare medium-term development plans	NBPSO – Hivos
	- Bioenergy goes to campus, Agriculture Faculty, University of Syiah Kuala Banda Aceh	PBPO – Makassar
	- Socialization to community in Pucak Village, Maros	PBPO- Makassar
	- Socialization at Environmental office in Maros	PBPO – Makassar
June	<i>(no activity due to Eid-Fitr festive holiday season)</i>	
July	- Socialization to Plaga Village, Bali with PPLH & Aqua Mambal	PBPO – Bali
	- Socialization to Bambu Village, Bali	PBPO – Bali
	- Socialization to Bongkasa Pertiwi with BUMDes Mandala Sari	PBPO – Bali
	- Socialization BIRU Program in Lampung with Kopdit	NBPSO - Credit Union
	- Socialization to Kawat Village, Pugung Rejo, East Lampung	Credit Union
	- Renewable Energy Development - ICARE event	I-CARE - NBPSO Jakarta
	- Socialization with Puskopdit in Maumere	Puskopdit Maumere
	-Meeting with Head of Unit of Environment Disaster Protection and Prevention and Head of Office of Waste Management - Malang	PBPO – East java
August	- ICCTF Event Lombok - Bioslurry in adoption to Climate Change	NBPSO
	- Socialization to Politeknik Energi dan Mineral AK Migas, Klaten, Central java	PBPO – Klaten
	- Exhibition with ACICIS in Gajahmada University, D.I. Yogyakarta	PBPO –Klaten
	- Socialization to Habitat Jakarta	NPBSO - Jakarta
	- Socialization to community in Cipari with PT. Ultrajaya and RBF	PBPO – West Java
	- Socialization toKutuh, Kuta Selatan, Bali	PBPO – Bali
	- Socialization to Baturiti with CPO Yayasan Manikaya Kauci, Bali	PBPO – Bali

Month	Socialization/Awareness Meeting	Organizer
September	- Socialization to Kelusa with CPO Yayasan Manikaya Kauci, Bali	PBPO – Bali
	- Socialization to Geluntung, Bali	PBPO – Bali
	- Socialization to Sengkidu, Karangasem, Bali	PBPO – Bali
	-Socialization of Biogas within other NGO within SPADU (Joint Secretariat) Sumba Barat Daya	PBPO – Sumba + SPADU
	-Socializaion in the Social Entrepreneur workshop - Kupang	Plan International
October	- EU Circular Economy Mission to Indonesia, Jakarta	NPBSO – Jakarta
	- Socialization to Sukadamai Village, Natar, South Lampung	PBPO – Lampjng
	- Socialization to Dawan Klungkung, Bali	PBPO – Bali
	- Socialization to Kediri, tabanan, Bali	PBPO – Bali
	- Socialization to Bedulu, Gianyar, Bali	PBPO – Bali
	- Socialization to Senganan, Tabanan, Bali	PBPO – Bali
	- Socialization to Jambi University, Agriculture Faculty	PBPO – West Java – DGNREEC - MEMR
	- Socialization to EnvironmentalEnvironmental Agency in Jambi	NPBSO – Jakarta
	- Socialization to Sumbawa, NTB	PBPO – NTBB
November	- Socialization to Pejeng, Gianyar, Bali	
	- Socialization to Bebandem, Karangasem, Bali	PBPO – Bali
	- Socialization to Pengotan, Bali	PBPO - Bali
	- Youth Speak League - Renewable Energy Education - Pari Island with WALHI	NPBSO – Jakarta
	- Socialization of Bioslurry Utilization in Kupang, NTT	PBPO – Central Java
	- Socialization to Pertahanan University, Jonggol, West Java	PBPO – West Java
	- Editorial Meeting with 18 editor from 10 provinces in Jakarta	NPBSO – Jakarta
	- Socialization of Bio Energy through Biogas, Budi Luhur University	NPBO - Jakarta
December	- UN ESCAP - Energy Transition Ashley Hotel	NPBSO - Jakarta
	- Socialization to Klaten District Government	PBPO – Klaten
	- Socialization to Seksi energy, Bali	PBPO - Bali
	- Socialization to Tejakula Buleleng, Bali	PBPO- Bali
	- Socialization to Banjarangkang, Klungkung, Bali	PBPO - Bali
	- Focus Group Discussion Cow dung management for Biogas and business development – Bapeda West Java	YRE – PJT II
	- Socialization to Mangesta, Tabanan, Bali	PBPO – Bali
	-Focus Group Discussion/FGD KLHSS RPJMD East Java 2019	Bappeda – East Java Province

Annex 4: List of Consultation Meetings with Local and National Government

Date	Province	Description
11 July 2018	D.I. Yogyakarta	Coordination Meeting with Energy, Resources and Mineral Agency for preparation biogas construction.
25 September 2018	D.I. Yogyakarta	Coordination Meeting with Energy, Resources and Mineral Agency for planning biogas construction in 2018
24 October 2018	D.I. Yogyakarta	Coordination Meeting with Energy, Resources and Mineral Agency
30 October 2018	D.I. Yogyakarta	Meeting with Energy, Resources and Mineral Agency and CV. Duta Sukma as tender winner
12 December 2018	Central Java	Coordination Meeting for General Regional Energy Plan
21 March 2018	NTT	Coordination Meeting with Kataka Village local Government, East Sumba
7 February 2018	South Sulawesi	Coordination Meeting with Dinas ESDM dan Bappeda in South Sulawesi
14 May 2018	South Sulawesi	Coordination Meeting with Dinas ESDM dan Bappeda in South Sulawesi
7 September 2018	South Sulawesi	Evaluation Meeting BIRU Programme in South Sulawesi
19 November 2018	NTB	Coordination meeting with Dinas ESDM NTB Province
11 October 2018	Bogor	BIRU Workshop with Ministry of Energy Mineral Resources, Bappenas, Ministry of Cooperative and Small Medium Enterprise, also Ministry of Agriculture and Environmental Ministry.

Annex 5: Media Publications after Editorial Meeting in November 2018

Ekonomi

PEMANFAATAN BIOGAS MASIH MINIM

ENERGI TERBARUKAN

Pemanfaatan Biogas Masih Minim

Oleh **ARIS PRASETYO** 21 November 2018

JAKARTA, KOMPAS — Pemanfaatan biogas untuk rumah tangga di Indonesia masih lambat dan butuh dukungan banyak pihak untuk pengembangan. Sejak 2015, target yang ditetapkan dalam Rencana Umum Energi Nasional atau RUEN belum pernah bisa dicapai. Banyak kendala dalam upaya mengoptimalkan biogas di [...]

TERPOPULER

1. Situasi di Petamburan Kondusif, Jalan KS Tuban Masih Ditutup
2. Aparat Masih Berjaga di Sekitar Bawatu

<https://kompas.id/baca/utama/2018/11/21/pemanfaatan-biogas-masih-minim/>

BALIPOST PORTAL BERITA

NEWS | BALI | PERISTIWA | POLITIK | HUKUM | SOSBUD | EKONOMI | PENDIDIKAN | PARIWISATA | GAYA | MULTIMEDIA | OPINI

FOKUS PADA BISNIS BUKAN WIFI ANDA

Ekonomi > BIRU Bangun 1.196 Reaktor Biogas di Bali

BALI | EKONOMI | MIKRO | NASIONAL | PERISTIWA

BIRU BANGUN 1.196 REAKTOR BIOGAS DI BALI

Senin, 19 November 2018 | 16:29:21

<http://www.balipost.com/news/2018/11/19/61644/BIRU-Bangun-1.196-Reaktor-Biogas...html>

Editors Meeting (1) : BIRU Targetkan Bangun 100 Ribu Reaktor Biogas

Senin, 19 November 2018 | 11:38

70

berita populer



Dukung Papua, Indonesia Cari Dukungan Negara-negara Pasific

JAKARTA. Para mitra program Biogas Rumah (BIRU) hingga September 2018 sudah membangun 23.079 unit reaktor biogas yang tersebar di 10 provinsi, dan di Provinsi Bali sendiri saat ini sudah terbangun 1.196 reaktor biogas. "Untuk menciptakan pasar biogas rumah, dan berkontribusi terhadap bauran energi terbarukan dengan lebih signifikan, Rumah Energi mentargetkan 100,000 digester melalui program Biogas Rumah," kata Executive Director of Rumah Energi Lina M. Moeis saat Editor Meeting di Jakarta, Senin (19/11).

<https://bisnisjakarta.co.id/2018/11/19/editors-meeting-1-biru-targetkan-bangun-100-ribu-reaktor-biogas/>

Editors Meeting (2-habis) : Membangun Ketahanan Energi Dengan Biogas

Selasa, 20 November 2018 | 10:36

55

berita populer



Dukung Papua, Indonesia Cari Dukungan Negara-negara Pasific



Ayla Turbo, Sporty & amp; Racy



Anggota DPRD Sumatera Utara Analisman Zalukhu Diperiksa KPK



Kiai Nasihin Jadi Guru Mursyid Sejak Usia 15 Tahun



Bergejolak, Partai Hanura Kini Anggap Wiranto Bagian dari Masalah



JAKARTA (Bisnis Jakarta)-

Mengurangi ketergantungan terhadap energi bahan bakar konvensional dapat dilakukan dengan memanfaatkan energi baru terbarukan (EBT) rumahan. Salah satunya, mengembangkan teknologi Biogas Rumah (BIRU). "BIRU merupakan salah satu sumber EBT yang ramah lingkungan dan berkelanjutan ditujukan kepada masyarakat lokal melalui pengembangan sektor yang mandiri dan berorientasi pasar," kata Direktur Bioenergi Ditjen EBTKE Kementerian ESDM Andriah Feby Misna saat Editor Meeting di Jakarta, Senin (19/11). Editor Meeting membicarakan upaya mendorong peran sektor biogas rumah dalam pembangunan ekonomi masyarakat. Pembicara lainnya Executive Director of Rumah Energi Lina M. Moeis Technical Specialist Rumah Energi Agung Lenggono, dan CEO of Perum Jasa Tirta II Djoko Saputro.

<https://bisnisjakarta.co.id/2018/11/20/editors-meeting-2-habis-membangun-ketahanan-energi-dengan- biogas/>



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