FINAL REPORT
INDONESIA DOMESTIC BIOGAS PROGRAMME

May 2009 - December 2013

BIRU
biogas rumah

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Activity Number: 19565

02 May 2014

Foreword

From May 2009 until December 2013, the Indonesian government has received support from the Dutch Embassy through the Indonesia Domestic Biogas Programme (IDBP), which is implemented by Hivos in cooperation with SNV and a large number of local partner organizations. The IDBP, more popularly called the BIRU (Bogas Rumah) programme, was undertaken in close cooperation with Directorate General of New Renewable Energy and Energy Conservation, Ministry of Energy and Mineral Resources of the Republic of Indonesia. The programme was appreciated by the Directorate General of New Renewable Energy and Energy Conservation because it highly responds to the mandate of this directorate to enhance the use of bioenergy, amongst others through the application of biogas installations for rural households.

The government of Indonesia acknowledges that the (semi-)market-based approach of having biogas users pay for biogas construction and services, in combination with the use of an investment incentive as applied under the BIRU programme, is an approach which leads to the construction of durable, high-quality digesters and commitment of farmers to use the digesters for a long time, contributing to lower use of fossil fuels, reduction of CO2e emissions and a more efficient use of the natural environment on a sustainable basis. User satisfaction is high as shown in the annual user surveys and government field surveys have confirmed that the digesters are of high quality, thanks to proper training of certified masons and intensive quality monitoring by the BIRU teams in the regions.

Hivos, together with its partners, local governments and the newly established local foundation Yayasan Rumah Energi (YRE), have managed to construct 11,249 digesters in nine provinces of Indonesia. There is scope for many more systems. It is the reason for the Directorate to allocate funds from government budget to realize more digesters, while other donors have chipped in to continue activities beyond the program period set by the Dutch Embassy. ENDEV (Energizing Development, implemented by GIZ), has made continuation of the programme possible and recently the Norway Embassy has also made funds available to upscale the activities.

The Dutch funding has come to an end by the end of 2013. The Directorate General of New Renewable Energy and Energy Conservation would like to express its gratitude to the Dutch Embassy for providing the funds which functioned as pioneering funds to develop the biogas sector, stimulating both demand and supply of biogas construction and services, providing training to over 1,000 people and biogas expertise among construction organizations as well as within the government. The programme has impacted the quality of the lives of many biogas users and has created a real economic sector and a considerable number of jobs in the renewable energy environment.

We also would like to thank Hivos and SNV for their excellent role in disseminating domestic biogas in Indonesia. We believe that the considerable number of digesters built under the BIRU programme to date are only a beginning and that many more rural households will enjoy the benefits of using their own biogas digesters.

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Directorate General of New Renewable Energy and Energy Conservation
Ministry of Energy and Mineral Resources of the Republic of Indonesia

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Abbreviations

ADB	Asian Development Bank
ASS	After Sales Services (resulting in partner inspection reports)
BAPPEDA	Regional Planning Bureau
BIRU	Biogas Rumah (domestic biogas)
BNI	Bank Negara Indonesia (Indonesian State Bank)
BSM	Bank Syariah Mandiri
BSNI	National Standardization Agency of Indonesia
CER	Certified Emission Reduction
CLP	Climate Leadership Programme
CPO	Construction Partner Organization
CSR	Corporate Social Responsibility
DAK	Dana Alokasi Khusus (Specific Allocation Fund)
DGNREEC	Directorate General of New Renewable Energy and Electricity Conservation
DOE	Designated Operational Entity
ENDEV	Energizing Development
EUR	Euro
FACET	Finance for Access to Clean Energy Technologies in South and Southeast Asia
GIZ	Gesellschaft für Internazionale Zusammenarbeit (Agency for International Cooperation
Hivos	Humanistic Institute for Cooperation with Developing Countries
IDBP	Indonesia Domestic Biogas Programme
INSTIPER	Institut Pertanian (Agricultural Institute)
IOB	Policy and Operations Evaluation Department of the Netherlands, Ministry of Foreign Affairs
LPO	Lending Partner Organization
MDG	Millennium Development Goals
MEMR	Ministry of Energy and Mineral Resources
MFI	Micro Finance Institution
NBPSO	National Biogas Programme Support Office
NGO	Non-Governmental Organization
NTB	Nusa Tenggara Barat (province)
NTT	Nusa Tenggara Timur (province)
OEW	Op Eigen Wieken
PBPO	Provincial Biogas Programme Office
PC	Provincial Coordinator

PoA	Programme of Activities (bundled carbon credit programme)
QI	Quality Inspector
RBF	RABO Bank Foundation
RNE	Royal Netherlands Embassy
R&D	Research & Development
SME	Small and Medium Enterprise
SNI	Standar Nasional Indonesia (Indonesian National Standard)
SNV	Netherlands Development Organization
SOG	Standard Operating Guidelines
TOT	Training of Trainers
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
VER	Voluntary Emissions Reductions

Output Summary

Programme period : 15 May 2009 - 31 December 2013 (including 12 months extension)

As from 1 January 2013 activities in East Java were funded through ENDEV, these ENDEV outputs and those of other donors (OEW, GoI) are highlighted separately.

No.	Activities	Achievement	Remarks/target
1	No of plants constructed	• Total from 2009 – 2013: 11,249 units • Total units built in 2013: 3,266 units, of which under ENDEV: 914 units (target: 1,500). • Total number of bio-digesters built outside Java: 3,249 units (target: 2,000 units)	Exceeding original minimum target of 8,000 units by 41% (including ENDEV) or 29% (excluding ENDEV)
2	No of masons trained	• 867 masons and 163 supervisors = 1,130 training participants. • 2013: 192 new masons and 39 new supervisors.	• Minimum number of trainees required according to proposal: 469 masons and 78 supervisors. • Output: masons 185%, supervisors 209%
3	User training organized	• Regular User training: 8,841 users • 2013: 3,845 users consisting of 717 female participants and 3,128 male participants	User training and bio-slurry training are mostly combined in one training session, but not in all cases.
4	External training and workshop participation	**2009:** • Renewable Energy Conference (Aug) • SNV Biogas Conference Nepal Nov) • TOT TEDC (Nov) • Joint Energy Working Group (Dec) **2010:** • SNV Biogas Workshop Thailand **2011:** • Management Skills training for Programme Development Ofcer (March-April) • International Biogas Training in China for 2 Quality Inspectors • Climate Leadership Programme for Programme Development Ofcer • SNV International biogas workshop (Nov)	

No.	Activities	Achievement	Remarks/target
4	External training and workshop participation	**2012:** • MDF management training for Provincial Coordinators (April) • International biogas training and workshop at Kunming University, China (July-Aug) • Biogas management training in Pathumtani, Thailand for 2 staf (Aug) • National Carbon Scheme Workshop by National Council for Climate Change, Jakarta (Nov) • Gender meeting at MEMR, Jakarta (Nov) • Project Results Framework Workshop by GEF, UNDP in Dili, TL (Nov) • Training Health and Safety with Kemenakertrans (Nov) • Workshop and meetings on SNI for Fixed Dome and SNI for Biogas utilization/installation • Climate Leadership Programme for 1 staf (Nov-Dec) **2013:** • GIZ Climate Leadership Programme – Alumni meeting (Jakarta, 15-17 March 2013) • Energy Access Practitioner Network (Phnom Penh, 16-18 March 2013) • GIZ: CLP presentation at Deutsche Welle 60th Anniversary (Bonn, 16-20 June 2013) • Nexus Annual General Meeting (Singapore, 11-14 July 2013) • WWF: presentation on Financing for Renewable Energy projects (Jakarta, 22 July 2013) • Green Entrepreneurship, Hivos, 2-9 June 2013 • Mid-term Development Planning Consultation for Central Java Province, (Semarang, 25-26 September 2013)	
5	No of promotion activities	Total activities from 2009-2012: **2009-2010:** • New BIRU Programme brochure (English) • BIRU marketing brochure • 4 exhibitions at national level • 4 exhibitions at regional level • 37 presentations to government • 40 presentations to potential partners • 65 community meetings • Over 50 media coverage items • 2 BIRU flms • BIRU website developed	

No.	Activities	Achievement	Remarks/target
5	No of promotion activities	**2011:** • Programme Profile brochure • Calendar • Pen • Maquette (10 units for regional ofces) • Marketing brochures and posters • Bio-slurry brochure • BIRU promotion fipchart (awareness meetings) • BIRU user training fipchart • Biogas construction flm • Bio-slurry utilization flm • BIRU bulletin • Upgraded website, Facebook and Twitter account. • Events 2011: • 7 national exhibitions • 10 regional exhibitions • 11 presentations to potential partners • 249 community meetings **2012:** • Programme profle brochure • Calendar • Marketing brochures and posters • Bio-slurry brochure • BIRU bulletin • Upgraded website, Facebook and Twitter • 2012 event: • 14 regional exhibitions (Salatiga, Bali, Tulungagung, Jember, Pujon, Garut Selatan/Bandung, Cibodas, Soreang, Ciamis, Garut, Bandung, Sumedang, Karawang and Lombok. • 2 national exhibitions (EBTKE and Min of Social Afairs) **2013:** • 160 community meetings • 11 presentations to potential partners • 7 exhibitions at national level • 10 exhibitions at provincial level	
6	No of coordination meeting with government	**2009-2010:** • National meetings: 6 times • Regional Meetings in 7 provinces: 14 times **2011:** • MEMR and BIRU workshop, Sukoharjo (Feb) • Endorsement workshop Makassar (Mar) • Biogas implementation Evaluation workshop by MEMR in Yogyakarta (Sept) • Biogas implementation Evaluation workshop by MEMR in Malang (Oct) • Joint Energy Working Group Solo (Dec)	Advisory Committee meetings in March/ April and Sept/ October every year. Provincial stakeholder consultation meetings usually one month later (for planning in Sept/Oct and for evaluation in April/May).

No.	Activities	Achievement	Remarks/target
6	No of coordination meeting with government	**Total 2013:** • Regular coordination meetings with DGNREEC (monthly on average) • Advisory Committee meeting biannually • Eighteen local stakeholder consultation meetings in 9 provinces.	
7	No of internal workshops/ meetings organized	**2009:** • Bio-digester design (June) • Partner Capacity building (Sept, Oct) **2010:** • Endorsement workshop Malang/Solo (April) • Endorsement workshop Bandung (May) • Partner induction workshop (April) • Partner workplan meeting (June) • Partner coordination meeting (Sept) • Quality Inspection workshop (April/Oct) • Endorsement workshop NTB/Bali (Dec) **2011:** • BIRU programme meeting, Bandung (April) • Provincial Coordinator meeting Jakarta (Aug) • Gender workshops in 6 provinces (Oct) • Gender strategy workshop (Dec) • Gender expert meeting (Dec) • Quality Inspection meeting (2x) • Stakeholder workshops in Bandung, Solo, Malang and Bali (Oct-Nov) **2012:** • IDBP introductioin for CPOs (April) • TOT user training (May) • QI refresher training • Duckweed for biogas training (Sept) **2013:** • Partners' Management training in 7 provinces • Malang, East Java, 17-18 April 2013 • Solo, Central Java, 23-24 April 2013 • Metro, Lampung, 2-3 May 2013 • Mataram, NTB, 16-17 May 2013 • Bandung, West Java, 22-23 May 2013 • Denpasar, Bali, 6-7 June 2013 • Makassar, South Sulawesi, 12-13 June 2013 • BSM-FACET loan awareness meetings in 8 provinces • Denpasar, Bali, 8 June 2013 • Makassar, South Sulawesi, 11 June 2013 • Solo, Central Java, 17 June 2013 • Yogyakarta, 18 June 2013 • Bandar Lampung, Lampung, 27 June 2013	

No.	Activities	Achievement	Remarks/target
7	No of internal workshops/ meetings organized	• Bandung, West Java, 2 July 2013 • Malang, East Java, 5 September 2013 • Mataram, NTB, 12 September 2013 • 1 Provincial Coordinator meeting in August 2013 in Jakarta • 1 Technical meeting for Quality Inspectors for Kitchen Performance Test training in Malang, October 2013 • 1 Promotion meetings in December 2013 in Jakarta	
8	No of external workshops organized	**2012:** • Local Stakeholders Consultation meeting for Gold Standard VERs (Feb) • IDBP meeting with potential partners Lampung (Sept) • Endorsement workshop in Bandar Lampung (Oct) • First partner meeting Lampung (Oct) **2013:** • Socialization meeting on Specially Allocated Funds of DGNREEC (Mataram, 14 February 2013)	
9	No of plants inspected by CPOs (ASS = maintenance reports)	• Total maintenance from 2010-2012: 2,899 units • Total maintenance 2013: 7,042 • Overall: 9,941 maintenance reports (88%)	Most of the inspections have taken place in 2013. Yayasan Rumah Energi will continue to undertake these inspections.
10	No of plants inspected by BIRU staf (during construction, after construction and after ASS = After Sales Service)	Overall: 4,892 inspections • 476 inspections during construction • 4,416 inspections after construction (3,477 plants already received After Sales Service/ASS) **2013:** 1,381 inspections • 168 inspections during construction • 1,213 inspections after construction (646 plants already received ASS)	Coverage: 45% of 9,288 (target at least 27%). Still more post-ASS inspections needed, to ensure that After Sales Services are done in a proper and honest way. BIRU has identifed 80 non- or bad-performing digesters (around 1% of the total) which will get special attention. YRE will follow up as necessary.
11	Subsidy disbursed	Euro 1,662,561 (1,500,677 from RNE and 161,884 from OEW) for 11,249 plants = Euro 148 per plant. **2013:** Euro 355,877 (337,768 from RNE and 18,109 from OEW).	Average amount in Euro.

No.	Activities	Achievement	Remarks/target
12	No of construction partners	52 CPOs and 9 Mason Groups **2013:** 19 new construction partners, 8 new Mason Groups, 21 construction partners pruned and 4 Mason Groups discontinued.	Planned: 30
13	No of cooperatives involved	Total: 48 **2013:** 4 new cooperatives	Ca. 15 cooperatives are also Construction Partner Organizations (CPO).
14	Number of provinces, districts and sub-districts	9 provinces (West Java, Central Java, East Java and DIY, NTB, Bali, South Sulawesi, Sumba-NTT and Lampung): 103 districts, 568 sub-districts. **2013:** 24 new districts, 101 new sub-districts	
15	Bio-slurry activities	**2009-2010:** • Production of bio-slurry management manual for user and for supervisors, pilot training undertaken. **2011:** • Demo-plots (33). • Updated bio-slurry management manual and pilot training • Bio-slurry as fodder analysis in Brawijaya University (March 2011). • King Grass nutrients analysis in Brawijaya University (May 2011). • Bio-slurry nutrients analysis in Jember University (July 2011). • Field research cooperation with Mataram University (November 2011). • Bio-slurry microbes analysis in Jember University (December 2011). **2012:** • Revision of bio-slurry utilization manuals • 2,500 people trained • TOT bio-slurry for supervisors • Demoplots (4) • Bio-slurry larvae analysis in Mataram University (January 2012). • Bio-slurry nutrients analysis in Brawijaya University, Malang (April 2012). • Water drain analysis in Jasa Tirta I and Brawijaya University in Malang (April 2012). • Bio-slurry seminar at UPN Veteran, Surabaya (November 2012 • Development and testing of tools to check quality and efect of solid and liquid bio-slurry as organic fertilizer. • Planning Meeting of Bio-slurry in Solo (December 2012)	Knowing the market potential and identifed kind of product of bio-slurry as organic fertilizer.

No.	Activities	Achievement	Remarks/target
15	Bio-slurry activities	**2013:** • Feasibility study of bio-slurry business with GE Programme-Hivos (April 2013) • Vermin compost Analysis in Padjajaran University, Bandung (June 2013). • Water Hyacinth (Eceng Gondok) Analysis in Gadjah Mada University (September 2013). • Fish Pond Water Quality Analysis in Mataram University (November 2013). • Bio-slurry training for INSTIPER's lecturer as a part of Curriculum Cooperation (October 2013). • Demo-plot (15). • Bio-slurry User Training: total 8,643 users trained, consists of 4,029 female and 4,614 male participants	To support the women farmer group of BIRU's users to develop vermicompost business
16	MFI development	Total ofcial partners for credit facility: 2, Rabobank Foundation and Nestle. Total credit disbursed by Rabobank Foundation from 2009-2013: IDR 3,787,498,000 for 860 farmers in West Java and Central Java. Total credit disbursed by Nestle from 2009-2013 IDR 22,068,247,512 for 4,890 users in East Java. Overall: Rabobank Foundation: credit available for farmers in West Java. Until the end of 2013, 860 farmers accessed the loans, a total of IDR 3,787,498,000. More cooperatives managed to establish the loan product in West Java (1, KPGS) and 2 cooperatives in Central Java are in the process of obtaining this loans (Koperasi Andini and Koperasi Ngudi Luhur). FACET subsidizes interest rate for the biogas loans so that farmers will be able to obtain a loan with 9% interest p.a. IDBP partners in Bali, South Sulawesi, Lampung, Bandung and Solo were invited to an awareness meeting about this loan product. In mid 2013, IDBP met Kiva in Singapore and afterward facilitated one partner in Yogyakarta to apply to Kiva. In January 2014, six selected partners from six provinces (Lampung, West Java, East Java, D.I. Yogyakarta, Central Java and South Sulawesi) were invited to a one-day workshop with Kiva in Jakarta. A direct partnership between Kiva, Hivos and YRE is currently being explored.	There are still concerns regarding the low access to credit. Eforts to recruit dedicated MFI specialist failed. Cooperation with RABO Bank now being intensifed with bright outlook for a number of new partners in West and Central Java. Credit in many other areas still a challenge, especially for individual farmers and farmer groups. Partnership with commercial bank imposes strict eligibility criteria for both IDBP partners and the farmers themselves. Crowd funding, such as one implemented by Kiva, provides more fexibility in repayment terms thus giving more opportunity for farmers to obtain biogas.

No.	Activities	Achievement	Remarks/target
17	No and % of households using credit	6,730 of 11,249 (60%) using credit at a total amount of ca. EUR 2,242,238 plus credit fnancing cost of ca. EUR 6,500	Total household investment is EUR 3,481,432. Interest rates varying from 0 to 1.5% per month.
18	Knowledge exchange	Total activities from 2009-2012: **2010:** • Communication Officer to Africa Biogas Partnership Programme for Gender Main-streaming meeting in Africa • Programme Manager to German for biogas training course • Biogas Technical Officer to China for training course • Programme Manager to 15th Indonesia-Netherlands JEWG in Amsterdam • Programme Manager to CASINDO meeting Makassar • Technical Advisor to international Technical Working Group, Jakarta. **2011:** • Programme Development Ofcer to management training in Bali (March) • Two biogas Technical Ofcers to China for biogas training (July-Aug) • Programme Manager at Green Entrepreneurs-meeting, The Hague (July) • BIRU team attending 16th Indonesia-Netherlands Joint Energy Working Group meeting in Solo (Oct) • Celebration of 4,000th digester, Bandung (Nov) **2012:** • Renewable Energy Conference and Exhibition, Jakarta (July) • Health and Business Roundtable Indonesia discussion, Jakarta (July) **2013:** • Involvement in reviewing the draft of Indonesian National Standards (environmental standards) for the fxed-dome bio-digester at the DGNREEC (two meetings) • Four presentations for IDBP experiences in the carbon mechanism process: • Presentation at Nexus Annual General Meeting in Singapore on 12 and 13 July 2013. • Energy Access Practitioner Network, Cambodia, 16-18 March 2013, • WWF meeting in Jakarta, 22 July 2013 • WWF meeting in Jayapura, Papua, 22 September 2013. • IDBP also gave two presentations for the government on the financing schemes in February and March 2013.	

1. Introduction

This is the Final Report of the Indonesia Domestic Biogas Programme (IDBP), funded by the Royal Netherlands Embassy (RNE) and implemented by Hivos with assistance from SNV, which started on 15 May 2009 and ran under a contribution agreement with the embassy until 31 December 2013 (including a one year budget-neutral extension) and with endorsement from the Indonesian Directorate Bio-Energy (Directorate General New Renewable Energy and Energy Conservation, Ministry of Energy and Mineral Resources).

This Final Report describes the activities undertaken from 15 May 2009 until the end of the programme period with special attention for the achievements gained during 2013. All documents produced during this programme (both soft and hard copies) have been compiled and the hard copies can be made available at the request of the Embassy.

In addition to the funding from the Netherlands Embassy, the IDBP received funds from other donors:

a. Since 2010 the IDBP receives funding from the Netherlands organization 'Op Eigen Wieken' especially for the investment subsidy component of the programme;

b. The Indonesian Bank BNI has funded investment subsidies for digesters in Sumba under the Iconic Island programme of Hivos to the amount of around 16,000 Euro. Other organizations, including Sawadee and Blof in Holland have also contributed to bio-digester construction in Sumba;

c. Since February 2013 the programme receives funds through the ENDEV (Energizing Development) Programme, which is undertaken by GIZ in cooperation with Agency NL and with funding from a group of donors including Australia, the United Kingdom, the Netherlands, Norway and Switzerland;

d. Since December 2013 the Norway Embassy has made EUR 332,500 available for the construction of 400 additional digesters;

e. The Indonesian government has committed funds to support the cooperation under the ENDEV programme to the amount of 395,000 EUR and has also allocated funds for coordination and regional biogas initiatives using the BIRU standard as guidelines for biogas development.

The funds of these various donors have tremendously contributed to the development of the biogas sector in Indonesia and a renewed and more intensive interest in biogas as a renewable source if energy since 2009. Herewith these donors also contributed to the Millennium Development Goals as stated in the IDBP proposal, especially MDG 1, 3, 4, 6 and 7[1].

Image 1: A signboard of BIRU in Sumba, NTT.

1 Programme Proposal, 6 April 2009, Indonesia Domestic Biogas Programme, Hivos.

2. Programme Objectives

Overall Objective

The IDBP proposal presents its overall objective as follows: "*The Indonesia Domestic Biogas Programme aims to disseminate domestic bio-digesters as a local, sustainable energy source through the development of a commercial, market oriented sector in selected Indonesian provinces.*"This means that the project not only intends to construct bio-digesters in order to provide clean energy and improved living condition for households, but also to develop a sustainable domestic biogas sector in Indonesia which also leads to job creation and a new biogas business sector (contractors, masons, training institutions, input suppliers). Sector development implies the close cooperation of all relevant stakeholders (Government, Non-Government and private sector) in the sector at all levels and that those stakeholders are sufficiently equipped to fulfil the necessary functions. An overview of the specific objectives and their respective output indicators are presented below.

Specific Objective and Output Indicators

To support implementation of provincial biogas programmes and increase the number of quality domestic bio-digesters with 8,000 in maximum eight provinces, of which 2,000 installations will be outside Java.

Output Indicators of this specific objective are the number of digesters construction and project areas. The proposal mentioned the following yearly targets: 150 plants in 2009; followed with 1,150 plants in 2010; 2,600 in 2011; and 4,100 in 2012.

To ensure the continued operation of all bio-digesters installed under the programme.

Indicator: this objective is considered accomplished if 90% of all digesters built in the previous years are by the end of the programme period still in operation.

To maximise the benefits of the operated bio-digesters, in particular the optimal use of digester slurry (agri- and horticulture, ducks and fish rearing). Extension service and users training are an important part in realizing this objective.

Indicator: A minimum of 50% of digester owners are applying bio-slurry.

To develop the capacity of existing organizations and institutions and to facilitate establishment of organizations and institutions (farmer's organizations, local governments, SMEs, MFIs, NGOs) for the continued and sustained development of the bio-digester sector in selected Indonesian provinces.

Indicator: Sufficient, qualitatively effective local organizations are involved to achieve the various objectives of the programme at national and provincial level.

To develop financial services to enable poor farmer households to participate in the biogas programmes.

Indicator: Poor farmer households have sufficient access to appropriate financial services to be able to purchase a bio-digester (minimum 45% of digesters financed by households through loans).

To effectively exchange knowledge between all relevant actors in the programme and with relevant international actors.

Indicator: Linking and learning knowledge exchange events have been organised in and between each province, at national and international level to inform the relevant actors in the biogas programmes of opportunities and constraints. (Reports of these meetings and follow-up activities will be produced; appreciation of the participants will be measured).

3. Institutional Setting

The Indonesia Domestic Biogas Programme is implemented based on a Contribution Agreement with the Netherlands Embassy d.d. 15/18 May 2009 and an implementation agreement d.d. 15 June 2011 with the Directorate of Bio Energy (Directorate for New Renewable Energy and Energy Conservation) under the Ministry of Energy and Mineral Resources. In implementing IDBP, Hivos receives technical support from SNV. The Indonesian government counterpart of Hivos is the Ministry of Social Affairs.

An Advisory Group established in July 2011, with the mandate to monitor programme progress and endorse initiatives, including representatives of relevant government agencies, DGNREEC, civil society and the Netherlands Embassy, meets bi-annually. A Technical Committee provides technical inputs and assists in preparing Advisory Group meetings.

The programme has established a National Biogas Programme Support Office (NBPSO), which supports Provincial Biogas Programme Offices (PBPO). The provincial offices are responsible for local implementation, and are tasked to synchronize and liaise with provincial and district energy agencies and cooperate with BAPPEDA (the local development planning branches) and other government agencies at province and district levels. Other tasks of the PBPO include: biogas promotion, capacity building, and development of the biogas sector, quality control, slurry extension and gender mainstreaming.

Through its mandate to develop a market-based and sustainable biogas sector, Hivos has entered into participation agreements with over 80 Construction Partner Organizations (CPOs), which are groomed to provide high-quality biogas digesters to cattle farmers interested in investing in biogas (bad-performing partners may be expelled from further participation). The PBPOs provide assistance and have an inspection role in order to ensure quality and continuity in the development of the biogas services in each target region.

The local partner organizations consist of NGOs, cooperatives and other) private sector entities. While Hivos strengthens these organizations called Construction Partner Organizations (CPOs), these partners are given responsibility to promote biogas, undertake construction and maintenance and develop themselves as biogas business service providers. This includes partners manufacturing biogas appliances and credit providers.

IDBP strives for local ownership. In November 2012 a local foundation was established under the name Yayasan Rumah Energi. The key mandate of this foundation is to gradually take over key responsibilities of the BIRU programme. Hivos biogas staff moved to this new foundation, and company regulations were developed and submitted to the Ministry of Manpower, which - after some suggestions for change – have been accepted. The foundation is continuously undergoing further strengthening by Hivos to prepare it for its tasks, also beyond the IDBP funding period.

4. Overview of the Indonesia Domestic Biogas Programme

The funding for the Indonesia Domestic Biogas Programme by the Netherlands Embassy was scheduled to finish at the end of 2012. Even though the programme almost reached the expected volume of digesters (7,983 of 8,000 targeted digesters, 99%), Hivos requested for a budget-neutral programme extension. Main reasons were that: a. in a number of target provinces the programme did not manage to reach the intended number of digesters; b. the programme did not reach a total of 2,000 units outside Java, and c. a number of activities needed additional attention, such as the bio-slurry management and d. the programme would have more time to strengthen the biogas supply sector through training and guidance. Activities of the Indonesia Domestic Biogas Programme were originally planned to be carried out in three phases i.e. an inception phase taking a maximum of six months; an implementation phase of approximately 36 months (October 2009 - September 2012); and a three-month administrative exit phase (October - December 2012).

The budget-neutral programme extension was approved with the condition that no funds would be made available to continue activities in East Java, where the targets where already achieved, allowing more focus on other areas. Activities in East Java were continued with funding from other agencies (GIZ's ENDEV programme, Hivos - carbon - funds and government matching funds for subsidies, and – in a very late stage – with funds from the Norway Embassy in Jakarta).

In the framework of localizing management, Hivos transferred tasks to the local foundation Yayasan Rumah Energi through a sub-contract, considering this new foundation as a partner organization responsible for implementing the bulk of the field activities as well as selected management activities at the National Biogas Programme Support Office in Jakarta. Partnership agreements with partners were now between the foundation and the partners. Field offices were presented as offices of YRE instead of Hivos, implementing the BIRU programme in close cooperation with Hivos and the local and national government.

The Indonesian Government, through the Directorate Bio-Energy under the Directorate General New Renewable Energy and Energy Conservation, Ministry of Energy and Mineral Resources, has adopted the Indonesia Domestic Biogas Programme as the BIRU programme and considers it as

one of its programs for renewable energy. Through the ENDEV programme[2] and other donor funds the cooperation between the Directorate Bio-Energy and Hivos/YRE/SNV can be continued with a plan to build another 4,000 digesters in 2014.

Image 2: A BIRU bio-digester in Lombok, 2012

4.1. Programme Implementation and Construction of 8,000 Digesters

Objective 1: To support implementation of provincial biogas programmes and increase the number of quality domestic bio-digesters with 8,000 in maximum eight provinces, of which 2,000 installations will be outside Java.

Output Indicators of this specific objective are the number of digesters construction and project areas. The proposal mentioned the following yearly targets: 150 plants in 2009, followed with 1,150 plants in 2010, 2,600 in 2011, and 4,100 in 2012.

4.1.1. Number of Digesters Produced

The progress since the end of 2012 has been somewhat disappointing. The years 2010 and 2011 a steady beyond-target growth was experienced, but a slight decline was seen in 2012 and below expectation production figures in 2013. During 2013 the total number of digesters has gone up from 7,983 to 11,249, an increase of 3,266 units, which is exceeding 2% of the targeted 3,000 during 2013. Under ENDEV 914 units have been built in East Java, which also shows underperformance of the biogas partners (target was 1,500 units in East Java).

2 ENDEV = Energizing Development, an access-to-clean-energy programme undertaken by GIZ in cooperation with Agency NL and with funding from a group of donors including the governments of Great Britain, Germany, The Netherlands, Norway, Swiss and Australia

Low performance of CPOs can have various reasons and has been explained in different reports. During 2013 low performance was mainly due to the following factors:

a. Absence of accessible credit for biogas construction in most of the target areas in spite of cooperation with RABO Bank Foundation and with the (seriously delayed) FACET programme of UNEP and Bank Syariah Mandiri;

b. Low willingness of potential biogas users to invest in biogas, especially in areas where the government has built a number of fully subsidized bio-digesters;

c. Saturation among target cooperatives, which find it increasingly difficult to convince their poorer members to invest in biogas, due to the considerable share of the farmer;

d. A successful kerosene-LPG conversion programme with heavily subsidized equipment (100%) and LPG (45%) reduces the interest for conversion to biogas. The issue of subsidized energy in Indonesia is well-documented in a report of IISD[3].

In poorer areas of Indonesia a start was made with higher subsidies, in accordance with the advice of the Advisory Committee to apply variable subsidy amounts in different areas. This approach was successfully applied in 2012 in NTB province and in NTT (Sumba). This way it has become possible to reach more than 2,000 units in NTB province in 2012 and 2013. Some provinces outside Java which seemed to be promising, did not meet expectations, especially South Sulawesi and Lampung province. In both areas it was difficult to introduce a credit mechanism while the government had recently undertaken the successful kerosene to LPG conversion programme with free stoves and subsidized LPG. The production of digesters in West Java and Central Java/ Yogyakarta improved in 2013 but due to credit constraints (especially in Central Java), the number of digesters just exceeded 1,000 in each of these two provinces at the end of 2013. It is important to note that the government is currently reducing subsidies for LPG, which will eventually lead to stronger interest for biogas among cattle farmers.

The activities to address the decreasing outputs have been the following:

- Special province meetings to discuss partner engagement issues and options for production increase;
- Meetings with key local authorities to enhance involvement and commitment;
- Special meetings with underperforming partners;

3 A citizens' guide to energy subsidies in Indonesia 2012 update (www.iisd.org/gsi)

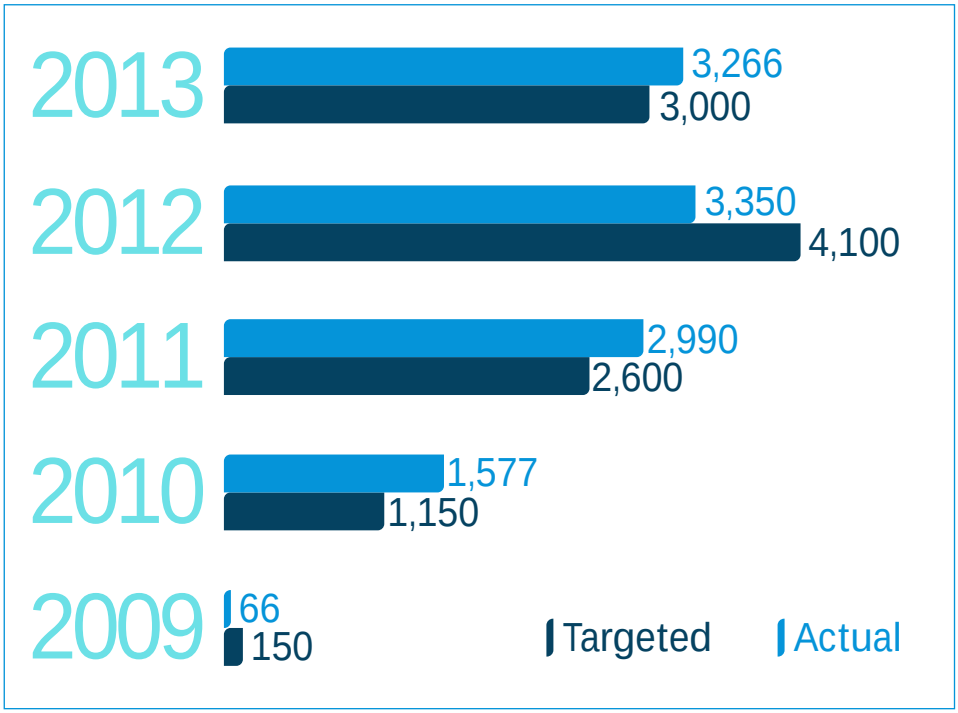
- Management training to enhance management capacity of the partners;
- Engagement with local governments interested in playing a more prominent role, including the provision of funding;
- Non-performing CPOs run the risk to be terminated, which happens when these partners do consistently not meet IDBP requirements such as production outputs and quality standards.

The table below gives the production targets and actual results during the period 2009-2013 (construction in East Java 2013 was funded by ENDEV and digesters in Sumba (NTT Province) received only investment incentives from the Netherlands Embassy).

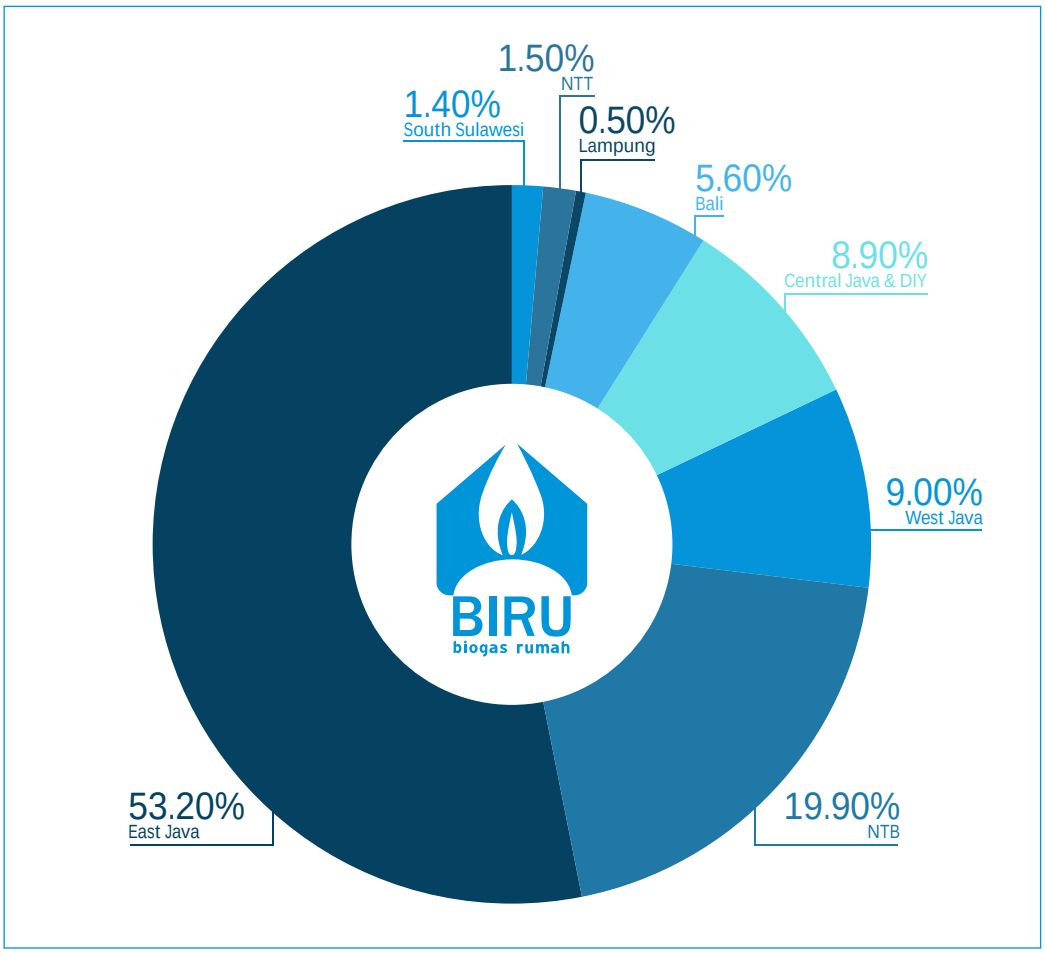
		West Java	Central Java and DIY	East Java	Bali	NTB	South Sulawesi	Sumba-NTT	Lampung	**Total**
2009	Target	50	50	50	-		-			**150**
	Actual	4	9	53	-	-	-	-	-	**66**
2010	Target	350	350	350	50		50		-	**1,550**
	Actual	113	134	1,249	30	51	-	-	-	**1,577**
2011	Target	700	700	700	250		250			**2,600**
	Actual	259	223	2,192	152	128	25	11	-	**2,990**
2012	Target	900	900	900	700		700			**4,100**
	Actual	436	276	1,573	211	739	34	79	2	**3,350**
2013	Target	1,000	1,000	(1,500)	520		140	90	250	**3,000**
	Actual	200	365	914	238	1,325	97	75	52	**3,266**
	Total	**1,012**	**1,007**	**5,981**	**631**	**2,243**	**156**	**165**	**54**	**11,249**

3,000 units of digester in 2013 is excluding East Java target.

Table 1: Targeted and Actual output (units of digesters) 2009 - 2013 (including East Java)



Graphic 1: Target & Actual Output 2009-2013



Graphic 2: Number of Digesters Built until December 2013

4.1.2. Digesters Size

As adviced in the Feasibility Study undertaken by SNV in 2008 and following good practices in other countries, the IDBP decided to construct domestic digesters in the sizes 4, 6, 8 10 and 12m^3. Initially, the programme recommended to construct 6m^3 digesters, as these are the most popular in other Asian countries, but in many areas of Indonesia it appeared that 4m^3 digesters were highly popular. This relates to the limited time people, especially in rural areas, tend to spend for cooking and the fact that cooking usually only takes place twice a day (early in the morning and around noon). In a later stage of the programme, 8m^3 digesters also became more popular, especially among slightly wealthier farmers. The IDBP applies generally a flat subsidy rate: farmers would get the same amount of subsidy, whether they would build a small or a large digester, favoring farmers who would opt for a smaller, cheaper digester.

The following table shows the number of digesters constructed in accordance with each size and location:

Province	4m^3	6m^3	8m^3	10m^3	12m^3	**Total**
West Java	276	673	29	8	26	**1,012**
Central Java	90	504	162	48	62	**866**
D.I Yogyakarta	34	93	2	4	8	**141**
East Java	157	2,887	2,258	411	268	**5,981**
NTB	2,139	87	6	0	11	**2,243**
Bali	286	271	61	12	1	**631**
NTT	80	62	15	6	2	**165**
South Sulawesi	67	70	10	4	5	**156**
Lampung	26	17	8	0	3	**54**
Total	**3,155**	**4,664**	**2,551**	**493**	**386**	**11,249**

Table 2: Number of domestic digesters according to size and province (2009-2013).

The optimal size of a digester depends on the biogas needs of the user and the volume of cow dung produced daily. Initially, users were advised to take a 6m^3 digester which produces between 1,300 and 2,300 liter gas per day[4] (modus around 1,500 liter), sufficient for around 5 to 6 hours cooking. Most users have indeed opted for a 6m^3 digester, but digesters of 4 and 8m^3 are also fairly popular. Large digesters are used by farmers who share the biogas with neighbors or family or who use the biogas for small scale commercial activities (catering, home industry, etc.).

4 Findings from the Technical Evaluation Report of IDBP, December 2010

4.1.3. Affordability and Willingness to Pay for Biogas

According to the feasibility study affordability and willingness to pay for biogas would be sufficiently high in Indonesia, leading to a technical potential of biogas of more than 1 million users. Target regions and related target numbers of digesters proposed in the feasibility study were established based on the findings of a field trip to each of these areas. In reality the BIRU programme sees that affordability and willingness to pay are not only influenced by the actual level of wealth and the perceived benefits the farmers would obtain from biogas. Other factors which play a role in the willingness to pay are:

a. Previous good or bad experience with biogas in the neighborhood (mostly from government projects);

b. Extend to which milk buyers promote biogas to their suppliers;

c. Extend to which dairy cooperatives are willing to play an active role in biogas dissemination among their members;

d. Level of understanding and commitment found among government agencies towards biogas;

e. Availability of credit facilities or, alternatively, additional government support.

4.1.4. Research and Development (activity 5.3.7)

Research and development on biogas design as well as appliances was one of the main focus areas at the beginning of the programme. As the biogas programme was new for Indonesia, it was necessary to review all the available designs and appliances and develop more appropriate ones for the Indonesian context. The biodigester design and appliances are considered key success factors for the sustainability of the programme, therefore a range of R & D activities were carried out during the project period:

a. Design of the digester: the design of the digester that was used successfully in Nepal for several years was reviewed for its appropriateness for the Indonesian context. The design was slightly revised on its structure and construction techniques looking into the possible earthquake impact and cooking pattern in Indonesia. The fixed concrete dome model is considered the best design for Indonesia as it has proven its benefits elsewhere and is strong enough to stand a normal earthquake. As a result, the Government of Indonesia has used most of the design characteristics to develop a National Standard Design (SNI 7826:2012).

b. Biogas stove: the biogas stove plays a vital role in the application of biogas for cooking. As there was no biogas stove available in Indonesia before the start of the programme, biogas users tended to use LPG stoves which are less efficient and not suitable for biogas. One of the immediate tasks for IDBP was therefore to develop suitable and efficient biogas stove; a new stove was designed with the help of Metalindo, an Indonesian stove manufacturer and test that stove for its efficiency at LIPI, a national research center in Indonesia. The stove was continually monitored, revised and finally approved as the efficiency was 52%, higher than the Indonesian national standard of 50%. As different users have different choices of stoves, three additional stove types were designed and produced with the help of CV Khazanah Bahari. Those stoves were also tested, monitored and found much better than the first one. A third stove was produced by Butterfly, a company based in Surabaya as the first and second producers could not supply stoves in sufficient amounts. All stoves were of good quality. Unfortunately the first company (Metalindo) stopped production of biogas stoves as there was competition among the suppliers. As all current stoves are of the single burner type, further R & D will be required to address the increasing demand for double burner stoves.

c. Biogas lamp: though biogas is mainly used for cooking, there was demand for biogas lamps from several households. A first lot of 200 lamps was imported from China in 2010. These lamps were used for two purposes: a) supplying to the households who were urgently demanding lamps, and, b) learning from these lamps so that lamps can be modified and produced locally. Selected manufacturers were challenged to produce a local version of the lamp imported from China by providing the sample and guarantee purchase of a number of biogas lamps at a certain amount, in order to cover the investments costs for these manufacturers. The lamps produced were then tried out in biogas user households. Finally, the design of the lamps was revised based on the feedback from the lamp users. Now two companies; Khazanah Bahari and Butterfly produce biogas lamps and these lamps are cheaper to obtain and more durable than the Chinese ones.

d. Water drain: the water drain is a device fixed in the gas pipe to drain out water from the gas pipe regularly. As there were no water drains available in Indonesia, this device was newly designed, tested and produced locally. Two types of water drains were designed and produced: a) water drain made of metal, and b) water drain made of PVC. The second type of water drain was cheaper, therefore most of the users preferred the second one.

e. Gas tap: the gas tap is used as a controlling device to regulate the gas flow near to the stove. This was mainly necessary in cases where the stove is not attached with gas regulating knobs. The gas tap is also designed and

produced by two companies. In many cases users own stoves with gas regulating knobs. Therefore, a good quality ball valve which is available in the market can be used as an alternative for the gas tap.

f. Manometer: the manometer is used inside the kitchen on the wall to see the gas pressure status inside the biogas digester. This device is locally produced which is much cheaper than the Chinese gas pressure gauge and also easy to read. Biogas users are very happy with this device as it clearly indicates the amount of gas and pressure inside the digester and amount of time left for the users to cook their food.

g. Mixer and main gas pipe: the mixer is used to mix the dung and water properly before feeding the digester. Properly mixed dung produces more gas and will easier pass out through the outlet without causing sedimentation inside the digester. This device is found very user friendly and useful. Training was provided to the local producers and the device is locally produced in all working areas. Similarly, a main gas pipe which is fixed on the top of the dome is also manufactured locally by trained metal workshops.

The high quality and efficient appliances and design of the digesters are the results of research and combined development efforts provided by the project staff and project partners.

Besides the above activities, a new digester design was tested in Rawa Pening lake near Semarang using aquatic plants such as water hyacinth, *Salvania molesta* and duck weeds. The result was promising and is now ready for replication.

The BIRU program has become widely known by the communities, especially for people who have cattle. Users who already have a biogas reactor are now convinced that they will get various advantages from it. Not only allows the biogas digester households to spend less on cooking and lighting, it also significantly reduces indoor air pollution, leading to less eye infections or irritation, it leads to cleaner kitchens and farm yards and better farm organization, while it reduces dependency on firewood and the considerable needed to collect that firewood.

BIRU program has an appropriate technology which is applied to the reactor, a technology named hydraulic chamber, which allows to reach the optimum gas pressure, replacing the need for an additional pocket to storage the gas (for which users tended to apply a large plastic bag which is placed under the rooftop).

Through the BIRU program the partners have built 11.249 units since 2009, and through an intensive quality inspection schedule (of the BIRU Quality Inspectors) the programme ensures that all reactors are working well and partner organizations stick to their After Sales Services obligations. Where this system fails, BIRU makes sure that the farmer can count on technical support to make sure the digester will work perfectly. This technical support system is instrumental in the success of the BIRU programme, as it avoids a 'hit-and-run' style of digester construction where farmers tend to be left with limited knowledge and often failing digesters of low quality.

Beside the quality control itself, the BIRU programme also engages with local vendors to develop biogas appliances, such as biogas stove, biogas lamp, gas tap, water drain, mixer, main gas pipe.

Each biogas appliance must pass the quality control by the BIRU programme, to make sure that the appliances is not only ready to be used, but also to ensure the local vendors' readiness to guarantee the quality of the appliances.

For now all of the biogas users do not need to worry about the biogas appliances stock, because all of the appliances are widely available in the market.

Some of appliances that have been tested by BIRU:

Biogas Lamp

Gas Tap

Biogas Stove

Main Gas Pipe

Mixer

Water Drain

Manometer

4.1.5. Standardization (activity 5.3.7)

Quality construction and proper services on after sales are crucial factors for successful operation of the biogas digester. High quality construction ensures a longer life of the digester, lower maintenance costs and proper operation of te digesters. Therefore, quality management was the top priority of the project from the beginning. A detailed list of construction quality standards (57 standards) was prepared and included in the training package of mason and supervisor training. The standards were weighted in 3 categories based on the importance. In the first category there are 4 standards which are extremely important and if these standards are not maintained by the CPO, those digesters will be rejected by the project and are not entitled for any subsidies. These are related to design and feeding materials. The second category has 35 standards and if these standards are not maintained by the CPO, the CPO will be penalized. The 3rd category standards are relatively less important and can be repairable

but still the CPO will be penalized if they do not maintain these standards. These standards were strictly implemented applying a bonus and penalty system. Every CPO and their staff were trained/ informed each time on the importance of quality standards. The quality was monitored by the Quality Inspectors (QI) regularly (see also the Quality Control section).

The Indonesian Ministry of Energy and Mineral Resources (MEMR) has already approved the BIRU biogas digester design as national biogas standard with number SNI 7826:2012 Biogas. Beside, MEMR is continuing the standardization process for the selected biogas appliances, especially the biogas stove, commercial biogas digesters and biogas standardization on safety. BIRU has contributed to the standardization process providing valuable support and inputs on a regular basis.

4.1.6. Promotion (activity 5.3.3)

The promotion component of IDBP is carried out mainly by the partners and other stakeholders. While the promotion design and approach was done by IDBP at the National Office, the execution of the plans was monitored and assisted by the Biogas Promotion and Extension Officers at PBPO level, and the partners are the ones who actively conduct awareness raising and marketing events. This rule has been carried out since the beginning of the programme in 2009 until now.

In order to ensure that the Programme can be identified easily by the targeted market, the farmers, also in IDBP decided to brand the programme "BIRU" which literally means blue in Bahasa Indonesia, and also an abbreviation of 'Biogas Rumah' (BIRU) or domestic biogas. This proved to be a good decision, because the brand and the logo represent good quality biogas (with a blue flame). A set of modest promo materials both online and offline were also developed at the beginning and throughout the programme and is continuously improved to support the promotion activities.

IDBP set three options of promotion: **First option** is by approaching organizations to become construction and/or lending partners. This is done either by NBPSO or PBPO offices to local partners (cooperatives, NGOs and SMEs). **Second option** is done by the partners themselves to farmers groups. Most of IDBP partners are either cooperatives and/or NGOs that have extensive network of farmers and their own working areas, and it is easy for them to identify and approach eligible farmers to install biogas. The **third option** is through a "biogas promoter" scheme, where a happy biogas user is marketing

the BIRU digester to other farmer households. Because these promoters are usually already active in their neighborhood and/or famers groups, they play an important role to reach the potential users and closing the deal. These three options were also the main promotion activities in 2013, as well as, the **fourth option**, cooperation with other stakeholders.

Throughout the programme, IDBP has consistently applied the above mentioned approaches for promoting biogas to potential stakeholders. The detailed activities in 2013 are described below.

Option 1: Finding suitable partners. All through 2013, in order to find suitable partners, IDBP teams in a few provinces such as Lampung, West Java and South Sulawesi continued to approach different organizations in the areas; cooperatives, NGOs and SMEs. In total there are 27 new partners recruited in 2013:

Province	New partners in 2013
Lampung	3
West Java	2
Central Java & D.I.Yogyakarta	7
East Java	6
Bali	3
NTB	1
NTT	1
South Sulawesi	4
Total	**27**

Table 3: Number of New Partners in 2013

In total, IDBP recruited 84 partners, 61 of which remained until the end of 2013. The other 23 partner organizations did not meet the requirements for further grooming, mostly because they could not find many potential users or because the cooperation with the BIRU programme was too big a challenge for them, even with the support provided by the programme.

Option 2: Directly raise awareness to farmers groups. In 2013, 160 direct community meetings were held in Lampung, West Java, Central Java & Yogyakarta, South Sulawesi, Bali and NTB and NTT in the Iconic Island programme. During the whole programme period, more than 400 community meetings were done in 9 provinces, reaching more than 25,000 farmers.

Option 3: Direct biogas marketing by promoters scheme. Receiving a positive response from the partners, the promo incentive initiative is being continued with a few adjustments. A new incentive scheme was introduced which includes co-sharing between BIRU and the CPOs, a gradual incentive payment and additional bonus for certain achievements per month. Effective February 2013, CPO or mason groups must pay a co-sharing of IDR 25 thousand for the promoter incentive for each digester built. The CPOs or mason groups must also pay the same amount of money for each digester built as a result of BIRU independent promotion activities. The details of the new scheme are as follows:

Achievement per month (1st to 30th)	Incentive per unit (in IDR)	Incentive per unit (in IDR)
1- 9 units	75,000	-
10 – 14 units	100,000	300,000
15 – 19 units	100,000	750,000
> 20 units	100,000	1,000,000

Table 4: Direct biogas marketing by promoters scheme

The provinces that made the most out of this scheme were West Java, Central Jaya & Yogyakarta, and Lampung. The total achievement for this scheme in 2013 is 388 units (199 from Central Java & Yogyakarta, 176 from West Java and 13 from Lampung) and this scheme was only valid for farmers who pay for the biogas using IDBP original financing scheme (2 million rupiah subsidy investment from IDBP and the remaining cost is borne by the farmers themselves).

Although the number seems small, when one looks at the outputs from the provinces, the results covered 54%, 88% and 26% from their final output, proving that direct marketing by satisfied biogas users is one of the most effective ways to get potential users. The number is slightly higher than 2012 and this shows that (1) although there are free-subsidized programmes, the farmers are still interested in financing the costs using their own funds, and (2) there are farmers in areas that could not be reached even through government project. For IDBP these farmers are the real market that needs to be tapped.

Joint Events

Inauguration of 5000th Digesters in East Java

The event on 6th February 2013 was aimed to celebrate the 5000th BIRU digester built in East Java Province alone. Hosted by Nestle, the event was held at the office of Koperasi Pujon – one of the largest cooperatives in East Java. The Deputy Head & First Secretary, Mr. Hajo Provó Kluit of the Netherlands Embassy and the Switzerland Ambassador for Indonesia Mr. Heinz Walker-Nederkoorn attended the event. Following the celebration, a workshop on the Importance of Biogas for Sustainable Cattle Farming was held. The event was also attended by a number of speakers including Assistant to the President's Special Envoy for the MDG Programme Planning and Community Cooperation, representatives of UNDP, Department of Animal Husbandry Government of East Java.

Image 3: Programme Manager of IDBP explains the biogas installation to guests at the Inauguration of 5000th digesters in East Java.

Green Competition 2013

Apart from the government, in 2013 IDBP also worked together with government and the private sector in conducting the 'Green Competition 2013: Clean and Renewable Energy for Indonesia: Local act for global impact'--an event aimed to promote biogas to the Indonesian youth. There were three categories: Feature Writing, Photo Story and Campaign Kit design. In total, 188 participants submitted their works, consisting of 122 feature writings, 16 photo stories and 50 campaign-kit designs, which were judged by independent professionals in the three categories, as well as IDBP and MEMR representatives. The winners were: Ms. Adeline Tiffanie Suwana (16 y.o. from Jakarta) for the Feature Writing Category, Mr. Aji Susanto Anom Purnomo (23 y.o. from Surakarta, Central Java) for the best Photo Story category and Mr. Asep Topan (24 y.o. from Tangerang, Banten) for Campaign-kit design. The whole events got 26 coverages from both print and online media. This event was a collaboration result between IDBP and MEMR, supported by UNEP and organized by a local youth organization, Pamflet. Other than the above mentioned activities, IDBP also participated in a number of expositions at the provincial level.

Image 4: The winners of Feature Writing category of Green Competition 2013.

4.2. Continued Operation

Objective 2: To ensure the continued operation of all bio-digesters installed under the programme.

Indicator: 90% of all digesters built in the previous years are in operation.

Continued operation of the constructed digesters can be ensured only if there is a provision of good aftersales services, users training and regular monitoring of the digesters. As these activities are taken key activities under the programme, the progress on these activities were gradually improved over the programme period. Progress in these activities in 2013 is found to be excellent. An intensive user's survey was conducted by an independent consultant and the results reveal that more than 97% of the installed digesters are functioning well. Some of the digesters were not functioning just because family moved to other places and cows were sold because of high feed costs. However, the programme is still trying to find the ways to make credit available to purchase cows and make the digesters operational.

The following activities were undertaken for the continued operation of constructed digesters:

4.2.1. User Training (part of activity 5.3.5)

Apart from mason training and various kinds of other (refresher) training targeting the constructors of biogas digesters and their supervisors, extensive user training provided to biogas owners is of paramount importance to ensure the sustained operation of the BIRU digesters. Looking into the importance, the users training was organised from the beginning of the programme.

Functioning of biogas digesters sustainably can be ensured only by ensuring proper operation and maintenance training to the users. Therefore, one day training on digester operation and maintenance was provided to the biogas users. As females are more concerned with the functionality of the digesters, female users were targeted as the participants of the training however in many cases both husband and wife were included. The training mainly contains feeding of the digester, control of gas leakage, use of stove efficiently, release of water from the pipes, safety measures, bio slurry utilization and minor repair and maintenance techniques. The training was found very useful as trained households have fewer problems on operating digester than the non-trained households. Based on the data received from the CPO, the total number of users trained during the project period is 8,841.

The table below shows the year wise progress on users training:

	2009	2010	2011	2012	2013	**Total**
User Trained	-	404	2,592	2,000	3,845	**8,841**

Table 5: Number of Users Trained from 2009 to 2013

Though around 88 percent of the users were trained over the programme period, there were some problems faced while conducting users training. As digesters are scattered in many villages, it is difficult to bring users in one place for the group training. In such case training was provided visiting each house in few cases but was found much time consuming and expensive. It was advised to partners to construct digesters in cluster areas where it will be easier to reach all users for training, maintenance and monitoring of the digesters.

Image 5: Family works together on biogas process in Sumba, NTT.

4.2.2. Quality Control and Enforcement (activity 5.3.6)

Quality Inspections

To ensure a high quality construction of all digesters by the partners, Quality Inspectors (QI) are key staff of the BIRU Programme. QIs are recruited in all provincial offices with the main task of continuously checking a considerable percentage of all the digesters built by the partners, using uniform data collection sheets to ensure consistent monitoring. At the beginning of the programme, the programme targeted to check at least 30% of all constructed digesters each year. The actual inspection rate over the programme period is 4,892 which is 43.5% of total constructed digesters, much higher than the targets. The year wise inspected number of digesters is presented below:

	2009	2010	2011	2012	2013	**Total**
Quality Inspection	-	385	1,774	1,352	1,381	**4,892**

Table 6: Number of Quality Control from 2009 to 2013

The quality control of the digester was based on the set quality standards in which each standard was valued with point as called 'default point'. At the end of the year, the total default point of all inspected digesters per CPO is calculated and an average default of all digesters is established. This calculation clearly shows that how many defaults are made by CPO in each digester and what is the severity of the defaults. The classification of average defaults was divided into 3 categories:

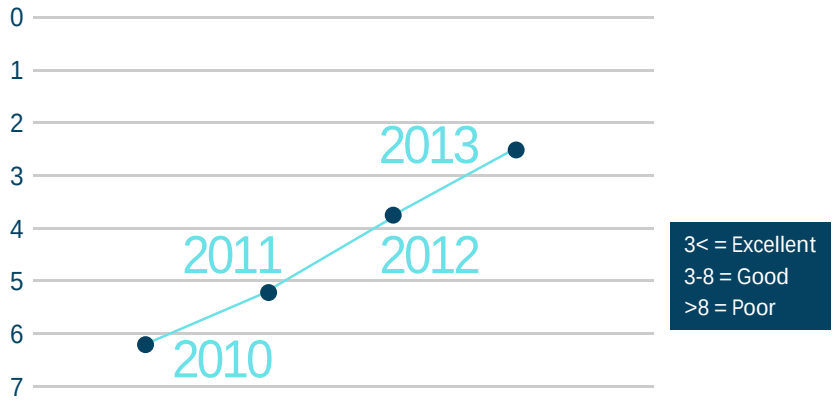
a. Average defaults less than 3 = Excellent

b. Average default between 3 to 8 = Good

c. Average default higher than 8 = Poor

Based on the above standard criteria, the quality of the digesters over the programme period is found to be good as the total average default was found to be 4.28 However, the quality of digester was gradually improved over the years. The quality results in 2013 was found be excellent.

The graph below indicates improvements on the quality of digesters lowering the average defaults over the project period :



Graphic 3: Average defaults of BIRU Digesters over the project period

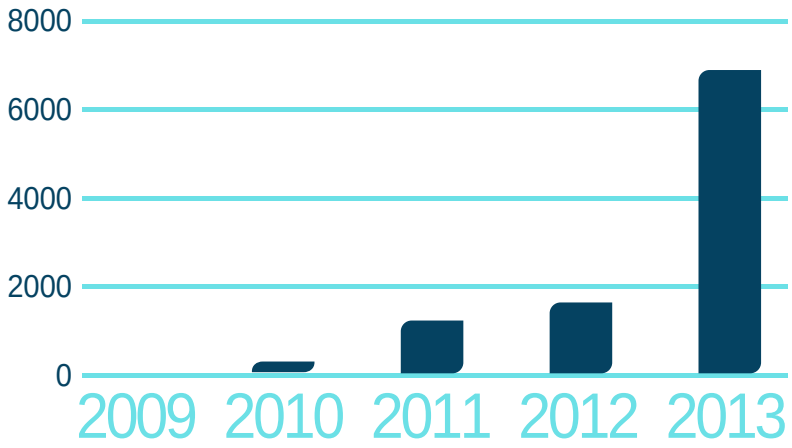
The highest average default was found in 2010 which was beginning year of the project whereas in 2013 the average default comes down to 2.44. This progress was achieved because of continuous training, follow-ups and awareness on the importance of quality digesters.

The quality of digesters was also verified by Users Survey carried out by independent consultant. The Users Survey reveals that 97% of the digesters are functioning well. One of the problems seen in the field is that due to the high price of cattle feed and high price of the cows, people tend to sell their cattle resulting in unavailability of cattle dung at the yard. BIRU is trying to find the ways how to minimise the risk of non-availability of cattle dung in the future.

Image 6: A QI conducts quality control in South Sulawesi during bio-digester construction, 2013.

After Sales Services

After sales services is considered one of the very important activities for continued operation of installed biogas digesters. Each digester was targeted to be visited by CPO technician two times every year after installation of the digesters. The purpose of the visit is to provide maintenance services to the digester and collect information on the status of the digester as part of IDBP monitoring system. For this purpose, a standard maintenance report has to be filled in and sent to IDBP office. CPO receives IDR 50,000 for each maintenance visit which was already collected by IDBP at the time of subsidy disbursement. This matter has been seriously taken up during the programme period and the number of ASS provided by 2013 has reached to 9,941. As the installed digesters were functioning well, CPO did not realise the importance of maintenance at the first few years of the programme and they were mainly concentrated on constructing new biogas digesters. At the later stage of the programme, the progress on ASS was far better and reached to 79% of total targets. In 2013 alone, total 7,042 maintenance service was provided. Compared to the limited progress in previous years, this progress on ASS in 2013 can be considered very good.



Graphic 4: ASS Progress over the Project Period

The ASS will be continued in 2014 for the digesters installed in 2012 and 2013. As both quality of digesters and maintenance services are good, this will insure continued functioning of the digesters in future.

The QI's are the important person to conduct quality control, coordination with the constructor to ensure that the reactor are working properly, the activity named ASS (After sales service).

From 2009 to 2013 a total of 11,249 reactors are built. The partners conducted already after sales services for 9,941 units, meaning that approximately 88% of the reactors has undergone regular maintenance, indicating that each of these digesters is functioning properly.

Monitoring and Evaluation

The IDBP has comprehensive M&E systems in place. Provincial Coordinators submit monthly reports and obtain feedback. Additionally, Hivos has introduced gender monitoring sheets. All pre-construction reports, household agreements, completion reports, quality inspection reports and Quality Control visit reports are entered into a database, providing a useful overview of the number and quality of the biogas digesters and the partners and their staff. An important part of the data presented in the data sheet at the beginning of this document are derived from this database.

This year IOB (the Policy and Operations Evaluation Department of the Netherlands Ministry of Foreign Affairs) has not undertaken a follow up impact survey, but a book was published, presenting results of renewable energy projects worldwide.

Biogas User Survey (BUS) for 2013 was conducted by an independent research agency JRI to 157 biogas households in 9 IDBP provinces. It was started in November 2013 and finished at the end of March 2014. The main objective of this survey is to comprehensively assess the impacts of biogas utilization impacts on several aspects of the households, such as energy use, gender concerns, socio-economic aspects, health and sanitation, agricultural systems as well as technical and environmental concerns. The survey is also done as per the guidelines from the Gold Standard where the IDBP Programme of Activities is registered.

The result of the Biogas User Survey showed that 83% users surveyed are satisfied with the biogas, because the impacts are similar to their expectations prior to using biogas, amongst others: faster cooking time, reduction time in collecting firewood and in household expenditure, high level of safety in biogas use. This percentage is lower than the satisfaction rate in 2012 (89%). The survey team has adviced us that this lower percentage is strongly related to the eruption of Mount Kelud, which resulted in the evacuation of thousands, including many of the biogas users just before the start of the biogas users survey. Also Mount Merapi was in state of high alert during that time. IDBP gave support to the survivors in Pujon and Ngantang subdistricts, which included repairs of more than 800 units of affected digesters.

Eighty six percent of biogas users surveyed use the gas for cooking (with average cooking time 181 minutes or 3 hours per day), and 14% among them use the gas for both cooking and lighting. Because of the biogas they use, the users' consumption in average in kerosene has decreased from 16.1 litre to 1.1 litre per month, in LPG consumption from 10.1 kg to 2.5 kg per month and in firewood use from 20.8 kg/day to 6.7 kg/day. With that kind of reduction, the households

can save up to IDR 158,981 (ca. EUR 11) and IDR 40,152 (ca. EUR 2.8) from kerosene and LPG purchase respectively. Households that use firewood as their main source of fuel also save up to IDR 43,615 (EUR 3) after they use biogas.

On the other hand, there are a few biogas users who are no longer using the digesterbecause of non-technical reasons (the users already moved out of the houses and/or the manure is no longer available). Within the programme implementation, it is the right of the users to participate in the operation and maintenance training so that they are able to properly use and take care of the digester. In the IDBP Dbase, more than 78% of users have received this training. The biogas households also received an A4-size brochure which they can use as a guidance to do simple repairs or to contact the BIRU hotline (+62 812 8030 2020) if they have problems or need information.

Image 7: A happy biogas user in Sumba, NTT.

Another significant impact seen from the survey is that the number of farmers who accessed 100% credit from cooperatives to purchase biogas is decreasing: 40% in 2013 as opposed to 63% in 2012. Most farmers who borrow from cooperatives are member of the same cooperatives. It is the prerogative right of the cooperative to determine whether or not a farmer is eligible for a credit, usually based on but not limited to; outstanding loans, repayment and/or non-performing loans, number of cattle and so on. Since the beginning of the programme, the cooperatives have been aiming to provide the biogas for the most eligible farmers—the 'low hanging fruits'--and this number keeps decreasing. This means that the cooperatives need to target less and less eligible farmers. For farmers who do not join any cooperative, the chance of getting credit to purchase biogas is even smaller. Therefore, cooperation with other MFIs is highly needed, and which is why the start of cooperation with the FACET programme in 2013 was crucial.

4.2.3. Carbon Mechanism (activity 5.3.10)

The carbon mechanism registration process for IDBP continues. In 2012, an on-site visit to validate the Programme was conducted in Nusa Tenggara Barat and East Java by a team of the Designated Operational Entity (DOE) approved by the Gold Standard. There was a delay in the process of submitting the validation report which was caused by changes made by the Gold Standard itself. By 4th April 2013, the Validation report was submitted to the Gold Standard and subsequently a response from them for clarifications was received by IDBP eight weeks later. By end of July 2013, IDBP already submitted the clarifications back to the Gold Standard. In the same month, July 2013, IDBP sent out notification about this carbon credit mechanism to the RNE as well as the DGNREEC at MEMR in Jakarta.

Once the Validation report was submitted to the Gold Standard, IDBP directly prepared a verification phase. The verification process which includes an on-site visit, was undertaken by a Designated Operational Entity (DOE) TuV Rheinland from Hong Kong. DOE is an independent auditor accredited by the CDM Executive Board (CDM EB) to validate project proposals or verify whether implemented projects have achieved planned greenhouse gas emission reductions. IDBP works with carbon consultant from the Netherlands, Climate Focus. One of the things that the DOE looked into was the consumption of conventional fuel on biogas and non-biogas households. To obtain the comparison data, a Kitchen Performance Test (KPT) must be done prior to the DOE field visit.

The Kitchen performance test training for all of IDBP Quality Inspectors was done in Malang, East Java from 24-25 September 2013. A total 96 households (48 biogas HH and 48 non-biogas HH) were interviewed and measured in fuel consumptions.

The DOE together with IDBP and Climate Focus visited 30 households in Central Java and East Java altogether to verify the KPT results from 22-24 October 2014. The Verification result is currently still being analysed.

Exactly eight months after submitting the Validation report (instead of the normative eight weeks period set by the Gold Standard) , on 3rd December 2013 IDBP was finally officially registered by the Gold Standard. IDBP uses the Technologies and Practices for Displacement of Decentralised Thermal Energy Consumption (TPDDTEC) methodology of Gold Standard, and under the methodology, each digester reduces the GHG emission of approximately 4 tCO_2e per year. So by the end of 2013, there are more than 44,000 $tC0_2e$ reduced by using the biogas.

The year 2013 also marked another important milestone for the carbon revenues utilization plan for IDBP. The Government of Indonesia already saw the carbon revenue as significant contribution in the implementation from the Programme itself. Therefore since 2013 the carbon revenues were already put as a financing component for the biogas programme in East Java. Continuing the success, the carbon credit is also committed to be pumped back to the programme implementation in 2014. To ensure the accountability of the funds management, in the revised Implementation Agreement between Hivos and DGNREEC, a special part is allocated for the carbon fund management mechanism. The amended IA will be valid until the end of 2015.

Another crucial development for IDBP in the carbon credit aspect is that by mid-December 2013 Hivos started to focus the emission reduction purchase agreement with Myclimate from Switzerland. Entering 2014, the negotiation regarding volumes, delivery schedule, option for the future, how to deal with defaults, et cetera was still on going.

The official registration, the progress from validation to verification process and the negotiation on the carbon credit purchase have gradually strengthened IDBP capacity in financing its programme. In addition to that, in 2013 IDBP was often referred to as an example of good practices in the domestic biogas programme implementation.

4.3. Maximise Benefits

Objective 3: To maximise the benefits of the operated bio-digesters, in particular the optimal use of digester slurry (agri- and horticulture, ducks and fish rearing). Extension service and users training are an important part in realizing this objective.

Indicator: A minimum of 50% of digester owners are applying bio-slurry.

The activity addressing the issue of maximized benefits is activity 5.3.4 Extension, while the activity Monitoring and Evaluation (activity 5.3.8) also plays a role.

4.3.1. Bio-slurry Utilization

Bio-slurry utilization activities started in October 2010, when a sufficient number of biodigesters built in various parts of Indonesia justified the recruitment of dedicated bioslurry officers to develop bioslurry management activities. In order to reach the objective target, the extension part was divided into 3 activities namely training, demo-plot and dissemination of bio-slurry utilization.

Image 8: A BIRU user farmer uses bio-slurry for cauliflower in Kediri, East Java

4.3.2. Bio-slurry Utilization Training

The training activities were divided into training for three different target groups: the first for extension staffs of BIRU, second for supervisors of CPO and third for users.

Since bio-slurry was something new for BIRU's extension staffs, a bio-slurry expert from SNV Bangladesh was invited to deliver a workshop in Malang, East Java from 12 to 15 July, 2011, which was followed by an additional workshop in Solo, Central Java on 12-13 December, 2012. In addition, the extension staffs conducted a consolidation meeting regarding training and evaluation methods and to update the bio-slurry utilization manual.

Before biogas users got bio-slurry training, each province conducted the ToT for supervisors of the CPOs. During 2009 – 2013 a total of 78 supervisors from 9 provinces participated in ToT. The material of the bio-slurry training consists of:

a. What is bio-slurry, where does it come from;

b. How many types of organic fertilizer and pesticide products can be created from bio-slurry;

c. How to handle and/or treat bio-slurry when it is stored in the slurry pit and how to apply it in the field;

d. How to create income generating activities for each user.

The bio-slurry user trainings were then started and from 2009-2013 in all 9 provinces, In total 7,643 biogas users (71.7% out of the total biogas users) participated in the trainings.

Image 9: A CPO's supervisor give biogas maintenance and bio-slurry training in Lombok, NTB, 2013

There are three bio-slurry training models that have been developed by BIRU:

1. Full package of bio-slurry training.
2. A combination of biogas user operation and maintenance and bio-slurry training.
3. A Combination of bio-slurry promotion and training.

The selection of which model to be implemented is based on the situation in each training. If it is easy to gather biogas users and there are potential farmers in one training location, usually training type 2 and/or 3 is given. However, training type 1 is done when the biogas users are living in different and remote areas.

The easiest and most effective method to conduct the bio-slurry training is to apply 25 - 40% content for theoretical knowledge and 60 - 75% for practical experiences. The practical experiences shown during the training consists of making 1) compost by heap compost, 2) liquid organic fertilizer, 3) liquid organic pesticide, 4) vermin compost, 5) vermin production, and 6) dried and wet pellets for fish fodder.

4.3.3. Bio-slurry Testing

In 2013, BIRU developed a tool to estimate the nutrient content of organic fertilizer, using a lamp testing. With the lamp testing, electric conductivity inside wet and liquid bio-slurry can be detected, based on the brightness of the lamp. If the lamp is very bright, it means that the nutrient content is high and otherwise, it is low. This tool is useful for the supervisors who give the training to convince the users during bio-slurry training. Moreover, it is economical to make and easy to operate.

Based on the Biogas User Survey 2013, 76% of biogas users are using bio-slurry (target: 50%). This number is lower than the result in 2011 and 2012, respectively 84% and 87%. This lower output is caused by the high production schedule in 2013, therefore most of the IDBP partners were focusing on the construction instead of the training. The CPOs caught up with the training in early 2014.

4.3.4. Demonstration Plots

Bio-slurry demonstration plots were done selectively in all 9 provinces. The selection is based on the following considerations:

1. BIRU's digester is located nearby an agriculture area so that the demo-plot can show the efficiency of bio-slurry as organic fertilizer;
2. To promote biogas and bio-slurry to potential farmers in the area;
3. To open the bio-slurry market of bio-slurry in nearby agriculture area;
4. To get the reliable data from field demo-plot.

IDBP worked with selected users and local universities in 2013 (University of Mataram in NTB, University of Lampung in Lampung) to implement the demo-plot activities.

The demo-plot main objective is to disseminate information to users about:

1. How to manage and utilize bio-slurry properly;
2. The efficiency of bio-slurry result application on plant growth and harvest;
3. The benefit of bio-slurry in decreasing the amount of chemical fertilizer and pesticide applied on the farm land.

From 2009 – 2013, 20 demo-plot have been done in 9 provinces. The demo-plots show bio-slurry utilization as (1) field fertilizer: paddy, fruit plant, vegetables, fodder grass, estate plant (sugarcane, cocoa, clove, etc.); (2) as a part of mix feed on duck fattening in poulty; (3) as part of mix feed on catfish production and pond fertilizer in fishery and (4) invermin and Vermin-compost production.

The BUS 2013 showed that the biogas users are satisfied when they use bio-slurry because: the quality of the harvest is better (80%) and when they used it as pesticide, their crops is more resistant to plant pest and diseases (59%).

4.3.5. Bio-slurry as New Income Generating Source

In some provinces, the activities of bio-slurry utilization has also become the new income generating source. The biogas users get more income from selling bio-slurry in the form of solid and liquid products.

Based on the Feasibility Study of Bio-slurry Business that was done by HIVOS and implemented by Yayasan Sahabat Cipta in 2012, it was recommended that a low-risk bio-slurry business should focus on dried bio-slurry and vermin compost. For a community-based business, liquid bio-slurry will be more lucrative. From BUS 2013, 5% of IDBP users are selling their bio-slurry excess and they can earn between IDR 20,000 to 600,000 per month.

4.3.6. Bio-slurry Analysis

IDBP also collaborated with several universities to find out about the quality and nutrient of bio-slurry from different sources; cow, pig, chicken and water lily. The analysis also tested the impact of bio-slurry to the environment, mainly the water quality in fish ponds. The analysis result indicates that it is beneficial for plant fertilizer and fish fodder.

Nutrient and microbe analysis were done in East Java by the University of Jember (2011) and the University of Brawijaya – Malang (2011 – 2012), in Central Java with the University of Gadjah Mada – Yogyakarta (2013), in West Java with the University of Padjajaran – Bandung (2013) and in NTB with the University of Mataram (2011).

Based on the analyses, BIRU obtained data that was subsequently used to develop bio-slurry activities in various locations.

In October 16 – 17, 2013, IDBP started cooperation with INSTIPER - Yogyakarta, an agriculture institute to include biogas and bio-slurry in their academic curriculum. In this cooperation, the teachers participated in a biogas

construction training as well as bio-slurry application training. It is expected that by including the subjects in the formal curriculum, the knowledge transfer will be continuous and the development of bio-slurry utilization will also expand to other areas.

4.4. Capacity Building

Objective 4: To develop the capacity of existing organizations and institutions and to facilitate establishment of organizations and institutions (farmer's organizations, local governments, SMEs, MFIs, NGOs) for the continued and sustained development of the bio-digester sector in selected Indonesian provinces.

Indicator: Sufficient, qualitatively effective local organizations are involved to achieve the various objectives of the programme at national and provincial level.

The following activities address this indicator:

a. Training (activity 5.3.5)

b. Institutional support (activity 5.3.9)

c. NBPSO tasks during implementation (5.3.11)

4.4.1. Training Activities (activity 5.3.5)

Internal Training

In the first and second semester of 2013 no internal training sessions were held.

Partner Training

Since the beginning of the programme, IDBP already provided non-technical trainings for partners. The moment they become a partner, they receive a thorough explanation about the cycle and administration aspects of the programme, followed by masons training (section 'c' below). In the middle of the partnership period, the quality of each partner is evaluated by the IDBP office at the provincial level to determine what kind of improvements and/or supports are needed for the rest of the period. At the last quarter of the partnership, the partner's performance is evaluated again and the result will determine whether or not the partnership will be continued for another period. There are different types of support given by IDBP to the partners, from giving guidance for their internal management to providing extra trainings to

promoting and introducing partners to government agencies and/or private sector, including dealing with financial institutions to obtain access to credit.

After four years of experience in managing the partners, IDBP has learned that the sense of entrepreneurship from the partners is still relatively low. Management training was already scheduled in an earlier phase of the BIRU programme, but it was difficult to develop the right mix of information needed to share with the partners to enhance their capacity. Finally, In the beginning of 2013 the BIRU team managed to compile a set of management training modules, good enough to provide 2-days training sessions to partners on how to manage their biogas business. The training includes modules with simple and easy to follow guidelines on how to manage the partners' staff, to obtain profits, to conduct marketing efforts, to maintain quality and later, to expand their biogas business.

A series of training sessions was held, starting in Malang, from 17-18 April, and then continued to Solo (23-24 April), Lampung (2-3 May), Mataram (16-17 May), Bandung (22-23 May), Bali (6-7 June) and Makassar (12-13 June). Improvements on the content of the modules were made as the training progressed. In total 50 partners joined the trainings in 7 provinces. All of them came up with a list of improvement priorities. By the end of 2013 a lot of the partners stated that they have become more aware about their biogas business, and that they are now looking at the business from a wider perspective in terms of business calculation. The training provided them a reference on how to conduct their business more strategically.

The CPOs Biogas Business Management module will also be updated and distributed to partners so that it can be used as their guidance, as well as to be shared with other relevant and interested parties, such as the African Biogas Partnership Programme.

Mason Training

Masons are considered the backbone of thebiogas programme. The programme has targeted to train local masons where biogas digesters are likely to be constructed. Local masons are responsible for quality construction of digesters under the supervision of CPO. Besides, local masons can play an effective role on promotion, demand collection and maintenance of the digesters. Considering this fact into mind, IDBP organized masons training in various locations.

Masons receive 8 days intensive biogas construction training in which they built one digester as part of practical training. After the training, masons start construction of digesters under strict supervision and guidance of trained supervisor. Once a mason construct 3-4 digesters successfully, he /she receive a certificate and ID number as a qualified biogas mason from IDBP. His/her work will be continuously monitored by Quality Inspectors, who are staff of the BIRU programme. In case the performance is found not satisfactory, the mason will receive refresher training.

Image 10: Mason training activity in West Java 2012

By the end of 2013, in total 867 local masons were trained by the programme. As one mason can construct 30 digesters in a year, the total trained masons have the capacity to install about 26,000 digesters per year. Masons trained over the programme period is as follows:

	2009	2010	2011	2012	2013	**Total**
Mason Trained	43	235	196	201	192	**867**

Table 7: Number of Masons Trained

The table above shows that a significant number of masons were trained over the programme period, however not all masons are active in biogas construction. As the demand of digester was low comparing the supply capacity, many masons dropped off from the biogas construction and moved to other construction activities. It is estimated that only about 40% masons are active in biogas construction.

As many CPOs dropped out during the programme period, masons group were established and organised to take over the ASS responsibility of the digesters. In some areas, mason group were found effective as they have local contacts and have lower management costs than the CPO. A female mason group was also established and encouraged for developing as a CPO.

Besides masons, a significant number of supervisors were trained for proper supervision of biogas construction. Apart from supervision of construction and guide to the masons, the supervisor is responsible for proper documentation of the digester, users training, after sales services, promotion and marketing and bio-slurry training activities. In general, one supervisor supervises the work of 5 masons. These supervisors receive the same training as received by the masons with additional training on supervision, monitoring and documentations. In total 163 supervisors were trained during the project period.

Currently, the mason and supervisors database shows the following figures:

No	CPO Name	M	S	Total
1	Abadi Mason Group	14	0	**14**
2	BOA Bali	26	4	**30**
3	CV Mitra Usaha Mandiri	9	2	**11**
4	Dewata Mason Group	11	2	**13**
5	Idep Selaras Alam	16	1	**17**
6	Koperasi Mitra Usaha Kecil	0	0	**0**
7	Yayasan Manikaya Kauci	11	2	**13**
8	Yayasan Sunari	8	3	**11**
9	Yayasan Padma Bhakti Pertiwi	3	1	**4**
10	Khazanah Bahari	41	5	**46**
11	Tanjung Sari Mason Group	10	0	**10**
12	WPU	11	3	**14**
13	YAPEKA	26	2	**28**
14	Yayasan Sutera	13	3	**16**
15	Sapa Institute	10	3	**13**
16	CV Mitra Artha Utama (Mitra Sehati)	11	1	**12**
17	Blora Mason Group	1	0	**1**
18	BMT Bina Ihsanul Fikri	5	2	**7**
19	Boyolali Mason Group	6	0	**6**

(M) Mason Trained, (S) Supervisor Trained

Table 8: Number of Masons and Supervisors Trained until December 2013

No	CPO Name	M	S	Total
20	Cahaya Biru Mason Group	0	0	**0**
21	CV Utama Graha	26	4	**30**
22	CV Sarana Sejahtera	4	2	**6**
23	KUD Mojosongo	5	1	**6**
24	LKM Rukun Makmur	6	4	**10**
25	LPTP	25	3	**28**
26	PINBUK	18	5	**23**
27	Postra Indonesia	4	1	**5**
28	Qariyah Thayyibah	25	3	**28**
29	SPTN HPS	10	1	**11**
30	Srikandi Mason Group	8	1	**9**
31	Yayasan Paluma	8	1	**9**
32	Yayasan Sion	22	3	**25**
33	Yayasan Trukajaya	23	3	**26**
34	Yayasan Suara Bhakti	5	2	**7**
35	CV Qibar Alami	3	1	**4**
36	PKBM Mitra Mulia	3	2	**5**
37	KAN Jabung	18	6	**24**
38	KPSP Maju Jaya Makmur	8	0	**8**
39	KPUB Sapi Jaya	7	2	**9**
40	KTM Malang	6	3	**9**
41	KUD Dadi Jaya	11	2	**13**
42	KUD Semen	8	1	**9**
43	KUD Sri Sedono	10	2	**12**
44	KUD Tani Makmur	8	1	**9**
45	KUD Tani Wilis	6	1	**7**
46	KUTT Suka Makmur	7	1	**8**
47	LPKP	17	3	**19**
48	LPPAB	6	2	**8**
49	Sae Pujon	12	4	**16**
50	Sami Mandiri	12	3	**15**
51	Setia Kawan	23	4	**27**

(M) Mason Trained, (S) Supervisor Trained

Table 8: Number of Masons and Supervisors Trained until December 2013

No	CPO Name	M	S	Total
52	Sumber Makmur Mason Group	1	3	**4**
53	Sumber Makmur Ngantang	19	3	**22**
54	Jaya Abadi	5	1	**6**
55	Sri Wigati	3	1	**4**
56	CV Fitria Jaya Abadi	7	2	**9**
57	GMWT	5	1	**6**
58	JRKL	5	3	**8**
59	YKWS	3	1	**4**
60	ASMD	6	0	**6**
61	Lembaga Tama Cahaya Bangsa	2	0	**2**
62	YLPMD	7	2	**7**
63	KPRI Prisma	7	2	**9**
64	Pusat Studi Pembangunan	20	5	**25**
65	Yayasan Pilah	10	3	**13**
66	YM3S	16	3	**19**
67	YSDM	9	1	**10**
68	YSLPP	20	4	**24**
69	CV Citra Perkasa Mandiri	19	4	**23**
70	MACIF	10	2	**12**
71	Radar Mason Group	0	0	**0**
72	Sulawesi Baru	10	2	**12**
73	YAPENSA	35	6	**41**
74	UD Bontomarannu	9	1	**10**
75	KSU Bulu Saukang	6	1	**7**
76	Yayasan Alam Lestari	11	2	**13**
77	Yayasan Sosial Donders	18	2	**20**
78	Yayasan Sumba Sejahtera	12	3	**15**
79	CV Nur Hikma	1	0	**1**
80	KSU Bina Lingkungan	9	0	**9**
81	Empu Jaya Mason Group	1	0	**1**
	Total	**867**	**163**	**1,030**

(M) Mason Trained, (S) Supervisor Trained

Table 8: Number of Masons and Supervisors Trained until December 2013

Province	Session	Participants		M	S	Total
		Male	Female			
Lampung	23 Feb	27	0	21	6	**27**
	16 Nov	2	0	2	0	**2**
East Java	27 Mei	12	0	9	3	**12**
Bali	15 Mar	4	0	3	1	**4**
	20 Apr	4	0	3	1	**4**
	9 Dec	19	0	18	1	**19**
Central Java	13 Feb	41	0	27	14	**41**
	14 Feb	6	0	6	0	**6**
	25 Feb	10	0	10	0	**10**
	9 Sep	10	0	9	1	**10**
	27 Sep	10	0	8	2	**10**
	18 Oct	4	0	4	0	**4**
Sumba	08 Mar	12	0	9	3	**12**
	24 Mar	3	0	3	0	**3**
	02 Apr	9	0	9	0	**9**
South Sulawesi	24 Jan	10	0	9	1	**10**
	25 Mei	10	0	8	2	**10**
	16 Aug	10	0	9	1	**10**
Total		**231**	**0**	**192**	**36**	**231**

Table 9: Number of Masons and Supevisors Trained from May 2009 until December 2013

4.5. Financial Services

Objective 5: To develop financial services to enable poor farmer households to participate in the biogas programmes.

Indicator: Poor farmer households have sufficient access to appropriate financial services to be able to purchase a bio-digester (minimum 45% of digesters financed by households through loans).

The Hivos cooperation with RABO Bank Foundation in 2013 continues and a few improvements took place. The cooperation between RBF and the biggest dairy cooperative in Lembang West Java is still going on and has facilitated biogas loans to 775 farmers. A new deal with another dairy cooperative in West Java (KPGS) was also struck in early June 2013 and is expected to accommodate 100 farmers.

In addition to that, in 2013 RBF was finally able to make a deal with two cooperatives in Central Java for the provision of biogas loans (Koperasi Andini for 100 users and Koperasi Ngudi Luhur for 50 users).

The cooperation between UNEP in the FACET Programme with Bank Syariah Mandiri (BSM) was officially started in March 2013, after a long period of deliberation. With this programme, FACET is subsidizing 13% interest rate for the biogas loans so that the farmers need only to pay ca. 9% interest. FACET provided EUR 800,000 that is expected to reach 10,000 farmers and can be utilized until 2016 (36 months).

IDBP has been playing a prominent role in this cooperation since the start. To ensure that the information about this cooperation was disseminated to all BSM offices and IDBP partners in the provinces, two parts of sensitization meetings have been done. The first sensitization meeting was done on 15th-16 March 2013 at Hotel Ibis in Jakarta. In this first meeting, the BSM head office and FACET explained about the UNEP-BSM cooperation and the biogas loans that will be made available to potential farmers. The second part consists of seven sensitization meetings jointly done by FACET and IDBP in Bali, South Sulawesi, Lampung, Bandung, Solo, Malang and Mataram.

Unfortunately, at the end of October 2013 BSM announced that there had been some changes in their loans division. Initially, the FACET loans were supposed to be available in any BSM branches in IDBP working areas. Due to BSM internal change, the loan can only be accessed in BSM's Warung Mikro office, and the coverage area is limited to maximum 10 km2 within the Warung Mikro's office. This created prolonged delay for the disbursement of the loan. Not to mention problems for IDBP and the partners who already disseminated information directly to farmers. The situation went on until the first quarter of 2014.

Another alternative for micro-finance access arrived in July 2013 when IDBP delivered a presentation during Nexus General Meeting in Singapore. During a networking session, IDBP met Kiva representative in South East Asia. Kiva is non-profit organization that allows people to lend money via the internet to low-income/underserved entrepreneurs and students in over 70 countries. Since 2005, Kiva has crowd-funded more than 1 million loans, totaling more than a half a billion dollars, at a repayment rate of 99 percent. As of Nov. 2013, Kiva was raising about $1 million every three days. The Kiva platform has attracted a community of more than 1 million lenders from around the world.

Upon hearing IDBP's story, Kiva realized that there is a niche to provide affordable and accessible biogas loans for farmers. Initially IDBP directly link Kiva with one of its partners from Yogyakarta province, Pinbuk. Also, at the end of 2013, a workshop with selected IDBP partners from 6 provinces (Lampung, West Java, East Java, Central Java & Yogya and South Sulawesi) were planned to take place in January to introduce Kiva to the partners. However, seeing the potential market, Kiva and IDBP are exploring closer cooperation through Yayasan Rumah Energi. Under the Kiva platform, there is 0% interest from Kiva to the partners, the repayment terms can be determined by the partners themselves, and the repayment period can be from adapted to the situations of the farmers; monthly-based, or as per harvest time and/or bullet-style repayment (once at the end of loan period). It is expected that the loan application process from IDBP partners to Kiva can be started in February 2014 and by June 2014 the loans will be available for farmers.

Source of loans	Number of borrowers	Amount (in EUR)
Rabobank Foundation	169	EUR 50,503
Nestle	788	EUR 286,675
FACET programme – Bank Syariah Mandiri	0	0
Others (community revolving funds etc)	180	EUR 59,411
	Total	**EUR 396,589**

Table 10: Credit Facility Accessed by Farmers in 2013

4.6. Knowledge Exchange

Objective 6: To effectively exchange knowledge between all relevant actors in the programme and with relevant international actors.

Indicator: Linking and learning knowledge exchange events have been organised in and between each province, at national and international level to inform the relevant actors in the biogas programmes of opportunities and constraints (Reports of these meetings and follow-up activities will be produced; appreciation of the participants will be measured).

4.6.1. Stakeholder Engagement

Involvement with Donor(s)

IDBP coordinates with the Embassy of the Kingdom of the Netherlands regularly during the course of the programme. The Netherlands Embassy in Jakarta was also invited to the National Biogas Advisory Committee meetings whenever it took place. Annually, in average IDBP had at least two meetings with the Netherlands Embassy as it was in 2013.

In 2013, IDBP explored several opportunities for funding in 2014 and beyond. Through Hivos, IDBP started to liaise with the Norway Embassy in Jakarta and to the Finland Embassy, also in Jakarta.

At the end of 2013, Hivos received USD 450,000 from the Royal Norwegian Embassy for IDBP implementation in 2014.

Awareness Raising

Initially, IDBP coordinated mainly with MEMR for the programme implementation. In the beginning of working in new areas, IDBP was always endorsed by MEMR, usually started with introduction to the Provincial MEMR Office, followed by IDBP awareness workshop by inviting MEMR representatives from the districts and other relevant parties such as Livestock Agency, Agricultural Department, financial institutions, small-medium enterprises, cooperatives as well as local NGOs. Prior to that, IDBP commissioned a market feasibility study in the province. It was through the process of data collection for this activity that initial contacts were made. MEMR supported IDBP with such awareness raising workshops in all of the provinces where IDBP is currently working.

Establishing Partnership with Construction Partners

Once the market study and awareness meetings were done, IDBP would seek partnership with local institutions by making use of existing networks; farmers cooperatives, farmers groups, NGOs, as well as professional network. In the beginning, the main strategy was to scan the province and potential districts where cattle and farmers' populations are high and to see if there's suitable potential organizations to be approached.

In 2012, IDBP tried a new strategy in partner recruitment in Lampung; by print advertisement stating that the IDBP programme is looking for construction partners. It was then tried out in West Java, South Sulawesi, Central Java and Yogyakarta provinces. Quite a lot of agencies expressed interest and were assessed. One of the results from this strategy was that at least three organizations that were actually approached by IDBP in 2009 and rejected to work together under the assumption that the programme would not last, finally changed their minds. Those partners are still working with IDBP in 2014.

Gradually, the partnership also attracted other type of business; small-medium workshops that made biogas appliances such as manometer and mixer, big stoves and lamps factories (at least two, Butterfly and Metalindo) as well as state-owned companies who buy bio-slurry as organic fertilizers from the biogas users.

Inter-ministries Relation

In 2010 the National Biogas Advisory Committee was established. The committee consisted of several ministries such as the Ministry of Environment, the Ministry of Agricultural, the National Development Planning Agency (Bappenas) as well as provincial MEMR offices where IDBP is active. It was expected that through this committee the biogas sector development can be coordinated more systematically and IDBP approach can be implemented in the ministries. The committee met twice a year to discuss about the progress of the IDBP implementation. In 2013, the meetings were conducted in Mataram, NTB on 27th February and on 19th September. The membership of the committee is renewed annually.

Three-party Co-financing Cooperation

In 2012 the government of Nusa Tenggara Barat (NTB) Province supported IDBP programme by providing subsidy for 1,000 households as a co-sharing component in Lombok and Sumbawa islands. Under this scheme, the farmers need to contribute between 1.5- 2 million rupiah per unit built. The cooperation went well and in 2013 NTB provincial government decided to continue to build 410 units of bio-digesters under a similar cooperation with IDBP.

At the same time, in 2013 DGNREEC also implemented a biogas programme under the Specially Allocated Funds (DAK) scheme for biogas construction in 74 districts all over Indonesia. Considering the success of the NTB model, it was agreed between IDBP, DGNREEC and the NTB government that the same financing scheme will be replicated in two districts, aiming to build 662 units under the DAK scheme, which also includes contributions from IDBP and the farmers themselves. Eventually, only one district in NTB was successful in implementing this co-financing scheme; Lombok Utara District, where 506 digesters were built.

The DAK model in NTB also attracted other provinces (where IDBP is working) to implement the same scheme. Therefore, IDBP has been involved in the socialization on this issue to other provincial government, such as in East Java, Bali and (later in August 2013) Lampung.

Despite the success in Lombok island, not all district recipients of DAK were able to replicate the scheme for a number of reasons; the low affordability level of the farmers, IDBP was not yet active in their districts and also the strict technical guidance under the DAK regulations itself. However, due to the results in 2013 especially in NTB and in East Java, more provinces have been convinced with this scheme that since early 2014 IDBP has received requests to start working in new provinces, such as Riau, Southeast Sulawesi, North Sulawesi, South Sumatera et cetera. Because in 2013 the cooperation with FACET and BSM had been started, at the end of 2013 IDBP began to raise the idea of combining credit access with the three-party co-financing scheme. The idea is that with the credit access, the farmers' affordability towards purchase of biogas digester will become stronger. Apart from the FACET programme, IDBP also already started discussion with Kiva to implement this approach. The discussion and first steps shall be developed further in 2014.

IDBP Participation in DGNREEC Priority Programmes

In 2013 DGNREEC of MEMR determined that there are seven priority programmes. Due to the success of the biogas programme and another initiative by Hivos, IDBP and Sumba Iconic Island (SII) were included in the priority programmes.

Sumba Iconic Island is an initiative started by Hivos to show that 100% renewable energy use can be done in one island. The initiative combines multi-stakeholders involvement with provision of different types of new and renewable energy technology for the people in Sumba, such as biogas, micro-hydro, solar PV and so on, both for on and off-grid connections. Because biogas programme is the activity that had already been running well, it was the first to be implemented in the island. In 2013, IDBP has three partners in Sumba and in total they built 165 units of bio-digesters all over the island.

The progress of IDBP has also reached other renewable energy actors in other countries in South East Asia. Hivos, who happens to be a member of Nexus cooperative in carbon asset management, was invited to give a presentation about IDBP. Therefore, on 12-13 July 2013 the Deputy Programme Manager of IDBP attended a meeting in Singapore and presented IDBP in a public event attended by local business people and 22 Nexus organization members from Asia, Europe, USA and Africa.

The BIRU Biogas Technical Officer has been involved with the Indonesian National Standardisation Agency (BSNI) to review the draft of Indonesian National Standards (environmental standards) for the fixed-dome bio-digester and the procedure of the health and safety environment for bio-energy.

Image 11: Local Stakeholders meeting, Jakarta 2012

4.6.2. Gender Sensitization

According to the BIRU team, the gender aspects of the IDBP were insufficiently highlighted in the Programme specific objectives of the IDBP proposal. Therefore with the support of Hivos and Gender and Energy Network (ENERGIA) IDBP gradually developed a gender mainstreaming strategy and indicators in mid-2010, followed by a series of internal workshops both in National and Provincial Offices. The result from the workshops was a guideline for IDBP gender sensitization aspect, which was then translated into gender targets to ensure continued monitoring of the gender aspects of the programme. Starting in October 2011, the monitoring continued in every four months. Below are the results of the monitoring compared to the achievement in 2012 and 2013.

No.	Description	Oct 2012	Dec 2013	% of achieved target
1	24 female mason and supervisor are trained and available	12	11	45%
2	50 female promoters are recruited and trained	25	27	54%
3	4,000 female users participate in the O&M training	3,433	4,926	123%
4	2,000 female users participate for bio-slurry training	3,096	4,534	226%
5	3 female headed BECs get support and special incentive	0	2	60%
6	800 biogas reactor are constructed in the female headed household	388	506	63%
7	Working together with 3 woman's organizations	5	3	100%
8	10 female users develop home industry with the biogas and/or bio-slurry usage	63	92	920%

Table 11: Result of monitoring as per December 2013

Image 12: Female masons training in Central Java, 2012.

Image 13: Female masons work on bio-digester construction in Central Java, 2012.

It was also because of the gender sensitization efforts that IDBP include a few components to be monitored in the annual Biogas User Survey since the beginning and more thoroughly since 2011. BUS 2013 highlights a number of significant results in IDBP gender sensitization. First, there was more than 100% increase in female initiative to install biogas digester in 2013: 28% as opposed to 12% in previous year. This increase can be attributed to the wide spread benefit of biogas and the co-financing cooperation that IDBP had with national, provincial and district governments, especially in East Java and West Nusa

Tenggara (NTB). This increase is also consistent in terms of the final decision making process in biogas installation (womens' voice was heard in deciding about taking biogas, increasing from 13% to 49%) and selection of plant location that involved women (from 4% to 17%) in 2012 and 2013 respectively.

A second significant result obtained from the BUS 2013 was, because of the trainings provided by IDBP, that female users have more responsibilities and understanding in plant operation and maintenance; 47% compared to only 34% in 2012. This result is also supported by the data that showed 48% of female users are now technically knowledgeable in 2013 compared to 36% of them in 2012.

Thirdly, the health benefits for women is also higher in 2013 than in 2012. Cases of eye redness, eye infection have lowered significantly; 36% compared to 12%.

Fourth, survey results in 2013 showed that women have slightly higher control in managing extra income or savings from using the biogas plant. In 2012, the rights and responsibilities was 79% with the women and in 2013 it was 83%. One possible cause for this is because in some areas there are more and more women who are doing bio-slurry business.

In terms of time-saved, BUS 2013 showed that the female users can save up to 45 minutes for cooking and in return their time to be involved in children education has increased to up to 38 minutes per day.

In 2012, a number of female masons and supervisors were trained and they worked all through the year. The quality of their construction is good. The main challenge with managing a female masons group is that they only wanted to work in groups of 2-3 people per digester, making not only the production number and also their income lower than what they can accomplish if they worked individually. Secondly, by working together they also tend to get de-motivated easily when disagreements occurs between the members. One female mason resigned in 2013 because she was pregnant. Despite the efforts that were continuously given by IDBP team on the field, they stopped working in 2013.

Image 14: Bio-slurry training activity in Lembang, West Java.
A successful user shows how to make vermin-compost from bio-slurry.

Through the BIRU program, female biogas users are being constantly encouraged and supported to start a new business or continue and expand their pre-existing business using bio-slurry and maximising the usage of biogas. One of the women entrepreneurs who succeeded in developing and expanding her bio-slurry business is Ety, a female biogas-user in West Java. Eti is also a member of KPSBU – dairy cooperative in Lembang – and takes the biogas loan from Rabo Foundation channelled through the cooperative. Starting her vermin-compost fertiliser business in mid-2011, Eti is now the chairperson of Karya Ibu group – a women group formalised in January 2013, with members of 25 women biogas users. Starting the production with 240 kg of vermin-compost per month, the group in 2013 produced around 7 ton of vermin-compost per month and growing, making gross income of ca. EUR 200 per month BIRU provides support from facilitating meetings to providing technical support and capacity building for the group administrators and members in accounting, administration, and product handling. IDBP continuously supports the women group in terms of transfer of knowledge in the bio-slurry composting activities. Besides producing vermin-compost, the women group also produces local food: Ketapang, chips made of flour and milk.

Overall, the BIRU programme strives to improve women's access and control over material resources and benefits such as income and services as well as the non-material resources and benefits such as participation and information, leading improvement of their capacities, voice, and self-esteem.

5. Challenges and Lesson Learned

Government Biogas Project

Inclusion of government programmes: Various ministries of the Indonesian Government often have biogas programmes themselves. Upon seeing the implementation of IDBP, the interest from the government to adopt the programme is quite high. However, in most cases these government programmes are implemented in limited areas and intended to be given to farmers for free. IDBP decided to tap into this opportunity by working with the government projects, yet requiring that the households must still invest a sum of money for the construction of the bio-digesters. This way, the farmers will still get the quality as per IDBP standard, and there is a continuation of quality monitoring for the bio-digesters. This is a valuable component for both the government and the users. It is anticipated that this approach may become more common as more government funds become available for biogas dissemination. If this assumption is correct, BIRU will advocate that Hivos/SNV and/or local partner YRE will maintain a quality control-, monitoring and evaluation-, carbon emission reduction mechanism- and capacity building role in order to ensure the sustained development of the biogas sector with high quality digesters.

Credit Access

Although the cooperation between FACET-BSM was signed, it still took a while until the programme can be rolled out. This is mainly because the BSM needed to finalize their Technical Guidelines which will be followed by the branches in the provinces. IDBP contributed inputs to be included in the Technical Guidelines. To ensure smooth start of the implementation, IDBP also assisted in the marketing plan of this loan. It was challenging to conduct this process because there was a communication gap between BSM head office with the local branches. Although the instruction was given by the head office, the branches have the autonomy in managing loan products because it will be considered as their portfolio. If the biogas loan fails, it will affect their performance rate as a whole.

The second challenge is that the bulk loans can only be accessed by a cooperative and/or micro-finance institutions and by farmers who live up to 10KMs within BSM's Warung Mikro office locations—a change which BSM applied at the end of 2013 after all the trainings and awareness

meetings done by both IDBP and FACET in most of the provinces where IDBP is active. This poses two problems. One, IDBP has limited number of partners which are also MFIs. Secondly, the work area coverage of IDBP is vast, thus it is possible that farmers who live in remote areas will not be able to access the loans.

A solution was then proposed by BSM: Non-MFIs partners of IDBP can function as a channeling agency: they will propose names of potential buyers to BSM. In that case the loan agreement will happen directly between the farmers and BSM. This channeling agency will also be able to accommodate the farmers who live beyond the 10KMs perimeter of BSM branches—provided that a number of potential users exists in that area. Until January 2014, the response time from BSM unfortunately was still slow and this in turn delayed the credit lines for the farmers.

Image 15: IDBP facilitates field visit of potential vegetable buyers to a farmer group in Lembang, West Java.

Selection of Suitable Partners

IDBP believes that to be able to successfully develop biogas sector, it has to apply market-based approach, albeit not yet 100% commercial. It has been a great challenge for IDBP to transfer this idea to most of the partners that do not come from entrepreneurial background. Partners that to some extent have had experiences in dealing with small-medium size business such as dairy, micro-loans and so on had relatively less difficulty in understanding the concept. However, partners that are used to receiving biogas grants—100% subsidized, would be struggling to reach the target in the first and second, even third year of partnership with IDBP. Such partners would either quit the partnership and/or only focusing on tapping 'pilot' projects from CSRs and/or government agencies.

This eventually created a challenge for IDBP because: a) there is no leverage between IDBP and the partner to ensure that the quality of the bio-digesters built is as per IDBP standard, and b) when the quality is not good, the bio-digester will only last in short time that it created disappointment amongst the farmers and eventually harm the IDBP brand. Therefore, selecting suitable construction partner is a crucial part of the programme. The selection criteria must include, amongst others, experiences in managing biogas programme, an amount of financial capital that can be used to pre-finance the construction process, capacity to recruit and manage masons and integrity to adhere to the quality standard and services that is set by IDBP.

Ensuring Continuous Maintenance and Operation

User Operation and Maintenance training is a crucial aspect in ensuring high performance and continuous utilization of the installed biogas. IDBP already provided mechanism with which the knowledge is transferred to the users and a monitoring mechanism is done by the partners. In 2011, IDBP announced a policy where trainings for Operation and Maintenance of biogas must be attended by two adults from each household (one man and one woman). In addition to that, to ensure that the users can have a reference at hand for trouble shooting, IDBP in 2012 also developed 7-step easy ways sticker in which IDBP hotline number is included so the users can use the number to convey their concerns. A more rigorous efforts to ensure higher attendance of households and ways to refresh the users' knowledge in the operation and maintenance aspect will need to be developed.

Bio-slurry as Green Generate Income

Bio-slurry utilization is part of biogas maximizing, if there is no action to give awareness to users, then they got only one benefit and might be influencing biogas development in farmers. IDBP has learned and experienced during 2009 – 2013 how to make effective approach to biogas users to maximize bio-slurry utilization.

Bio-slurry utilization will success in biogas users if they knew:

1. The right and clear information regarding bio-slurry nutrient content and utilization via training and manual book.

2. Exploring the maximum of beneficial bio-slurry as farmland and fish pond fertilizer, organic pesticide, vermin-compost event also as a part of feed material.

3. Developing farmer to farmer concept, that invited happy and success user also as farmer in certain farmer group meeting to tell their success stories that already has been using biogas and utilizing bio-slurry.

4. Developing of bio-slurry as income generate better that to be managed by user group, because the group will have many material of bio-slurry both liquid and dried form.

5. Facilitating the business potential or success group to buyers in order to develop better bio-slurry business.

Image 16: A field study between farmer group and worm buyers in Karangploso, Malang, East Java, regarding worms cultivation.

Engaging Stakeholders for Events Organizing

There were a few important learning points from events organizing in 2013 that should be taken into considerations for future activities:

1. Social media such as website, Facebook and Twitter are very powerful in promoting the event. During the Green Competition, the IDBP traffic from both social links increased significantly.

2. Agreements with the involved stakeholders and sponsors on visibility, especially on the logos used in promotion and marketing materials, must be clearly defined in the beginning. IDBP is more than just a programme. It has become a household name for the farmers that represents good quality and services. Acknowledgement of the involved parties is important, yet the promotion must be emphasized more on amplifying IDBP's quality and benefits for the users and the environment as a whole.

3. When making an agreement with mass media, it must be ensured and constantly communicated that they will stick to the agreements. In terms of timeless articles, it is always useful to ask to proofread the material before it goes to printing.

4. Involvement of communities is very crucial, not just for the direct end-users. IDBP managed to reach tens of thousands of farmers through community meetings, mostly arranged through cooperatives. Other than that, IDBP can also work with interests or campus-based communities in promotion and marketing. During the Green Competition 2013, at least 15 communities help to promote the event.

A Cooperation of
the Government of the Republic of Indonesia and
the Embassy of the Kingdom of the Netherlands

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