= Narrative Report =

INTERNATIONAL TRAINING PROGRAMME ON BIOENERGY DEVELOPMENT

held in cooperation of:
the Government of the Republic of Indonesia
and the Non-Aligned Movement
Centre for South-South Technical Cooperation (NAM CSSTC)
(Yogyakarta, Indonesia, 24 - 31 August 2015)

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1. General Situation of the Project

Background

Bioenergy is renewable energy made available from materials derived from biological sources. Biomass is any organic material which has stored sunlight in the form of chemical energy. As a fuel it may include wood, wood waste, straw, manure, sugarcane, and many other byproducts from a variety of agricultural processes.

In its most narrow sense it is a synonym to biofuel, which is fuel derived from biological sources. In its broader sense it includes biomass, the biological material used as a biofuel, as well as the social, economic, scientific and technical fields associated with using biological sources for energy. This is a common misconception, as bioenergy is the energy extracted from the biomass, as the biomass is the fuel and the bioenergy is the energy contained in the fuel.

Biomass energy programmes offer a wide range of potential benefits for developing countries. Already traditional biomass products like firewood, charcoal, manure, and crop residues provide the main source of household energy use for some 2-3 billion people in the developing world, and this demand is likely to grow in the years ahead. But new technologies for commercial energy production from biomass are emerging that could lead to dramatic new opportunities for agriculture and the rural sector, as well as help developing countries reduce their dependence on expensive oil imports. Both the traditional and the new options for biomass energy pose challenges that will require technology and policy solutions to ensure efficient, healthy, and environmentally sustainable outcome.

In the household fuel and health sector, tremendous gains in fuel reduction and health improvement are possible through the design and dissemination of improved stoves. At the same time, significant benefits to forest sustainability and biomass production are achievable by enforcing sustainable forest and agricultural waste management strategies.

The production of energy from biomass involves a range of technologies that include solid combustion, gasification, and fermentation. These technologies produce liquid and gas fuels from a diverse set of biological resources -- traditional crops (sugarcane, maize, oilseeds), crop residues and waste (maize stover, wheat straw,

rice hulls, cotton waste), energy-dedicated crops (grasses and trees), dung, and the organic component of urban waste. The results are bioenergy products that provide multiple energy services: cooking fuels, heat, electricity, and transportation fuels. It is this very diversity that holds the potential of a win-win development path for the environment, social and economic development, and energy security. There is a clear link between access to energy services and poverty alleviation and development.

Training Substance

With reference to some successful bioenergy development programmes in many developing countries, the Non-Aligned Movement Centre for South-South Technical Cooperation (NAM CSSTC) with the support of the Government of Indonesia (Ministry of Foreign Affairs and Ministry of Energy & Mineral Resources) jointly conducted an International Training Programme on Bioenergy Development. The training was conducted in Grand Zury Hotel, Yogyakarta, Indonesia, from 24 to 31 August 2015. Field study was conducted at the Microalgae-based Biofuel Production at the Mini Ecoplant of University of Gadjah Mada and its field activities in Cangkringan, Sleman District. Another field study was also conducted at the Fruit Waste-based Biogas Production at the Fruit Wholesale Market of Gamping.

The participants were requested to present their respective country papers on the first session. The 13 (thirteen) Training Subjects were shared in the Class and Field Sessions, namely: (1) Introduction to Bioenergy; (2) Technology and Management of Bioenergy Production; (3) Characteristics and Potency of Feedstock; (4) Energy Forest; (5) Bioenergy from Biomass: Case of Cuba; (6) Utilization of Bioenergy; (7) Mechanical and Biological Treatment of Municipal Waste to Energy; (8) Advanced Biofuel; (9) Financial Aspect of Bioenergy Project; (10) Set up a Bioenergy Project; (11) Sustainability Aspect of Bioenergy Project; (12) Microalgae-based Biofuel Production; and (13) Fruit Waste-based Biogas Production.

On the concluding session the participants also prepared and presented their Action Plans to be implemented in their respective countries when they are back home.

The series of evaluations were made by using forms as described in the Chapter 2, *pages 13-15.* Participants were also requested to express their expectations in written using form provided by the Committee before departing to Indonesia to be further discussed in the last session before the Closing Ceremony. In conclusion the training programme satisfactorily met their expectations (99%).

2. Participant and Resource Person

Total participant is 19 persons from 9 developing countries, namely: Bangladesh, Cambodia, Cuba, Indonesia, Lao PDR, Myanmar, Philippines, Tanzania and Vietnam.

Resource persons are from the University of Gadjah Mada (Yogyakarta), the Institute of Technology Bandung, the Association of Biofuel Producers of Indonesia (Jakarta) and the Research Station ‘Indio Hatuey’ of University of Matanza (Havana, Cuba).

The participants are from the government institution, university, research institution and bank working on energy-related activities. *Detail of participants and resource persons is described on pages 17-22 .*

3. Project Achievement

Objective

(a) The main objective of the training is to provide an instant benefit to energy-related policy makers and renewable energy (especially bioenergy) practitioners. Upon completion of this training the trainee is expected to be aware of: (i) the importance of renewable energy; (ii) knowledge of bioenergy and its development; (iii) technical aspect and benefits of bioenergy; (iv) financial aspect of bioenergy; and (v) sustainability issues.

(b) The criteria of successful achievement are as follows:

a. participant's expectations were met;
b. training subjects delivered and discussed were relevant, efficient and clearly understood;
c. field studies enriched participants with theory and technical aspects of the subjects concerned; and
d. participants could prepare action plans to be implemented in their repective countries post training.

Actual Output

The actual training outputs are Action Plans prepared by participants on country basis. They also indicated what internal and external assistance is required. Participants becoming aware of bioenergy both substantively and technically

Evaluation Results

Following is the resuts of series of evaluations made:

1. Expectations and Evaluation

Before participants departed to Indonesia, all participants were requested to express their expectations in written using the form prepared by the Committee. Their expectations were compiled by subject of concerns and openly discussed on the last session. They all together checked whether their expectations were met or not. There are also series of post-class and post-field evaluations by subjects. Overall evaluation was also made before the Closing Session.
The results are described as follows:

1. Check Participant's Expectations:

No.	EXPECTATIONS	MET			NOT MET		
		10	8	6	4	2	0
I	**ON THE GENERAL KNOWLEDGE RELATED WITH BIOENERGY**						
1	Generally in Bangladesh, Bioenergy is still not a familiar territory. So through this training I am expecting to know a decent knowledge about Bioenergy so that we can explore the territory. **(Akter Jahan Shukhee and Mohammad Sharfuzzaman, Bangladesh)**		v				
2	Bioenergy is renewable energy made available from materials derived from biological sources. Biomass is any organic material which has stored sunlight in the form of chemical energy. As a fuel it may include wood, wood waste, straw, manure, sugarcane, and many other byproducts from a variety of agricultural processes. **(Leang Khemarith, Cambodia)**		v				
3	- Learn about best practices/good experiences on Bioenergy Production and Development from participating countries, especially from Indonesia - Learn about policy and strategy on Bioenergy Production and Development from participating countries, especially from Indonesia - Ability to do and develop Action Plans for Bioenergy Production and Development. **(Chan Puthearath, Cambodia)**		v				
4	Acquire and deepen knowledge in basic concepts on bioenergy, specifically on biofuels, energy forest, treatment of waste, and sustainability project management. **(Marlen Navarro Boulandier, Cuba)**		v				
5	- To gain the knowledge and the understanding of the general condition and prospects of bioenergy in Indonesia and other country in the world, - To gain the knowledge and the understanding of the demand and supply of bioenergy as well as an energy mix in Indonesia and other country in the world. **(Nunung Prabaningrum, Indonesia)**	v					
6	By joining this training i hope i can improve my knowlege about bioenergy and the potential of bioenergy in Indonesia so i can implement it. I hope i can get as much as information about many kinds of natural resources that can convert into energy and how to convert it into energy. **(Fajar Marendra, Indonesia)**	v					
7	Understanding why bioenergy development is being promoted and what are the potential benefits and challenges of bioenergy development. **(Ginanjar Indramaulana, Indonesia)**	v					
8	Bioenergy is one Renewable Energy has great potential developing in Indonesia. **(Ikrar Adilla, Indonesia)**	v					
9	- bioenergy resource, - bioenergy industry. **(Chanthaboun Keobouala, Lao PDR)**		v				
10	I would like to acquire the knowledge for biomass and biogas which are easily realized in a developing country and specially easily procure in country-side such as like agricultural products. **(Souphavady Phothisat, Lao PDR)**		v				
11	On the general knowledge of biogas, gasifier and biofuel technology. **(Saw Khu Say, Myanmar)**	v					
12	Bioenergy is one of the Renewable energy made available from materials derived from biological sources. It is providing 10% of world primary energy supply. Potential Bioenergy sources available in Myanmar are Bio-ethanol, Bio-diesel, Gasification and Biogas. We have a lot of experience		v				

	and knowledge in construction of biogas plant. **(Nang May Thet Khaing, Myanmar)**						
13	To acquire new knowledge related to bioenergy production suited to my country. **(Norberto S. Quite, Philippines)**	v					
14	I expect that I can gain/acquire more knowledge related with bioenergy from the experiences of participants from other countries. **(Roberto G. Dolojan, Philippines)**	v					
15	- Different types of bioenergy resouces in Indonesia; - Technologies applied in utilization of bioenergy resources; - Policies applied for bioenergy in Indonesia. **(Victor Stephen Labaa, Tanzania)**		v				
16	To get good knowledge on bioenergy. **(Japhari Hasara Chinjala, Tanzania)**	v					
17	Know more about the support from other Governments on policy, finance for bioenergy development. **(Le Thi Phuong Thao, Vietnam)**		v				
18	- Policy making; - Technology; - Management; - Road map. (**Nguyen Tien Long, Vietnam)**		v				
II	**ON THE BASIC TECHNICAL ASPECTS OF BUILDING AND DEVELOPING BIOENERGY**						
1	Bioenergy can be a very important source of energy for Bangladesh in future. So to acknowledge the technical aspects of building and developing Bioenergy is very important for us. **(Akter Jahan Shukhee and Mohammad Sharfuzzaman, Bangladesh)**		v				
2	Traditionally, bioenergy is used for cooking and heating. Today, the use of biomass as an energy source in industrial and developing countries could not be more contrasting. Biomass – be it solid, liquid or gaseous – is the only renewable energy resource to replace fossil fuels directly. Biomass utilized to produce energy. Agricultural product and residue, wood waste and other types of organic waste make up the major part of the biomass used to biodiesel, bioethanol, biogas and thermal gasification. Biomass will continue to grow as a source of energy bringing heat and power to both residential and commercial buildings. **(Leang Khemarith, Cambodia)**	v					
3	- Know how to use existing biogas resources efficiency - Know what can be used as resources for biogas production - Know what kinds of bioenergy that we can create and develop - Know about technology and management of bioenergy production **(Chan Puthearath, Cambodia)**	v					
4	I´m interesting in (i) technologies for biofuels appliance, such as irrigation system; (ii) experiences in electric generation from biogas and technologies for construction; (iii) experiences in forest biomass, biomass gasification and direct burned, efficient of those process; and (iv) different alternatives for mechanical and biological treatment of waste. At the same time, experiences in agronomical management of *Jatropha curcas* for biofuels production. **(Marlen Navarro Boulandier, Cuba)**		v				
5	- to be able to understand the feedstock availability, the appropriate method, a simple, inexpensive and efficient separation processes in the production of bioenergy for the home industry, farmers, fishermen, and other users who are included in the low income community, - to get an overview of bioenergy production on an industrial scale. **(Nunung Prabaningrum, Indonesia)**	v					
6	I hope in this section I will get explanation about the detail process in	v					

	producing bioenergy and the implementation of developing process in my country step by step. By joining this training i hope i can make an action plan that suitable with the condition in my hometown and i can simply implement it step by step. **(Fajar Marendra, Indonesia)**						
7	- Describe parameters for sustainable production of bioenergy crops. - Understanding advanced technologies related to bioenergy development to produce high quality and quantity production. **(Ginanjar Indramaulana, Indonesia)**	v					
8	- Developing bioenergy with more efficient - Processing bioenergy with more efficient (Technical) - Sustainability for bioenergy resources (Feedstock) - Regulation dan incentives for Renewable Energy (Bioenergy). **(Ikrar Adilla, Indonesia)**	v					
9	- Promotion and development of bio-fuels, biogas, biomass. - bioenergy management scheme - Research and studies on bioenergy. - Bioenergy production. - government policy in term of contribution and support manufacturer. **(Chanthaboun Keobouala, Lao PDR)**		v				
10	I would like to acquire the process technology in fields of Biomass utilizing agricultural product such as like rice production, Cassava and para-rubber, corn production and the other side, in Fields of biogas utilizing nippier grass and cow manure and cattle Dung. **(Souphavady Phothisat, Lao PDR)**	v					
11	On basic technical of biogas, gasifier and biofuel building And another technology of developing bioenergy. **(Saw Khu Say, Myanmar)**	v					
12	There are many kind of bioenergy in Myanmar. In our department have been established two kind of bioenergy. They are design and construction of gasifier and biogas plant. Not only community type but also family types of biogas digester have been established. **(Nang May Thet Khaing, Myanmar)**	v					
13	To list down different technology, processes and mechanisms in developing bioenergy and related projects/program. (**Norberto S. Quite, Philippines)**		v				
14	Bioenergy in the Philippines has a very wide scope. It includes biomass for power and non-power application including biofuels. Biomass for power and non-power application is common technology in agricultural provinces in the country. However, when it comes to biofuels we are using only two (2) agricultural crops for blending (coconut and sugarcane). In this regard, I expect that I could gain more knowledge including technologies and crops used by other countries in terms of biofuels. **(Roberto G. Dolojan, Philippines)**	v					
15	Technologies applied for efficient utilization of solid, liquid and gaseous bioenergy. **(Victor Stephen Labaa, Tanzania)**	v					
16	To be able to build and develop bioenergy. **(Japhari Hasara Chinjala, Tanzania)**		v				
17	Vietnam is lacking of electricity and the demand for this kind of energy is huge in the future. I am interested in learning about: - Biomass gasification for electricity generation - Electricity generation from biogas digesters - Electricity generation from Municipal waste **(Le Thi Phuong Thao, Vietnam)**		v				
18	Technology of Biological treatment of waste from agriculture to bioenergy. **(Nguyen Tien Long, Vietnam)**	v					

III	ON SOCIAL AND ECONOMIC ASPECTS RELATED WITH THE DEVELOPMENT OF BIOENERGY						
1	Depending on Bioenergy people can save their natural resources from burning and can also minimize their daily costing for fuel. And it can also enhance our social environment and can lead us to the sustainability. So social and economic aspect related to Bioenergy are very significant. **(Akter Jahan Shukhee and Mohammad Sharfuzzaman, Bangladesh)**	v					
2	Biomass utilisation, bioenergy technologies, their market share and research interests in these issues vary considerably from country to country. The socio-economic benefits of bioenergy use can clearly be identified as a significant driving force in increasing the share of bioenergy in the total energy supply. The benefits associated with local bioenergy production: - Social Aspects - increased Standard of Living– Environment– Health– Education, Social Cohesion and Stability– Migration effects (mitigating rural depopulation)– Regional development– Rural diversification. - Macro Level - Security of Supply/Risk Diversification, Regional Growth, Reduced Regional Trade Balance, Export Potential. - Supply Side - Increased Productivity, Enhanced Competitiveness, Labour and Population Mobility (induced effects), Improved Infrastructure - Demand Side – Employment, Income and Wealth Creation, Induced Investment, Support of Related Industries Socio-economic impacts are commonly used to evaluate the local, regional and/or national implications of implementing particular development decisions. Typically, these implications are measured in terms of economic indices, such as employment and monetary gains, but in effect the analysis relates to a number of aspects, which include social, cultural and environmental issues. In reality, local socio-economic impacts are diverse and will differ according to such factors as the nature of the technology, local economic structures, social profiles and production processes. **(Leang Khemarith, Cambodia)**		v				
3	- Know clearly how can bioenergy development help to develop society and economic - Know about optimal set-up cost of bioenergy in order to promote this as alternative energy to rural and remote areas - Know specifically who are the beneficiaries from bioenergy development projects and how can government help to support them. - Know how bioenergy development can help as parts of sustainable development and improving resources efficiency. **(Chan Puthearath, Cambodia)**	v					
4	I would like to acquire knowledge and exchange about cost of biofuels production, feedstock more utilized, and different experiences to use of biofuels in rural context. **(Marlen Navarro Boulandier, Cuba)**	v					
5	Training results are expected - to provide an overview and understanding of the possibilities of bioenergy as a substitute of non-renewable energy sources, which can be applied and used for public, - to get the knowledge and understand about the government's policy on the application and production of bioenergy to meet the society demand. **(Nunung Prabaningrum, Indonesia)**	v					
6	I hope i can get explanation from the practicioner of bioenergy about both good and bad side of bioenergy impact from social and economic side. I also want to know the comparison between the use of bioenergy	v					

	and conventional energy. **(Fajar Marendra, Indonesia)**						
7	- Understanding stakeholder roles and public participation strategies. - Understanding economic analysis in a bioenergy project. **(Ginanjar Indramaulana, Indonesia)**		v				
8	Synergizing ABGC (Academy, Business, Goverment and Community) in establishing Bioenergy Programme. **(Ikrar Adilla, Indonesia)**	v					
9	- sustainable bioenergy development to suburb and rural area. - good repeat to reduce greenhouse gas emission farm and from household. **(Chanthaboun Keobouala, Lao PDR)**	v					
10	My social aspect is that new technology for bioenergy should be developed by peoples for preventing of environmental pollution on earth but bottlenecks on development of bioenergy is now in higher cost compared with typical energy producing cost applied in now. So, at present, I suggest that we have to find out best economical way. **(Souphavady Phothisat, Lao PDR)**		v				
11	On social aspect related with the development bioenergy. Because of I am working for Government section. **(Saw Khu Say, Myanmar)**		v				
12	By constructing biogas digester, rural people can gain more benefit and effective use for socio economic. By using the digester for the electricity can improve the living standard, increase income and health in rural area. **(Nang May Thet Khaing, Myanmar)**		v				
13	To help in reducing social problems such as unemployment and waste management and the benefits that will be derived from the bioenergy project. **(Norberto S. Quite, Philippines)**	v					
14	It is an important factor in developing bioenergy the social acceptance and economic aspect of the project. I expect that I could gain more knowledge related to social development and economic aspect of bioenergy from other countries. **(Roberto G. Dolojan, Philippines)**	v					
15	Policies on involvement of communities in large scale bioenergy projects. **(Victor Stephen Labaa, Tanzania)**			v			
16	To have good bioenergy techniques which will meet social and economic needs of my country. **(Japhari Hasara Chinjala, Tanzania)**		v				
17	- The application of bioenergy for replace/reduce the use of nature resources (wood from forest, charcoal, oil..) to reduce the impact to environment - The potential of bioenergy in energy map, will it become a cheapest energy and the first choice of all people? **(Le Thi Phuong Thao, Vietnam)**	v					
18	Identify solutions for sustainable development (economic, social and environmental) through the application of models of bioenergy development in rural areas. **(Nguyen Tien Long, Vietnam)**	v					
IV	**HOW YOU MAY RELATE THE SUBSTANCES (EITHER THEORY OR TECHNICAL ASPECTS) THAT WILL BE DELIVERED IN THE SESSION TO YOUR COUNTRY'S INTEREST**						
1	In this training session, theoretical and technical aspects of Biotechnology will be going to be discussed. Case study and field visit will be happen during this training programme. This is total package for us to understand the opportunity bioenergy has for our country. Because the sources of different kind of Bioenergy are more or less available in Bangladesh. So the training programme will help us to understand the chance of success of Bioenergy. **(Akter Jahan Shukhee and Mohammad Sharfuzzaman, Bangladesh)**	v					

2	Around 80 % of the Cambodia's total energy consumption is converted by biomass resources. The use of bioenergy resources are limited and only some pilot projects and other small scale applications are introduced. .Bioenergy is needed to assess the technical feasibility and the economic and social potentials for the adoption of bioenergy technologies as well as to provide a preliminary assessment of the long-run commercial viability of biofuel programme in Cambodia. Poverty reduction remains the principle objective of any adoption of bioenergy technology. Thus, applications and services that use energy productivity to improve the livelihoods of people should be considered. **(Leang Khemarith, Cambodia)**	v					
3	- Firstly, I will share what I have learnt from this training to my office during GSSD Knowledge Sharing Program - And then discuss what we can do and develop on bioenergy sector according to good experiences/best practices from other countries with mandate of the National Council for Sustainable Development and the General Secretariat for Sustainable Development (GSSD). **(Chan Puthearath, Cambodia)**	v					
4	When I return to my country, I will be meet with functionaries of Renewable Energy (Ministry of Energy and Mines), Ministry of Higher Education, Embassy of Indonesia in Havana and other National Institutions in Cuba for notified about knowledge and experiences acquired and planning any strategic for implementation of relevance experience in our country. By another side, I consider that the training is a great opportunity for establishment relationship with colleagues from Indonesia and others countries. One of the most important objective is the international cooperation, based in utilization of bioenergy. **(Marlen Navarro Boulandier, Cuba)**	v					
5	Trying to trigger an understanding of renewable energy in the community or small group, especially about technology and management in the production of bioenergy using the available feedstock in my the country. **(Nunung Prabaningrum, Indonesia)**		v				
6	I will connect it with the data about the potention of bioenergy in my country and calculate detaily all the preparation i need to make a pilot project. And i will learn about the regulation that have correlation with bioenergy development in my country. Then i will make a community that concentrate in developing bioenergy in Indonesia. **(Fajar Marendra, Indonesia)**		v				
7	Indonesia's challenges in developing bioenergy are related to funding and investment, raw materials, and infrastructure, hopefully I will gain a comprehensive understanding to solve those challenges. **(Ginanjar Indramaulana, Indonesia)**		v				
8	- focus on modern technologies from this program. - will organize training program for other technical staff and local people. **(Chanthaboun Keobouala, Lao PDR)**		v				
9	After this training, I am going to deliver to my colleagues my acquired knowledge's through periodic seminar. **(Souphavady Phothisat, Lao PDR)**	v					
10	I may relate the substances (technical aspects) that will be delivered in the session to my country's intrest. My country's intrest are gasifier, biogas and biofuel. **(Saw Khu Say, Myanmar)**	v					
11	In Myanmar there are many ministries to implement the bioenergy project. DRI also has been doing research on expand use of low cost household biogas digester system in the villages. And there are five courses of Renewable Energy Training in our department to distribute		v				

	our knowledge to people. **(Nang May Thet Khaing, Myanmar)**						
12	To determine the applicability of the discussion in the training in the Philippine setting. **(Norberto S. Quite, Philippines)**	v					
13	I will suggest to my bosses all important substances that I may find interesting and applicable in our country, either theoretical or technical aspects be developed and/or replicated in our country. **(Roberto G. Dolojan, Philippines)**	v					
14	To compliment in ongoing initiatives of developing a sustainable production and utilization of bioenergy in Tanzania. **(Victor Stephen Labaa, Tanzania)**		v				
15	Now many farms in VN are starting to build biogas digesters (large scale) and they're considering technologies/equipment for electricity generation. I hope after this course, I will introduce and mentor some good, advance technologies for VBA members for electricity generation to supply not only for their farms/factories but also for national grid. **(Le Thi Phuong Thao, Vietnam)**		v				
16	Share techniques and theory through seminars/workshops for organizations and individuals interested in the development of bioenergy. (**Nguyen Tien Long, Vietnam)**		v				
V	**Possible application of knowledge and experiences shared in the session to your country's bioenergy development programme:**						
1	As a central Banker of Bangladesh, we can promote the Bioenergy sectors, we can encourage our investors to invest more and more in these sectors so that we can sustain in the long run as a successful country. **(Akter Jahan Shukhee and Mohammad Sharfuzzaman, Bangladesh)**		v				
2	This training course is importance for me and my country to development bioenergy sector. I will share my knowledge and experiences to my colleague and demonstrate this field to communities. **(Leang Khemarith, Cambodia)**	v					
3	- Develop GSSD Action Plan and mandate with bioenergy development according to exiting policy, strategy and national green growth roadmap to achieve sustainable urban and rural energy development in the future. - Build a Technical Working Group (members from relevant ministries or institutions) to study and research more on Bioenergy Sector and then implement the action plan accordingly. **(Chan Puthearath, Cambodia)**		v				
4	Improve new Bioenergy Project. Application of new technology and management of bioenergy production. Include in municipalities development strategies innovative alternatives for mechanical and biological treatment of waste to produce energy. **(Marlen Navarro Boulandier, Cuba)**	v					
5	- transferring knowledge and skills to persons or community who need an understanding of the importance of bioenergy application and production, - submitting proposals to obtain research funds in the bioenergy production on a laboratory scale followed by developing for larger scale that can be applied to public who need it with feedstock availability in my country. **(Nunung Prabaningrum, Indonesia)**	v					
6	I hope all the information explained in this session will give a big impact in developing bioenergy in my country so we can maximize the bioenergy resources in Indonesia. By the development of bioenergy in Indonesia I hope many people can consume a cheaper and environmental frienly energy easily. **(Fajar Marendra, Indonesia)**	v					

7	- Get a comprehensive strategies about bioenergy investment promotion to banks and investors - Mapping of potential land for bioenergy development - Effective coordination with the relevant ministry / institution. **(Ginanjar Indramaulana, Indonesia)**		v				
8	Encourage bioenergy utilization to education institute ,local senator and agriculture industry. **(Chanthaboun Keobouala, Lao PDR)**		v				
9	I suggest that possible application of knowledge and experiences shared in the session shall be in fields of biomass and biogas, Solar energy. **(Souphavady Phothisat, Lao PDR)**		v				
10	Gasifier and biogas knowledge and experiences shared in the session to my country's bioenergy development programme. **(Saw Khu Say, Myanmar)**		v				
11	30% of population of the country can assess the electricity from the national grid. 70% of populations of the country live in rural area and out of the national grid. Our country have a lot of demand for electricity. So we need to implement bioenergy project. **(Nang May Thet Khaing, Myanmar)**		v				
12	By adopting the technology in other countries that is also suited in the Philippines. **(Norberto S. Quite, Philippines)**	v					
13	As a standard operating procedure in our office, all knowledge that has been acquired through seminars, training etc., will be echoed/relayed to other staffs who has not able to attend the activity. In this way the knowledge that I will acquire can also be transferred to other staff and eventually can also be shared to our country's bioenergy programme. **(Roberto G. Dolojan, Philippines)**	v					
14	The knowledge obtained will contribute in preparing policies and strategies of ensuring sustainable development of the bioenergy industry in Tanzania. **(Victor Stephen Labaa, Tanzania)**	v					
15	To have applicable bioenergy knowledge experiences from other participants which meets my country's development programme. **(Japhari Hasara Chinjala, Tanzania)**	v					
16	Biogas development in VN mainly focuses on small scale for household level. We have 5 big projects funded from WB, ADB, Netherland… which built about 550.000 household biogas digesters. Base on the success of these projects, now we upscale these models to medium and large scale with focusing on electricity generation. We are building/developing some projects from that idea and I hope to learn more experience about biogas for electricity, bio-fuel (E5, E10). **(Le Thi Phuong Thao, Vietnam)**	v					
17	- Proposed implementation plan development of bioenergy in agriculture the period 2016-2020. - Integrating the content development of bioenergy in agriculture in planning, strategic agricultural sectors. **(Nguyen Tien Long, Vietnam)**		v				
VI	**OTHER EXPECTATIONS**						
1	As we have got the schedule of the whole training programme, I can see that this is going to be a classroom oriented training. I have expected that, there would be more field visit. That is a bit disappointing. Otherwise I hope, I am going to enjoy the training programme. **(Akter Jahan Shukhee and Mohammad Sharfuzzaman, Bangladesh)**		v				
2	I hope that this program will be supporting us more and more to provide knowledge, experience and capacity building to our government officials on bioenergy sector. And also I strongly hope next time this program will support more participants from my country including policy and technical						v

	levels for improving productivity and development of bioenergy. **(Chan Puthearath, Cambodia)**						
3	To receive this training will provide me the possibility to learn from the broad international experience and to acquire new skills and knowledge as well as the chance to exchange experiences with colleagues either from other countries to which the participants belong, beside access to specific and update literature in the subject. The knowledge and abilities possible to be acquired during the course will make deeper my background in the matter related with the encouragement of new projects in bioenergy as focused concepts in the decision making processes and planning and monitoring of investigations in my fields. I hope to achieve additional tools to implement alternative and advanced strategies for the further development of Cuban bioenergy. **(Marlen Navarro Boulandier, Cuba)**	v					
4	a) to collaborate with other participants to conduct research/project, brain-storming, share or exchange ideas (discussion) of bioenergy in technical and policy aspects. b) Since I am a lecturer with the duties of teaching, researching, and giving public services, the results of this training can be assisted and facilitated my duties, - in the field of teaching, training results can become learning materials in the course of Biomass Energy Engineering and Energy Conservations, - in the field of research, the results of training can be an inspiration to create ideas of research topics for students' final year project, - in the field of public service, training results can encourage and stimulate me to transfer the knowledge of bioenergy production to weak economic communities. **(Nunung Prabaningrum, Indonesia)**	v					
5	I hope all the participant of this training can make a productive network that helping each other to make bioenergy developing project can be realize as an alternate energy that environtment friendly to meet the need of energy in ASEAN countries. **(Fajar Marendra, Indonesia)**	v					
6	More case studies for better understanding in the reality. **(Ginanjar Indramaulana, Indonesia)**	v					
7	Financial and Economic analysis of each technology. **(Souphavady Phothisat, Lao PDR)**			v			
8	We expect your country's bioenergy development technology for my country. **(Saw Khu Say, Myanmar)**		v				
9	As your country has advanced technology of bioenergy, we hope to gain many technology and knowledge from this training. **(Nang May Thet Khaing, Myanmar)**	v					
10	To know more friends and institutions that will serve as a link/network in implementing the bioenergy project. **(Norberto S. Quite, Philippines)**	v					
11	I expect that I will acquire more knowledge especially in biofuels technology from other participating countries and suggest to my bosses for possible replication to our country's biofuels proramme. **(Roberto G. Dolojan, Philippines)**	v					
12	- Obtaining experience of Indonesia in bioenergy development; - Obtaining experience of other participating countries in bioenergy development. (Victor Stephen Labaa, Tanzania)	v					
13	To be a good service provider in bioenergy technologies. **(Japhari Hasara Chinjala, Tanzania)**	v					

14	- VBA is a young organization which is on the way to establish the role of representative for biogas industry and feedback to the Government for policy and decision making. I would like to know some models of relevant organizations from other countries which are successful in the same role VBA targets to. - I also would like to find potential partners for VBA and VBA members. **(Le Thi Phuong Thao, Vietnam)**		v				
15	To learn from the experience of the countries attending the programme. **(Nguyen Tien Long, Vietnam)**	v					
		58	41	1			1
Total		**100**			**1**		
Percentage (round up)		**99%**			**1%**		

Based on the percentage of met expectations (99%), we may conclude that the participants are satisfied with the training programmes they participated.
[*As reference, the scoring range is classified as follows: 81-100% met is Satisfied; 51-80% met is Good; 26-50% met is Sufficient; and 0-25% met is Failed*]

2. Summary of Evaluation by Training Subjects:

Participants were requested to fill up the Evaluation by Subject/Field Form right after the related subject/field was finished. The evaluation by Subject/Field Form is shown on *pages 25-26.* The tabulation result of the filled up questionnaires shows its summary/conclusion as follows:

No	a1	a2	b1	b2	b3	Score	Relevance	Efficiency
1	4.1	4.1	4.3	4.4	3.9	4.15	4.1	4.2
2	3.9	3.9	3.9	4.4	4.0	4.04	3.9	4.1
3	4.1	3.9	4.4	4.3	3.9	4.14	4.0	4.2
4	4.1	3.9	4.3	4.3	4.2	4.15	4.0	4.2
5	4.2	4.3	4.4	4.4	4.4	4.33	4.2	4.4
6	4.3	4.2	4.3	4.4	4.4	4.29	4.2	4.3
7	4.2	4.2	4.3	4.5	4.3	4.29	4.2	4.4
8	4.2	4.1	4.2	4.3	4.3	4.20	4.1	4.3
9	4.0	4.0	4.2	4.3	4.3	4.15	4.0	4.2
10	4.3	4.3	4.1	4.5	4.3	4.29	4.3	4.3
11	4.3	4.1	4.3	4.4	4.3	4.27	4.2	4.3
12	4.3	4.1	4.3	4.4	4.3	4.25	4.2	4.3
13	4.4	4.4	4.4	4.5	4.3	4.41	4.4	4.4
14	4.3	4.4	4.0	4.5	4.5	4.32	4.3	4.3
15	4.5	4.6	4.2	4.4	4.4	4.41	4.5	4.3
	4.1	4.1	4.2	4.4	4.2	4.21	4.12	4.27

Block a for Relevance; Block b for Efficiency

The score range is from 1 to 5. [1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree]. If the average score of all training subjects is closer to 5, it means that the 15 subjects delivered in the Class and Field Sessions are well understood by the participants and most appropriate for them. Based on the average of scores described above (4.21), the

evaluation result is good. The relevance of the training subjects shared (4.12) is also good as well as the training efficiency.

Number on the left column of the table above represents the resource persons with their respective training subjects as described following:

1. Tatang H. Soerawidjaja on *Introduction to Bioenergy*
2. Arief Budiman on *Technology and Management of Bioenergy Production*
3. Rochim B. Cahyono and Eko A. Suyono on *Characteristics and Potency of Feedstock*
4. Muhammad A. Imron on *Energy Forest*
5. Marlen N. Boulandier on *Bioenergy from Biomass: Case of Cuba*
6. Rochim B. Cahyono and Muhammad M. Azis on *Utilization of Bioenergy*
7. Siti Syamsiah and Rachmawan Budiarto on *Mechanical and Biological Treatment of Municipal Waste to Energy*
8. Paulus Tjakrawan and Eko A. Suyono on *Advanced Biofuel*
9. Paulus Tjakrawan and Rachmawan Budiarto on *Financial Aspect of Bioenergy Project*
10. Rachmawan Budiarto and Siti Syamsiah on *Set up a Bioenergy Project*
11. Paulus Cakrawan and Eko A. Suyono on *Sustainability Aspect of Bioenergy Project*
12. Eko A. Suyono on *Microalgae-based Biogas Production*
13. Siti Syamsiah and Dimas Agil Marendra on *Fruit Waste-based Biogas Production*
14. Observatory Visit to the Microalgae-based Biofuel Production
15. Observatory Visit to the Fruit Waste-based Biogas Production

4. Summary of Overall Evaluation:

Participants were requested to fill up the Overall Evaluation Form on the last session. The Overall Evaluation Form is shown on *pages 27-29.* The tabulation results of the filled up questionnaires show the conclusion as follows:

No	a1	a2	b1a	b1b	b2	c1	c2	c3	c4
1	5	5	5	5	5	5	5	5	5
2	5	5	4	4	5	5	4	4	5
3	5	5	4	4	5	5	4	5	3
4	4	4	5	5	5	4	4	4	3
5	5	5	5	5	5	5	5	5	5
6	4	4	5	4	4	4	5	5	4
7	4	4	4	4	4	4	5	4	4
8	4	4	5	4	4	4	5	5	4
9	4	4	4	4	4	4	4	4	4
10	5	5	5	5	5	5	4	5	5
11	5	5	5	4	5	5	4	5	5
12	5	5	4	4	5	5	5	4	5
13	4	4	4	4	4	4	4	4	4
14	4	4	4	4	4	4	5	4	4
15	4	4	4	4	5	4	3	4	4
16	5	5	5	5	5	5	5	5	2

17	4	4	4	4	4	4	4	4	4
18	4	4	5	5	5	4	4	5	4
19	5	5	5	5	5	5	5	5	5
Total	85	85	86	83	88	85	84	86	79
Score	4.5	4.5	4.5	4.4	4.6	4.5	4.4	4.5	4.2
	4.47		**4.51**			**4.39**			
					Total Score				40.1
					Final Score				**4.45**

Block a for Relevance; Blok b for Effectiveness; Block c for Efficiency
The score range is from 1 to 5. [1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree]. If the average score of all training subjects is closer to 5, it means that overall subjects delivered in the Class and Field Sessions are well understood by the participants and most appropriate for them. Based on the average of final score (4.45), the overall evaluation result is good. This evaluation also to cross-check the result of evaluation by training subjects. There's consistency between evaluation by subjects and overall performance of the training sessions.

Number on the left column of the table above represents the participant numbers or respondents (n).

5. Work Activities / Progress

The training programme was conducted through:

Class Session:

The session conducted using adult-learning methodology. There was no instruction but knowledge-sharing approach was applied.

Field Session:

Observatory visit to the Mini Ecoplant at the UGM Chemical Laboratory and field practices of microalgae-based biofuel production at Cangkringan was intended to see how microalgae is engineered to generate biofuel. Another observatory visit to the Gamping Market was intended to to see how the fruit waste is processed to generate biogas energy for electricity and cooking.

Pesentation of Country Reports:

Participants were requested to prepare and present their Country Reports covering problems and potentials of renewable energy development, especially of bioenergy. Their knowledge and experiences were shared during the class and field sessions.

Preparation of Action Plan:
At the end of the Class Session, participants were asked to prepare Action Plan to be implemented in their respective countries when they are back home. They also indicated possible future collaboration post training.

Language:

The language used in the Training Programme is English.

6. Problems and Difficulties

Basically problems and difficulties were not significantly found, either during the training preparation or implementation. However there was only one thing that should be carefully managed and anticipated which is related to the nomination and the selection processes.

The nomination forms received were not in schedule as expected. Most of the nominees were a bit late in the selection process, although they were still in time to proceed with administrative works.

In general, the qualification of participants was met.

7. Recommendations

Following is the conclusion and recommendation for further anticipation:
The overall implementation of the training programme on bioenergy has been well implemented, both substantially and logistically.

However, there are some feedbacks from the participants expressed during the overall evaluation that could be accommodated in future similar training, as follows:

1. Despite the training subjects have been considered appropriate, it could be enriched with guest resource person(s) from other country(ies) that have similar cases. Guest resource person from Cuba was highly appreciated.
2. Technical exercises in the field session might be applied using appropriate instruments which are not complicated. It is intended as part of learning by doing practices.
3. Since the observatory visit is not merely on technical matters, it is suggested to extend more days at fieldsite to observe and practise relevant field works related to social, institutional and economic development.

There is also strong recommendation to conduct another similar training with considering the feedbacks from participants. In this regard, NAM CSSTC and the Ministry of Energy and Mineral Resources will identify another best practice(s) of bioenergy development that also to generate value added in the local/national development process.

8. Name and title of person(s) who prepared the report

1. **Achmad Rofi'ie**
   Assistant Director for Programme, NAM CSSTC
   for <u>Narrative Report</u>

2. **Subandiyo**
   Assistant Director for Administration and Finance, NAM CSSTC
   for <u>Financial Report</u>

Attachments

List of Participants

No.	COUNTRY	NAME	POSITION AND ORGANIZATION	CONTACT DETAILS
1	Bangladesh	Ms. Akter Jahan Shukhee	Assistant Director of Sustainable Finance Department, Bangladesh Bank (Central Bank of Bangladesh)	Sustainable Finance Department, Bangladesh Bank , Head Office, Dhaka-1000, Bangladesh 43/r/1,Indira Road, Framgate, Dhaka, Bangladesh Cell: +8801816899598 Email: akter.jahan@bb.org.bd; ajshukhee@gmail.com
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3	Cambodia	Mr. Chan Puthearath	Senior Technical Officer of Green Economy Department, National Council for Sustainable Development (NCSD), Ministry of Environment, Kingdom of Cambodia	#48, Preah Sihanouk, Tonle Basac, Chamkarmon, Phnom Penh, Cambodia Home: #262,360, Sankat Tonle Basac, Chamkarmon, Phnom Penh, Cambodia Ph:/Fax: +855-977969798 Cell: +85511660040 Email: cputhearath@yahoo.com
4	Cambodia	Mr. Leang Khemarith	Chief Office of New Energy and Research, New and Renewable Energy Department, Ministry Mines and Energy Cambodia	#79.89, Pasteur Street (51), Sangkat Phsar Thmey 3, Khan Daun Penh, Phnom Penh, Cambodia. Ph: +855 11959698; Email: lkhemarith@yahoo.com
5	Cuba	Ms. Marlen Navarro Boulandier	Professor and Senior Researcher of Ministry of Higher Education Cuba/ Research Station Indio Hatuey University of Matanzas	Street Mesa 277 e| America Arias & Moncada. CP 42400.Colon, Matanzas, Cuba Ph: +53-45312342 Fax: +53-571225 Cell: +53-53430791

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6	Indonesia	Mr. Fajar Marendra	Researcher, Waste Refinery Center of University of Gajah Mada (UGM)	Wirodiedo Street, RT/RW 02/20 Dode Gulon Salam, Magelang Cell: +62-85 856075029 Email: fajar.marendra@gmail.com
7	Indonesia	Mr. Ginanjar Indramaulana	Trainer, Education and Training Center for Electricity, New Energy, Renewable, and Energy Conservation Ministry of Energy and Mineral Resources, Indonesia	Jl. Poncol Raya No. 39 Ciracas, Jakarta Timur, Indonesia Telp. +62-21-8729101-06 Fax: +62-21-8728109 Cell: +62-856 864 730 Email: ginanjar@gmail.com
8	Indonesia	Mr. Ikrar Adilla	Researcher, P3TKEBTKE, Ministry of Energy and Mineral Resources, Indonesia	Jl. Cileduk Raya Kav. 109 Cipulir-Kebayoran Lama, Jakarta Selatan, Indonesia Ph: +62-21-7203530 Fax: +62-21-7203525 Cell: +62-85888827785 Email: ikrar.adilla@gmail.com
9	Indonesia	Ms. Nunung Prabaningrum	Lecturer, Dept. of Engineering Physics, Univ. Gadjah Mada (UGM), Yogyakarta Indonesia	Dept. of Engineering Physics, Univ. Gadjah Mada (UGM), Jln. Grafika 2 Yogyakarta 55281, Indonesia Ph: +62-274-580882 Fax: +62-274-580882 Email: nunung.prabaningrum@ugm.ac.id
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11	Lao PDR	Ms. Souphavady Phothisath	Technical officer at Development of Renewable Energy Division, Ministry of Energy and Mine, Institute of Renewable Energy Promotion	Development of Renewable Energy Division, Ministry of Energy and Mine, Institute of Renewable Energy Promotion, Lao PDR Ph: +856 21-285144; 020-77714484

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19	Vietnam	Mr. Nguyen Tien Long	Environment official Department of Science, Technology and Environment, Ministry of Agriculture and Rural Development (MARD), Vietnam	No. 2, Ngoc Ha Street, Ba Dinh District, Hanoi City, Vietnam Tel: +84-37347079 Fax: +84-38433637 Email: longnt.khcn@mard.gov.vn; nguyentienlong76@yahoo.com

List of Resource Persons

No.	NAME	POSITION AND ORGANIZATION	CONTACT DETAILS
1	Rachmawan Budiarto, S.T., M.T.	Centre for Energy Studies (PSE) UGM Dept. of Physics Engineering, Fac. of Engineering UGM Institute for Research and Community Service (LPPM) UGM	Centre for Energy Studies (PSE) UGM Dept. of Physics Engineering, Fac. of Engineering UGM Institute for Research and Community Service (LPPM) UGM Yogyakarta, Indonesia Cell: +62-813-92932566 Email: rachmawan@ugm.ac.id Blog: sustainability-rachmawan.blogspot.com

2	Tatang Hernas Soerawidjaja, Dr. Ir.	Bandung Institute of Technology (ITB), Indonesia	Jl. Ranca Kendal No. 228A, Bandung 4019, Indonesia Fax: +62-22-2501438 Cell: +62-812 234 947 Email: thsoerawidjaja @gmail.com
3	Prof. Arief Budiman, D.Eng	Centre for Energy Studies, Chemical Engineering Department, Gajah Mada University (UGM)	Jl. Grafika 2 Kampus UGM, Yogyakarta, Indonesia Ph: +62-274-902171 Fax: +62-274-902170 Cell: +62- Email: abudiman@ugm.ac.id
4	Dr. Muhammad Ali Imron	Lecturer, Gadjah Mada University	Fac. of Forestry UGM Komplek Agro No. 1 Bulaksumur, Yogyakarta, Indonesia Ph: +62-274- Fax: +62-274- Cell: +62-812 15 392583 Email: maimron@ugm.ac.id
5	Rochim Bakti Cahyono, Ph.D	Lecturer, Center for Energy Studies and Department of Chemical Engineering Gadjah Mada University	Nogosaren, Gamping, Yogyakarta, Indonesia Ph: +62-274- Fax: +62-274- Cell: +62-81 393 696 232 Email: rochimbakti@ugm.ac.id
6	Dr. Eko Agus Suyono, M.App.Sc.	Lecturer, Center for Energy Studies and Faculty of Biology Gadjah Mada University	Perum Citra Ringin Mas C-19 Purwomartani, Kalasan, Sleman, Yogyakarta, Indonesia Ph: +62-274- Fax: +62-274- Cell: +62-81328765344 Email: eko_suyono@ugm.ac.id
7	Muhammad Mufti Azis, Ph.D	Lecturer, Center for Energy Studies and Department of Chemical Engineering Gadjah Mada University	Jl. Grafika 2, Faculty of Engineering, University of Gadjah Mada, Yogyakarta, Indonesia Ph: +62-274- Fax: +62-274- Cell: +62-81299215203 Email: muhammad.azis@ugm.ac.id
8	Dr. Marlen Navarro Boulandier	Professor and Senior Researcher of Ministry of Higher Education Cuba/Research Station Indio Hatuey University of Matanzas	Street Mesa 277 e| America Arias & Moncada. CP 42400.Colon, Matanzas, Cuba Ph: +53-45312342 Fax: +53-571225 Cell: +53-53430791 Email: boulandier@ihatuey.cu; boulandier@gmail.com

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10	Ir. Paulus Tjakrawan	Indonesia Biofuels Producer Association	88@ Casablanka Office Tower, 5th Fl. Jl. Kasablanka Kav. 88, Jakarta, Indonesia Ph: +62-21-2956 8698 Fax: +62-21-2956 8697 Email: aprobi@ymail.com
11	Dimas Agil Marendra	Biogas Plant Manager Waste Refinery Center, Faculty of Engineering, Gadjah Mada University	Kufu Dukuh RT 12 RW 30 No. 2480 Sinduadi, Mlati, Sleman, Yogyakarta Cell: +62-85725801970 Email:dimasagil@gmail.com

Training Programme

Date	Time	Agenda
D-1: Mon, 24 August	08:30 – 09:00	**Opening Ceremony** ***(Remarks and Group Photo)*** *(MC: Elly Tioria of MOFA Indonesia)*
	09:00 – 09:15	**Coffee break**
	09:15 – 10:00	- Briefing on the Programme, Logistics and Action Plan *Achmad Rofi'ie, Rachmawan Budiarto M.T*
	10:00 – 13:00	- Presentation of Country Papers - *Facilitated by Rachmawan Budiarto M.T*
	13:00 – 14:00	**Lunch break**
	14:00 – 15:30	- Introduction to Bioenergy *Dr. Tatang Hernas Soerawidjaja*
	15:30 – 15:45	**Coffee break**
	15:45 – 17:15	- Introduction to Bioenergy (*continued*) *Dr. Tatang Hernas Soerawidjaja*
D-2: Tue, 25 August	08:00 – 09:30	- Technology and Management of Bioenergy Production *Prof. Arief Budiman D. Eng*
	09:30 – 09:45	**Coffee break**
	09:45 – 11:15	- Technology and Management of Bioenergy Production (*continued*) *Prof. Arief Budiman D. Eng*
	11:15 – 12:45	- Characteristics and Potency of Feedstock *Dr. Rochim B Cahyono, MT, Dr. Eko Agus Suyono*
	12:45 – 13:45	**Lunch break**
	13:45 – 15:15	- Characteristics and Potency of Feedstock (*continued*) *Dr. Rochim B Cahyono, MT, Dr. Eko Agus Suyono*
	15:15 – 15:30	**Coffee break**

Date	Time	Agenda
	15:30 – 17:00	- Energy Forest - *Dr. Muhammad Ali Imron*
D-3: Wed, 26 August	08:00 – 09:30	- Bioenergy from Biomass: Case of Cuba *Prof. Marlen Navarro Boulandier*
	09:30 – 09:45	**Coffee break**
	09:45 – 11:15	- Utilization of Bioenergy *Dr. Rochim B Cahyono, MT, Muhammad Mufti Azis, Ph.D*
	11:15 – 12:45	- Utilization of Bioenergy (*continued*) *Dr. Rochim B Cahyono, MT, Muhammad Mufti Azis, Ph.D*
	12:45 – 13:45	**Lunch break**
	13:45 – 15:15	- Mechanical and Biological Treatment of Muncipal Waste to Energy *Dr. Siti Syamsiah*
	15:15 – 15:30	**Coffee break**
	15:30 – 17:00	- Mechanical and Biological Treatment of Muncipal Waste to Energy (*continued*) *Rachmawan Budiarto M.T*
D-4: Thu, 27 August	08:00 – 09:30	- Advanced Biofuel *Ir. Paulus Tjakrawan, Dr. Eko Agus Suyono*
	09:30 – 09:45	**Coffee break**
	09:45 – 11:15	- Financial Aspect of Bioenergy Project *Ir. Paulus Tjakrawan, Rachmawan Budiarto M.T*
	11:15 – 12:30	- Set up a Bioenergy Project (Group Discusssion on 3 Cases) *Rachmawan Budiarto M.T, Dr. Siti Syamsiah*
	12:30 – 13:30	**Lunch break**
	13:30 – 14:45	- Set up a Bioenergy Project (Group Discusssion on 3 Cases) - (*continued*) - Presentation by Groups *Facilitated by Rachmawan Budiarto M.T* - Biogas from Fruit Waste *Dr. Siti Syamsiah*
	14:45 – 16:15	- Sustainability Aspects of Bioenergy Project *Ir. Paulus Tjakrawan, Dr. Eko Agus Suyono*
	16:15 – 16:30	**Coffee break**
	16:30 – 17:00	- Sustainability Aspects of Bioenergy Project (*continued*) *Ir. Paulus Tjakrawan, Dr. Eko Agus Suyono* - Briefing on Preparation of Action Plan *Rachmawan Budiarto MT*
D-5: Fri, 28 August	08:00 – 08:30	- Microalgae-based Biofuel Production *Dr. Eko Agus Suyono*
	08:30 – 10:00	- Fruit Waste-based Biogas Production *Dr. Siti Syamsiah, Dimas Agil Marendra*
	10:00 – 10:15	**Coffee break**
	10:15 – 11:45	- Preparation of Action Plan by Participants
	11:45 – 13:00	**Lunch break/Friday Prayer**
	13:00 – 14:30	- Preparation of Action Plan by Participants (*continued*)
	14:30 – 16:00	- Presentation of Action Plan by Participants *Facilitated by Rachmawan Budiarto MT*
	16:00 – 16:15	**Coffee break**
	16:15 – 17:45	- Presentation of Action Plan by Participants (*continued*)

Date	Time	Agenda
		Facilitated by Rachmawan Budiarto MT - Overall Evaluation (Filling up the Questionnaires)
D-6: Sat, 29 August	***Whole day***	- Observatory Visit to the Microalgae-based Biofuel Production *Facilitated by the Centre for Energy Studies of UGM* - Observatory Visit to the Fruit Waste-based Biogas Production *Facilitated by the Cooperative of Gemah Ripah*
D-7: Sun, 30 August	***Whole day***	- Free
D-8: Mon, 31 August	08:00 – 09:30	- Check Expectations *Achmad Rofi'ie, Elly Tioria*
	09:30 – 09:45	**Coffee break**
	09:45 – 11:15	**Closing Ceremony** ***(Remarks, Certificate Awarding and Group Photo)*** *(MC: Elly Tioria of MOFA Indonesia)*

Evaluation Forms

SUBJECT/FIELD EVALUATION
International Training Programme on
Bioenergy Development
Yogyakarta, 24 - 31 August 2015

Name of Subject/Field :
Name of Trainer/ Resource Person :
Date : **Time :**

Instruction:
Use the following score to indicate the extent to which you agree or disagree with each of the statements below.
Score Code:

Strongly disagree	= 1
Disagree	= 2
Neutral	= 3
Agree	= 4
Strongly agree	= 5

If you have any comment, please write down on the space at the end of each item.

BLOCK A: RELEVANCE

A1. I was able to understand the operating system of Micro Hydro Power. (Level of Understanding)

1	2	3	4	5

Comment:

……

A2. Knowledge/skills gained from this field visit could be applied in my country. (Level of Application)

1	2	3	4	5

Comment:

……

BLOCK B: EFFICIENCY

B1. Documents provided (Training Materials) are appropriate and useful.

1	2	3	4	5

Comment:

……

B2. The Trainer/ The resource person is professional (Method of instruction, Communication skills: clear explanation, clear answers to questions)

1	2	3	4	5

Comment:

……

1	2	3	4	5

B3. The time given was appropriate.

Comment:

.....

……....

.....

OVERALL EVALUATION

International Training Programme on
Bioenergy Development
Yogyakarta, 24 - 31 August 2015

Instruction:
Use the following score to indicate the extent to which you agree or disagree with each of the statements below.

Score Code:

Strongly disagree	= 1
Disagree	= 2
Neutral	= 3
Agree	= 4
Strongly agree	= 5

If you have any comment, please write down on the space at the end of each item.

BLOCK A: RELEVANCE

A1. The knowledge and practices of Micro Hydro Power for Rural Development scheme seem workable in my country.

1	2	3	4	5

Comment :

……...

……...

A2. The content of the course (how to understand, develop and manage micro hydro power, and its benefit for rural development seem workable in my country.

1	2	3	4	5

Comment:

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……..

BLOCK B: EFFECTIVENESS

B1. I was able to achieve the following objectives of this course:

a. Knowledge and practices of Micro Hydro Power.

1	2	3	4	5

Comment:

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……

b. Explain and analyse Micro Hydro Power Development, its context, actors and venues, its relevance to your host country and the skills it requires.

1	2	3	4	5

Comment:

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B2. The course contents are clearly related to your present or future works.

1	2	3	4	5

Comment:

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……

BLOCK C: EFFICIENCY

C1. This course has covered the subjects that I expected.

1	2	3	4	5

Comment:

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C2. In general, the study visits arranged were suitable to help me deepen my understanding or further improve my skills on each subject.

1	2	3	4	5

Comment:

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C3. I consider the course is "timely" implemented according to the country's needs in developing micro hydro power (objective of the course).

1	2	3	4	5

Comment:

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C4. One-week course is appropriate.

1	2	3	4	5

Comment:

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Documentation

Welcoming Remarks by Ambassador Esti Andayani,
Director of NAM CSSTC

Opening Remarks of the Training Sessions by Ronggo Kuncahyo,
Senior Assistant to the Minister of Energy and Mineral Resources of Indonesia

Group Photo
after the Official Opening Session of the Training Programme

Briefing on the Programme, Logistics and Action Plan before the Training Session Started

Presentation of Participant's Country Paper


Class Session

Class Session

Class Session

Group Discussion

Group Discussion

Group Discussion


Presentation of the Group

Field Session at the Microalgae-based Biofuel Production in Cangkringan, Sleman District

Field Session at the Microalgae-based Biofuel Production in Cangkringan, Sleman District

Field Session at the Microalgae-based Biofuel Production in Cangkringan, Sleman District

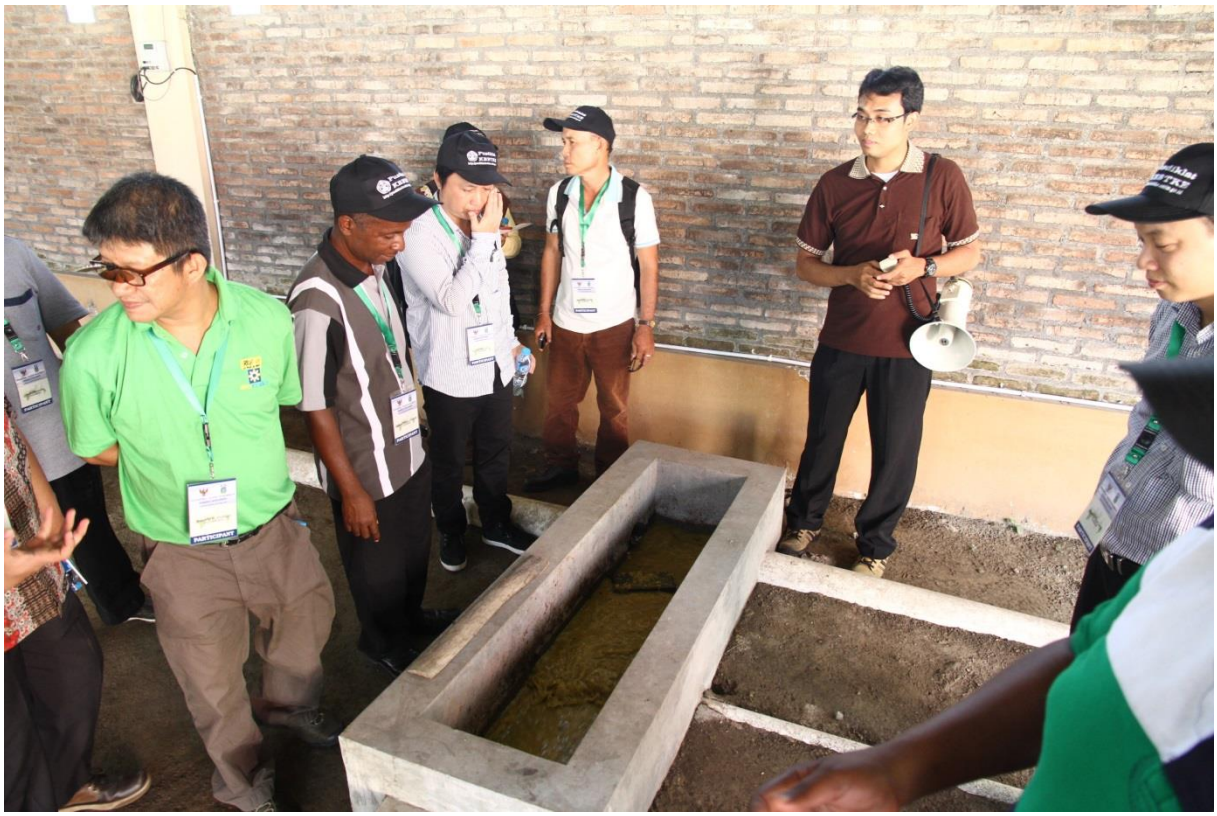
Field Session at the Microalgae-based Biofuel Production in Cangkringan, Sleman District

Sukiman, on behalf of the Ministry of Energy and Mineral Resources Giving a Small Token to the Lecturer of UGM during Field Session in Cangkringan, Sleman District

Field Session at the Microalgae-based Biofuel Production at the Mini Ecoplant of UGM

Field Session at the Microalgae-based Biofuel Production at the Mini Ecoplant of UGM

Field Session at the Fruit Waste-based Biogas Production at the Gamping Market



Field Session at the Fruit Waste-based Biogas Production at the Gamping Market

Field Session at the Fruit Waste-based Biogas Production at the Gamping Market

Field Session at the Fruit Waste-based Biogas Production at the Gamping Market

Field Session at the Fruit Waste-based Biogas Production at the Gamping Market

Subandiyo, on behalf of NAM CSSTC giving a Letter of Appreciation
to the Chairman of Market Cooperative during Field Session in Gamping

Preparation of Action Plan by Country

Preparation of Action Plan by Country

Presentation of Action Plan by Country

Check Participant's Expectations

Participants' representative, Roberto G. Dolojan (Philippines), Delivering Vote of Thanks to the Training Committee on the Closing Session

Achmad Rofiíe, Assistant Director for Programme of NAM CSSTC
Delivering Closing Remarks on the Closing Session

Awarding of Certificate to the Participants

Awarding of Certificate to the Participants

Awarding of Letter of Appreciation to the Resource Person and Training Coordinator

Ronggo Kuncahyo, Senior Assistant to the Minister of Energy and Mineral Resources of Indonesia
Delivering Closing Remarks on the Closing Session

Group Photo
after the Official Closing Session of the Training Programme