

Report
on
Launching of the Project
and
Two-day Capacity Building Workshop
on
Converting Waste Agricultural Biomass into Resource

Conducted By



Society for Environment and Economic Development Nepal
(SEED Nepal)

in Collaboration with
Madhyapur Thimi Municipality (MTM)

with Support of
UNEP, DTIE, IETC

August 2009

Background

Society for Environment and Economic Development Nepal (SEED Nepal) in association with the Madhyapur Thimi Municipality (MTM) and with the support of UNEP, Division of Technology, Industry and Economics (DTIE), International Environmental Technology Center (IETC) has planned to implement a demonstration project on "Converting Waste Agricultural Biomass into Resource". A two-day workshop was conducted for launching of the Project and capacity building of the stakeholders on 26th and 27th of August 2009. The workshop was conducted at the Training Institute for Technical Instruction (TITI).

Inaugural Ceremony

At the inaugural ceremony of the workshop, Chief Guest the Honorable Minister for Environment could not attend due to scheduling of an urgent Cabinet Meeting of the Ministers. The session was chaired by the Executive Officer of MTM Mr. Ram Prasad Pathak. Mr. S. P. Chandak, Deputy Director, UNEP had given the keynote address. Mr. Amar B. Manandhar, Executive Director of SEED Nepal gave welcome speech and introduced SEED Nepal, the Project and the objective of the workshop. Mr. Govinda Tiwari, Director of SEED Nepal was the Master of Ceremony.



Mr. Manandhar welcomed all the guests, presenters and participants. He introduced the SEED Nepal as a non-governmental and non-profit organizations working mainly in the fields of Environment and Productivity. According to him, SEED Nepal gives more emphasis on the proactive and preventive approach. He went on to say that the project on converting Waste Agricultural Biomass into resource is going to be implemented by SEED Nepal in collaboration with MTM and with the support of UNEP, DTIE, IETC. Since Madhyapur Thimi is the main center for agricultural production in the Kathmandu Valley, the Municipality of Madhyapur Thimi has been chosen for the project site. Waste agricultural biomass will be converted into resource using the application of a suitable technology. The selection of the technology is not yet done and will be done with the consultation of all the stakeholders. The technologies available include biomass briquetting, biomass Gasification, conversion into liquid fuel, bio-methanation, composting and bio-gas from biomass. Besides, the waste biomass may also be converted into material resource. The conversion process will be selected on the basis of socially acceptance, economically feasible, and present market. The project will establish a real life demonstration of a technology for converting the waste agricultural biomass into material or energy resource. He also mentioned that the workshop is just the beginning of the process and the stakeholders will be consulted and briefed. Five papers were presented during the workshop and discussions were held on these working papers. SEED Nepal has already initiated the survey of the baseline study on the categorization and quantification of the Waste Agricultural Biomass in the Madhyapur Thimi Municipality. The preliminary findings of the survey and the methodology followed will also be presented in the workshop with a view to obtain

feedback and suggestions. He mentioned that the workshop kit contained a brief write up on the project with all its activities.



In his keynote speech, Mr. Chandak highlighted that UNEP tries to promote better environment. The activities of IETC focus mainly on Waste and Water. Under waste, IETC has various programs on E-Waste, Integrated solid Waste Management (ISWM), management of Plastic, and conversion of waste agricultural biomass into resource. He said that such demo project is also being implemented in Sri Lanka. The objectives of such demo project are the conversion of agricultural waste into

resource on one hand and on the other this will help in the reduction in the degradation of the environment due to Green House Gases (GHG). He also mentioned that he has experience in working together with the SEED Nepal professionals from 1996, when he had provided technical assistance for the implementation of Cleaner Production (CP) under Industrial Pollution Control Management (IPCM) Project assisted by UNDP and UNIDO. He took the example of a water bottle. Once the water in the water bottle is exhausted, it is going to be useless and waste for someone, however someone may make use or reuse the empty bottle. It may also be burnt for the energy. This will also result in the lower volume of the waste to be disposed at the landfill site. He also gave an example from England. A study has shown that the value of plastic materials calculated from 30 landfill sites, is estimated to be 200 million pounds . Also in Nepal a significant amount of waste can be saved from the landfill and utilized by converting into material or energy resource. Mr. Chandak also emphasized on the issues of employment generation and equitable distribution of income due to implementation of such project to convert waste agricultural biomass and this could contribute to poverty alleviation.



Mr. in his inaugural speech said that the waste is one of the main problems for the Municipality and arising out of the urban lifestyle. The awareness has been enhanced on the need for environmental improvement and slogans like *Fohar Bata Mohar* meaning Cash from Trash. It is now time to carry out the actual implementation. He also want on to say that he has included some programmes and also allocated some budgets for environment related programmes such as biogas from biomass. Agricultural Biomass is degradable and causes adverse impact on the environment including emission of GHG contributing to global warming while the resources are also wasted. Such project will improve the cleanliness and also save the amount of money to be spent on collection, transport and proper disposal of the waste. So the proposed project has been launched at a very good time. He thanked the Project Team, SEED Nepal and UNEP for implementing the project in MTM and he wished the project team a grand success in the process of implementation. He declared the closure of the inaugural session.

The details of the workshop programme with the inaugural session and the closing session is given in the Annex – 1. The attendance of the participants of the workshop is attached as Annex – 2.

Technical Sessions on the First Day

The technical session started with the presentation on Categorization and Quantification of Waste Agricultural Biomass by Mr. Chandak. The handouts of the presentation are given in the Annex – 3. The presentation invoked interaction and discussion among the participants. The session continued after lunch as well. The main focus of presentation and discussions were: forms of Waste Agricultural Biomass (WAB), benefits of converting WAB to resource, use of organic compost fertilizer, reduction of green house effects, quantification and categorization of WAB, trend of generation of WAB, cost of collection and transportation of WAB, availability seasonally, and parameters to be considered in the characterization.

Dr. Krishna Raj Shrestha presented on Data Collection, Analysis and Preliminary Findings of Waste Agricultural Biomass in the Madhyapur Thimi Municipality from the survey conducted by SEED Nepal. The handouts of the presentation are given in the Annex – 3. He presented on the methodology followed in the survey for the baseline study including the sampling, the questionnaire, data collection, analysis using SPSS package. The preliminary findings were also presented and discussed.

Discussion

The following issues were discussed:

- It was raised that the agricultural waste from domestic source has not been considered. Mr. Chandak mentioned that the domestic waste is usually dispersed so the segregation and collection of such waste is very difficult and outside the scope of this project. He gave example of good segregation and collection system practiced in Japan. Japan follows seven categories segregation of wastes from domestic waste. But it will not be easy to practice the same in Nepal.
- Krishna Bahadur Ghaju raised the issue of rapid urbanization. Urbanization is increasing rapidly in the Madhyapur Thimi Municipality. As a result, there is a loss of agricultural land and the results of the study may change fast in the near future.
- Environmental Cleanliness is desirable but by human nature, Not In My Backyard (NIMBY) syndrome has started to prevail strongly. Participants requested that the project needs to consider this in the establishment of Technology.
- An example of a failure of a compost plant was cited. In the Ward 5 Nagadesh, a compost plant had been constructed in collaboration with World vision and the Municipality. The composting plant was operating smoothly for around two years. Then the land next to the plant was bought at a very low price by a party, who constructed a residential building there and complained to close the operation of the compost plant. The building was approved by the municipality. This case should be taken as a lesson for the proposed project location.
- It was suggested to consider the collection of agro-residue from community forest.
- Not only domestic solid waste but also domestic liquid waste is to be considered
- Rice and wheat straw produced after the beating process should also be considered
- Changes in the Socio-economic conditions should also be considered

Day 2:

Technical Session

The second day technical session started with the presentation on Assessment of Agricultural Waste Management System by Mr. Chandak. The handouts of the presentation are given in Annex – 3. The presentation focused on collection, transportation, pre-treatment, recycling and recovery, final disposal for proper management of Agro-waste. Interactions were held on the stakeholders, assessment of policies, laws, economic instruments, and their enforcement. Assessment of institutions involved, their roles, mandate, human and financial resources, weakness and gaps, measures for improvements; assessment of financing mechanisms and technology were also discussed.



The second presentation was made on Existing Waste Management System by Mr. Govinda Tiwari. It covered topics like Historical Development of the Solid Waste Management (SWM) systems in Nepal, government initiatives, and Policies for Solid Waste Management in Nepal. He also presented on the waste management hierarchy and existing management system being practiced.

The third presentation was made on the compendium on Technology for the converting Waste Agricultural Biomass into Resource by Mr. Amar B. Manandhar. The presentation is given in the Annex – 3. He discussed on the UNEP/Development Academy of Philippines (DAP) website on Technology for converting Waste Agricultural Biomass into Material and Energy Resources. He clarified that with consultation of the stakeholders, issues will be identified so that these will result in better selection of most desirable technology for converting the available WAB into resource.

Discussions

The issues discussed under the three presentations on the second day were as given below:

Mrs. Manju Thapa, Nava Jagaran Mahila Samaj, Treasurer: Organic wastes are being used for composting. How to use the plastics and glass? It was pointed out that the most plastics and glass can be recycled. Waste based industries like Enviroplast of Chitwan district are looking for waste plastics. Broken glass recycling is not available in Nepal as the glass industries have closed, but these can be safely used in underground construction filling.

Issue Raised by Ms. Sulochana Pokhrel, Mahila Nava Jagaran Kalyan Samaj

In Shankhadhar Shakwa tole, non-organic wastes like plastic, glass have been collected from 20 households once in a month and have demanded transport vehicle from MTM for its collection. The vehicle was provided for one year but it is not provided now. As a result, they were compelled to dump the inorganic waste collected from 20 household along the riverside. The composting is being continued at the household level for the organic waste. It was suggested to increase the number of households for the collection of non-degradable waste so that the recycling industries will be interested to purchase them.

Issue raised by Hari Govinda Prajapati, Nepal Ceramics Co-operative society Ltd.

There is a lack of dumping site for the management of municipal waste in Kathmandu Metropolitan City. The problem is mainly due to the Municipal Waste. Therefore, organic Municipal waste must be used.

Surya Prakash Chandak: One of the UNEP project is Integrated Solid Waste Project which incorporates the different types of waste generated like Municipal Waste, Industrial waste, commercial waste, and healthcare waste. Different treatment units are to be installed for different wastes according to their nature. And it is a huge project. In Nepal, such system is handled by KMC. KMC has to manage all the waste generated. In this condition, maximum solution cannot be achieved. For the various steps of Management, from the primary collection, segregation to final disposal, stakeholders are chosen. For this, technology is not only the solution. Other factors like political issues, administrative aspects need to be considered for the planned management.

Many studies have been carried out in Municipal Waste but the Waste Agricultural Biomass is a very new topic. For Nepal, waste agricultural biomass is also one of the major problems.

Issues Raised by Mr. Sita Ram Dugu, Ward no. 6.



The technology to be used is still not known. He also suggested that the handouts will be more useful in Nepali language. Mr. Manandhar clarified that it is just the beginning and all the stakeholders will be consulted and briefed on the choice of technology. He also suggested visiting the UNEP/DAP website for available technology. He also promised that in the next meetings and workshops, handouts will be provided in Nepali language.

Closing Session



After the three sessions and the discussion session, the formal closing session was conducted as per the programme. The session was again chaired by Mr. Ram Prasad Pathak, Executive Officer of MTM. Mr. Tiwari was the Master of Ceremony.

Mr. Manandhar thanked all the participants for active participation and relevant feedback. He reiterated the objectives

of the and the project. He presented on the summary of discussion as given below:

1. The initial discussion in the workshop tried to indicate that there is no WAB. However, it was discussed that the WAB can be a good positive resource.
2. WAB from household should also be considered at a later stage on long term
3. Remaining WAB from the Paddy and Wheat after thrashing must also be considered
4. While harvesting the wheat and rice, small quantity of agro waste is left in the field (root and 3-4 inch of straw) and this needs to be considered.
5. Agro-forest residue from community forests must also be included
6. Awareness on environment and technological solutions must be promoted
7. Political commitment, strong commitment of Municipality are necessary to prevent closer of operational units like the composting plant
8. Not in my back yard (NIMBY) syndrome must be properly considered for success of the project
9. Cost of transport of WAB needs to be considered
10. Waste from floriculture may be significant and should be studied
11. Technology of bricks and tiles making from the municipal waste could also be considered
12. Changing socio-economic conditions and urbanization must also be considered as these may affect the choice of technology

He also narrated the action plan for the forthcoming activities of the project as given below:

1. Completion of baseline studies on characterization and quantification of WAB and WAB Management System by end of September 2009
2. Issues of concern on the Technology selection for converting WAB to resource by November 2009
3. Selection of Environmentally Sound Technology (EST) for converting WAB to resource by November 2009
4. Project development on EST by November 2009
5. Procure selected EST and implementation by August 2009
6. Development of strategy for the government for replication of EST by September 2009
7. Preparation of guidelines for the replication of EST by September 2009

From the side of all the participants, two of the participants were requested to give their feedback on the workshop and the project. They had the following feedbacks:



Ms. Shova Kaiti, Yuva Krisak Samuha, Nikosera, Ward No.3 was the first to provide the feedback from the side of the participants. She said that Madhyapur Thimi is recognized as agricultural center. Waste from agricultural biomass will be utilized for the energy extraction in economically, socially, environmentally friendly and in a profitable manner. The objectives and scope of work of the Project has been understood clearly. But there was lot of confusions before the start of the workshop. Since the project is a good one, the implementation of the project will be beneficial for all the residents of the Madhyapur Thimi from farmers to the local government. The interaction level is higher which is really appreciable. Consideration of Agricultural biomass along with Municipal solid waste is desirable. She also wished every success of the Project.

Bhakta Raj Khatri, Samudaya Bikas Samaj was the next participant to speak. According to him, the project on converting Agricultural biomass into resource is good one and he welcomed the implementation of the project in the Madhyapur Thimi Municipality. Initially, he did not have the idea about the agro waste before the workshop but now the need and advantage is understood. There are many challenges for this project. The major problem is still the domestic waste and hence this needs to be considered as well. The agricultural waste can be used for income generating activities by creating job opportunities through appropriate technology. Market opportunity for the materials or energy produced from the wastes should also be considered. So awareness level has to be increased.

Mr. Surya Prakash Chandak, UNEP Expert in his closing remarks asked the floor as to who owns the project. The participants replied that the project is owned by them all as they are the stakeholders and the project is for their benefit. The project belongs solely to the Residents of the Thimi Municipality. Waste is not useless items but it can have great value. He appreciated the active participation of all the relevant stakeholders and involvement of very interactive lady participants. He also requested all the stakeholder participants to follow up on MTM, SEED Nepal on the timely implementation of the project.

Mr. Ram Prasad Pathak, Executive officer of Madhyapur Thimi Municipality in his concluding remarks said that the project can be taken as a demand based project now as all the stakeholder participants have agreed that the project belong to them. He opined that the waste is related to development. Developmental activities have severe impact on the environment like global warming. Management of environment is costly. Therefore, developmental activities must be executed in environment friendly way. Then only it will be successful and the development will be sustainable and there will be no adverse impact.

He mentioned that in Rome, the Mayor has to take oath that he will handover Rome in the same state or condition to the next Mayor. There must be 100% commitment and effort from all the stakeholders for delivering benefits to society. He emphasized in his firm commitment to see that the project is carried out well. On the failure or closing down of the composting plant, he said that it lacked proper policy that time. The smell from the plant could not be avoided. We must learn from the earlier project and mistakes to do better in new projects. The project like this is of great need for the people of Madhyapur Thimi Municipality. Municipal Solid waste is posing a major problem in Thimi being a center for agriculture.

Finally, maximum utilization of the agricultural waste is desirable. Now it is time for actual implementation. The stakeholders should give the positive pressure to the MTM and SEED Nepal. From the analysis of raw data, meaningful information will be obtained and used for the site as well as technology selection. The two day workshop is a huge success and he thanked everybody before declaring the workshop closed.

Annex – 1: Details of Programme

**Capacity Building Workshop on
Converting Waste Agricultural Biomass into a Resource
Conducted by
Society for Environment and Economic Development Nepal (SEED Nepal)
in Association with Madhyapur Thimi Municipality (MTM)
and with Support from UNEP, DTIE, IETC
26st and 27nd August 2009**

Draft Agenda

**Venue: Training Institute for Technical Instruction (TITI), Gatthaghar, Madhyapur Thimi
Day 1: 26th August Wednesday**

Session	Time	Particular	
Inaugural			
	09:30 – 10:00	Arrival of Participants	
	10:00 - 10:05	Chairing Executive Officer, RPP, MTM	
	10:05 - 10:15	Welcome remarks Project and Workshop Overview - ABM	
	10:15 – 10:30	Keynote Address – SPC	
	10:30 – 10:45	Inauguration and Inaugural Address - Chief guest Honorable Minister for Environment	
	10:45 – 11:00	Address and Closing by Chairperson	
	11:00 – 11:30	Tea Break	
Baseline Report on Waste Agricultural Biomass			
1.1	11:30 – 13:00	Waste Characterization and Quantification	SPC
	13:00 – 14:00	Lunch Break	
1.1	14:00 – 15:00	Waste Characterization and Quantification - continued	SPC
1.2	15:00 – 15:30	Presentation of Data Collection, Analysis and Preliminary Findings for Waste Agricultural Biomass	SEED
1.3	15:30 – 16:30	Discussion Q & A	
		End of Proceedings (Day 1)	

Day 2: 27th August Thursday

Session	Time	Particular	
	10:00 – 10:30	Arrival of Participants	
Selection of Environmentally Sound Technology			
2.1	10:30 – 12:30	Assessment of Agricultural Waste Management System	SPC
2.2	12:30 – 13:00	Existing Waste Management System	GT
	13:00 – 14:00	Lunch Break	
2.3	14:00 – 14:30	Presentation on Compendium of Technologies	ABM
2.4	14:30 – 15:00	Discussion, Question & Answers	ABM
	15:00 – 15:30	Tea Break	
Closing Session			
2.5	15:30 – 16:30	Chairing of the session by Executive Officer, MTM Summary of Discussion and way forward - ABM Remarks and Feedback from the side of participants 1 & 2 Closing Remarks - SPC Final Remarks and Closing from the chair	
	16:30	End of Workshop Proceedings	

ABM: Amar B. Manandhar;
KRS: Dr. Krishna Raj Shrestha
RPP: Ram Prasad Pathak

GT: Govinda Tiwari
SPC: Surya Prakash Chandak
MTM: Madhyapur Thimi Municipality

Annex – 2: List of participants