WOKSHOP PROCEEDINGS REPORT
Sustainable Household Waste Management Workshop
Problems and Potentials (Towards 3 + 2Rs)
Riverview Resort and Conference Center, Calamba City, Laguna, Philippines
4 July 2017, Tuesday, 9:00-3:00 PM

Welcome remark and introduction
Dr. Erika Seki
Osaka University

Dr. Erika presented a brief introduction of the project and its origin. She mentioned that the Sustainable Waste Management Network (SWAN) Project was launched as an initiative to somehow help reduce solid wastes among lakeshore barangays in Calamba. This condition exacerbates the already poor state of Laguna de Bay. More than 20 years ago when she had her graduate studies (MS) at UPLB, she used to eat fish caught from Laguna de Bay since it was still very clean. She emphasized the importance of including 2 more Rs (Refuse and Respect) to the current 3Rs (Reduce, Reuse and Recycle) for a sustainable household waste management. Dr. Erika said that the SWAN Project aims to address economic, social, and moral issues of household solid waste management in Calamba City specifically in Barangay Looc. She mentioned some future activities of the project which are solid waste management workshops, possible seminars in Japan, and a community forum in 2018.

Evolution and overview of the workshop
Dalton Erick Baltazar
Project Researcher, SWAN Project

Mr. Baltazar presented how the project started and prior projects and activities connected to SWAN Project. These projects and activities were the LakeHEAD and FACE projects, and the Philippine Field Study Group initiated by Ritsumeikan University. He presented some results of the key informant interviews and household surveys that they have undertaken. He noted that Barangay Looc in Calamba City, Laguna does not have its own waste management system and that it just depends on the LGU. He mentioned that about half of the recyclables in the city is unmanaged and that the city waste collector misses to collect about a ton of waste in Looc per day. He said that the average volume of waste each household holds in a day is 3kg and 60% of which are plastics. Households refuse to divulge the way they dispose wastes and the awareness of the households to ordinances and waste management practices is generally low. The project recommends the city to improve its waste collection services, possibly adopt new technologies, and enlighten households about the concept of waste management as public goods.

Impacts of Solid Waste Management Program within the Laguna de Bay Basin: LLDA Perspective

Forester Azyleah C. Abino
Laguna Lake Development Authority (LLDA)

Forester Abino of LLDA mentioned the enabling rules and regulations related to solid wastes which are the following: LLDA Board Resolution No. 125 Series of 2000 (2000)- an ordinance among all municipalities to use non-biodegradable plastic bags and provisions of RA 9003 to be implemented among LGUs- LISCOP Project via MRF establishment (2004). Model LGUs for the LISCOP Project when it comes to MRF are Teresa, Morong, Tanay and Antipolo in Rizal and some municipalities in the province of Laguna. Among all lakeshore municipalities in Laguna de Bay, Calamba City is the catch basin. Hence, it absorbs most of the wastes. In 2014, World Bank found that amount of biological oxygen demand (BOD) in Laguna de Bay was 18,000 tons/year representing an 80% reduction. This result was attributed to LISCOP projects.

Question & Answer

Q1: What is biological oxygen demand (BOD)?
A: BOD is the amount of dissolved oxygen needed to decompose an organism. Too high BOD level is not favorable.

Q2: How was the assessment of Laguna de Bay's BOD level with and without project made? Was it done by comparing before and after the LISCOP project?
A: Yes

Q3: Were there impact assessments done to evaluate the MRF project?
A: None at the moment. Impact assessment is done 5 years after the project. Since MRF project only started in 2013. However, based on preliminary assessment, of the 7 LGUs' MRF, 3 are no longer functional. What LLDA did was to craft memorandum of agreement (MOA) with the LGU stating that LLDA shall provide technical assistance. Also, it is the DILG to assess LGUs compliance to RA 9003 which is being done quarterly.

Q4: What made the 4 LGUs successful compared to 3? What possible changes can be made in other areas? It'd be quite important to assess why the 4 LGUs are successful against 3 which can be applied in other areas of the country.
A: Something to do with the leadership (executive and legislative) in support to solid waste management (SWM) program. Another is sharing of best practices of a champion LGU to other LGUs. One of the champion LGUs is Teresa, Rizal. A lot of LGUs are visiting Teresa to observe and adopt best practices. The champion in Teresa is the engineer who's very creative. Other reasons for success in Teresa are the strong support of the Mayor; commitment of the people and the whole municipality but also the religious groups, and at the barangay level. Reasons for the success in Teresa, Rizal was documented by a student of College of Development Communication (CDC) in UPLB.

SESAM Solid Waste Management (SWM) Related Project
Engr. Marisa Sobremisana
School of Environmental Science and Management (SESAM), UPLB

The speaker has been involved on solid waste management for more than 3 decades already. Her presentation dealt on floating ideas regarding new technologies that LGUs might want to adopt and a touch on the current project of SESAM on solid wastes. She stated that the major challenges at the moment in solid waste management are: availability of suitable land, budget and consensus among stakeholders/implementers of RA 9003. The areas for improvement in solid wastes are: shared responsibility, producers responsibility through the extended producers responsibility (EPR) wherein recyclable wastes e.g. Hewlett-Packard (HP's) cartridge will be bought again, and; waste to energy conversion. In most of the developed countries right now, landfilling is no longer common but rather recycling and incineration of wastes through the closed cycle system. Given the recent progress in the incineration technology, total ban of incineration in the Philippines to be revisited.

Question & Answer

Comment1: Reward system is good especially for the country like the Philippines but it is not yet widely used. An advantage in developing countries, garbage has value to people. In fact the Philippine Clean Air Act law should be revised to promote on conditional basis the "incineration." But taking into account the amount of GHGs that shall be emitted.

Comment2: Filipinos are efficient in recycling

Comment3: LLDA staff shared to the group that one of the problems of LGU is the disposal of residual wastes. One cement plant in Rizal actually incinerates to address such problem which has been supported by the LGU as well.

Comment4: The speaker shared that UPLB does not have its own waste disposal facility and its former waste facility has been closed.

Q1: How to share responsibility to people?
A: This can be done via the Extended Producers Responsibility (EPR) incorporated in the Environmental Management System (EMS). Such is the case of the Hewlett Packard- shared responsibility among industries e.g. HP-Hewlett Packard buying cartridge. One of the speakers however said that the problem with EPR since Philippines is a developing countries, many of our products especially the electronics have adulterated parts. Hence, it is difficult to decipher the responsible company for the EPR.

Q2: Are there studies on the assessment of policies in relation to SWM e.g. market based instruments? Which ones are the most appropriate to use?
A: None at the moment. The speaker said that what SESAM does is to help LGU develop environmental code. The participant said that there should be mechanisms/ policies for the

industries and households comply with environmental users fee system (EUFS) especially those who do not obey the law.

Review of the 3R Policy Implementation in the Philippines
Dr. Vella Atienza
Community of Public Affairs and Development (CPAF), UPLB

The speaker discussed Philippine policies related to 3R which are: RA 9003 (Ecological Solid Waste Management Act of 2000) and the National Framework Plan for the Informal Waste Sector in Solid Waste Management (2009). RA 9003, enacted in 2001 takes a holistic approach to address the problems on solid wastes management. The speaker is a current member of the drafting committee in Asia and the Pacific regarding the status of 3R in the region which started either in 2013/14. Most of the information of her presentation came from the country chapter of this project that included: (1) country situation and recent policies related on 3R (2) waste definition, categorization and 3R indicators (3) assessment of 3R policy implementation in the Philippines and, (4) recommendations. Other initiative for 3R is the Regional Forum organized by United Nations Centre on Regional Forum (UNCRD) that started in 2009. It is an annual event occurring every December. During the 4th Regional Forum in Hanoi, Vietnam, 33 goals were crafted measuring the accomplishments of 3Rs. The drafting committee for Asia and the Pacific focused on 9 goals covering the period from 2013-2023.

Country situation and recent policies related on 3R

The Philippines being archipelagic has unique ways of managing wastes affected by culture and population growth in each municipality. Trend shows that population is increasing, hence, an increase in waste generated. Based on assessment, however, per capita waste generation decreased from 2.35kg/person in 1990 to only 1.90kg/person in 2010. Nonetheless, the urban is has consistently higher wastes generated compared to those in the urban.

Regarding Philippine law on solid waste management, RA 9003's states that LGUs should adopt a comprehensive, systematic, ecological solid waste management system. Hence, various stakeholders such as the government, private sectors, NGOs, manufacturing and packaging industries convened. Biodegradable wastes are the responsibility of the barangay while recyclables should go to the Materials Recovery Facility (MRF). The LGU should manage its residual wastes. The roles of LGUs based on RA 9003 are: mandatory closure of dumpsites, 25% waste diversion, segregation at source, construction of MRF in each barangay etc. However these are challenges since LGUs often have little or no technical, financial and human support. Thus, the role/involvement of informal waste sectors (waste pickers) should be recognized.

The question plaguing the solid waste management is that, with the closure of the dumpsites, what shall be done to the informal sectors? Based on studies, if the social aspect is not addressed, poverty and other illegal operations would worsen. Thus, it is important to consider the social aspect. Such is in the case when Payatas shut down. An increased crime rate was observed. Payatas dumpsite reopened but waste picking by the informal sectors was done systematically.

For the informal sectors, waste picking is their source of livelihood. Worldwide data showed that a $15M was recovered on solid wastes. The informal sectors are often exposed to different hazards: unsafe working environment, prone to exploitation and limited access to services. The informal sector often gets the lowest benefit in the chain ending up in poverty and powerlessness. Another concern is how to protect the informal waste sectors without putting the health of people and the environment at risk? What are the possible strategies to uplift their economic condition both economically and socially in the Philippines? Hence, the National Framework Plan for the Informal Sector in Solid Waste Management was crafted. For the integration of informal sectors become successful in the implementation of solid waste management, there should be a public-private partnership. Some of the proposed interventions: forming the informal sectors to organizations/cooperatives; capacity development, access to resources, favorable policy environment and access to secured livelihood.

In early 2000, the Philippine-Australian Community Assistance Program (PACAP), a WorldBank Project and First Philippine Innovative Project extended a grant. The fund was used to organize the informal sectors through household survey and collaboration with the LGU. Some of the LGU beneficiaries were Los Baños, Laguna, Negros Occidental and Payatas, Quezon City. In 2004, a collaboration was made with Mayor Cesar Perez. The informal sector became official collectors of recyclables from the households and establishments. Collectors have IDs signed by the president of the organization and the Municipal Mayor. Gave seed money, uniforms and pedicab. Waste collectors were introduced to different sectors in Los Baños. Unfortunately, the project stopped due to change in leadership. In Negros, Occidental, meanwhile, the informal sectors were integrated to the eco-centers. With the closure of its dumpsite, many waste pickers were affected. About 10 of the workers became full time or part-time workers in the eco-center. Lastly, in Payatas, Payatas Alliance Recycling Exchange (PARE) registered as a multi-purpose cooperative registered under Cooperative Development Authority (CDA). The informal sectors were also affected by the closure of dumpsite. Children below 14 y/o are not allowed. Through PARE, former scavengers can access financial and skills trainings.

Waste definition, categorization and 3R indicators

What is solid wastes? The way we define wastes differ in various countries. Categorization of wastes are: biodegradables, recyclables, special wastes and residuals from households and commercial establishments. If all households and commercial establishments will implement 3R, only small percentage will be disposed in the landfill. Based on the regulation of RA 9003, all controlled dumpsites should be closed and the sanitary landfill should be the final destination. If only small portion of residual wastes is dumped, it shall extend the lifespan of the landfill.

Some of the 3R indicators are: total waste generated and disposed off; per capita waste generation; overall recycling rate; amount of hazardous wastes, agricultural wastes, marine and coastal wastes; e-wastes, policies, guidelines on extended producers responsibility (EPR), and; GHG emission. In the Philippines, there is no data on the national volume of waste generated but the Metro Manila Development Authority (MMDA) in Manila collected data from accredited

disposal facilities. These are the landfills in Rizal, Navotas and Quezon City. The estimated volume of waste in 2015 was 10.264 M m^3.

Assessment of 3R policy implementation in the Philippines

By 2006, the LGUs were supposed to have diverted 25% of its wastes as provided in RA 9003 and should continue to increase every after 3 years. LGUs should have activities that reduce or eliminate the amount of solid wastes in the facility. In Metro Manila, though this was not reach, the percentage of waste reduction has been decreasing. Recycling rate is 31%. What are the ways to promote recycling in LGUs? DENR search for model city and barangays which give cash incentives and trophies e.g. incentive rebates program in Quezon City. This is done to reduce hauling fee. There are also recycling collection events wherein 2 of the biggest malls, SM and Ayala do recycling activities with the informal sectors organizing them.

In relation to managing hazardous wastes, DAO-28 provides the guidelines. DENR is in the works of improving its recording system. Moreover, the agricultural biomass come from crops, livestock, poultry and fishery. Around 31% of the labor force depends on agriculture as main source of livelihood. In 2014, the gross value added in agriculture and fishery increased by 1.6% accounting for the country's 10% of the gross domestic product (GDP). Significant amount of biomass comes from the agricultural sector. Agricultural wastes in the country is 0.05kg/ day. The most common agricultural wastes in which biomass energy can be derived are rice husks, rice straws, coconut shells and bagasse. The lack of inventory of agricultural remains to be a problem. In 2014, marine and coastal plastic wastes considered plastic bags (food wrappers, plastic beverages, plastic straws etc.) as the most common wastes found in Manila de Bay. The Philippines ranked 3rd in terms of poor waste management along with China and Indonesia. LGUs and other NGOs convened to ban the use of plastics. Among all wastes, the country does not have policies on e-wastes, categorized as special wastes. DENR however developed guidelines for e-wastes. For the EPR, no established laws yet but DOE in cooperation with ADB developed (2009-2013) hazardous metal collection e.g. mercury (Hg).

Recommendations

As a summary, the Philippines is still successful in crafting 3R policies but the challenge relies on the effective implementation. The problem on solid wastes is not only technical but also behavioral. Hence, strong information, education and communication (IEC) campaigns should be developed to promote to communities so that they can be empowered and accountable. These require strong political, economic and social efforts. The challenges in implementing 3R are lack in technical, financial and human resources but if only households (at source) would properly segregate solid wastes, only small percentage of residual wastes will go to the landfill. Thus, the use of expensive technologies may not be advisable in the case of the Philippines. What we need is to promote 3R and the use of simple, local and low-cost technologies. These will address not only environmental but also economic and social components by turning wastes into resource. Some of the recommendations are: strengthening of the monitoring system of the LGUs; identify the best practices, and; institutionalization of effective 3R.

Question & Answer

Q1: How does the barangay practice incentive rebate system for the people?
A: Initiated in Quezon City, the LGU pays the hauling fees depending on the amount brought to the MRF (biodegradables- composting; recyclables). Reduce the number of trips into half by implementing 3Rs. A certain percentage of money is returned to the barangay. Individuals can collect points using the passbook and can exchange these points for certain commodities.

Comment1:
Latest initiative of DENR, was the launching of "Basura Patrol" last year wherein groups of people in certain municipalities are assigned to takes pictures of those who will litter. The Environmental Management Bureau (EMB) will then call the attention of the offender. EMB shall reprimand for the first offense but shall impose penalty for the succeeding offenses. The picture(s) of the violator(s) will be uploaded in the website, some sort of "shame campaign program."

Comment2: Some litter without being caught. What is worst, some dump in the national hi-way. Hence, there should be strict implementation of the law.

Comment 3: One of the participants said that the real challenge right now is strengthening information, education and communication (IECs) materials, not anymore technologies and policies, since laws are already in place. For example the use of anaerobic bacteria. The real challenge is to make LGUs make people commit because solutions are already there.

Synthesis of the workshop

During the workshop, all of the participants acknowledged that the Philippines has sound laws, policies, and ordinances. The problem really is that these are not implemented, practiced, and enforced. Two factors were also noted to have a huge impact to the success or sustainability of waste management initiatives and programs – support of people in power (politicians) and the willingness of people to adopt them. It was discussed that one way to resolve the dissolution of a program or initiative after a change in administration (in LGUs) is to institutionalize the programs or initiatives. Institutionalization could mean the creation of specific ordinances or recognized cooperatives (say, for scrap collectors).

There have also been a number of efforts done to improve the waste management system in different LGUs – a) economic instruments have been used in the form of incentives and penalties; b) LGUs were provided capacity building programs and were assisted in developing plans; c) producers and commercial sectors were also involved through extended shared responsibility initiatives; and d) there have been numerous IEC campaigns, including workshops with different stakeholders, as far down as members of homeowners' organizations. However, these initiatives seemed to have limited impacts in the day-to-day waste disposal practice of the people.

During our workshop discussions and syntheses, a number of examples known for their good practices and positive experiences were shared. They include:

• Naga city for the successful institutionalization of informal solid waste management sector.
• Mother Earth for integrating awareness raising workshop prior to the livelihood project,
• Los Banos Solid Waste Organization for the successful official recognition followed by innovative activities with local eco-centre,
• Quezon city, Rizal for successful rebate system of waste segregation and collection, and
• "Basura Patrol" for local peer monitoring and penalising improper waste disposal practices.

The discussion of possible future initiatives led to the following:
1. Innovative approach of Public Information Campaign to reach individual decision makers
2. Roles of LGU (i.e. municipalities and cities)
Many LGU require support to come up with the 10 year Solid Waste Management Plans. The implementable plan requires
3. Provincial summit of inter-municipalities and inter-sub-basin levels

Following up some of the insights gained and based on the initiatives shared during the workshop, we foster collaboration and sharing information through the SWAN Practitioner google group.

Facebook page: https://www.facebook.com/Sustainable-Waste-Management-Network-SWAN-Project-317802771999488/

Sustainable Household Waste Management Workshop:

Problems and potentials (towards 3 + 2 Rs)

Date: July 4, 2017

Venue: Riverview Resort and Conference Center, Calamba City

Organizers: SWAN (Sustainable Waste Management Network) Project of Ritsumeikan University (Japan) and University of the Philippines at Los Banos

Program

	Activity
8:30 – 9:00	Registration
9:01 – 9:15	Welcome Remark and Project Overview *Dr. Erika Seki, Osaka University, Japan*
9:16 – 9:30	Overview of the workshop *Dalton Erick Baltazar, SWAN Project Researcher*
9:31 – 10:00	[1] SWAN Project: Research and Results *Dr. Erika Seki and Dalton Erick Baltazar*
10:01 – 10:15	Coffee break
10:16 – 10:30	Participant Introduction and Expectations
10:31 – 13:00	[2] Impacts of Solid Waste Management Program within the Laguna de Bay Basin: LLDA Perspective *For. Azyleah Abino, Laguna Lake Development Authority* [3] Sustainable Household Waste Management Workshop: Problems and potentials (towards 3 + 2 Rs) *Engr. Marisa Sobremisana, School of Environmental Science and Management, UPLB* [4] Review of the 3R (Reduce, Reuse, Recycle) Policy Implementation in the Philippines *Dr. Vella Atienza, Institute for Governance and Rural Development, College of Public Affairs, UPLB*
13:01 – 14:00	Lunch break
14:01 – 15:00	[5] Discussion and synthesis, summary of insights from workshop
15:00 - 16:00	Awarding of certificates, Closing