



**CLIMATE &  
CLEAN AIR  
COALITION**  
TO REDUCE SHORT-LIVED  
CLIMATE POLLUTANTS



**IGES**  
Institute for Global  
Environmental Strategies



## **First Focus Group Discussion (FGD)**

# **Development of the National Strategy to Reduce Short-Lived Climate Pollutants (SLCP) from Municipal Solid Waste (MSW) in the Philippines**

**September 5-7, 2018, Quezon City, Philippines**

**This report is prepared and submitted by IGES to CCAC-MSWI**

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## List of Acronyms

|       |   |
|-------|---|
| 3R    | Reduce, Reuse, and Recycle                      |
| AFR   | Alternative Fuel and Raw Materials              |
| BAT   | Best Available Technology                       |
| BAU   | Business as Usual                               |
| BC    | Black Carbon                                    |
| BEP   | Best Environmental Practice                     |
| CAPEX | Capital Expenditure                             |
| CCA   | Climate Change Act                              |
| CCAC  | Climate and Clean Air Coalition                 |
| CCC   | Climate Change Commission                       |
| CCD   | Climate Change Division                         |
| CDF   | Controlled Dumping Facility                     |
| CGE   | Core Group of Experts                           |
| COA   | Commission on Audit                             |
| DA    | Department of Agriculture                       |
| DENR  | Department of Environment and Natural Resources |
| DILG  | Department of the Interior and Local Government |
| DOH   | Department of Health                            |
| DOST  | Department of Science and Technology            |
| EMB   | Environmental Management Bureau                 |
| ENRO  | Environment and Natural Resources Officer       |
| EPR   | Extended Producer Responsibility                |
| EQT   | Emission Quantification Tool                    |
| ESWMA | Ecological Solid Waste Management Act           |
| FGD   | Focus Group Discussion                          |
| FS    | Feasibility Study                               |
| GDP   | Gross Domestic Product                          |
| GHG   | Greenhouse Gas                                  |
| GHGI  | Greenhouse Gas Inventory                        |
| HUC   | Highly Urbanized City                           |
| IEC   | Information, Education, Campaign                |
| IGES  | Institute for Global Environmental Strategies   |
| INDC  | Intended Nationally Determined Contribution     |
| IPCC  | Intergovernmental Panel on Climate Change       |

|       |   |
|-------|---|
| IPPU  | Industrial Processes and Product Use                        |
| LCA   | Life Cycle Assessment                                       |
| LGU   | Local Government Unit                                       |
| MMDA  | Metro Manila Development Authority                          |
| MRF   | Materials Recovery Facility                                 |
| MSW   | Municipal Solid Waste                                       |
| MSWI  | Municipal Solid Waste Initiative                            |
| NAMA  | Nationally Appropriate Mitigation Action                    |
| NCR   | National Capital Region                                     |
| NDC   | Nationally Determined Contribution                          |
| NSWMC | National Solid Waste Management Commission                  |
| OD    | Open Dumpsite   |
| OP    | Office of the President                                     |
| OPEX  | Operating Expense   |
| PAP   | Program, Activity and Project                               |
| R&D   | Research And Development                                    |
| RA    | Republic Act  |
| SLCP  | Short-Lived Climate Pollutants                              |
| SLF   | Sanitary Landfill   |
| SMART | Specific, Measurable, Attainable, Realistic, and Time-bound |
| SWMD  | Solid Waste Management Division                             |
| SWMP  | Solid Waste Management Plan                                 |
| TESDA | Technical Education and Skills Development Authority        |
| UNIDO | United Nations Industrial Development Organization          |

## Introduction

The Department of Environment and Natural Resources (DENR) - Environmental Management Bureau (EMB) through its Climate Change Division (CCD) and Solid Waste Management Division (SWMD), and the multi-agency National Solid Waste Management Commission (NSWMC), in coordination with the Climate Change Commission (CCC), has been involved in developing the National Strategy to reduce Short-Lived Climate Pollutants (SLCP) from the Municipal Solid Waste (MSWM) Sector with technical assistance from the Institute for Global Environmental Strategies (IGES) under the Climate and Clean Air Coalition (CCAC).

This national SLCP strategy could be the first of its kind in Asia; existing ones are the SLCP strategies of Canada, Mexico, and California, which cover all sectors to address SLCPs. Since the Philippines intends to develop a national SLCP strategy that is specific for the MSW sector, this document could be the first in the world for specific focus on the waste sector.

The development of the national strategy is a multi-stakeholder participatory process executed by DENR/NSWMC. A core group of experts (CGE) provides inputs into the strategy composed of experts from NSWMC Committee on Climate Change/SLCP, CCC, DENR/EMB, select local government units (LGUs), IGES/CCAC, and others including the academe and research institutions. To date, a series of consultation workshops and trainings had been organized, including the first national awareness workshop on SLCP on November 23, 2017 in Quezon City, and the (international) regional training workshop on measuring and mitigating SLCP from MSWM on April 2-4, 2018 in Bacolod City.

The Philippine government is currently preparing a roadmap for its INDC/NDC and has so far institutionalized its Philippine Greenhouse Gas (GHG) Inventory, Management, and Reporting System. For the waste sector, the SLCP strategy development process quantifies climate pollutants through a life cycle analysis (LCA) perspective. It encompasses other sources such as waste collection and recycling of non-biodegradables. Another value-added is the analysis of the black carbon (BC) emissions from MSWM.

Thus, the first focus group discussion (FGD) on the development of the national strategy to reduce SLCPs from the MSW sector was conducted on September 5-7, 2018. The first FGD aimed at the following:

- CGE provide technical expertise in identifying the root cause of SLCPs from MSW in the Philippines;

- Review existing national SLCP strategies and propose a working outline for the Philippine MSW sector;
- Propose nationwide strategic measures to prevent/reduce emissions from the life cycle of MSW management based on the:
  - results of the national baseline and alternative scenarios generated using the IGES Emission Quantification Tool (EQT),
  - harmonized targets, policies, plans, and programs of the government and private sector, including but not limited to, development, climate and sectoral targets.
- Consolidate main contents to come up with the first draft of the National Strategy to Reduce SLCPs from the MSW sector.

## **Methodology and Approach**

A combination of plenary and breakout sessions were organized: the former for providing input presentations for the discussion of concepts and updates on the initiatives in the waste sector while the latter was administered to generate inputs from the CGE as regards to baseline situational assessment and identification of strategic measures to reduce SLCPs. The outputs from the breakout sessions were then presented back in the plenary so that the CGE and IGES experts would be able to clarify and clinique the suggested strategic options. Recapitulation exercises were also conducted to generate feedback from the participants regarding the previous sessions and hold process checks.

The FGD were carried out in two and half days and by the end of the FGD, the participants agreed on the next steps and set schedule for the second FGD in October 2018.

## **Participants and Facilitator**

The first FGD on the development of the national strategy to reduce SLCPs was attended by 30 participants representing the CGE from NSWMC, CCC, DENR, DA, DILG, MMDA, TESDA, pilot LGU partners, academe private sector, and IGES-CCAC. Overall facilitation of the FGD was done by Engr. Voltaire Acosta, consultant from IGES with co-facilitation from Ms. Maria Delia Cristina Valdez and Ms. Liz Silva from the DENR-EMB as well as technical backstopping support from Dr. Rajeev Singh and Dr. Nirmala Menikpura of IGES.

## Preliminaries

Prayer offering and singing of the national anthem were rendered, followed by the opening remarks from Commissioner Crispian Lao and Dr. Rajeev Singh.

*Commissioner (Com.) Crispian Lao, Vice Chair of NSWMC* formally opened the workshop on behalf of Undersecretary (USec.) Benny Antiporda, USec. for SWM and LGU Concerns of the DENR. He shared the following welcome remarks: The Philippines being part of the Paris Climate Agreement has been preparing mitigation actions to curb emissions to ensure that effects of climate change



are minimized. The overarching goal of the country is climate-resilient development as well as pursuant of domestic mitigation measures to address GHG emissions, air pollutants and SLCPs in consonance with the continuous development of the Philippine economy. While SLCPs has lesser atmospheric lifetime, it poses significant climate temperature warming potentials. Consequently, taking actions to reduce emission through immediate clear-cut results to address not only climate change but can also be instrumental in improving public health and the ecosystem. Recognizing that MSW contributes to the release of SLCPs due to inappropriate collection, recycling, treatment and disposal methods, the DENR has initiated the development of a national framework to reduce SLCPs. This initiative will promote environmental stewardship because it is everyone's duty to respond to the changing environment through the convergence amongst international and local stakeholders. Therefore, such endeavor will not be possible without the expertise and guidance from the country's global partners.

Com. Lao thanked the IGES under the MSW Initiative (MSWI) of the Climate and Clean Air Coalition (CCAC) for providing support and technical assistance to ensure that the venture is pushed toward climate-smart waste management approach for SLCPs reduction. He also thanked DENR's partner LGUs for sharing their experience in SWM. He hoped that the LGUs will continually implement the core vision of the Republic Act (RA) 9003 by anchoring and concretizing the plans and programs to reduce SLCP emissions. He reminded the participants to take the FGD as an opportunity to learn, integrate, and align solid waste actions using the results of the tools provided to support the development

of relevant city-level initiatives by pursuing ecologically-sound methods to manage the solid waste problems in the country.

To that end, Com. Lao hoped of working together in creating long-term programs to protect the country's environment, to combat the inevitable effects of law of nature and ultimately, to provide support in achieving emission reduction targets of the country.



***Dr. Rajeev Singh from IGES***

thanked the DENR and the participants who have joined the workshop despite of their busy schedule. Dr. Singh emphasized that the workshop aims to discuss issues related to SLCPs and obtain inputs and insights for the drafting the national strategy to reduce SLCPs from the MSW sector—a document that can be used in

reaching the targets of the Paris Agreement, Sustainable Development Goals (SDGs), and (I)NDC goals.

He shared that CCAC has about 60 member-countries that have been working on the initiative and the Philippines is one of the leading members and will be the first country to formulate a national strategy specific for SLCPs from the waste sector.

To that end, Dr. Singh looked forward to the presentation and interactive discussions, hence generating important inputs for developing the national strategy.

## Plenary Presentation

### 1. Introduction to SLCPs and about the IGES/CCAC-MSWI support to the Philippines to Develop the National Strategy to Reduce SLCPs from the MSW Sector (*presentation via Skype*) Dr. D. G. J. Premakumara, IGES/CCAC-SWMI

SLCPs are a set of powerful climate warming agents such as black carbon (BC), methane (CH<sub>4</sub>), ozone (O<sub>3</sub>), hydrofluorocarbons (HFCs). They have a relatively short lifetime in the atmosphere when compared to the longer-lived climate pollutants, such as carbon dioxide (CO<sub>2</sub>), and have a significant warming potential, which is often a multiple of that of CO<sub>2</sub>. Thus, SLCP reduction is equally important to avoid global warming and to contribute to improve health and ecosystem conditions. Specifically,

- It can reduce global warming by about 0.6°C by 2040–2050;
- It can help to keep average global temperatures to no more than 1.5 to 2°C above pre-industrial levels this century, and to meet the temperature goals in the Paris Agreement with adoption of global action to reduce CO<sub>2</sub> together;
- It can avoid an estimated 2.4 million premature deaths annually from outdoor air pollution and greatly reduce impacts on health from indoor exposure; and
- It can avoid annual losses from four major crops of more than 30 million metric tons.

The MSW sector is one of the key sectors that has great opportunity in reducing SLCPs. It targets all activities in waste management that emit GHGs and SLCPs from waste collection and transportation to treatment/final disposal, as can be seen in figure 1.

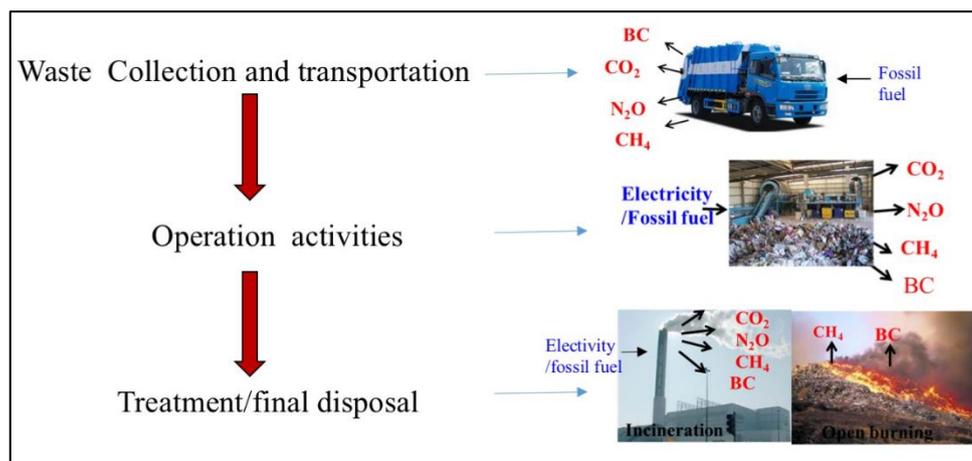


Figure 1. Activities in Waste Management vis-a-vis Emission

IGES-CCAC has been supporting Asian cities in developing city assessment, action plans, and work plans, information exchange, training and capacity building on waste management. And in the Philippines, IGES-CCAC is providing technical assistance for the development of national strategy to reduce SLCPs from the MSW sector. The initiative is not just aiming to contribute to the commitment of the country to the Paris Agreement but also on achieving sustainable waste management goals under the SDGs by 2030

As detailed in figure 2 below, DENR/NSWMC, with support from IGES-CCAC, aims to have the approved National Strategy by March 2019. The previous activities were participated by various institutions from the national government, pilot LGUs, the academe, and the private sector.

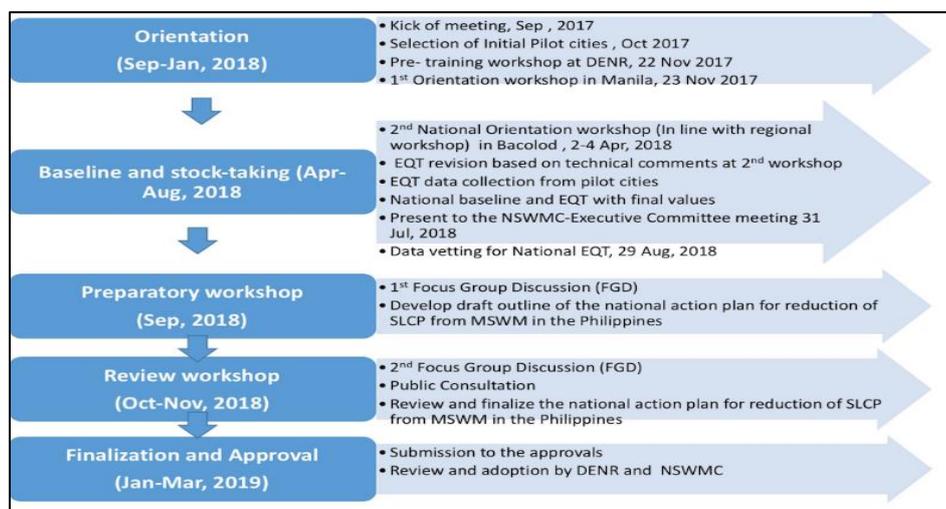


Figure 2. Workplan for Developing National Strategy to Reduce SLCPs

### ***Discussion Highlights***

Below are key points raised from the open plenary.

- On the strategy of other countries in measuring other GHG emission that are not included in the NDCs, for instance black carbon or the methane component from collection and recycling components.

Working in other case studies, reducing GHG is very important especially that most landfills are open for disposal. However, black carbon is not yet calculated particularly in other areas where landfill burning is still happening. This concern is already in the discussion within the Intergovernmental Panel on Climate Change (IPCC) especially around calculating black carbon from the waste sector.

- On the reason these pollutants are called short-lived?

The availability of these pollutants in the atmosphere is shorter and have quicker impacts than CO<sub>2</sub>.

## 2. Updates on SLCP-relevant RA 9003 Implementation

*Engr. Eligio T. Ildefenso,  
Executive Director, NSWMC  
Secretariat and Chief, EMB's  
Solid Waste Management Division  
(SWMD)*



The presentation covered the greenhouse gas inventory (GHGI) for the waste sector, status of RA 9003

compliance, updates on the NSWM Strategy, and NSWMC resolution creating the Committee on Climate Change.

The result of the 2000 base year for GHGI, i.e., as featured in the Philippines' Second National Communication (SNC) as compared to the latest GHGI with base year 2010 showed that the waste sector (within the IPCC definition of 'waste sector') increased its emissions from 11 million (M) metric tons of carbon dioxide equivalent (mtCO<sub>2</sub>e) in 2000 to 16.5M mtCO<sub>2</sub>e in 2010. The figures include both solid waste and wastewater, where solid waste represents slightly <50% of total waste emissions. The change in emissions between 2000 and 2010 represents a 42.4% increase compared to 2000 value, which is mainly due to growth in population and gross domestic product (GDP). The country has more detailed data now, but the IPCC methodologies used are the same. For example, the sector is using the first order decay model, which was also used in 2000. Also, the RA 9003 was only starting to take effect in 2010, so emission from solid waste are still growing quickly; nonetheless the NSWMC expects that the implementation of RA 9003 is starting to level off.

In terms of compliance to RA 9003, below are key updates on the compliance of LGUs:

- Out of the 1,634 municipalities, 92.6% of the LGUs have complied with the submission of the 10 year SWM Plans and as of August 2018, 411 are already approved by NSWMC, 1,102 are pending for evaluation and approval, while 121 have not submitted yet.

- b. Only 24% of the 42,036 materials recovery facility (MRF) has been established servicing 32% barangays of the 42,046. MRF establishment is one of the most challenging parts for the LGU in terms of compliance to RA 9003.
- c. There are still 405 illegal dumpsites that need to be closed and rehabilitated, majority (101) are in Region 7, followed by region 5 with 77 illegal dumpsites and Region 4A with 51 illegal dumpsites.
- d. As August 2018, there are 145 operating sanitary landfills (SLFs) that cater to 337 LGUs, which represents only 20.93% of the total LGUs in the country.

Thus, below are some key initiatives to address SLCPs related issues on waste sector.

- Closure of the open dumpsites (OD) and controlled dumping facility (CDF).
  - 185 illegal disposal sites located in the Sustainable Integrated Area Development, PhP1.85B is proposed to complete the closure.
  - Filing of Ombudsman Case: Filed complaints against 50 non-complying LGUs at the Environmental Ombudsman. As of 2016, 50 LGUs were investigated by the Environmental Ombudsman on illegal practices on RA 9003
- Support in the Establishment of MRFs: Funds transferred to DENR-EMB Regional Offices to support the establishment of MRF in 200 identified barangays. To date, DENR-EMB provided support to 490 LGUs for the establishment and operationalization of their respective MRFs.
- Implementation of no open burning: DENR has a current partnership with United Nations Industrial Development Organization (UNIDO) related to Best Available Technology (BAT) and Best Environmental Practices (BEP) to mitigate open burning activities.
- Diversion of biodegradable waste (composting): A proposed bill on Extended Producer Responsibility (EPR) is being championed by Senator Cynthia Villar in the Senate. The proposed bill will hold the companies accountable for the hazardous packaging materials they produce that end up in garbage dumps, or worse, pollute the country's water bodies.
- Maximize recycling and re-use.
- Waste-to-Energy (guidelines) and conversion into a Department Administrative Order.
  - On Gasification system. Llanera has an average capacity 200 tons per day, output is 12.5MW as high as 20MW depending on the pitstops, which is the major factor for energy generation. In the future, the Commission is looking for waste to fuel that can be used for the power plant. But for now, there are 7 factories using the residual waste (cement factories) to replace portion of pitstop for the production of cement
- A feasibility study will be conducted on the use of eco-efficient soil cover for the closure of the open dumpsites.
- Methane Recovery and gas utilization. Some facilities are a) MARIWASA, a Laguna-based company uses agriculture waste to produce heat to dry the tiles (Laguna-based company). 2)

Payatas, Quezon City (which is recently closed SLF), 3) Rodriguez, and 4) another one in Laguna that is being pilot tested.

Currently, the Commission is updating the National Solid Waste Management Strategy to cover the three main island clusters and the National Capital Region and to incorporate nationally appropriate mitigation action (NAMA). During the NAMA mission, the Commission has identified NAMA-relevant aspects in each of the 10 components it has proposed. For example, MRV could fall in the monitoring component; technology transfer could be under our knowledge management and capacity development components; financing and creating economic opportunities are already directly subsumed into the Strategy.

Lastly, the Commission has drafted a resolution to create a multi-agency committee on climate change composed of DENR as the Chair, Recycling Sector as Co-Chair, and the Department of Science and Technology (DOST), Department of the Interior and Local Government (DILG), Metro Manila Development Authority (MMDA), Department of Agriculture (DA), and non-government organization (NGO) as members of the committee. Further, the committee may invite additional NSWMC members and resource persons/experts from CCC, select LGUs, academe, research institutions, MSWM contractors/practitioners, and others as may be decided upon by the committee.

The committee shall have the following functions:

- Adopt national MSWM information that are based on officially adopted/published documents such as those from the DENR, NSWMC, National State-of-the-Brown Environment Report, Philippine Statistics Authority, and other government reports, databases, and publications, and duly vet on information based on experts' judgement as necessary; and
- Prepare a timetable for the development of the said national strategy until its approval including the conduct of a public consultation.

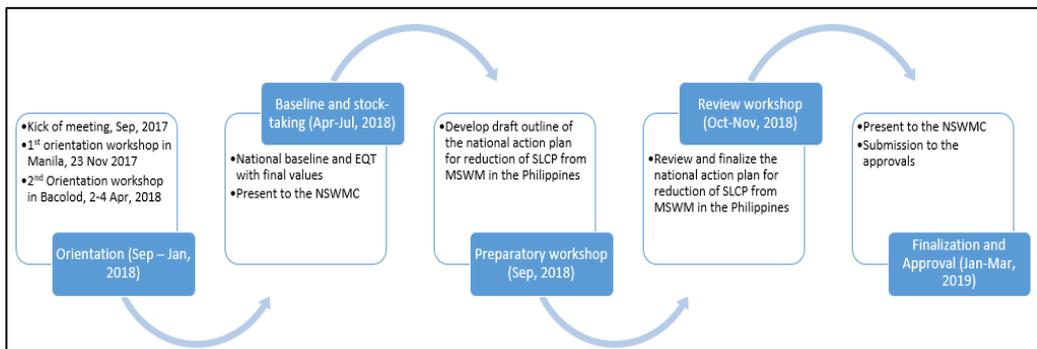


Figure 3. Timeline for the Approval of the National Strategy to Reduce SLCPs

## *Discussion Highlights*

Below are key highlights from the open plenary.

- On having funds which can solve the problems related to waste management.

Not all solid waste related problems can be solved by having enough funds. Case in point: One of the major issues is the return of non-utilized funds from the regional offices to support LGUs for their compliance to RA 9003. The availability of funds can be a form of motivation, however the involvement of all stakeholders is also key to solving solid waste related issues.

- On the financial assistance to establish MRFs only available for municipalities, i.e. the province South Cotabato applied twice under the financial assistance but the regional office did not approve the proposal.

The DENR is only mandated for the implementation of RA 9003, however the department was able to justify the funds for MRF and closure of open dumpsites through the Supreme Court Mandamus Decision on Cleaning up of Manila Bay (Region 3, NCR, and Region 4). The funds for piloting MRF and closure and rehabilitation of open dumpsites will only last until 2019, while the new funds for the new budget year can only be used for the capacity development of regional ecology centers.

MRF establishment has been a case-to-case basis, some are adaptive while some are not yet ready, i.e out of 16 regions, only 1/3 has the MRFs. In Region 12, particularly Cotabato City did not accept the financial support for the MRF establishment and closing of OD while the northern regions have had no issue on fund utilization.

- On recycling being considered as part of the GHGI for waste sector.

The first, second and even the third inventory used slightly different methodologies, which only accounted for the biodegradables and calculated the CO<sub>2</sub>, CH<sub>4</sub>, NO<sub>2</sub> gases. The inventory has a total figure for disposal taking into consideration the oxidation factor (1) and considering current flaring data, which is deducted from the total. Recyclables, collection, and transportation, on one hand, were not included yet due to the limitations of the IPCC 2006 guidelines.

- On looking at other sectors that have contribution to waste sector's GHG emission.

Globally, the waste sector is short-changed when it comes to scoping under the IPCC given that SWM mitigation action can be accounted for the transport/energy sector. However, IPCC has to agree on boundaries just to avoid double counting.

IGES developed a tool that can do inventory for each phase of Life Cycle Assessment (LCA), there will be no double counting since each cycle is carefully accounted for.

**3. International, Regional, and Local Issues on MSWM’s Contribution to SLCPs and Challenges to SLCP-relevant MSWM Measures**

*Ms. Liz Silva, Climate Division of DENR-EMB*



Ms. Silva presented the summary of international and local issues MSWM. She also gave a summative overview on the different challenges relevant to MSWM measures, which were initially identified from the regional workshop in April 2018 and culled out from the NDC roadmap drafted and vetted on March 2018 and May 2018, respectively

*Table 1. Summary of International and Local Issues on MSWM*

| <b>Countries</b>      | <b>Issues on MSWM</b>   |
|-----------------------|---|
| Cambodia              | <ul style="list-style-type: none"> <li>• A lack of public concern about waste management, infrequent and limited waste collection services, and a general dissatisfaction with existing services;</li> <li>• Absence of source segregation;</li> <li>• Limited public participation in waste management such as fee payment, limited capacities of waste collectors, and</li> <li>• Lack of effective law enforcement capacities to apprehend violators, among others.</li> </ul> |
| Jambi City, Indonesia | <ul style="list-style-type: none"> <li>• Financial limitations, human resource constraints, and low public awareness about the need to carry forward waste management initiatives over the long term.</li> </ul>  |
| Medan City, Indonesia | <ul style="list-style-type: none"> <li>• Fostering behavior change around 3R (reduce-reuse-recycle) practices; and</li> <li>• Building public-private partnerships in the waste sector.</li> </ul>  |
| Nan Pyi Taw, Myanmar  | <ul style="list-style-type: none"> <li>• Lack of source separation;</li> <li>• Uncontrolled dumping, with current landfill sites not following technical and hygienic specifications;</li> <li>• Lack of adequate equipment and human resources for waste management;</li> <li>• Low public awareness about waste issues; and</li> </ul>  |

|                            |   |
|----------------------------|---|
|                            | <ul style="list-style-type: none"> <li>• Insufficient enforcement of solid waste regulations.</li> </ul>  |
| Nonthaburi City, Thailand  | <ul style="list-style-type: none"> <li>• Low public awareness and compliance with waste laws and regulations;</li> <li>• Issue of enforcement;</li> <li>• Data gaps; and</li> <li>• Inefficient waste collection and other attendant infrastructural problems; as well as health risks due to poor waste management.</li> </ul>   |
| Maragusan                  | <ul style="list-style-type: none"> <li>• Open dumping and burning of waste in selected areas, which contributes to pollution and contamination of local resources;</li> <li>• The need to improve existing waste infrastructure, such as MRFs, and upgrade recycling facilities; associated budget constraints; and</li> <li>• Data gaps constraining its monitoring efforts</li> </ul> |
| Province of South Cotabato | <ul style="list-style-type: none"> <li>• Compliance issues with existing waste legislation;</li> <li>• The need to enhance waste treatment activities including final disposal; and</li> <li>• Improving data collection and management for further updating municipal waste management plans.</li> </ul>   |

In summary, waste management issues revolve around the following:

- Behavioral: low public awareness and participation, increasing consumption:
- Technical: lack of source separation, infrequent collection services, inadequate human resources, data gaps
- Financial: budget constraints
- Policy: unsystematic coordination/coherence between national and subnational authorities
- Infrastructural: absence of appropriate technologies for waste treatment/disposal, overcapacity of final disposal sites
- Legal: weak enforcement of policies and regulations
- Health: public health risks
- Environmental: air/water pollution, climate change

Looking at the issues mentioned, waste management presents both opportunities and challenges for socioeconomic development, that community participation, education and public awareness campaigns remain critical to success, where both domestic and international partnerships are often prerequisite for building capacity and mobilizing resources.

*Table 2. Philippines Case: Issues and Challenges to Implementation of Options and Proposed Intervention*

|  | <b>Policy/Institutional</b>  | <b>Finance</b>   | <b>Technological</b>  | <b>Awareness/Capacity Building</b>                             |
|--|--|--|---|--|
| <b>Crosscutting</b>  | <ul style="list-style-type: none"> <li>• Inadequate enforcement of RA 9003</li> <li>• Weak segregation practices/ineffective enforcement of guidelines</li> <li>• Need to increase collection coverage and optimize routing schemes</li> </ul> | Need to establish policy and institutional arrangements to enable tapping of the National Solid Waste Management Fund (NSWMF) to support LGU implementation of SWM projects.         | Need to improve waste collection system/coverage  |  |
| <b>MSW Digestion/ Combustion/ Waste-to-energy (WTE) conversion</b> | No approved guidelines yet for Waste-to-energy (WTE) projects and composting   | Need financing for the adoption of waste disposal systems/WTE facilities   |   | Lack of appreciation and there is opposition to WTE projects   |
| <b>Methane Recovery from Sanitary Landfills</b>                    | <ul style="list-style-type: none"> <li>• Need policy support to develop SLF methane recovery projects</li> <li>• Need guidance on treatment of leachate from dumpsites and SLFs</li> </ul>   | Power generation is only feasible for bigger disposal sites that generate at least 38% methane concentration in its biogas due to high investment cost – Requires economies of scale |   | Need for guidance and training for LGUs on leachate management |
| <b>Composting</b>  |  | Lack of market or weak marketing strategies for compost  | Lack of technical capability among LGUs on the use of appropriate technologies/ methodologies on composting | Low acceptability of the use of compost among farmers          |

## ***Discussion Highlights***

Below are key highlights from the open plenary.

- On SWM issues related to the Philippines alone.

Yes, the identification of issues in the NDC roadmap was a product of the consultations for the formulation of the roadmap.

- On the involvement of the government for gas management.

The current policy for existing dumpsites only mandates LGUs and operators to have a gas management system, i.e., mere venting is already acceptable. While for SLFs, gas recovery may, technically and policy-wise, not be feasible given that only residual wastes should be accepted.

For South Cotabato, Maragusan, and San Carlos City, only gas venting is being done for residual wastes. Below details the sharing from the participants representing the pilot-LGUs.

1. South Cotabato. Their SLF only accepts residual wastes, while management of biodegradables are handled by the barangay LGU for compositing and processing. The province has clustered the municipalities into seven for disposal in the SLF.
  2. Maragusan. The municipality does not have an SLF yet. The management for biodegradables is being done at the household level for backyard composting; only waste from the wet market is transported to the composting facility of the municipality.
  3. San Carlos. Segregation happens at the household level and collected separately. The city has a central MRF for the final segregation of the remaining recyclables from residual wastes, the latter are then transported to the SLF.
  4. Quezon City. The city has partnered with a private sector for the conversion of captured gas to electricity, which is being used by the community surrounding the SLF, the excess methane is then flared up for internal use in the SLF.
  5. DA has initiated a small scale bio-digester both for animal waste from agriculture and kitchen waste. This requires popularization among farmers and households in the country.
- On the culture of over-consumption and disposal.

Among all kinds of treatment, recycling contributes a lot in waste reduction and its output has high economic value, for instance for every 1 ton plastic, say (not real values) 900kg of plastic

granules can be recovered (replacing crude oil used on producing plastic); otherwise, 1,400kg of crude oil (not real values) is needed to produce 1 ton of plastic.

#### **4. Discussion on Guiding Principles and Prioritization Criteria of Measures for the National Strategy**

*Engr. Voltaire Acosta, Consultant, IGES*

Engr. Acosta facilitated the discussion on coming up with guiding principles and prioritization criteria for the development of the national strategy. He posted two questions and the participants responded accordingly.

##### **A. Guiding Principles**

*What are the characteristics of strategies/measures that make it worthy to be included or put high on the agenda?*

1. Socially (publicly) acceptable and politically sustainable (policies change across boundaries but should be supported by the general public);
2. Practical, doable by all levels of LGUs (province, city/municipality, and barangay levels);
3. Continuity amidst administrative transitions or political changes;
4. Economically feasible and cost effective;
5. Benefits to communities including employment, reducing health risks, etc.;
6. Green or eco-friendly technologies;
7. It should be funded. Identify sources (viability and availability), considering both capital expenditures (CAPEX) and operational expenses (OPEX);
8. Time-bound (with targets);
9. Should be MRV-able; and
10. Alignment with national strategies not necessarily the targets (unless there are realistic/achievable non-conflicting targets).

## B. Prioritization Criteria

*What are the parameters/indicators that could be used to objectively rate/rank options/measures?*

1. Urgency vis-à-vis public service delivery;
2. Significance vis-à-vis RA 9003 implementation;
3. Positive impacts on CH<sub>4</sub> or BC emission reduction;
4. Co-benefits in terms of economic, social, environmental, adaptation/resilience, and transformational change; and
5. Contributes to R&D agenda/product development.

### 5. Application of Emission Quantification Tool (EQT) for Estimation of GHGs/SLCPIs in the National Baseline/Scenarios of MSWM in the Philippines

*Dr. Nirmala Menikpura, Fellow,  
IGES*



The presentation was composed of four parts. The first part briefly discussed the features of the EQT, the second part presented the result of the

SLCP-MSWM baseline from the vetted data, the third part was the presentation of result of the SLCP-MSWM scenarios from set targets/options, and the last part discussed the implications of a national EQT results to national SLCP strategy development and recommendations.

#### ***Part 1: Brief Introduction/Walk through on Features of the IGES SLCP Emission Quantification Tool (EQT)***

The EQT can be used as decision-making tool and monitoring tool for strategies in reducing GHG and SLCPIs from the waste sector. It aims to be used in rapid assessment of GHGs and SLCPIs from business as usual (BAU) with alternative solutions and find the most suitable options for the city/municipality and in keeping records and monitoring of progress made on mitigating GHGs and SLCPIs emissions from chosen waste management options. The basis for EQT is the LCA of waste management:

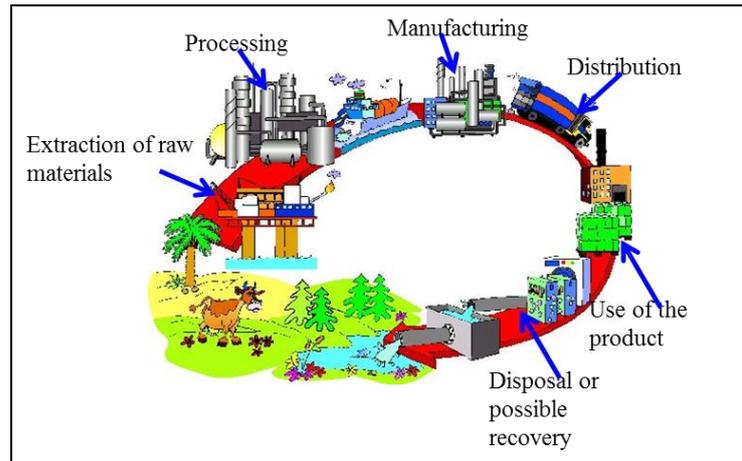


Figure 4. Life Cycle Assessment (LCA) of Waste Management

The features of the Emission Quantification Tool are:

- Simple and step by step guidance has been provided to users in all the sheets on how to enter the data and obtain the results;
- Special skill is not required and ability to work with excel would be sufficient;
- Each and every sheet has designed a way that users can easily move among the sheets, enter the data and obtain the results on their preferred waste treatment options;
- The tool accounts both SLCPs and other GHGs from waste management considering the entire life cycle; and
- Both emissions and savings potentials are accounted across the life cycle.

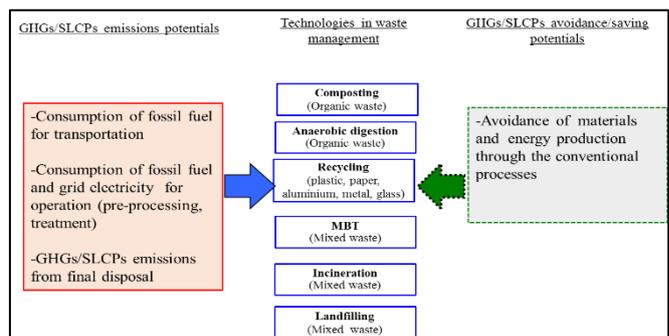


Figure 5. Accounting Emissions using LCA Perspective

The tool is designed to cover waste management system in larger geographical area (Asia, Latin America, Africa, and the Middle East and North Africa (MENA) region). It accounts from relatively basic waste management technologies to advanced technologies in both developing and developed countries.

The input data requirement for the tool requires two types of data:

1. Key Data: Country/location specific data e.g. basic data, waste composition of generated waste, energy consumption data/default emission factors, scenario specifications.

- Technology-specific data. Users are asked to enter technology specific data e.g. waste composition in each treatment, type and amount of fossil fuel used, amount of grid electricity used, amount of resource recovered and potential replacement of conventional resources.

In terms of emission factors and default values, the option has been given to the users to choose either the country/location specific emissions factors or the default values, e.g. grid emission factors, calorific values of the fuel, efficiencies of gas and electricity recovery, and emission factors for avoided chemical fertilizer production. But for coming up with the baseline for the Philippines, the recently published emission factors of GHGs/SLCPs and GWP have been used.

Once completed, the tool shows a) disaggregated results for SLCPs and GHG emissions from individual treatment method for each pollutant and present per gas, b) GHGs and SLCPs emissions and avoided (as a result of resource recovery) potential is displayed, c) net emissions per gas, per ton of waste, and d) separate net climate impact from BC and other GHGs.

The figure below displays the summary of SLCPs and GHG emissions from BAU practice and alternative scenarios (can be generated both table and graphs format). Note that user can choose the unit of measurements based on their preferences as the tool facilitates to measure the climate impact from scenarios for four types of functional units: a) emissions per ton of generate waste, b) emissions per ton of collected waste, c) emissions from yearly generated waste, and d) emissions from yearly collected waste.

| Type of emissions    |  | Emission/avoidance potential | Phase activity                                    | Emissions from recycling activities (kg/tonne of mixed recyclable waste) |                   |                   |               |              |
|----------------------|--|------------------------------|---|--|-------------------|-------------------|---------------|--------------|
|                      |  |                              |   | BAU  | Scenario 1        | Scenario 2        | Scenario 3    | Scenario 4   |
| SLCPs                | CH <sub>4</sub>  | Emissions                    | CH <sub>4</sub> fossil -Direct (fuel consumption) | 0.000  | 0.010             | 0.010             | 0.010         | 0.000        |
|                      |  | Avoided                      | Through material recovery                         | 0.000  | 0.021             | 0.021             | 0.021         | 0.000        |
|                      |  | <b>Net emissions</b>         |   | <b>0.000</b>   | <b>-0.011</b>     | <b>-0.011</b>     | <b>-0.011</b> | <b>0.000</b> |
|                      | BC   | Emissions                    | Direct (fossil fuel consumption)                  | 0.000  | 0.020             | 0.020             | 0.020         | 0.000        |
|                      |  | Avoided                      | Through material recovery                         | 0.000  | 0.037             | 0.037             | 0.037         | 0.000        |
|                      |  | <b>Net emissions</b>         |   | <b>0.000</b>   | <b>-0.017</b>     | <b>-0.017</b>     | <b>-0.017</b> | <b>0.000</b> |
| Other GHGs           | CO <sub>2</sub>  | Emissions                    | Direct (fossil fuel consumption)                  | 0.000  | 344.672           | 344.672           | 344.672       | 0.000        |
|                      |  |                              | Indirect (Use of grid electricity)                | 0.000  | 178.848           | 178.848           | 178.848       | 0.000        |
|                      |  | Avoided                      | Through material recovery                         | 0.000  | 1,837.693         | 1,837.693         | 1,837.693     | 0.000        |
|                      | <b>Net emissions</b>   |                              | <b>0.000</b>                                      | <b>-1,314.173</b>  | <b>-1,314.173</b> | <b>-1,314.173</b> | <b>0.000</b>  |              |
|                      | N <sub>2</sub> O   | Emissions                    | Direct (fossil fuel consumption)                  | 0.000  | 0.003             | 0.003             | 0.003         | 0.000        |
|                      |  | Avoided                      | Through material recovery                         | 0.000  | 0.006             | 0.006             | 0.006         | 0.000        |
| <b>Net emissions</b> |  |                              | <b>0.000</b>                                      | <b>-0.003</b>  | <b>-0.003</b>     | <b>-0.003</b>     | <b>0.000</b>  |              |
| Net impact           | Net BC emissions (kg of BC/tonne of mixed recyclable waste)                            |                              |   | 0.000  | -0.017            | -0.017            | -0.017        | 0.000        |
|                      | Net climate impact of GHGs (kg of CO <sub>2</sub> -eq/tonne of mixed recyclable waste) |                              |   | 0.00   | -1,315.23         | -1,315.23         | -1,315.23     | 0.00         |

Figure 6. Summary of the Emissions

## ***Discussion Highlights***

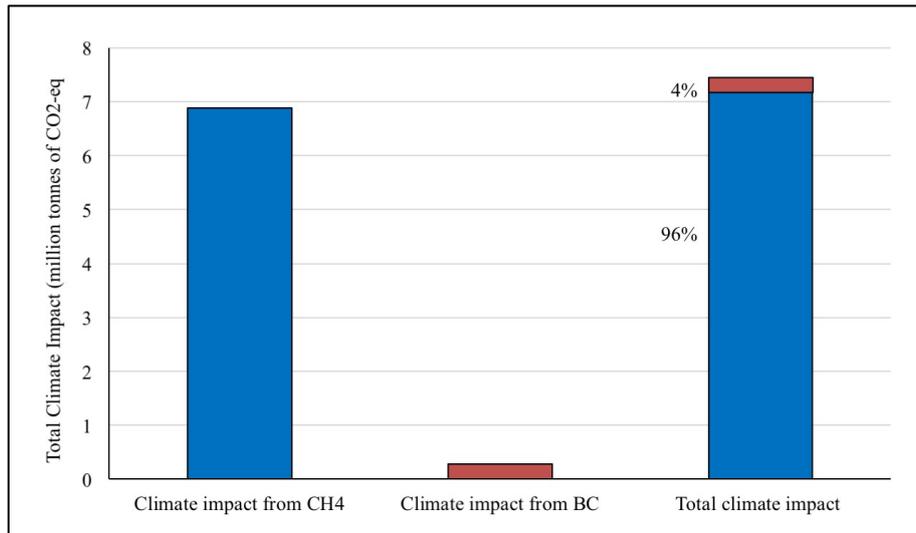
Below are highlights from the discussion.

- The National Panel of Technical Experts (NPTE) on Climate Change has included black carbon calculation in their discussions.
- The EQT can capture the following:
  - Oxidation factor which should be considered in GHG inventory.
  - GHG avoided in each step of waste management, i.e. using the compost instead of chemical fertilizer.
  - Residual waste from SLF, as long as the data on its composition are known or can be collected.

## ***Part II. Results of SLCP Baselines from Vetted Data as the National Level***

In coming up with the SLCP baselines from the vetted data at the national, the waste flow analysis at the national data for year 2010 was used to establish the baseline for BAU practices. This resulted to the following:

- a. Net GHG Emission from Different Treatment Options in BAU
  - Net GHG emission per ton of generated waste is 427 kg CO<sub>2</sub>e; and
  - Total GHG emission from annually generated waste is 5.76M mtCO<sub>2</sub>e.
- b. Net BC Emissions from Different Treatment Options in BAU
  - Open burning of waste is the major source of BC;
  - Climate impact due to BC emissions from burning one tonne of waste would equal to 442 kg of CO<sub>2</sub>e; and
  - BC emissions from annually generated waste is 418 tons and that would equivalent to 284,732 mtCO<sub>2</sub>e.
- c. Overall Climate Impact from SLCPs in Baseline Scenario
  - CH<sub>4</sub> emissions contributes for 96% of climate impact caused from SLCPs and BC contributes for remaining 4% climate impact in BAU.



*Figure 7. Overall Climate Impact from SLCPs in Baseline Scenario*

### ***Discussion Highlights***

Below are key points from the discussion.

- The country has no data yet on open burning, the data reported to CCC are adopted from the IPCC guidelines.
- The categorization of SLFs was adopted from the IPCC guidelines – unmanaged deep and shallow dumpsites are categorized as open dump, SLFs without gas recovery are under categories 3 and 4, while managed semi-anaerobic falls under categories 1 and 2. The SLCP baselines from the vetted data are generated as a national data, while the EQT was used at the municipality and city level.
- Data on open burning and landfill fires were not thoroughly discussed in the data vetting workshop, rather the sector only adopted household burning based on the IPCC guidelines for consistency.
- In building the scenarios, the following should be considered:
  - Landfill fires;
  - Strategies that could be in relation to SLCP and sources of emission.

### ***Part III. Results of SLCP-MSWM Scenarios from Set Targets/Options***

There are three intended scenarios identified for the promotion of climate-friendly MSWM in the Philippines.

- a. Consider an improved waste collection rate with separation of higher percentage of organic waste for resources recovery via composting;
- b. Improved waste collection rate with separation of higher percentage of biodegradables and recyclables for resource recovery; and
- c. Improved waste collection rate, improved waste separation for resource recovery with termination of both unmanaged shallow and unmanaged deep dump sites, while implementing sanitary landfill with GR disposal.

Each scenario was analyzed and then came up with the comparative result of GHG and BC emission and reduction for each scenario.

- a. Comparative Assessment of GHG Emissions
  - When compared to BAU practices, 52% of GHGs can be avoided by introducing the policy directions proposed in Scenario I;
  - GHG avoidance rates can be further increased as high as 83% by introducing the policy directions set out by Scenario II; and
  - By following policy directions outlined in Scenario III, with 95% waste collection rate and intensive waste recovery while replacing unmanaged dumpsites with sanitary landfills with GR, GHG mitigation potential can be 90% in comparison to BAU practices.
- b. Comparative Assessment of BC Emissions
  - With proposed policy directions, BC mitigation potentials from Scenario I, Scenario II, and Scenario III relative to the BAU practice is 43%, 51% and 57% respectively.

Overall, the climate impacts can be reduced to 51% by implementing policy direction proposed in Scenario I. While as long term-goals, Scenario II and Scenario III can be implemented with gradual improvements of resource recovery and waste collection rate while terminating unmanaged disposal sites, which would mitigate climate impact by 80% and 87% respectively as compared to BAU practice.

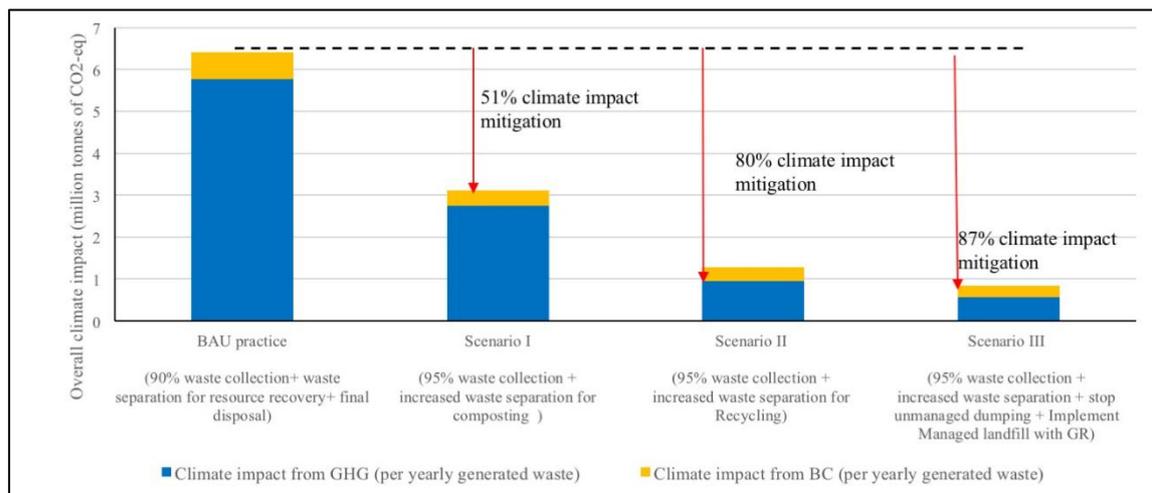


Figure 8. Comparative Assessment of Overall Climate Impact in Baseline and Three Scenarios

#### Part IV. Implications of National EQT results to National SLCP Strategy Development and Recommendations

Table 3. Implications and Recommendations for the Development of National SLCP Strategy

| Implications to National SLCP Strategy Development   | Recommendations   |
|--|---|
| <ul style="list-style-type: none"> <li>Improper/conventional disposal of solid waste is the main source from CH<sub>4</sub> emission</li> <li>CH<sub>4</sub> contribute 96% of SLCPs in baseline scenario in the Philippines</li> <li>Termination of uncontrolled disposal practices is an urgent strategy to be implemented</li> <li>Open burning of uncollected waste is a main driver of BC emissions</li> <li>BC emissions cannot be ignored any longer in climate policy as it causes 442 kg of CO<sub>2</sub>-eq climate impact per tonne of waste burning</li> <li>According to EQT emission estimations, recycling seems to be the most climate friendly waste treatment option as it has GHGs/SLCPs saving potentials</li> <li>Energy recovery from sanitary landfills would contribute for a significant GHGs emissions reduction</li> </ul> | <ul style="list-style-type: none"> <li>Development of a national framework aiming GHGs/SLCPs mitigation would be the initial first step in planning and implementing climate friendly waste management</li> <li>Well-designed, integrated waste management systems with right technologies an important step in implementation for achieving climate-change mitigation targets in the Philippines</li> <li>Priority should be given to below issues on implementing such a program at national level               <ol style="list-style-type: none"> <li>Awareness gaps about SLCPs among key stakeholders,</li> <li>Data and analytical challenges associated with quantifying emissions reductions</li> <li>Strategic entry points for institutionalising a SLCP-reduction agenda into existing policy and decision making processes,</li> </ol> </li> </ul> |

|  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• EQT results proved that, implementing a national programme focused on resource recovery along with improving waste collection rate and terminating improper/conventional disposal practices while implementing sanitary landfill with gas recovery, would contribute for achieving country’s national mitigation target in waste sector.</li> <li>• With careful selection of right technologies to match with waste characteristic and local condition, it is fully possible to achieve 100% of GHGs/SLCP mitigations target at national level.</li> </ul> | <p>including through the establishment of an intergovernmental oversight body, and</p> <p>d) Opportunities for scaling up means of implementation, such as through adequate, predictable and sustainable financing for appropriate technologies and capacity building</p> |
|--|---|

### ***Discussion Highlights***

Below are key points raised during the open plenary:

- Suppressing an open burning at dumpsites will (at this point in the EQT model) yield no emission reduction since the calculated baselines have only considered backyard burning so far.
- The baseline from BAU scenario presents the level of GHG emission from each process, deciding on various scenarios for improving waste management should consider how GHG/SLCPs will be reduced.
- Waste sector does not focus on refrigerants; however, it was included in the Industrial Processes and Product Use (IPPU) which covers all sectors relevant to SLCPs.
- EQT does not yet consider expenditures from waste management or life cycle costing, however it is a good recommendation to improve the tool for policy and decision-making process.

## 6. Review of National Policies, Plans, and Programs relevant to SLCP-MSWM in the Philippines



*Ms. Maria Delia Cristina Valdez, SWMD-EMB*

Ms. Valdez presented the national policies, plans, and programs relevant to SLCP-MSWM in the country. The development of the national strategy for SLCPs is anchored on four major plans: Ambisyon 2040, the Philippine Development Plan (PDP) 2017-2022, RA 9003 and the National Solid Waste Management Strategy (NSWMS), and RA 9729 and the National Climate Change Action Plan. The underlined portions in the table below are specifically relevant to the

development of the national strategy for SLCPs reduction.

*Table 4. Chapters of the PDP where SLCP/MSWM are Embedded*

| <b>Chapter 19: Subsector Outcome 2: Strategic infrastructure implemented</b> |   |
|--|---|
| Transport  | <ul style="list-style-type: none"> <li>• <u>Road-based transport</u> will be improved through “<u>engineering, enforcement, and education</u>”.</li> <li>• <u>Anti-overloading</u> measures to prevent the rapid deterioration of roads.</li> <li>• Motor Vehicle Type Approval System and <u>Motor Vehicle Inspection System</u> will be implemented.</li> <li>• Road-based transport initiatives, such as travel demand management, ... <u>fleet modernization, route rationalization, environmentally sustainable urban transport systems ...</u></li> </ul>                 |
| Energy   | <ul style="list-style-type: none"> <li>• The government will expedite the implementation of remaining policy mechanisms under <u>Renewable Energy (RE) Act of 2008</u> to further encourage development.</li> <li>• Compliance to DOE DC2015-07-014, “Guidelines for <u>Maintaining the Share of RE in the Country</u>”</li> <li>• Prioritize the provision of electricity services to the remaining un-electrified off-grid, island, remote, and last-mile communities to <u>achieve total household electrification by 2022 (universal access to electricity)</u>.</li> </ul> |
| Social Infrastructure  | <ul style="list-style-type: none"> <li>• The effective implementation of social infrastructure projects provides conducive access to <u>basic social services</u> necessary for human capital development.</li> <li>• <u>LGUs</u> will be provided assistance in complying with the requirements under the <u>ESWMA</u>.</li> </ul>   |

|  |   |
|--|---|
|  | <ul style="list-style-type: none"> <li>• There will also be <u>public awareness programs</u> to promote proper waste management;</li> <li>• <u>Investments in relevant technologies</u> will be undertaken to improve SWM throughout the country.</li> <li>• DENR-EMB, in coordination with NSWMC and relevant stakeholders, will <u>implement strategies in support of RA 9003.</u> <ol style="list-style-type: none"> <li>a. Promote <u>clustering of LGUs for common SWM facilities</u> and services to take advantage of economies of scale</li> <li>b. Revisit the provisions of RA 9003, and make necessary amendments, for the creation of SWM units and appointment of <u>ENR persons in each LGU.</u></li> <li>c. Fully utilize the national <u>ecology centers</u> and regional ecology centers as possible venues for trainings or education in integrated SWM.</li> <li>d. Provide an <u>incentive mechanism to local recycling industries</u> to encourage their continued participation in the local SWM system.</li> <li>e. Adopt <u>alternative technologies, including waste-to-energy, as SWM solution, considering institutional, legal, and technical limits.</u></li> <li>f. Intensify the promotion of <u>segregation-at-source by engaging local communities</u> to participate in “learning by doing” programs, IEC campaigns and social marketing programs on SWM.</li> <li>g. Operationalize <u>SWM fund</u> and assess the re-institutionalization of the <u>NG-LGU cost sharing scheme for SWM</u></li> </ol> </li> </ul> |
|--|---|

**Chapter 19: Subsector Outcome 3 Asset preservation ensured**

- The government will continue to strengthen its role in coordinating infrastructure management and place greater emphasis on sustainability, safety, and resilience.
- Incorporate climate change adaptation (CCA) and disaster resilience measures; Considering that the Philippines is highly vulnerable to disasters and effects of climate variability, the operational life of infrastructure will be secured.
- Disaster risk reduction (DRR) and CCA strategies will be considered to ensure resilient infrastructure facilities.

**Chapter 19: Subsector Outcome 4: Infrastructure-related R&D intensified**

- To improve the infrastructure sector, it is imperative that research and development (R&D) expertise is institutionalized.
- The government will pursue programs to develop R&D on, among others,
  - renewable energy technologies to meet the growing need for clean and affordable energy;
  - cost-efficient technologies for wastewater and solid, hazardous, and health care waste management for the protection of public health and the environment;
  - new transportation technologies;
  - climate change- and disaster resilient infrastructure designs;
  - emerging ICT applications or platforms;
  - and new methodologies for gathering and managing science-based data.
- In addition, establishment of R&D facilities will be supported.

### **Chapter 20: Subsector Outcome 1: Biodiversity and functioning of ecosystem services sustained**

- Mainstream ecosystem values into national and local development planning.
  - Mainstreaming accounting and valuation in the development planning is necessary to ensure that due importance and appropriate management will be given to these finite resources.
  - Identifying the true value of the resources will: (a) facilitate informed decision making of political leaders and local communities; (b) provide better alternatives and trade-offs; and (c) generate income and employment in the rural areas and create wealth for the nation.
- Develop a policy for Payments for Ecosystem Services.
  - A policy to institutionalize payment for ecosystem services that will provide incentives in the management of ENR will be developed. This will also provide an alternative source of income to the local communities.

### **Chapter 20: Subsector Outcome 2: Environmental quality improved**

- Strengthen enforcement of environmental laws. Specifically:
- Air Quality Management
  - Strengthen the enforcement of antismoke belching and vehicle emission testing
  - Promote environmentally-sustainable transport, including the mass transport system, use of cleaner fuels, and conversion to fuel-efficient engines (see Ch. 19)
  - Enforce the creation of airshed governing boards and ensure that they are functional
  - Strengthen the enforcement of air quality standards among industry players
- Land Quality Management
  - Improve management of solid, toxic, and hazardous wastes incl. electronic wastes. Enforce the compliance of LGUs to RA 9003 in relation to the
- establishment of material recovery facilities (MRFs) and treatment facilities;
- closure and rehabilitation of remaining dumpsites; and
- formulation of local SWM plans
- Promote the practice of 3Rs and proper waste management
- Promote strategic clustering of sanitary landfills and SWM technologies to address their large capital requirement, and allow low-income LGUs to pool their resources to finance such facilities
- Provide alternative livelihood activities for waste pickers in the remaining dumpsites identified for closure
- Improve the management and disposal of electronic, hospital and toxic wastes
- Promote sustainable consumption and production (SCP). The government will develop and implement SCP policies and initiatives, particularly practices and technologies that will facilitate the attainment of both economic goals and environmental standards. In particular, the following strategies will be pursued to strengthen SCP promotion:
  - Formulate a “polluters pay” policy and implement corresponding measures
  - Establish a sustainable market for recyclables and recycled products
  - Strengthen the certification and establish information systems for green products and services
  - Strengthen the implementation of Philippine Green Jobs Act
  - Promote green procurement in the public and private sectors

- Strengthen the promotion, development, transfer, and adoption of eco-friendly technologies, systems, and practices in the public and private sectors by increasing access to incentives and facilitating ease of doing business and other related transactions, among others (see also Ch. 9, 10, 14 and 19);
- Intensify the use of renewable energy and increase its share in the energy mix (see also Ch. 19)
- Promote the conduct of a GHG inventory in the public and private sectors

**Chapter 20: Subsector Outcome 3: Adaptive capacities and resilience of ecosystems increased**

- Strengthen implementation of CCA and DRR across sectors, particularly at the local level
- Strengthen the monitoring and evaluation of the effectiveness of CC and DRRM actions. This includes activities related to the identification of indicators and development of monitoring systems to measure the implementation and effectiveness of CC and DRRM initiatives vis-a-vis Sustainable Development Goals (SDG), Sendai Framework for Disaster Risk Reduction, and United Nations Framework Convention on Climate Change commitments.
  - Identify appropriate indicators to measure adaptive capacity and resilience.
  - Develop a database to measure emission reduction per sector. Pursuant to EO 174, there is a need to conduct GHG inventory for agriculture, forestry, energy, transport (i.e., land, maritime and aviation), waste, and industry. This will assist the monitoring, reporting and verification of the country's GHG emissions.

Meanwhile, the table below details the MSWM-relevant PAPs/Targets from the RA 9003 (ESWMA of 2000) and RA 9279 (Climate Change Act of 2009).

*Table 5. MSWM-relevant PAPs/Targets*

| RA 9003 (ESWMA of 2000) and MSWM-relevant PAPs/Targets   | RA 9279 (CCA of 2009) and Climate-relevant PAPs/Targets   |
|--|---|
| <ul style="list-style-type: none"> <li>• RA 9003] Definition of Terms: Waste Diversion is defined as activities that reduce or eliminate solid wastes from waste disposal facilities.               <ul style="list-style-type: none"> <li>✓ [RA 9003] Section 20. Establishing <b>Mandatory Solid Waste Diversion</b>. ... the LGU shall <b>divert at least 25% of all solid waste</b> from waste disposal facilities through re-use, recycling, and composting activities and other resource recovery activities: Provided, That the <b>waste diversion goals shall be increased</b> every three (3) years thereafter ...</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• EO 174 s. 2014] The EO institutionalizes the Philippine Greenhouse Gas Inventory Management and Reporting System (PGHGIMRS).               <ul style="list-style-type: none"> <li>✓ GHGI, Ref Year 1994: Waste Sector = 9,198.21 Gg CO<sub>2</sub>e wherein 302.73 Gg CH<sub>4</sub> is from solid waste (100% CH<sub>4</sub>)</li> <li>✓ GHGI, Ref Year 2000: Waste Sector = 11,599.07 Gg CO<sub>2</sub>e wherein 259.39 Gg CH<sub>4</sub> is from solid waste (100% CH<sub>4</sub>)</li> <li>✓ GHGI, Ref Year 2010: Waste Sector = 13,800 Gg CO<sub>2</sub>e wherein 4,700 Gg CO<sub>2</sub>e is from solid waste (accounting for CH<sub>4</sub>+CO<sub>2</sub>+N<sub>2</sub>O)</li> </ul> </li> <li>• [Paris Agreement] The country ratified the PA on Climate Change on signing the accession</li> </ul> |

|  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• [RA 9003] Definition of Terms: <ul style="list-style-type: none"> <li>a. Open dump shall refer to a disposal area wherein the solid wastes are indiscriminately thrown or disposed of without due planning and consideration for environmental and health standards.</li> <li>b. Controlled dump shall refer to a disposal site at which solid waste is deposited in accordance with the minimum prescribed standards of site operation.</li> </ul> </li> <li>✓ [RA 9003] Section 37. <b>Prohibition Against the Use of Open Dumps for Solid Waste. No open dumps shall be established and operated, nor any practice or disposal of solid waste by any person, including LGUs, which constitutes the use of open dumps for solid waste, be allowed ... Provided, further, That no controlled dumps shall be allowed five (5) years following effectivity of this Act.</b></li> </ul> | <p>instrument by President Rodrigo Duterte last March 6 and after the Senate unanimously gave its concurrence to <b>PA ratification</b> on March 14, 2017.</p> <ul style="list-style-type: none"> <li>• The Philippines submitted its Intended Nationally Determined Contribution (<b>INDC</b>) on October 1, 2015. <ul style="list-style-type: none"> <li>✓ “The Philippines intends to undertake GHG (CO<sub>2</sub>e) emissions reduction of about <b>70% by 2030 relative to</b> its business-as-usual (<b>BAU</b>) scenario of 2000-2030. Reduction of CO<sub>2</sub>e emissions will come from energy, transport, <b>waste</b>, forestry and industry sectors. The mitigation contribution is <b>conditioned</b> on the extent of financial resources, including technology development &amp; transfer, and capacity building, that will be made available to the Philippines”.</li> </ul> </li> <li>• The country’s Nationally Determined Contribution (<b>NDC</b>) currently being deliberated by the government based, among others, on the Cost-Benefit Analysis (<b>CBA</b>) Study. <p>Assumptions/targets were:</p> <ul style="list-style-type: none"> <li>✓ 100% MRF coverage of barangays by 2025</li> <li>✓ Increasing the percentage of biodegradable waste that is composted from 5% in 2010 and 10% in 2015 to 50% in 2050. Or, increase from 382,889 tpd in 2000 and 352,537 tpd in 2010 to 846,328 tpd by 2025 and 953,587 tpd by 2030.</li> <li>✓ Fraction of Category 4 SLFs with methane recovery (at ~50% collection efficiency): 34% by 2025 and 56% by 2030 and thereafter; Increase in SLF methane recovery from 1.77 m<sup>3</sup> in 2010 to 94.76 m<sup>3</sup> by 2025 and 164.44 m<sup>3</sup> by 2030.</li> <li>✓ Open and controlled dumpsites completely closed (accommodating 0 tpd of MSW) in 2030; From baseline relative to 2017 (100% capacity utilization rate to gradual decline from</li> </ul> </li> </ul> |
|--|--|

|  |  |
|--|--|
|  | <p>77% utilization in 2020 and 38% utilization in 2025.)</p> <ul style="list-style-type: none"> <li>✓ Methane capture/recovery in open and controlled dumpsites from 0 until 2017 to 14.0 in 2020, 43.7 in 2025, and 81.5 Gg CH4 in 2030.</li> <li>✓ Percentage of small SWDS with eco-efficient soil cover: 4% in 2018, 31% by 2025, and 50% by 2030 and thereafter.</li> <li>• Clustered actions based on the FGD on “MA implementation requirements”: <ul style="list-style-type: none"> <li>✓ Control of open burning (backyard and SWDS)</li> <li>✓ Optimization of waste <u>collection and routing schemes</u></li> <li>✓ Segregation of <u>recyclables</u> for MRF and then for subsequent <u>recycling</u></li> <li>✓ Diversion of organic waste through <u>aerobic composting</u></li> <li>✓ Diversion of organic waste through <u>anaerobic digestion (with gas capture and/or utilization)</u></li> <li>✓ Methane capture/treatment at waste disposal sites: Use of <u>eco-efficient/methane-oxidizing soil cover</u> at smaller dumpsites</li> <li>✓ Methane capture/treatment at waste disposal sites: <u>Flaring</u> of gas at bigger dumpsites</li> <li>✓ Methane recovery and utilization at waste disposal sites: <u>Electricity generation</u> at very big SWDS</li> <li>✓ <u>Leachate collection and treatment</u></li> <li>✓ Co-processing (<u>alternative fuels</u> and raw materials) in cement kilns / Residuals WTE</li> </ul> </li> </ul> |
|--|--|

To that end, Ms. Valdez mentioned the key issues in the implementation and compliance of LGUs to RA 9003.

1. Limited mandated of DENR to only technical assistance;
2. Limited budget for establishment of MRF, closing of dumpsites, and opening up a SLF;
3. Land for SLF: closing of open dumpsites but if there is no available land for the SLF, the tendency is for the LGU to open a new dump site; and
4. Capacity of LGUs to establish MRF and opening of SLF.

## *Discussion Highlights*

Below are key points raised in the open plenary;

- The diversion target is based on what was collected, however the value will be different in terms of computing for the entire waste generation. For example, the diversion of San Carlos City to date is at 70%, but if the entire waste generation is included, diversion rate could be 95%. While the maximum potential rate of diversion is being computed from the compostable and recyclables, in reality, there are still biodegradables being transported or processed in other facility. The national data was generated as an average data from all 10-year SWM plans submitted to the NSWMC. However, each LGU has different maximum potential for diversion as they differ in percentage compostable waste, some have higher percentage some may have lower. Note that the plan is on a medium term duration which will be revisited and updated annually based on the achievements of the previous year.
  - NSWMC is developing an excel template for the standard computation of diversion target. Once ready, it will be piloted in Region 4B and will be communicated to LGUs for their SWM plan updating as well as for LGUs who have not submitted their plans yet.
- The INDC's 70% emission reduction below BAU is a conditional commitment, hence the country will reduce its emission on the condition that financing and technology and knowledge transfer are made available for the country.
  - Currently, CCC is preparing the Nationally Determined Contribution (NDC) which is more binding since the country is a signatory to the Paris Agreement. The data is being reconstructed to consider other factors such as population and GDP, as well as different options to reduce emission and the co-benefits of such option. The target for submission to UNFCCC is December 2019 at the latest.





## 7. Comparative Outline and Contents of the SLCP Strategies of California and Canada

*Engr. Voltaire Acosta, Consultant, IGES*

Engr. Acosta presented the comparative outline and content of the SLCP strategies of California and Canada. Note that both strategies outline all sectors that contribute to SLCPs and the

Philippines plans to have a waste sector specific strategy to reduce SLCPs. Table below suggests the possible outline for the country, taking cue from the outline and contents of the SLCP strategies of California and Canada.

*Table 6. Content/Outline for the National Strategy*

|  |
|--|
| <b>Content/Outline</b>   |
| Need/Situation   |
| Overall Targets  |
| Opportunities and Benefits in Addressing SLCPs                                 |
| Guiding Principles   |
| Process for Developing the SLCP Strategy plus Composition of FGDCGE            |
| Science and Sources of SLCPs plus Baseline                                     |
| Issues and Gaps to be addressed (per SLCP gas; per functional element?)        |
| Related PAPs and Targets to SLCPs/SWM  |
| Current Initiatives: targets and gains (per SLCP gas; per functional element?) |
| Holistic Approach to reducing SLCPs  |
| Specific SLCP Strategies and Reduction Targets                                 |
| MERV System  |
| Next Steps/Way Forward   |

*Additional Inputs from the discussion.*

- On alignment of financial incentives for organic diversion and leverage funds to generate investments from the private sector.

Since there is no funding from the national government for solid waste management, the challenge is looking at the possibility for provincial funding but may not be consistent because it will depend on the allocation of the province.

There is a similar funding appropriated for composting and residual processing but specific for the procurement of equipment. The specific equipment is not yet identified and with the procurement process in the country, it might be an equipment for all but may not be applicable to all.

In terms of leveraging, there is a need to understand the entire process, i.e. investment on composting will not generate much return in which the private sector may not be interested in. On one hand, tackling the issue of waste that should be contracted on an annual basis should be put forward given LGUs are not allowed by COA to enter into a long term contract, except for hauling. Even for infrastructure projects, a joint project arrangement or private-public partnership contract is required for an LGU to have a longer contract.

- On branding the national program on SWM like the National Greening Program.

The challenge is that LGUs are mandated to manage their solid wastes. There is a need to get the funding first before having a national branding for SWM. Right now, the structure of NSWMC is confusing, *first* NSWMC is headed by the DENR, *second* the NSWMC needs to request funding from the Office of the President (OP), but it is not included in the general appropriations of OP.

- On aligning of waste sector to other sectors

The DENR and CCAC have another project to support the national action planning to cover all sectors that contribute to SLCP emission. The discussions were completed and the signing of agreement is set to happen this year. DENR can then plan out for the activities.

## Breakout Session

The participants were divided into two groups to work on four breakout sessions, 1) *clustering of issues and and concerns related to SLCPs*, 2) *analysis of gains, challenges and opportunities and identification of initial measures*, 3) *prioritization of measures to avoid/reduce SLCPs from MSWM*, and 4) *identification of corresponding targets and co-benefits*. The same groupings worked on each breakout session.

### Breakout Session 1. Clustering of Issues and Concerns related to SLCPs

The outputs of the two groups were then subjected to plenary for synthesis of the facilitator. Below table is the synthesized version, while individual output of the two groups can be found in Annex 3.

*Table 7. Synthesized and Clustered Outputs from Breakout Session 1*

| Categories                                   | Policy/ Institutional   | Finance/Resources  | Technology/Technical  | Awareness/Behavioral/ Capacity Building/ Enforcement   | Others/Cross Cutting  |
|--|---|--|---|--|---|
| General (overall including waste generation) | <ul style="list-style-type: none"> <li>No strong policy yet on SLCP in general</li> <li>Strategic actions, and targets</li> <li>High amount of data requirements</li> <li>Need to update ordinances and 10-year plan at the LGU level</li> <li>Lack of proper monitoring and implementation of SWP plans</li> <li>Too much bureaucratic procedures on government procurement and policy development</li> <li>Absence of plantilla position focused on SWM</li> <li>Lack of monitoring and assessment of effectiveness and efficiency of policies</li> </ul> | <ul style="list-style-type: none"> <li>Lack on incentives and rewards for LGUs with best practice</li> <li>Financial limitations</li> <li>The need to update data requires corresponding financial requirement</li> <li>Lack of budget (central government and allocation from LGU)</li> <li>Need for resources to augment the inefficient and ineffective procurement procedures</li> <li>Budget for PENRO/CENRO/MENRO focusing on SWM</li> <li>Some technologies are expensive</li> <li>Lack of resourcefulness</li> </ul> | <ul style="list-style-type: none"> <li>Lack of collaboration among stakeholders</li> <li>No data on waste flow</li> <li>Poor data management</li> </ul> | <ul style="list-style-type: none"> <li>Culture of overconsumption and disposal (lack of concern)</li> <li>Inadequate enforcement</li> <li>Lack of awareness on policies</li> <li>Lack of IEC materials</li> <li>Lack of motivation (prioritization)</li> <li>Lack of political will/support</li> </ul> | <ul style="list-style-type: none"> <li>Lack of sharing of city-to-city knowledge</li> <li>Unavailability of land/spaces</li> <li>(intentional burning)</li> </ul> |

| Categories                              | Policy/ Institutional   | Finance/Resources   | Technology/Technical  | Awareness/Behavioral/ Capacity Building/ Enforcement   | Others/Cross Cutting  |
|---|---|---|---|--|---|
|   | <ul style="list-style-type: none"> <li>Lack of partnerships (donor, financing agencies)</li> </ul>  |   |   |  |   |
| Open Burning                            | <ul style="list-style-type: none"> <li>Need to harmonize government policy on burning (inter-department)</li> </ul>   |   | <ul style="list-style-type: none"> <li>No data on open burning</li> </ul>   | <ul style="list-style-type: none"> <li>Lack of awareness on government policy in open burning</li> <li>Lack of national campaign of national campaign on OB</li> <li>No implementation/ Very low penalties on open burning violators (both LGU and HHs)</li> <li>Behavioral issue (convenience of burning the waste rather properly disposing them)</li> </ul> |   |
| Disposal                                | <ul style="list-style-type: none"> <li>Current guidelines for gas management (gas venting is the minimum requirement)</li> <li>Guidelines/F.S on the use of eco-efficient cover at smaller dumpsites</li> </ul> |   | <ul style="list-style-type: none"> <li>Use of non-engineered SWDs</li> <li>Lack of knowledge on how to suppress landfill fires</li> <li>Lack of proper design on disposal facilities</li> </ul> | <ul style="list-style-type: none"> <li></li> </ul>   | <ul style="list-style-type: none"> <li>Dumpsite burning</li> <li>More than 700 dumpsites are still operating</li> <li>Only 21% of LGUs have accessed to SLFs</li> </ul> |
|   |   | <ul style="list-style-type: none"> <li>Need for LGUs to close and rehabilitate remaining dumpsites</li> </ul>   |   |  |   |
|   |   | <ul style="list-style-type: none"> <li>Mismanagement of disposal facilities</li> </ul>  |   |  |   |
| Source separation/collecti on/transport | <ul style="list-style-type: none"> <li>Inefficient collection of wastes</li> </ul>  | <ul style="list-style-type: none"> <li>Inefficient collection</li> <li>Clamor/need for dedicated collection of biodegradables from food industry</li> <li>Need for logistics for recyclables</li> </ul> |   |  |   |

| Categories                                      | Policy/ Institutional  | Finance/Resources  | Technology/Technical  | Awareness/Behavioral/<br>Capacity Building/<br>Enforcement   | Others/Cross Cutting  |
|---|--|--|---|--|---|
|   | <ul style="list-style-type: none"> <li>Need for a policy on modernization of collection vehicles</li> <li>Lack of policy mandate for private sector (segregation)</li> </ul> |  | <ul style="list-style-type: none"> <li>Absence of segregation and public support</li> <li>Lack of efficient collection routes and vehicles</li> </ul> |  |   |
|   |  |  | <ul style="list-style-type: none"> <li>The use of old model for transportation</li> </ul>   |  |   |
| Recovery for recyclables, processing, treatment | <ul style="list-style-type: none"> <li>Poor policy implementation on the informal waste sector</li> </ul>  | <ul style="list-style-type: none"> <li>No enough market for recyclables</li> <li>Only 32% of all barangays have access to MRFs</li> <li>Need for proper infra (MRFs, Recycling facilities)</li> <li>Lack of proper infrastructure and facilities to process recyclables</li> <li>Need for R&amp;D on new technologies and its application for recyclables</li> <li>Lack of appropriate technology selection</li> </ul> |   | <ul style="list-style-type: none"> <li>Lack of awareness on technology selection</li> </ul>                                |   |
|   |  |  | <ul style="list-style-type: none"> <li>Weak database and recycling facilities</li> </ul>  |  |   |
| Resource: Bio-processing                        | <ul style="list-style-type: none"> <li>Absence of publicized guidance on composting</li> </ul>   | <ul style="list-style-type: none"> <li>Lack of proper infra and facilities to process compostables</li> <li>Lack of technical composting knowledge</li> <li>Need for R&amp;D on new technologies and its application for compostables</li> <li>Inappropriate capacity of composting treatment</li> </ul>   |   | <ul style="list-style-type: none"> <li>Low awareness on composting – lack of knowledge on how it should be done</li> </ul> | <ul style="list-style-type: none"> <li>Huge amount of biodegradables collected</li> <li>Poor post-harvest process</li> <li>Lack of area for composting</li> </ul> |
| Resource recovery, including energy             |  | <ul style="list-style-type: none"> <li>Lack of marketing for composting/promotion</li> <li>Lack of recycling (recyclables processing) with the Philippines</li> </ul>  |   | <ul style="list-style-type: none"> <li>Social acceptance of technologies</li> </ul>  |   |

## Breakout Session 2 and 3: Analyze, Identify and Prioritize Measures

The groups had two tasks to complete: First was to analyze gains, challenges, and opportunities and identify the measures/options to address issues and concerns identified in the first breakout session. Second was to prioritize or shortlist measures/strategies from the options/measures identified in the second breakout session. The groups were reminded that strategies should be able to address the challenges identified for each waste management phase. Targets should adopt the Specific, Measurable, Attainable, Realistic, and Time-bound (SMART) principle. *See tables below for the detailed output.*

Table 8. Group 1 Output

|   | <b>Gains (what have done/available so far)</b>  | <b>Challenges (Remaining barriers to be addressed)</b>  | <b>Opportunities (possible driving forces that can be tapped)</b>   | <b>Potential Measures</b>   | <b>Priority Measures</b>  |
|---|---|---|---|---|---|
| GENERAL (Overall), including Waste Generation | <ul style="list-style-type: none"> <li>National SWM Strategy are currently being updated</li> <li>On-going comparative research on the emission of WTE vs open burning</li> </ul> | <ul style="list-style-type: none"> <li>Need to research data: identify basis to formulate policy</li> <li>Proper allocation of budget by the government for WM sector</li> <li>Proper data collection and management by LGUs</li> </ul> | <ul style="list-style-type: none"> <li>Refer to other countries i.e Canada, Mexico regarding best practice on reducing SLCPs</li> </ul> | <ul style="list-style-type: none"> <li>Use of EQT Tool as guide for LGUs</li> <li>Develop a national campaign on open burning policy through television, social media, schools, and HHs</li> <li>Develop KM on available technologies in the ff: WTE, food-to-waste technology, recycling</li> <li>Strengthen partnerships with stakeholders (summit, workshops, recognition)</li> <li>Recognition of private sector initiatives specific to SWM</li> <li>Best practice sharing among cities for benchmarking</li> <li>Develop tools for monitoring SWM</li> <li>Monitoring, Reporting, Verification (MRV) of Measures</li> <li>Develop knowledge management of data on recycling, consolidation, junkshop</li> <li>Collaborative research output should be adopted by stakeholders for prioritization</li> <li>Present and Lobby to DBM the approval of budgte to implement the RA 9003</li> </ul> | <ul style="list-style-type: none"> <li>Develop national framework for the reduction of GHG/SLCP emissions from MSWM.</li> <li>Develop knowledge management of data (recyclers, consolidators, technologies, good practices, mapping of SLFs)</li> </ul> |

|                            |  |  |  |   |   |
|----------------------------|--|--|--|---|---|
| OPEN BURNING               | <ul style="list-style-type: none"> <li>• Support to Philippines in BAT/BEP to address open burning</li> <li>• Knowledge products from IPOP's Management Project</li> </ul>   | <ul style="list-style-type: none"> <li>• How to formulate questionnaire based on the effect of open burning vis-à-vis policy formulation</li> <li>• Avoidance of dumpsite burning</li> </ul> | <ul style="list-style-type: none"> <li>• Creation of guiding principles</li> </ul>   | <ul style="list-style-type: none"> <li>• Formulated policy on open burning</li> <li>• Enforce segregation at source and segregation collection (no segregation at disposal facilities)</li> <li>• Develop behavioral communication plan to create campaigns that inspire change</li> <li>• Gathering research output from other Asian countries for the development of SLCP policies/ standards/ procedures</li> <li>• Conduct workshops/retooling to harmonize government policy on burning (DOH, DA, DENR)</li> </ul> | <ul style="list-style-type: none"> <li>• Develop Behavioral Communication Change Strategies</li> </ul>  |
| DISPOSAL                   | <ul style="list-style-type: none"> <li>• Ombudsman filing cases on non-compliant cities and municipalities</li> <li>• 20% LGU Budget Allocation in the Local Development Plan can be budget source for environmental protection program</li> </ul> | <ul style="list-style-type: none"> <li>• Continuity of the Ombudsman program on non-compliant LGUs</li> <li>• Amendment of the LG Code (RA7160)</li> </ul>                                   | <ul style="list-style-type: none"> <li>• Serves as an eye opener for other LGUs to comply with RA 9003</li> </ul>  | <ul style="list-style-type: none"> <li>• Mandate certain % of LGU budget to SWM</li> <li>• Institutionalize incentive and Reward System: Cleanest and Greenest LGU, Best SWM Model for Schools focused on segregation, collection, recycling, and composting (Cash Award)</li> <li>• Creation of plantilla positions for LGUs ENROs</li> <li>• Strengthen government policies on procurement (including policy on allowing gov't resources on closing disposal sites on private lands)</li> </ul>                       | <ul style="list-style-type: none"> <li>• Adopt economically viable technologies applicable to specific requirement</li> <li>• Institutionalize SWM requirements (manpower, budget, plans and programs)</li> </ul> |
| DISPOSAL (Methane capture) | <ul style="list-style-type: none"> <li>• Studies on eco-efficient soil cover conducted (Region 8)</li> </ul>   | <ul style="list-style-type: none"> <li>• Elucidation of pollutants present in the soil</li> </ul>  | <ul style="list-style-type: none"> <li>• Develop optimize method of analysis as a standard quality control</li> <li>• It creates employment opportunities</li> </ul> | <ul style="list-style-type: none"> <li>• Clustered SLF for better management and cost cutting of operation</li> <li>• Complete FS on the use of eco-efficient soil cover for small dumpsites by 2018</li> <li>• NSWMC to develop guidelines for gas recovery in disposal sites</li> </ul>   | <ul style="list-style-type: none"> <li>• Strengthen partnership with relevant stakeholders (PPP for infra for Vis/Min, incentives for private sector)</li> </ul>  |

Table 9. Group 2 Output

|  | <b>Gains (what have done/available so far)</b> | <b>Challenges (Remaining barriers to be addressed)</b>  | <b>Opportunities (possible driving forces that can be tapped)</b>   | <b>Potential Measures</b>  | <b>Priority Measures</b>   |
|--|--|---|---|--|--|
| SOURCE SEPARATION, COLLECTION, AND TRANSPORT | Development of guidelines/policy on EPR        | <ul style="list-style-type: none"> <li>• ZERO Mixing of waste at source</li> <li>• Willingness to pay of food industry + Identification of service providers</li> </ul> | <ul style="list-style-type: none"> <li>• Alternative livelihood for MRF operations</li> <li>• Revenue generation for the collection of kitchen waste on the food industry + Business opportunities for service providers</li> </ul> | <ul style="list-style-type: none"> <li>• Development of national policy framework on GHG/SLCP reduction</li> <li>• Develop standard collection scheme</li> <li>• Develop software program to enhance collection efficiency</li> <li>• Create localized law enforcement team for SWM</li> <li>• Separate collection for kitchen waste of food industry</li> </ul> | <ul style="list-style-type: none"> <li>• To develop a system of SWM that will address the reduction of SLCPs through a systematic approach which include sustainable consumption, proper storage of waste, collection, treatment processing, monitoring, data gathering in collaboration with all stakeholders and partnership with the private sector</li> <li>• Development of a platform (computer-based) to enhance the efficiency of overall waste management by collaboration of stakeholders</li> <li>• Development of a more comprehensive national strategy to cover all socio-economic, environmental aspects of SWM in individual technology</li> </ul> |

|                           |  |  |   |   |  |
|---------------------------|--|--|---|---|--|
| RECYCLABLES MANAGEMENT    | Society has been accepted as they earn money/employment opportunities            | <ul style="list-style-type: none"> <li>Capacity of treatment plants is not good enough</li> <li>Inefficiencies of available technologies</li> <li>Low buying price of recyclables materials</li> </ul> | <ul style="list-style-type: none"> <li>Contribution of private investors/government to expand treatment facilities</li> <li>Donor agencies/developed countries might provide knowledge and finance</li> <li>Presence of willing buyers of recyclable materials</li> </ul> | <ul style="list-style-type: none"> <li>Setting a fix market price for recovered resources/expand export market</li> <li>Establishment of mini-MRF in every purok</li> <li>Stakeholder/cross-country collaboration</li> <li>Incentivize recycling to encourage more people to recycle</li> </ul>                         | <ul style="list-style-type: none"> <li>More systematic collection of food wastes from HH (supported by a local ordinance) and collaborate with food waste processors production/co-production of animal feeds</li> <li>Other biodegradables should be composted, each LGU should have a central composting facility (must have)</li> </ul> |
| BIODEGRADABLES MANAGEMENT | Composting guidelines and compost quality have been passed and approval by NSWMC | <ul style="list-style-type: none"> <li>Less Demand for compost from SWM</li> </ul>   | <ul style="list-style-type: none"> <li>Increase the nutritional value of soil if we apply good quality compost-compost analysis</li> <li>Higher marketing value of good compost</li> </ul>  | <ul style="list-style-type: none"> <li>Institute a comprehensive food waste management program + policy/system</li> <li>Expand organic farming/market</li> <li>Promote urban gardening (HH-based gardening thru use of compost harvest)</li> <li>Tap the academe, etc. for the proper training on composting</li> </ul> | <ul style="list-style-type: none"> <li>Facilitate to set quantitative targets at the national level for enhance resource recovery, recycling by year 2020 (i.e. 20% of plastic produced by recycled plastic)</li> </ul>  |
|                           |  | <ul style="list-style-type: none"> <li>Composting on HUCs-Cities in Metro Manila</li> <li>Production of IEC materials (in different languages) to be disseminated in rural areas</li> </ul>            | <ul style="list-style-type: none"> <li>People are encouraged to do proper segregation of SW especially biodegradables</li> <li>Employment opportunities to the society/contribute for national income</li> </ul>  | <ul style="list-style-type: none"> <li>Identify suitable area for clustered composting in urban areas</li> <li>If volume is known the LGU can buy the suitable equipment to intensify composting</li> <li>Waste to energy to replace conventional energy resources</li> </ul>   |  |
| ENERGY RECOVERY           | Guidelines on the use of AFR in cement kilns                                     |  |   |   | <ul style="list-style-type: none"> <li>Put up more infrastructure to support the use of AFR with government support and administrative orders</li> </ul>   |

## Further Clarification on Measures/Strategies presented in the Plenary



- On development of a computer-based platform to enhance the efficiency of overall waste management.

It will be an efficiency support system, where generation of a national baseline can happen and stakeholders can share lessons and best practice among each other.

- On addressing problems on open burning through the development of behavioral communication strategy.

The communication strategy will somehow address the issue through education and communication on proper waste management since open burning does not only happen in the facility but also at the household level.

- Many provinces already visited South Cotabato to learn from their experience on waste management. It plans to intensify its IEC on SWM through eco-caravan and continue to educate the children in schools and teach them on proper waste management at a young age.
- In addition, there is a need to develop a collection system i.e. calendar of collection. While TESDA has a training regulation for garbage collection for SLF, there is a need to build the capacity of assessors.

## Breakout Session Synthesis

Engr. Acosta guided the participants to cull some identified strategies and re-classify ideas to bring out vertical strategies that cut across different functional elements of waste management.

*Table 10. Vertical Strategies*

|  |
|--|
| <b>1. Establish a platform for KM/data management for SLCP baselining, tracking programs</b><br>- <b>Compile best practices, tools and make it available to the public or as tools for sharing knowledge</b> |
| <b>2. Actively engage the private sector and adopt suitable business/PPP model</b>   |
| <b>3. Link/develop market for recyclables, compost, energy and other useful products from SWM management</b>   |
| <b>4. Adopt/mainstream national SLCP policy/framework objectives</b>   |
| <b>5. Formulate R&amp;D to enhance SLCP avoidance/reduction from the MSW sector; To identify cost-effective technologies</b>   |
| <b>6. Enhance incentive scheme for communities/barangays/PS practicing good SWM, also for self-assessment</b>  |
| <b>7. Design a comprehensive social marketing plan</b>   |
| <b>8. Institutionalize SWM requirements (manpower, budget, plans and programs)</b>   |
| <b>9. Strengthen convergence initiatives among government agencies and also partnerships with other relevant stakeholders.</b>   |



#### Breakout Session 4. Target Setting and Identification of Co-Benefits

For each priority measure/strategy, the groups were tasked to set targets for 2020, 2025, 2030 and identify if there are co-benefits in terms of economic, environmental, social, adaptation/resilience, and transformational change. Combined output from the two groups are detailed below:

Table 11. Combined Outputs of Group 1 and 2

| Category     | Strategy (SLCP Gas)   | Baselines (No.)                             | Targets                        |      |  | Level of Support Needed        | Co Benefits |      |        |     |          |
|--------------|---|---|--------------------------------|------|--|--------------------------------|-------------|------|--------|-----|----------|
|              |   | 2018  | 2020                           | 2025 | 2030   |                                | econ        | envi | social | A/R | T.C      |
| DISPOSAL     | Enforcement of closure and rehabilitation of all open dumpsites as mandated by the RA 9003 (CH <sub>4</sub> , BC)   | 400   | 50%                            | 75%  | 100% of waste disposed from the remaining dumpsites                            | Local, National, International | x           | ✓    | ✓      | ✓   | ✓        |
|              | Comprehensive Management and operation of disposal facilities and with remediation plan <ul style="list-style-type: none"> <li>- Proper design, operation, and management of all landfill (CH<sub>4</sub>)</li> <li>- Gas capture recovery of utilization of landfill gas</li> <li>- Prevention or suppression of landfill fire (CH<sub>4</sub>, BC)</li> </ul> | 145 (335: 20% LGUs with access to 145 SLFs) | 40%                            | 80%  | 100% of the LGUs have access to SLFs<br><br>assuming all SLF with gas captured | Local, National, International | ✓           | ✓    | ✓      | ✓   | Not sure |
| OPEN BURNING | Strategically implement BAT/BEP to present and  | 15%   | 10% of households open burning | 5%   | 1%   | Local, National, International | ✓           | ✓    | ✓      | x   | ✓        |

|  |   |        |   |  |  |                                |   |   |   |   |   |
|--|---|--------|---|--|--|--------------------------------|---|---|---|---|---|
|  | controlled open burning (BC)  |        |   |  |  |                                |   |   |   |   |   |
| SOURCE SEPARATION, COLLECTION, AND TRANSPORT | Establishment of a systematic and efficient collection and transportation of wastes (BC)  |        | Diversion of at least 90% of the generated wastes                                   | Diversion of at least 95% of the generated wastes  | Diversion of at least 99% of the generated wastes  | Local, National, International | ✓ | ✓ | ✓ | ✓ | ✓ |
| RECYCLABLES MANAGEMENT                       | Establishment and operationalization of mini-MRF in every purok of the barangay and providing incentives to MRF operators (BC)                | 10,052 | Additional 15,000 MRF   | Additional 25,000 MRF                              | Additional 35,000 MRF                              | Local, National, International | ✓ | ✓ | ✓ | ✓ | ✓ |
| BIODEGRADABLES MANAGEMENT                    | Development of a comprehensive food waste management program in all levels that should be supported by a policy from NSWMC (CH <sub>4</sub> ) |        | Outside of 51% biodegradables<br>60% diversion for composting + anaerobic digestion | 70% diversion for composting + anaerobic digestion | 80% diversion for composting + anaerobic digestion | Local, National, International | ✓ | ✓ | ✓ | ✓ | ✓ |

## Feedback from the Recapitulation Exercises

Ms. Valdez and Ms. Silva facilitated the recapitulation exercises in the second and third day of the workshop, respectively. Feedback from the participants are as follows:

*Table 12. Feedback from the Recapitulation*

| <b>Recap Questions</b>           | <b>Feedback from the Participants</b>   |
|----------------------------------|---|
| Biggest realization from Day 1   | <ol style="list-style-type: none"> <li>1. Understood which aspect of MSWM directly contribute to SLCPs;</li> <li>2. Black carbon stays in the atmosphere for a very short period of time;</li> <li>3. Importance of agriculture wastes esp. agriculture plantation to be included in the 10-year SWM plan;               <ol style="list-style-type: none"> <li>a. It does not stop LGUs to comprehensively manage all solid wastes, including agriculture wastes; and</li> <li>b. Policy gaps on agriculture waste burning CAA vs ESWMA (biomass power plants, disease control vs ratooning, safety of farmers.</li> </ol> </li> <li>4. No policy on SLCP yet;</li> <li>5. Ideas from peers can help feed into university research;</li> <li>6. A lot of things need to be addressed by the NSWMC;</li> <li>7. Identification of issues and options/measures;</li> <li>8. Strengthen collaboration work with stakeholders; and</li> <li>9. Importance of crafting a comprehensive strategy/measures in an integrated manner, i.e. food waste management.</li> </ol>  |
| What made you happy about Day 2? | <ol style="list-style-type: none"> <li>1. My group are also happy. We had a very good report, we shared our ideas and expertise. We have a very exciting discussion, sometimes group is saying that we are noisy. Our passion in environmental protection goes out of us.</li> <li>2. I am new to SWM, I learned that our activities have effects to environment.</li> <li>3. We had the chance to discuss further the nitty gritty of some of the plans.</li> <li>4. Everybody was cooperative, our group is very active in the discussion.</li> <li>5. Realization that there is a need for additional policy need.</li> <li>6. Realizing that the strategies identified in the first day are in line to our national strategies.</li> <li>7. A lot of learnings especially on best practices of South Cotabato with regards with SWM.</li> <li>8. Free flowing discussion and workshop structure is not strict.</li> <li>9. The participants were very active in discussing and the open discussion was very interesting. There is a lot of sense of ownership in the outputs.</li> <li>10. This is not from yesterday, I am happy to learn that the Commission is actively filing cases against LGUs, for two decades, I think it's right time to act on it.</li> </ol> |

## Way Forward

The participants agreed on the following next steps.

1. GJ of DENR-EMB to provide the electronic copy of the materials to participants.
2. Prepare the first draft of the National Strategy to reduce SLCPs from the MSWM in PH (based on the outputs of the 1<sup>st</sup> FGD).
3. 2<sup>nd</sup> FGD (October 17-19, 2018/ Tagaytay)
  - a. Day 1: Pre-processing of outputs from the 1<sup>st</sup> FGD
  - b. Day 2 and 3: Refine and prioritize strategies and targets using the factor analysis and Review and polish 1<sup>st</sup> draft.
4. Incorporate the revisions and prepare the second draft of the Strategy (based on the outputs of the 2<sup>nd</sup> FGD).
5. Public Consultation (November 9)
  - a. Gather commitments and suggestions from the stakeholders and experts
6. Incorporate revisions and finalize (based on the outputs of the Public Consultation).
7. Endorse to NSWNC (December?).

## Closing Remarks

*Com. Crispian Lao* thanked the organizer for making the activity possible and for the participants who put a lot of work in order to come up with the valuable inputs for the national strategy. He gave emphasis that a lot has been done, but there is a lot more that needs to be learned and accomplished. He thanked IGES for the support and hoped for continued support for the country.

Looking at the strategies presented, Com. Lao mentioned that strategies are too general in nature. Thus, he reminded everyone the need to build more concrete and executable plan, as well as aim for achievable and realistic targets. The CGE should also prioritize the development of strategies that would engage the private sector and make them understand that the government does not have money, hence attracting potential investments for solid waste management.

In other updates, Com. Lao shared that Quezon City government wants to be part of the CGE. The City is rich in data where the group can learn from especially that the City plans to calculate black carbon from its waste management. It is aware that the waste-to-energy project will be criticized, but they are positive as they will leverage the potential savings of the City Government up to 12B from using clean energy, then the black carbon will be considered in that calculation to derive an overall positive figure.

To that end, Com. Lao looked forward to the same participation for the next activities.

**Dr. Rajeev Singh** shared his satisfaction on seeing valuable inputs for the development of the national strategy. He expressed his gratitude to the team from the DENR for the hardwork in arranging the activity and to the Commission for the support and technical advice to the team. He looked forward to the second FGD in October.

## Annexes

### 1. Participants List

| Name                          | Agency             | Position                                  | Day 1 | Day 2 | Day 3 |
|-------------------------------|--------------------|---|-------|-------|-------|
| 1. Juvy Monserate             | CLSU               | Head, Nanotech R&D Facility               | ✓     | ✓     | ✓     |
| 2. Kathleen Dominique Cornejo | DENR-CCD           | Project Monitoring and Evaluation Officer | ✓     | ✓     | ✓     |
| 3. Maria Kristina Santos      | DENR-EMB SWMD      | Dev. Com. Specialist                      | ✓     | ✓     | ✓     |
| 4. Gerard Accon               | DENR-EMB SWMD      |   | ✓     | ✓     | ✓     |
| 5. Elbe Balucanag             | LGU South Cotabato | Supervising EMS                           | ✓     | ✓     | ✓     |
| 6. Ferdinand Bautista         | LGU-Maragusan      | MENRO                                     | ✓     | ✓     | ✓     |
| 7. Mary Cris Base             | TESDA              | Sr. TESD S                                | ✓     | ✓     | ✓     |
| 8. Rita O. Regalado           | MFG                | Company Representative                    | ✓     | ✓     | ✓     |
| 9. Eugenia Briones            | DA-BSWM            | SC-SDAS                                   | ✓     | ✓     | ✓     |
| 10. Arthur Batomalaque        | LGU-San Carlos     | GMS                                       | ✓     | ✓     | ✓     |
| 11. Rodeth Antonio            | DENR-EMB           | Monitoring Officer                        | ✓     | ✓     | ✓     |
| 12. Petra Aguilar             | DENR-EMB           | Supervising EMS                           | ✓     | ✓     | ✓     |
| 13. Aleya Arca                | DILG               | PDO II                                    | ✓     | ✓     | ✓     |

|                          |                   |   |   |   |   |
|--------------------------|-------------------|---|---|---|---|
| 14. Jaril Ayron Mustapha | Quezon City-EPWMD | PRA   | ✓ | ✓ | ✓ |
| 15. Jacinto E. Guevara   | Quezon City-EPWMD | SEMS  | ✓ | ✓ | ✓ |
| 16. Eligio Ildefonso     | DENR-EMB          | NSWMC Secretariat Executive Director/ Chief, SWMD | ✓ | ✓ | ✓ |
| 17. Antonio Rol          | DENR-EMB SWMD     |   | ✓ | ✓ | ✓ |
| 18. Liz Silva            | DENR-CCD          | SRS II  | ✓ | ✓ | ✓ |
| 19. Ma Delia Valdez      | DENR              | SEMS  | ✓ | ✓ | ✓ |
| 20. Rajeev Kumar Singh   | IGES              | Researcher  | ✓ | ✓ | ✓ |
| 21. Nirmala Menikpura    | IGES              | Researcher  | ✓ | ✓ | ✓ |
| 22. Crispian Lao         | NSWMC             | Vice Chairperson                                  | ✓ | ✓ | ✓ |
| 23. Voltaire Acosta      | IGES              | Consultant  | ✓ | ✓ | ✓ |
| 24. Desiree Pinca        | MMDA              | PDO II  | ✓ | ✓ | ✓ |
| 25. Carlo Mari Tan       | DILG              | PDO IV  | ✓ | ✓ | ✓ |
| 26. Ellice Dane Ancheta  | CCC               | CCC   | ✓ | ✓ | ✓ |
| 27. Mervin Fulgencio     | EMB               |   | ✓ | ✓ | ✓ |
| 28. Clarina Capistrano   | EMB               | PDS   | ✓ | ✓ | ✓ |
| 29. Maryfe Toyokam       | DLSU              |   | ✓ | ✓ | ✓ |
| 30. Jazzie Jao           | DLSU              |   | ✓ | ✓ | ✓ |
| 31. Edgar Camoste        | DLSU              |   |   |   | ✓ |
| 32. Mary Grace Mawanay   | Quezon City-EPWMD |   |   |   | ✓ |
| 33. Almie Talatad        | Quezon City-EPWMD |   |   |   | ✓ |
| 34. Jeszelle Suetos      | Quezon City-EPWMD |   |   |   | ✓ |

## 2. Program Agenda

| Time                                | Activity / Topic   | Discussant  |
|-------------------------------------|--|---|
| <b>Wednesday, 05 September 2018</b> |  |   |
| 10:00a                              | <b>Opening ceremonies</b> <ul style="list-style-type: none"> <li>Prayer and National Anthem</li> <li>Welcome Remarks</li> <br/> <li>Introduction of Participants</li> <li>Levelling off Expectations</li> </ul>  | <ul style="list-style-type: none"> <li>Benny D. Antiporda, USec for SWM and LGU Concerns, DENR</li> <li>Dr. Rajeev Singh IGES/CCAC-MSWI</li> <li>Engr. Voltaire Acosta Consultant, IGES</li> </ul>  |
| 10:15a                              | <b>Introductory Presentations</b> <ul style="list-style-type: none"> <li>Introduction to SLCPs and about the IGES/CCAC-MSWI support to the Philippines to develop the national strategy to reduce SLCPs from MSWM</li> <li>Updates on SLCP-relevant RA 9003 Implementation: <ul style="list-style-type: none"> <li>Status of RA 9003 compliance</li> <li>Updates on the revisit to NSWM Strategy</li> <li>Alignment of national plans/targets viz. SLCPs</li> <li>NSWMC Resolution creating CC/SLCP Committee</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>Dr. Preakumara Jagath Dickella (through Zoom), IGES/CCAC-MSWI</li> <li>Engr. Eligio T. Ildefonso, Executive Director, NSWMC Secretariat and Chief, Solid Waste Management Division (SWMD) - EMB</li> </ul> |
| 11:15a                              | <b>SESSION: SLCP-MSWM Issue Identification</b><br><br><b>Input Presentation:</b> <ul style="list-style-type: none"> <li>Introduction to SLCPs and about the IGES/CCAC-MSWI</li> <li>International/regional/local issues on MSWM's contribution to SLCPs and challenges to SLCP-relevant MSWM measures</li> </ul>   | <ul style="list-style-type: none"> <li>Mr. Albert A. Magalang, Chief, Climate Change Division (CCD)-EMB and CCAC Focal Point</li> </ul>   |
| 12:00n                              | <i>LUNCH</i>   |   |
| 1:00p                               | <b>Breakout Session <u>A1</u>: SLCP-MSWM Issues/Concerns</b> <ul style="list-style-type: none"> <li>Identification of SLCP-MSWM issues relevant to PH</li> </ul>   | <ul style="list-style-type: none"> <li>Facilitated by Ms. Maria Delia Cristina Valdez, SWMD-EMB and Ms. Liz Silva, CCD-EMB</li> </ul>   |
| 1:30p                               | Presentation of results  | <ul style="list-style-type: none"> <li>Participants</li> </ul>  |
| 1:45p                               | <b>Plenary Workshop <u>A1</u>: Clustering of Issues/Concerns and Initial Identification of Measures</b> <ul style="list-style-type: none"> <li>Open Forum</li> <li>Synthesis and consolidation of common issues</li> <li>Analysis of gains, challenges, and opportunities</li> </ul>   | <ul style="list-style-type: none"> <li>Facilitated by Engr. Voltaire Acosta</li> </ul>  |
| 2:15p                               | <b>Breakout Session <u>A2</u>: SLCP-MSWM Option Identification</b> <ul style="list-style-type: none"> <li>Identification of corresponding SLCP-relevant MSWM measures/options (initial long list) per issue/concern</li> </ul>   | <ul style="list-style-type: none"> <li>Facilitated by Ms. Delia Valdez and Ms. Liz Silva</li> </ul>   |

|                                    |  |   |
|------------------------------------|--|---|
|                                    | (Note: Pure brainstorming only. Prioritization/Refinement of SLCP-relevant measures/solutions will be carried out in Day 2)  |   |
| 3:00p                              | <i>PM Break</i>  |   |
| 3:15p                              | <ul style="list-style-type: none"> <li>• Presentation of results</li> </ul>  | <ul style="list-style-type: none"> <li>• Participants</li> </ul>                                      |
| 3:30p                              | <b>Plenary Workshop <u>A2</u>: Clustering of Proposed Measures</b> <ul style="list-style-type: none"> <li>• Open Forum</li> <li>• Synthesis and consolidation of common SLCP-MSWM measures/options/solutions</li> </ul>  | <ul style="list-style-type: none"> <li>• <i>Facilitated by</i><br/>Engr. Voltaire Acosta</li> </ul>   |
| 04:45p                             | <b>Closing of Day 1; Expectations for Day 2</b>  |   |
| <b>Thursday, 06 September 2018</b> |  |   |
| 08:00a                             | <b>Preliminaries</b> <ul style="list-style-type: none"> <li>• Recapitulation</li> <li>• Overview of Day 2 Agenda</li> </ul>  | <ul style="list-style-type: none"> <li>• <i>Facilitated by</i><br/>Ms. Liz Silva, CCD-EMB</li> </ul>  |
| 08:30a                             | <b>National Baseline (2010) and Scenarios on SLCP from MSWM in the Philippines</b> <ul style="list-style-type: none"> <li>▪ Brief Introduction/Walkthrough on Features of the IGES SLCP Emission Quantification Tool (EQT)</li> <li>▪ Results of SLCP-MSWM Baseline from vetted (best available) information on MSWM</li> <li>▪ Results of SLCP-MSWM Scenarios from set (ideal) options</li> </ul>   | <ul style="list-style-type: none"> <li>• Dr. Nirmala Menikpura<br/>IGES/CCAC-MSWI</li> </ul>          |
| 10:00a                             | <i>AM Break</i>  |   |
| 10:15a                             | <b>National Baseline and Scenarios (cont'd.)</b> <ul style="list-style-type: none"> <li>▪ Implications of National EQT results to National SLCP Strategy Development, including Recommendations</li> <li>▪ Open Forum</li> </ul>   | <ul style="list-style-type: none"> <li>• Dr. Nirmala Menikpura</li> <li>• Dr. Rajeev Singh</li> </ul> |
| 11:00a                             | <b>Review of National Policies, Plans, and Programs relevant to SLCP-MSWM in the Philippines</b> <ul style="list-style-type: none"> <li>▪ AmBisyon Natin 2040 and the Philippine Development Plan (PDP) 2017–2022</li> <li>▪ RA 9003 (Ecological Solid Waste Management Act of 2000) and its implementing rules and regulations (IRR), the National Solid Waste Management Framework (NSWMF), and the National Solid Waste Management Strategy (NSWMS)</li> <li>▪ RA 9729 (Climate Change Act of 2009), as amended by RA 10174, and its IRR, the National Framework Strategy on Climate Change (NFSCC), National Climate Change Action Plan (NCCAP), Intended Nationally Determined Contribution (INDC), the draft Nationally Determined Contribution (NDC), and related/supporting reports/studies</li> <li>▪ Other initiatives/programs</li> </ul> | <ul style="list-style-type: none"> <li>• Ms. Delia Valdez, SWMD-EMB</li> </ul>                        |
| 11:45a                             | <b>Instructions for Breakout Session B</b> <ul style="list-style-type: none"> <li>▪ Mechanics and Expected Outputs</li> <li>▪ Grouping / Assignment of cluster of measures/options</li> </ul>  | <ul style="list-style-type: none"> <li>• Ms. Liz Silva, CCD-EMB</li> </ul>                            |
| 12:00n                             | <i>LUNCH</i>   |   |

|                                  |  |  |
|----------------------------------|--|--|
| 1:00p                            | <p><b>Breakout Session B: Priority Measures/Strategies to Avoid/Reduce SLCPs from MSWM, and Corresponding Targets and Co-Benefits</b></p> <ul style="list-style-type: none"> <li>• Revisiting the results of <i>Plenary Workshop A2</i></li> <li>• Prioritization of SLCP-MSWM-relevant measures/options/strategies (short listing)</li> <li>• For each priority measure/strategy: <ul style="list-style-type: none"> <li>▪ Identification of sectoral/SLCP targets by 2030, e.g., quantitative target, geographical coverage, etc. under three conditions (current local/private sector capabilities, with national support, with intl. MOI)</li> <li>▪ Identification of corresponding Co-Benefits (economic, social, environmental, adaptation/ resilience, transformational change), incl. KPIs</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• <i>Facilitated by</i> Ms. Delia Valdez and Ms. Liz Silva</li> </ul>       |
| 2:30p                            | <p><b>Group 1 Presentation and Plenary Discussion</b></p> <ul style="list-style-type: none"> <li>• Presentation of Results</li> <li>• Clinique of workshop outputs</li> </ul>  | <ul style="list-style-type: none"> <li>• <i>Facilitated by</i> Ms. Liz Silva, CCD-EMB</li> </ul>                   |
| 3:00p                            | <i>PM Break</i>  |  |
| 3:15p                            | <p><b>Group 2 Presentation and Plenary Discussion</b></p> <ul style="list-style-type: none"> <li>• Presentation of Results</li> <li>• Clinique of workshop outputs</li> </ul>  | <ul style="list-style-type: none"> <li>• <i>Facilitated by</i> Maria Delia Cristina Valdez, SWMD-EMB</li> </ul>    |
| 3:45p                            | <p><b>Plenary Workshop B: Identification and Clustering of Crosscutting Strategic Measures (“Vertical” angle)</b></p> <ul style="list-style-type: none"> <li>• Identification of common/cross-cutting strategies for interrelated measures/options</li> <li>• Identification of overarching/coordinative aspects in SLCP-MSWM strategy implementation, e.g., institutional, policy, research and development, private sector involvement, empowering LGUs, etc.</li> <li>• Prioritization and Clustering according to: <ul style="list-style-type: none"> <li>▪ Common/holistic approaches?</li> <li>▪ Type of SLCP gas?</li> </ul> </li> </ul>  | <ul style="list-style-type: none"> <li>• <i>Facilitated by</i> Dr. Rajeev Singh / Engr. Voltaire Acosta</li> </ul> |
| 04:45p                           | <b>Closing of Day 2; Expectations for Day 3</b>  |  |
| <b>Friday, 07 September 2018</b> |  |  |
| 08:00a                           | <p><b>Preliminaries</b></p> <ul style="list-style-type: none"> <li>• Recapitulation</li> <li>• Overview of Day 3 Agenda</li> </ul>   | <ul style="list-style-type: none"> <li>• <i>Facilitated by</i> Ms. Liz Silva, CCD-EMB</li> </ul>                   |
| 08:30a                           | <p><b>Review of Outlines of Existing SLCP Strategies</b></p> <ul style="list-style-type: none"> <li>▪ Walkthrough of existing SLCP strategies developed by California, Canada, and Mexico</li> </ul>   | <ul style="list-style-type: none"> <li>• Engr. Voltaire Acosta / Dr. Rajeev Singh</li> </ul>                       |
| 09:00a                           | <p><b>Plenary Workshop C: Outline for the National Strategy to Reduce SLCPs from MSWM in the Philippines</b></p> <ul style="list-style-type: none"> <li>• Identification of critical elements for PH Strategy</li> </ul>   | <ul style="list-style-type: none"> <li>• <i>Facilitated by</i> Dr. Rajeev Singh / Engr. Voltaire Acosta</li> </ul> |
| 10:00a                           | <i>AM Break</i>  |  |

|        |   |  |
|--------|---|--|
| 10:15a | <p><i>continuation ...</i></p> <ul style="list-style-type: none"> <li>• Identification of elements for the PH national strategy viz. what information are available as well as data gaps</li> <li>• Agreement on the outline for the Philippines</li> </ul> | <ul style="list-style-type: none"> <li>• <i>Facilitated by</i><br/>Dr. Rajeev Singh /<br/>Engr. Voltaire Acosta</li> </ul>     |
| 11:30a | <p><b>Way Forward</b> (Calculation of SLCP impacts based on agreed targets?;<br/>2<sup>nd</sup> FGD: Oct 17-18?; PubCon: Nov 9?)</p> <p><b>Closing Remarks</b></p>  | <ul style="list-style-type: none"> <li>• Ms. Delia Valdez</li> <li>• Comm. Crispian Lao</li> <li>• Dr. Rajeev Singh</li> </ul> |
| 12:00n | <p><i>LUNCH and CHECKOUT</i></p>  |  |

### 3. Individual Output for Breakout Session 1

#### Group 1 Output

| Policy/ Institutional   | Finance/Resources  | Technology/Technical   | Awareness/Behavioral/<br>Capacity Building/<br>Enforcement                         | Others/Cross Cutting                            |
|---|--|--|--|---|
| Need to update ordinances and 10-year plan at the LGU level                       | The need to update data requires corresponding financial requirement   | Lack of proper design on disposal facilities                                     | Lack of awareness on government policy in open burning                             | No data on open burning                         |
| Need to harmonize government policies on burning (DA, DOH, DENR)                  | Lack of proper infrastructure and facilities to process MSW i.e composting, recycling, MRF, etc.   |  | Very low penalties on open burning violators (both LGU and HHs)                    | Mismanagement of disposal facility              |
| No Policy/standard on SLCP for municipal SW                                       | Weak database on recycling facilities  | No enough market for recyclables:  | Cultural Issue: convenience of burning the waste rather than proper waste disposal | Lack of area for composting                     |
| Absence of a publicized guidance on composting                                    | Budget for PENRO/CENRO/MENRO focusing on SWM   | Need for R&D on new technologies and its application on recycling and composting | Lack of national campaign of national campaign on OB                               | No data on waste flow                           |
| Lack of political support   | Need for resources to augment the inefficient and ineffective procurement procedures<br><br>Lack on incentives and rewards for LGUs with best practice | Use of old model for waste collection  | Poor implementation of RA 9003 (SWM Act) (general)                                 | Lack of Efficient Collection Routes and vehicle |
| Absence of plantilla position focused on SWM                                      |  |  | Behavioral issue: resistance to change   | Inefficient Collection Scheme                   |
| Need for a policy on modernization of collection vehicles                         |  |  | Poor Enforcement of the segregation policy (LGU to HH)                             |   |
| Too much bureaucratic procedures on government procurement and policy development |  |  | Poor implementation of Clean Air Act on the regulation of mobile sources           |   |
| Lack of monitoring and assessment of effectiveness and efficiency of policies     | Low awareness on composting: lack of knowledge on how it should be done  |  |  |   |

## Group 2 Output

| <b>Policy/ Institutional</b>                              | <b>Finance/Resources</b>                         | <b>Technology/Technical</b>                                     | <b>Awareness/Behavioral/<br/>Capacity Building/<br/>Enforcement</b> | <b>Others/Cross Cutting</b>                           |
|---|--|---|---|---|
| No strong policy yet on SLCP in general                   | Lack of budget (central government)              | Lack of technical composting knowledge                          | Lack of awareness on policies                                       | Huge amount of SLCPs emission from agriculture sector |
| Lack of policy mandate for private sector                 | Lack of budget allocation from LGU               | Lack of awareness on technology selection                       | Lack of IEC materials   | Lack of promotional marketing for composting          |
| Lack of strict implementation                             | Lack of partnerships (donor, financing agencies) | Lack of collaboration among stakeholders                        | Lack of motivation (prioritization)                                 | Unavailability of land/spaces (intentional burning)   |
| Lack of proper monitoring and implementation of SWP plans | Lack of resourcefulness                          | Limited R&D   | Attitude of the people (passive, business as usual)                 | Political will  |
| Poor policy on the informal waste sector                  |  | Non-engineered SLFs<br>Lack of appropriate technology selection | Lack of sharing of city-to-city knowledge                           | Poor post-harvest process<br>Poor data management     |
| Inefficient collection of waste                           |  | Inappropriate capacity of treatment (composting)                | Cultural indifferences  | Irresponsible disposal                                |
| Poor planning in general                                  |  | Social acceptance of technology                                 |   |   |

#### 4. Some Photos of the FGD

