

## CCAC MSW City Action Plan

### Cebu City, Philippines

**Objective:** To initiate cooperation that promotes short-lived climate pollutant (SLCP) mitigation in waste management activities within CCAC partner cities.

**Purpose:** Understanding that CCAC partner cities have a broad range of experiences and differing levels of familiarity with waste activities focused on SLCP mitigation, this “City Action Plan” is designed to highlight key steps for development of these projects. While some cities may wish to use this form to develop a plan for addressing projects that have already been identified, other cities may wish to use the form to develop a more comprehensive strategy that would help provide direction on specific activities.

This exercise should help organize our thoughts on main priorities, stakeholders, processes, and resources needed for implementing waste sector SLCP projects. It will also help identify how the CCAC can help advance these projects in a targeted way. While considering these key issues, we can all think strategically about those actions that are within the purview of cities, those that require the involvement of external authorities (state, regional, national), as well as those challenges that may require engagement with other stakeholders.

#### Summary of City Assessment Results

##### ***Waste Generation***

Cebu City, the highly urbanised growth center in the Central Visaya of the Philippines, generates approximately 182,500 tonnes of MSW per year (about 500 tonnes of MSW per day). Average waste generation per capita per day is about 500g. Due to the rapid urban and economic growth in the city, daily MSW generation has increased from 212 tonnes in 1982 to 500 tonnes in 2010. Most of the MSW in the city is generated by households, which accounts for about 40%, with the remainder coming from commercial establishments, public markets, schools, hospitals and others.

##### ***Waste Collection***

It has been estimated that the waste collection coverage in the city is almost 100%. Waste collection in the city operates 24 hours a day in three shifts with the service is provided by the Department of Public Services (DPS). Two popular collection methods are practiced for waste collection - (i) communal method where common waste receptacles are strategically located in public places (ii) household collection carried out by garbage trucks across the city.

##### ***Waste Disposal***

First, the collected MSW from various parts of the city is transported to Inayawan, the only landfill site in the city. At the site, approximately 40% of MSW is loaded again into bigger trucks and transported to Consolacion landfill, which is located in a neighbouring city, 30 km away from Cebu City. The city pays 700 PhP per tonne as a tipping free. The rest of the 60% is disposed of in the Inayawan landfill site,

constructed in 1998 under the financial assistance of the Japan International Cooperation Agency (JICA) as a sanitary landfill site. However, due to the lack of adequate expertise in utilising and maintaining the equipment and facilities, insufficient financial and human resources for operation and maintenance coupled with the increasing volume of MSW disposed in the landfill daily, after few years of operation, the landfill became an open dump.

### ***Organic Diversion***

According to a waste analysis 66% of the city's MSW is organic. It was estimated that approximately 46,000 tonnes of organic waste in the city is composted annually at two centralised composting plants operated by the private companies and at more than 50 small, decentralised composting plants operated by barangay officers. The private companies who operate the two centralised composting plants have signed yearlong contracts with Cebu City, receiving 700 PhP per tonne as a tipping fee. The compost product is sold at the market. The barangay composting schemes, which have a receiving capacity of less than one tonne per day, rely on waste collected from the neighbourhoods. The compost produced is mainly used as fertilizer for beautifying the barangays.

### ***Recycling***

The city has been involved in promoting waste separation at source and recycling, though the success of these activities is still very limited. There are three companies in the city involved in formal waste recycling activities. These recycling plants received approximately 22,000 tonnes of recyclable materials per year. In addition, there are more than 300 waste pickers who are making a living by picking up recyclables from the landfill site. The health of waste pickers is a concern because they are living on or nearby the open burning dump site.

## **Proposed activities under the CCAC MSW Initiative**

### **Project/program/policy of interest to the city**

The city identified that following programmes for future consideration:

#### ***1. Implementation of waste separation at source***

**Project/Programme:** In compliance with Republic Act (RA) 9003, the Cebu City passed City Ordinance 2031 promoting MSW segregation at source with penalties for violations in 2004. Since April 2011, the city has introduced a No Segregation No Collection policy and public education programmes to separate waste at source into four different categories: biodegradable, recyclable, special (hazardous) and residuals. However, the effective implementation of these bylaws and ordinance is still an issue requiring urgent attention and will need strong political support and commitment. In addition, to educate the people, Barangay Environmental Officers (BEOs) appointed at each barangay, will be utilised as facilitators. To ensure the enforcement of the ordinance, the Cebu Environmental and Sanitation Team (CESET) will be appointed.

**SLCP Impact:** This initiative will reduce methane and black carbon emissions from waste collection and transportation; removing organic and other recyclable materials going to the landfill; open burning at the dump site, communities, schools and religion organizations.

**Technical Assistance Sought:**

- Research and technical assistance for reviewing the current status in implementing the waste separation at source, identify key challenges, documentation of best practices and lessons learned and identifying key strategies.
- Technical assistance and capacity building for developing training manuals for BEOs and CESET officers on environmental education and enforcement system
- Technical assistance and capacity building for introducing new technologies for material recycling.

## **2. Promotion of composting**

As 66% of MSW in the city is organic, promotion of composting helps the city to reduce the volume of waste being disposed at the landfill. Model composting facilities have been established by the city in partnership with different stakeholders at different levels. At the household level, composting baskets have been distributed to make compost using kitchen waste in collaboration with women's organisations, homeowners associations and NGOs. In addition, small-scale barangay composting facilities have been established. Further, two central waste treatment facilities have been established by private ventures near the Inayawan landfill site to treat plastic and organic waste. However, these composting schemes have encountered a number of challenges such as lack of cooperation from the residents in waste separation, finding a suitable location, identifying suitable technologies (both physical and biological operation), lack of capacity and management skills, and lack of political interest and willingness of barangay officials and staff to tackle these issues.

**SLCP Impact:** This project will reduce SLCP emissions in terms of open dumping and open burning organic waste at landfills. Further, it can minimize the SLCP emissions from production of chemical fertilizer. SLCP emissions from waste transport could be minimized if the municipal composting site and farms are located closer to the city than the current disposal site.

### **Technical Assistance Sought:**

- Technical assistance and capacity building on composting technologies at different scales, especially medium (5-50 tonnes/day) and larger (50-100 tonnes/day) scale facilities.
- Technical and capacity building on developing marketing strategies, supportive policies and incentive systems and quality standards.

## **3. Final disposal site improvement**

**Project/Programme:** The Inayawan Sanitary Landfill (ISL) is 15 ha and is located in the Inayawan barangay. It was constructed in 1998 under the financial and technical assistance of the Japan International Cooperation Agency (JICA) aiming to receive 400 tonnes of MSW daily with an estimated life span to 2005. However, due to the lack of adequate expertise in utilising and maintaining the equipment and facilities, insufficient financial resources for operation and maintenance coupled with the increasing volume of MSW being disposed in the landfill daily, the landfill almost reached its maximum capacity after only a few years. Although its lifespan was planned to be limited to seven years only, the Cebu City Government still continues to operate the landfill by using a compactor machine. Open burning at the dumpsite is a serious problem in Cebu City as it affects air quality. It also affects the welfare of waste pickers and the neighbourhoods around the landfill. There was originally PhilBio biogas reactor in the original operation of the landfill for collecting sewage and leachate. However, due to technical problems, the reactor was closed. Since then the leachate treatment pond has served as an impounding basin, discharging untreated leachate into the surrounding areas, causing land and water

contamination issues. Thus, the city seeks support to stop open burning at the dump site, and is asking for technical assistance in upgrading the disposal site so that it is more environmental and climate friendly.

**SLCP Impact:** Extinguish the fires at the dumpsite to avoid methane and black carbon emissions from open burning. Trees can help offset SLCP emissions.

**Technical Assistance Sought:**

- Technical assistance and capacity building for improving the landfill site (especially Fukuoka sanitary landfill method)
- Technical assistance and capacity building for utilization of the existing plastic in the landfill site (RDF)

**4. Building partnership for implementation of integrated solid waste management (ISWM)**

The city has identified the importance of creating supportive institutional and financial mechanisms to promote the partnership with other local and international groups in planning and implementation of ISWM system in the city. Under the City Ordinance of 2017 which passed on October 6, 2004, the solid waste management board (SWMB) was established to prepare, submit and implement working plans for a safe and sanitary management of MSW generated in the city. The SWMB is headed by the Mayor with the relevant representatives from other sectors, such as academic, community-based organisations (CBOs), non-governmental organisations (NGOs) and private sector. In addition, the city has a strong partnership with some of the foreign cities and their counterparts in Japan and USA. Since 2000, Cebu city has been one of the most active members of the Kitakyushu Initiative Network for Clean Environment. Under this, both Kitakyushu City and Cebu City have undertaken several programmes, including community-based SWM and composting; building plastic waste recycling model project; and an electronic waste research project. The city is now working with Yokohama City with JICA support in establishing an intermediate processing facility for recycling of existing plastic waste inside the Inayawan landfill into plastic fluff fuel to be used as alternative fuel by cement plants in the area. From 2000–2005, Fort Collins (Colorado, USA), a sister city of Cebu, provided technical assistance to draft its SWM plan to enhance the capability of local officials. Furthermore, Haarlemmermeer (The Netherlands), another sister city, has helped Cebu in educating waste scavengers at the Inayawan landfill on how to make organic compost as an alternative source of income. However, all these interventions are project-based and not long-term interventions. Thus, Cebu city would like to develop a systematic SWM action plan incorporating the on-going and future activities.

**SLCP Impact:** A comprehensive and integrated SWM Master Plan would enable SCLP reductions through more efficient management in all areas.

**Technical Assistance Sought:**

Technical and capacity building on planning a ISWM system, establishment of institutional and financial systems, environmental education and enforcement systems

**Knowledge sharing, Networking, and City-to-City Exchanges**

**Interested in learning about:**

- Planning and implementation of ISWM systems, waste separation at source, successful environmental education programmes and effective enforcement systems.
- Planning and operation of sanitary landfill site (Fukuoka method)
- Planning and implementation of composting programmes especially at medium (5-50

<p>tonnes/day) and larger (50-100 tonnes/day) scales.</p> <ul style="list-style-type: none"> <li>- Technologies related to waste to energy (RDF)</li> <li>- Technologies related to other waste categories (medical and E-waste)</li> <li>- Research and capacity building for calculating SLCP mitigation</li> </ul> <p><b>Interested in sharing information on:</b></p> <ul style="list-style-type: none"> <li>- Implementation of community-based solid waste management and education programmes</li> <li>- Planning and implementation of community-based composting and recycling programmes</li> </ul>
<p><b>Roles and Responsibilities</b></p> <ul style="list-style-type: none"> <li>- Under the overall coordination of the council of environment of Cebu City, the Cebu Solid Waste Management Board (CSWMB) will be responsible for submitting the city actin plan to the council approvals for implementation.</li> <li>- The DPS will be responsible in the implementation of actions related to waste collection, transport, and final disposal.</li> <li>- The Cebu City Environmental and Natural Resource Office (CCENRO) will be responsible for the implementation of environmental education programmes and enforcement on waste separation at source and implementation of community-based composting programmes with CBOs and NGOs.</li> <li>- Private sector will take a leading role in planning and implementation of recycling businesses such as composting, RDF, etc.</li> <li>- The research and academic institutions including the Solid Waste Management Association (SWMA) in Cebu will assist the city in data collection, making strategic plans, and documenting best practices.</li> <li>- Kitakyushu City, Yokohama City and their business partners will provide technical and capacity building, for establishing new business opportunities for waste recycling and treatment.</li> <li>- IGES will provide technical assistance with the financial and technical support from CCAC and other international donors to develop a work plan and then implement this plan to reduce SLCP from waste management.</li> </ul>
<p><b>Next Steps</b></p> <ul style="list-style-type: none"> <li>• Develop a work plan to implement the action plan in consultation with Cebu city and its key stakeholders</li> <li>• Assist Cebu City in finding financial support from its own sources and other international programmes and donors</li> <li>• Build the capacity of key stakeholders and set institutional structure to effectively implement the work plan</li> <li>• Conduct city-to-city exchange programs and technical workshops with mentor cities to build the capacity of stakeholders to implement the action plan.</li> </ul>
<p><b>Overall experience</b></p> <ul style="list-style-type: none"> <li>• It was found that Cebu is busy implementing some MSW projects with international partners. However, most of them are project-based activities. In this regard, Cebu City found the importance of CCAC project lay in its technical assistance for understanding the overall picture of MSW in the city and assisting with the initial steps in identifying key actions based on the overall plan.</li> <li>• Cebu City is willing to go to the next step of the CCAC planning process in making detailed work plans in consultation with its key stakeholders. Due to lack of capacity and budget constraints, the city requires both technical and financial support from CCAC and international donors.</li> <li>• The experience in Cebu revealed that the process required more time to inform the city partners about the project and secure political support before the actual start. In addition, it was found</li> </ul>

that it takes more time than expected to collect the data due to very poor data management in the city.

- Cebu City's experiences have also led it to acknowledge the positive role of mentor cities in encouraging knowledge transfer, technological, expertise, best practices and lessons learned through city-to-city learning to build awareness, solutions and capacity to the developing cities. However, this technical transfer should be matched with the local conditions of the developing cities.