Thematic Summary Report

May 2022

CHINA

Integrated Waste Management NAMA Support Project

Suggestions for Improvement in the Formulation and Implementation of Policies and Standards for Integrated Waste Management in China

GOPA Infra

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Abbreviations

IWM	Integrated Waste Management
IWM	Integrated Waste Management
MEE	Ministry of Ecology and Environment
MEP	Ministry of Environmental Protection of the People's Republic of China
MIIT	Ministry of Industry and Information Technology
MoHURD	Ministry of Housing and Urban-Rural Development
MSW	Municipal Solid Waste
NAMA	Nationally Appropriate Mitigation Action
NDRC	National Development and Reform Commission
O&M	Operation & Maintenance

1 Policy and standards status of Integrated Waste Management in China

1.1 National policies and standards

1.1.1 National Policies

China has developed a relatively complete set of laws, regulations, departmental rules, and policy documents about Integrated Waste Management (IWM) in urban areas. Recently, the speed and number of policies introduced relating to IWM in China have increased significantly. Especially in the past two years, regarding municipal solid waste classification, from the overall deployment to pushing the targets to provinces and cities to the refinement of assessment and expansion of scope, the Chinese central government is very determined to implement the municipal solid waste classification system fully. The coverage and depth of the comprehensive municipal solid waste management policy are also gradually strengthening, with central and western China and rural areas become the focus in the future. And there have been significant changes in the regulatory requirements for online monitoring of waste incineration plants and price concessions for entering into the Grid for the electricity generated by the incineration plants.

The national-level policy documents that have been relevant to Integrated Waste Management (IWM) since 2018 are as follows.

- On **June 16, 2018**, the State Council issued the **Opinions on Resolutely Fighting the Battle of Pollution Prevention and Control by Comprehensively Strengthening Ecological Environmental Protection**.
- On **December 29, 2018**, the General Office of the State Council issued the **"Pilot Work Plan for the Construction of 'Zero-Waste' Cities."**
- On **September 1, 2020**, the **Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste** was amended and implemented by the National People's Congress.
- On **October 24, 2021**, the State Council issued the **"Action Plan to Achieve Carbon Peak by 2030"**.

The policy documents issued by the national authorities in recent years are as follows.

- On June 11, 2019, the Ministry of Housing and Urban-Rural Development (MOHURD) and nine other departments issued the Notice on Comprehensively Carrying Out **Municipal Solid Waste Classification** Work in Cities at the Prefectural Level and above level.
- On July 13, 2019, the National Development and Reform Commission (NDRC) and four other departments issued the Notice on Further Accelerating the Work Related to **Urban Sewage and Waste Treatment in Central and Western Regions**.
- On December 4, 2019, the National Development and Reform Commission and ten other departments issued the Guiding Opinions on Promoting the **Industrialized Development of Bio-Natural Gas**.
- On January 1, 2020, the Ministry of Ecology and Environment (MEE) began implementing the Regulations on the Application of **Automatic Monitoring Data for Municipal Solid Waste Incineration Power Plants.**
- On January 16, 2020, the National Development and Reform Commission and the Ministry of Ecology and Environment issued the Opinions on Further Strengthening the **Control of Plastic Pollution.**
- On January 20, 2020, the Ministry of Finance, the National Development and Reform Commission, and the National Energy Administration issued the Opinions on Promoting the Healthy **Development of Non-Water Renewable Energy Power Generation** (Caijian [2020] No. 4).
- On July 31, 2020, the National Development and Reform Commission, the Ministry of Housing and

Urban-Rural Development, and the Ministry of Ecology and Environment jointly issued the **Implementation Plan for Urban Municipal Solid Waste Classification and Treatment Facilities** to Make Up for Shortcomings and Strengthen Weaknesses.

- On September 29, 2020, the Ministry of Finance, the National Development and Reform Commission, and the National Energy Administration jointly issued a supplemental notice on matters related to "Certain Opinions on Promoting the **Healthy Development of Non-Water Renewable Energy Power Generation**" (Caijian [2020] No. 426).
- On November 27, 2020, the Ministry of Housing and Urban-Rural Development and 12 other ministries and commissions jointly issued "Several Opinions on **Further Promoting the Classification of Municipal Solid Waste.”**

1.1.2 National Standards

To implement the national regulations and policies on the comprehensive management of municipal solid waste, the relevant industry authorities have promulgated and implemented several technical standards, guidelines, and manuals, which mainly include:

- standards on equipment manufacturing,
- process integration,
- project establishment,
- industry management,
- engineering design and construction,
- facility operation and management, etc.,

These standards are mainly formulated and promulgated by the National Development and Reform Commission (NDRC), the Ministry of Industry and Information Technology (MIIT), and the Ministry of Housing and Urban-Rural Development (MoHURD). The Ministry of Ecology and Environment (MEE), formerly the Ministry of Environmental Protection of the People's Republic of China (MEP), and before 2008, known as the State Environmental Protection Administration (SEPA), mainly formulates and promulgates pollution control standards.

1) <u>Standards on equipment manufacturing, process integration, etc.</u>

   These standards in this area are mainly product standards, and about 103 product standards on environmental sanitation and municipal solid waste management have been promulgated and implemented. Such as:

   - "Biological deodorization trickling filter tank" JB/T 12580-2015,
   - "Nanofiltration device" HYT 114-2008,
   - "Solid-liquid separation equipment for manure elimination station" JB/T 11379-2013,
   - "Technical requirements for the collection and utilization of bulky waste" GB/T25175-2010,
   - "Aerobic composting oxygen automatic monitoring equipment" CJ/T 408-2012, etc.

2) <u>Project establishment and industry management standards</u>

   Standards in this area are mainly promulgated and implemented by the National Development and Reform Commission and the Ministry of Housing and Urban-Rural Development (MOHURD). About 10 standards are promulgated and implemented in this area. For example:

   - Construction Standard for Sanitary Landfill Treatment Project of Domestic Waste",
   - "Construction Standard for Incineration Treatment Project of Municipal Solid Waste" Jianbiao 142-2010,
   - "Municipal Solid Waste Classification Sign" GB/T 19095-2019,
   - "Municipal Solid Waste Classification and its Evaluation Standard" CJJ/T102-2004, etc.

3) Standards for engineering design, construction, and operation management

The measures in this area are mainly promulgated and implemented by the Ministry of Housing and Urban-Rural Development (MOHURD), and there are about 40 standards promulgated and implemented in this area. For example:

- "Technical Regulations for Municipal solid waste Collection and Transportation" CJJ205-2013,
- "Technical Regulations for Operation and Maintenance of Municipal solid waste Transfer Station" CJJ109-2006,
- "Technical Specification for Municipal solid waste Incineration Project" CJJ90-2009,
- "Technical Standards for Operation and Maintenance and Safety of Municipal solid waste Incineration Plant" CJJ128-2017,
- "Technical Specification for Kitchen Waste Treatment" CJJ184-2012, etc. CJJ184-2012, etc.

4) Standards on pollution control

Standards in this area are mainly promulgated and implemented by the Ministry of Ecology and Environment (MEE), and there are currently dozens of standards promulgated and implemented in this area. Such as

- "Pollution Control Standards for Municipal solid waste Incineration" GB18485-2014,
- "Pollution Control Standards for Municipal solid waste Landfills" GB 16889-2008,
- "Technical Specification for Continuous Monitoring of Flue Gas (SO2, NOx, Particulate Matter) Emissions from Stationary Sources" HJ75-2017,
- "Technical Requirements for Environmental Monitoring of Municipal solid waste Sanitary Landfills" GB/T 18772- 2017, etc.

1.2 Local policies and standards

Due to the vast size of China, the economic, natural, and other social-economic conditions vary greatly; during the implementation of the relevant national policies and standards, there is a need to adapt to the current situation of a different location and to develop local applicable policies and standards. Local policies are mainly promulgated and implemented by provincial and municipal governments, and local standards are mainly promulgated and implemented by provincial governments.

The provincial governments of the five IWM-NAMA pilot cities have issued policy documents on municipal solid waste management and classification, including the Measures on Municipal Solid Waste Management (MSWM) and the Implementation Plan for the Municipal Solid Waste Sorting System (Measures), etc. The governments of the five pilot cities have also promulgated and implemented relevant policy documents on municipal solid waste management. Other provinces and cities have also enacted similar policies to enforce the central government's policies. The relevant local policy documents are as follows:

Shaanxi Province and Xi’an City

- Implementation Plan of Municipal solid waste Separation System in Shaanxi Province promulgated and implemented in 2017.
- Regulations on the Management of Municipal solid waste Classification in Xi'an City, to be implemented in 2021

Jiangsu Province

- Implementation Measures for the Municipal solid waste Classification System in Jiangsu Province, to be implemented in 2017

Shandong Province

- Implementation Plan for the Municipal solid waste Classification System in Shandong Province, to be implemented in 2020

Anhui Province

- Regulations on Management of Municipal solid waste Classification in Anhui Province, to be implemented in 2021

Gansu Province

- Measures for the Management of Urban Municipal solid waste Disposal in Gansu Province, to be implemented in 2020.
- Implementation Plan for the Classification of Urban Municipal solid waste in Gansu Province, to be implemented in 2019.

In addition to preventing solid waste pollution and resource recovery, some provinces and municipal cities also issued several policy documents, such as "Solid waste pollution prevention and control of the environmental regulations in Jiangsu Province" and "Shanghai resources recycling management measures," and others.

Regarding the integrated management and treatment of municipal solid waste, some provinces have promulgated and implemented local standards, including pollution control standards for waste incineration, assessment and evaluation criteria for incineration plants, and energy consumption indicators for incineration plants. For example:

- "pollution control standards for municipal solid waste incineration" DB46/484-2019 in Hainan Province,
- "air pollution control standards for municipal solid waste incineration" DB13/5325-2021 in Hebei Province,
- "energy consumption limits for municipal solid waste incineration treatment" DB11_T 1234-2015 in Beijing,
- "operation and maintenance of municipal solid waste incineration plants in Fujian Province, and the testing supervision and evaluation standards" DB13/93-2015, etc.

2 Implementation of policies and standards for IWM in demonstration cities

2.1 Waste Classification

There are still gaps between the five IWM-NAMA demonstration cities and the national requirements regarding policies and standards of integrated MSW management.

In terms of municipal solid waste classification management, although the provincial and municipal governments of the five IWM-NAMA cities have issued relevant management documents or implementation plans by the central government's policy requirements, the concrete actions and effects are not very satisfactory. All five IWM-NAMA cities have at least set up separate waste bins at the source of municipal solid waste collection, including household food waste bins, recyclables bins, and other bins. Still, due to the insufficient efforts in separation management, residents do not separate household food waste from other waste. Residents did not put household food waste separately, and only a few pilots in residential communities implemented the separation of household food waste.

The overall recycling rate of household recyclables is still relatively high, and the main recycling channel is not the formalized household waste collection system but the informal waste recycling system. The primary practice is that residents usually sell recyclables (newspapers, cardboard boxes, cans, waste plastic products, etc.) directly to vendors itinerant in the community, or residents deliver recyclables to the community cleaning staff, who sell them to individual scrap collectors. A small number of recyclables put into the waste cans are picked out by the rag-pickers and sold for scrapping collectors. As a result, the current recycling rate of household-generated recyclables is relatively high (estimated to be over 90%) in the five demonstration cities compared to other cities across the country. The implementation of the national policy in the 5 IWM-NAMA cities is relatively exemplary regarding recyclables recycling. However, this recycling channel is mainly self-operated (also known as "informal"), and the process may impact the urban environment.

2.2 Waste collection and transportation

In terms of waste collection and transportation, the state and governments' basic policies are promoted to achieve (i) daily collection and transportation of domestic waste for daily produced waste and (ii) to allow private enterprises to be contracted in the domestic waste collection and transportation business, (iii) to actively promote the implementation of urban and rural integrated household waste collection and transportation systems, (iv) to actively promote the upgrading of household waste collection points, collection stations, transfer stations, and collection vehicles, (v) to improve the operation of domestic waste collection points, collection stations, transfer stations, and collection vehicles, (vi) to strengthen the information technology supervision of waste collection and vehicles, and (vii) to implement domestic waste sorting in cities, areas or regions where household waste sorting should still be established.

The construction and equipment of domestic waste collection points, collection stations, transfer stations, and collection vehicles in the five IWM-NAMA model cities meet the daily production of household waste. Waste collection and transportation business is undertaken by two types of enterprises: state-owned and private enterprises. Rural domestic waste is collected and transported effectively, the operation of collection and transportation facilities and vehicles is basically in good condition, and some waste collection and transportation vehicles are incorporated into the Information-based City Management System to achieve real-time tracking and supervision of vehicles.

2.3 Waste Recycling

In terms of recycling household high-value (directly recyclable) recyclables, the five IWM-NAMA cities, like the rest of the country, can achieve a recycling rate of over 90% and be very effective in implementing the national policy on resource recycling. Parts of household high-value recyclables are mixed with industrial source recyclables in the intermediate collection and final recycling and reprocessing. Hence, there are no accurate statistics on the amount of household sources recyclables.

Some low-value recyclables in household waste are not recycled, mainly including plastic bags, glass bottles, milk cartons, etc. Such items are not bought and thrown into the trash because of the high cost of recycling and the difficulty of making a profit. The current five IWM-NAMA demonstration cities, like other cities across the country, are following the national policy regarding recycling high-value recyclables and currently have little potential to increase the recycling rate in terms of high-value recyclables from domestic sources. There is a need for the government to issue preferential policies or incentives for the collection and recycling of low-value recyclables from domestic sources. Otherwise, it

would be difficult to collect and recycle this waste component.

2.4 Waste incineration

All five IWM-NAMA demonstration cities have built municipal solid waste incineration power plants. The scale of incineration power plant construction is determined according to the mixed collection of municipal solid waste and the total amount of municipal solid waste incineration achieved. Municipal solid waste incineration treatment is an integral part of the comprehensive management system of municipal solid waste. It is an important facility to solve the resourceful and harmless treatment of municipal solid waste. Waste incineration power generation is a waste resource treatment method supported by central and local government policies. The government has preferential policies on feed-in tariffs and waste treatment subsidy fees, which have been implemented in 5 cities.

2.5 Kitchen waste treatment

Food waste is generated by the catering industry, restaurants, and household food waste. In the past, restaurant food waste, the same as the food waste generated by the urban catering businesses, was mainly transported to the suburbs of cities to feed pigs and refine waste cooking oil. Waste cooking oil was privately re-processed into “fresh” cooking oil and returned to restaurants. After increased government supervision, restaurant food waste treatment plants were built, eliminating restaurant food waste delivery for feeding pigs and avoiding privately organized refining of waste cooking oil and grease cycle back to the dining table. As an essential part of the comprehensive urban waste management system, all five IWM-NAMA cities have built restaurant food waste treatment plants and implemented the national food waste collection and treatment policy. However, because the national policy is not well executed for the separate collection of municipal solid waste, resulting in that household food waste is not being effectively separated from other municipal solid waste, the food waste treatment plants in the five cities are dealing mainly with restaurant food waste. Household food waste is still mixed with municipal solid waste into the incineration plant for burning.

In addition, utilizing biogas generated in kitchen waste treatment in several cities still needs the government's policy support. For example, it is administratively not easy to feed upgraded biogas (biomethane) into the urban natural gas pipe network, and getting permission to generate electricity generated into the State Grid without additional government support is not easy.

2.6 Waste landfill disposal

After implementing full-volume incineration, the original municipal solid waste dumping sites are no longer used. The newly designed constructed landfills mainly treat the stabilized incineration fly ash; if achieved, zero landfilling of primary waste is achieved. Therefore, in terms of reducing the amount of direct waste to be landfilled, all five IWM-NAMA cities have well-implemented national or local policies. In terms of the utilization of landfill biogas from the former municipal solid waste landfills, the utilization rate of landfill gas in Xi'an is low, and a large amount of landfill gas is burned off, which is not in line with the national policy on encouraging the utilization of renewable energy. The landfills in Lanzhou and Bengbu also do not yet have effective landfill gas discharges and utilization.

2.7 Other solid waste

2.7.1 Construction and demolition waste

As China is still in rapid economic development with accelerated urbanization, construction waste, as a kind of municipal solid waste, is currently generated in large quantities in most of the cities in China. The state supports the resource utilization of construction waste with policy terms. However, due to the lack of local supporting policies, construction waste resource utilization is still relatively low.

2.7.2 Fecal Sludge Treatment

This sludge is mainly from emptying septic tanks in residential areas, generally with more than 90% water content. Their treatment facilities are part of the comprehensive municipal solid waste treatment system. The main treatment methods are landfill disposal of solid residue (sludge sediment) after dewatering or composting solid organic residues and treatment of stripped water in municipal wastewater treatment plants. The five IWM-NAMA pilot cities have implemented the related national policy in treating fecal sludge with treatment systems following the national policies.

3 Problems existing in the formulation and implementation of policies and standards for IWM in China

3.1 Formulation of policies and standards

At the national level, the central government has the following problems in developing policies and standards for integrated municipal solid waste management.

1) There is no administrative guiding document or departmental regulation on the process supervision and effectiveness examination of comprehensive municipal solid waste management. As a result, the local governments have (i) no basis for the process of supervision and a practical assessment of the comprehensive municipal solid waste management, and (ii) no basis for the government's financial allocation for the funding for the process supervision and effect assessment. It is challenging to implement such processes.

2) There is still a lack of preferential policies and mandatory policies for the utilization of waste treatment products, such as urban natural gas companies purchasing upgraded biogas (biomethane) from kitchen waste treatment and power grid companies purchasing bio-electricity from kitchen waste treatment plants, etc.

3) There is a lack of standardized documents such as technical guidelines, design manuals, and operation manuals at the operational level. Waste management associations and local government waste management departments must develop such standardized documents. Waste management technology industry associations are needed, mainly for the national industry, and the development of standardized technical documents adapted to the national level is required. Local government waste management departments are responsible for local conditions and actual needs and adjust the development of standardized technical documents to local conditions.

3.2 Implementation of policies and standards

3.2.1 Problems existing in the implementation of policies and standards at the national level

The main problem in implementing national-level policy standards is the lack of a systematic and specific implementation mechanism. The current means of policy implementation is - after the promulgation of national-level policy documents, issued in layers of red-headed government documents; the implementation mode of local governments at all levels is primarily a meeting of higher-level departments to convey a meeting of lower-level departments until to the most grassroots departments. The grassroots departments receive the documents shared by the higher-level departments and then organize the concrete implementation of the policies. Since implementing most policies requires the investment of human capital, material and equipment, and financial resources, the higher-level departments generally do not have specific solutions in this regard. Most implementation level departments have to solve their problems alone, and it is difficult for the grassroots departments to solve the problem of human, material, and financial resources. Some grassroots departments implementing policies submit reports on funding needs to the superior branch. Only the superior branch can forward fund applications to the government finance branch. The government finance department is responsible for the project approval process, including the funding approval, which prolonged the time of policy implementation. And some local governments will be unable to implement the relevant national policies due to fiscal difficulties.

The implementation mechanism of national standards is similar to the policy implementation mechanism, and in general, it lacks a supervision mechanism for standards implementation. During construction periods, the project plan and engineering design are completed by the consulting design unit and evaluated by experts from the technology industry, basically following the relevant national and local standards for design and building. However, after completion, the facility is generally operated and managed by the investor who sets up a new operating company. Due to the rapid development of the waste management industry, the demand for suitably skilled staff cannot be satisfied by the current labor market. Thus, the functional skills of the recruited personnel are not high. In addition, the government does not compensate some of the facilities' operational expenses according to their costs. Consequently, the O&M company cannot strictly abide by the standard requirements for operation and management.

3.2.2 Problems existing in the implementation of policies and standards in demonstration cities

To complete the implementation process of national policies and standards, the five IWM-NAMA demonstration cities also need to promote and implement relevant local (at least provincial) policies and standards. According to the previous description, the provinces where the 5 IWM-NAMA demonstration cities are located have issued their local policy documents for municipal solid waste management, which are published to support the implementation of the relevant national policy documents under the characteristics of each region. The main problems in implementing these local policies are similar to those of the national policies, mainly the lack of supervision mechanisms and funding for the policy implementation and dissemination process.

The lack of supervision mechanism for policy implementation refers to the following:

- lack of sustainability plan for policy implementation,
- lack of a transparent accountability system,
- lack of process supervision and regular assessment,

- lack of evaluation system and specific actions.

The lack of funds mainly refers to the funds required to construct hardware facilities, personnel, and facility operating costs for the policy implementation process.

The main problems in the integrated management of MSW in the 5 IWM-NAMA demonstration cities are as follows:

1) The coverage of municipal solid waste separation collection is not high, and household food waste is not effectively separated. Currently, the incoming waste from food waste treatment facilities is mainly restaurant food waste, with very little household food waste included.

2) The waste collection and transportation system lack an optimized solution. Currently, each city's waste collection and transportation rates are 100%. But the cost of waste collection and transportation is high, mainly because of the enormous fuel consumption of vehicle transportation. The operation path of waste collection and transportation vehicles is not yet optimized.

3) The recycling rate of low-value recyclables from household sources is low, and there is a lack of rules for management on the collection and recycling of low-value recyclables.

4) The government has not implemented supervision and assessment of the efficient energy use in waste incineration plants, resulting in low energy efficiency in municipal solid waste incineration facilities. The waste incineration heat is purely used for condensing turbine power generation; the total power generation efficiency is only about 22%, except for a small amount of thermal energy used for air and flue gas heating; the rest of the generated heat is lost.

5) The government has no preferential or mandatory policies for applying kitchen waste resourceful treatment sub-products, such as biogas and bio-electricity. The government has not implemented supervision and assessment on the resource utilization rate of food waste treatment facilities, resulting in a low resource utilization rate. It is mainly manifested in the small amount of biomethane production, the low energy efficiency of biogas utilization equipment, and the low resource utilization rate of organic residues.

6) The government did not implement supervision and assessment of the landfill gas collection and utilization rate, resulting in low landfill biogas collection and utilization rate after decommissioning former municipal solid waste landfills. Suzhou and Xi'an landfills have landfill gas power generation systems, but a large amount of landfill gas in Xi'an landfill is burned by torches and not utilized. Landfill gas collection systems are not yet installed in any landfills in other cities.

4 Suggestions on the formulation and implementation of policies and standards for IWM in China

4.1 Suggestions for improving policy and standard formulation at the national level

1) It is recommended that the MoHURD issue the "comprehensive management and treatment of municipal solid waste process supervision measures," requiring local governments to implement daily supervision of the whole process of municipal solid waste sorting and collection, sorting and transportation, and sorting and treatment. Local governments arrange financial funds to support the daily supervision funds by this supervision measure. The measures proposed to allow local governments to entrust third-party regulatory agencies instead of the government to implement comprehensive management of municipal solid waste and treatment process supervision, that is, to enable local governments to purchase services for the complete management of municipal solid waste and treatment process supervision.

2) It is suggested that the MoHURD should prepare the "Standard for the Process of Classifying Household Waste" to provide a consistent technical basis for classifying household waste.

3) It is suggested that the MoHURD, together with the Ministry of Commerce and other Ministries and departments, should issue the "Management Measures for Classifying and Recycling of Low-Value Recyclables from Domestic Sources," requiring local governments and material recycling management departments to strengthen the recycling of low-value recyclables, which can be supported by some preferential policies to mobilize individuals and enterprises to take over an active role in low-value recyclables to improve the overall recycling rate of municipal solid waste.

4.2 Suggestions on improving the implementation of policies and standards in IWM-NAMA demonstration cities

1) Develop city-level "Management Rules for Sorting and Recycling of Low-Value Recyclables from Household Sources." The rules should include the classification of low-value recyclables from household sources (e.g., lightweight plastic bags, small plastic packaging boxes, paper-plastic packaging boxes, metal can, boxes, glass containers, fabrics, etc.), collection stations/points, logistics models, the establishment of recycling facilities, and end-product sales and market establishment, etc.

2) In the development of city-level "integrated management of urban municipal solid waste and disposal process supervision and assessment rules," the scope of the rules should include process supervision and assessment on:
   - municipal solid waste classification
   - municipal solid waste collection and transportation
   - municipal solid waste treatment facilities' operation

The technical content of the rules should include regulatory assessment plan development, regulatory assessment agencies commissioned (set up), regulatory assessment process, regulatory content, assessment methods, regulatory assessment report preparation, and regulatory assessment results to be reported.

1) The following city-level guidelines and technical standards should be established:
   - municipal solid waste collection and transfer system energy saving and carbon reduction technology guidelines
   - municipal solid waste incineration plant energy efficiency assessment methods
   - food waste treatment plant resource utilization assessment methods
   - and other relevant standards documents.

2) According to the relevant national standards and the above-mentioned city-level policy and standard documents, each city should prepare an annual plan to manage and treat municipal solid waste. The plan should include estimating the government funds required for the integrated management and treatment and the needed funds in the government budget for the following year to ensure that the funding is guaranteed in the city government planning and budget.

3) The cities could implement the integrated management of urban municipal solid waste and treatment process supervision and assessment according to the following policies and standards:
   - the "integrated management of urban municipal solid waste and treatment process supervision and assessment rules,"
   - the "municipal solid waste collection and transfer system energy saving and carbon reduction technology guidelines,"
   - the "municipal solid waste incineration plant energy efficiency assessment methods,"
   - the "food waste treatment plant resource utilization rate assessment methods."
   - and other supporting policies and standard documents

The assessment mainly focuses on the results of municipal solid waste classification collection and treatment, energy consumption, energy efficiency, and resource utilization rate. The city governments should be enabled to pay the service fees to each service provider based on the supervision and assessment results.