

Ex-Ante Evaluation (for Private Sector Investment Finance)

Private Sector Partnership and Finance Department, JICA

1. Name of the Project

Country: Republic of Kenya (hereafter referred to as “Kenya”)

Project: Bio-recycling Project

Agreement date: October 4, 2021

2. Background and Necessity of the Project

(1) Current State and Issues of the Waste and Agriculture Sector in Kenya and the Priority of this Project

The population of Nairobi, Kenya’s capital and largest city, is expected to increase from 3.04 million in 2009 to 5.94 million in 2030, and this will be accompanied by an increase in the amount of waste generated from 1,848 tons/day in 2009 to 3,990 tons/day in 2030. However, waste treatment, including its collection, transportation and landfill management, is not being adequately carried out by the local government, with approximately half of the waste generated being illegally dumped, while the remaining waste is collected and landfilled at the existing Dandora Municipal Dump Site, but the situation is that it only has a treatment capacity of 0.5 million m³ and 1.8 million m³ is brought in (62% of the discarded recyclable waste in Nairobi is food (organic waste) (African Clean Cities Platform, 2019)). As a result of this, a lot of waste in the city is unlawfully dumped, the waste becomes scattered and landfill gases are generated leading to foul odors, soil pollution, and the deterioration of environmental hygiene in the surrounding area. In addition, only 12% of households in Kenya are connected to the sewage system (JETRO, 2013), and human waste often seeps out around people’s dwellings due to inadequate sanitation facilities, especially in the slums of the low-income household areas, raising concerns about detrimental effects on the water, sanitation and the health of citizens. Kenya’s national development program, Vision 2030, states that by 2030 it will establish a clean and safe environment through the spread of appropriate sanitation facilities, waste treatment and dealing with environmental pollution.

Kenya’s agriculture, forestry and fishing industries are major industries that account for 30% of Kenya’s GDP and 40% of its total workforce (Ministry of Agriculture, Forestry and Fisheries of Japan, 2018), but they are reliant on comparatively expensive imported products for the feed and fertilizer that make up the largest proportion of production costs for stock-raising and agriculture. This is a burden for small-scale farmers who account for over 60% of agricultural production output, and is a main factor in hindering the expansion of production (Ministry of Agriculture, Forestry and Fisheries of Japan, 2015). The Kenyan Government’s Agricultural Sector Growth and Transformation Strategy sets increasing the income of small-scale

farmers as a goal that should be achieved by 2023, as well as the provision of good quality input goods like fertilizer.

In these circumstances, Sanergy, Inc., an American corporation founded in 2010, has developed a business that collects organic waste from commercial establishments (farms, markets, restaurants, hotels, etc.) in Nairobi County, as well as human waste from compost toilets installed in the city's slums, and utilizes biotechnology (insects) at a waste recycling factory to recycle this waste into feed and fertilizer for sale. This project will contribute to resolving some of the developmental issues of this country by improving the city's environmental hygiene and increasing agricultural productivity, through the provision of funds required for the expansion of Sanergy's waste recycling business.

(2) Japan and JICA's Cooperative Policies for this Sector and the Priority of this Project

JICA Country Analysis Paper for the Republic of Kenya (March 2018) states that waste treatment in cities, increasing agricultural productivity, and promoting the optimization and spread of investment in agriculture, are all main developmental issues that JICA should work on. Environmental conservation and agricultural development are also named as priority areas in our development cooperation policy for Kenya. This project that aims to improve the urban environment through waste treatment in Nairobi, and increase agricultural productivity through the domestic production of feed and fertilizers, is in compliance with these analyses and policies.

(3) Other Donors' Activity

The U.S. International Development Finance Corporation (USDFC) is supporting the expansion of the factory with a loan of US\$ 5 million, as well as supporting the company's formulation of a strategic business expansion plan with US\$ 1 million of technical cooperation. A Finnish development financial institution, the Finnish Fund for Industrial Cooperation Ltd., is investing US\$ 1.25 million.

3. Project Description

(1) Project Objective

This project aims to contribute to improving urban environmental hygiene and increasing agricultural productivity by promoting the collection of waste and its recycling into feed and fertilizer, through the provision of the funds required for the expansion of Sanergy's waste recycling business in Kenya.

(2) Project Site/Target Area

Nairobi County and Machakos County, Kenya

(3) Project Components

Human waste is collected from compost toilets installed in Nairobi's city slums and

organic waste is collected from commercial establishments (farms, markets, restaurants, hotels, etc.), and then domestic Black Soldier Flies (hereafter referred to as BSF) are used at the company's waste recycling factory to produce insect feed and organic fertilizer for sale to farmers both inside and outside the country.

(4) Project Implementation Structure

Investee, project executing agency, operation and maintenance agency: Sanergy, Inc.

(5) Collaboration and Role-Sharing with Other Aid Organizations and Projects

1) Japan's Aid Activities: Support to improve Nairobi County's environmental management capabilities is provided with technical support and facility maintenance being carried out to improve environmental management capabilities in response to the deterioration of the urban environment due to the increasing urban population, in accordance with the Kenya development cooperation policy of "Environmental Conservation," as well as the creation of a master plan concerning waste management in the "Cooperation Program's Preparatory Survey for Integrated solid Waste Management in Nairobi City," and support to improve Nairobi County's waste management capabilities in the "Project for Capacity Development of Waste Management in Nairobi City."

Initiatives to improve agricultural productivity are being carried out in accordance with the Kenya development cooperation policy of "Agricultural Development," with technical support being provided to improve productivity in an attempt to increase the income of small-scale farmers, with projects like the "Project for Smallholder Empowerment and Agribusiness Promotion" and "Capacity Development Project for Enhancement of Rice Production in Irrigation Schemes."

2) Aid Activities of Other Organizations: As in 2. (3).

(6) Environmental and Social Considerations, Cross-sectional Items, and Gender Classification

1) Environmental and Social Considerations

① Category classification: B

② Basis for categorization: This project does not qualify as a large scale one in the impact prone waste sector according to the "Japan International Cooperation Agency Guidelines for Environmental and Social Considerations" (announced in April 2010), and it's judged that it will have a noncritical undesirable impact on the environment, as according to the guidelines it doesn't have characteristics that are likely to have an impact, and isn't being carried out in an impact prone area.

③ Environmental approval and authorization: The Environmental Impact Assessment (EIA) report regarding factory construction was accepted by the Kenyan government in August 2019, and environmental approval and authorization has been obtained.

④ Pollution control: With regard to impacts on air quality, water quality, noise,

waste, and odors generated during shared use, the project is expected to meet domestic and international environmental standards by implementing mitigation measures such as proper operation of equipment and facilities and additional source control measures based on operating conditions, covering material storage areas during rainy seasons and regular maintenance of equipment, installing sound deadening equipment and limiting vehicle speed at equipment facilities, and proper separation and disposal of waste materials. The project is expected to meet domestic and international environmental standards through the implementation of mitigation measures, such as the installation of sound deadening equipment on equipment, limitation of vehicle speed, and proper segregation and disposal of waste materials.

⑤ Natural Environment: The project area is not located in or near a sensitive area such as a national park, etc., and thus, undesirable impacts on the natural environment are expected to be minimal.

⑥ Social and Environmental Aspects: The land to be used for the project is leased from a government agency, and thus does not involve land acquisition or involuntary resettlement.

⑦ Other/Monitoring: The project will be monitored by Sanergy for noise, vibration, odor, and other items.

2) Cross-sectional Items: The implementation of this project will contribute to climate change (mitigation) countermeasures, as it will suppress the generation of methane from waste that is not properly landfilled, and the installation of solar power generating panels on the roof of the factory will help reduce greenhouse gas emissions.

3) Gender Classification: [Not applicable] ■ GI (Gender mainstreaming needs investigation and analysis items) <Reasons for classification> Although gender mainstreaming needs were confirmed, specific efforts to contribute to gender mainstreaming were not included.

(7) Other Important Issues: Nothing in particular.

4. Targeted Outcomes

(1) Quantitative Effects: Amount of waste treated, amount of feed and fertilizer produced, amount of human waste collected, etc. The principal indicators are as follow.

Indicator	Baseline (2020)	Target (2024) [One year after the factory starts full-scale operation]

Amount of waste treated at the Nairobi factory	9,943 ton/year	90,000 ton/year
Amount of human waste collected from sanitary toilets in Nairobi County	4,754 ton/year	20,452 ton/year
(Auxiliary Index) Number of employees	417	600

(2) Qualitative Effects: Improvements in urban environmental hygiene and agriculture productivity

5. External Factors and Risk Control

- (1) Prerequisites: Nothing in particular
- (2) External Factors: Nothing in particular

6. Lessons Learned from Past Projects

(1) Evaluation Outcomes of Similar Projects

In the case of pilot projects for local government public services like waste treatment, such as the “Pilot project to construct a recycling system including raw garbage in the South,” (a technical cooperation project in Thailand) it’s important to get the local government involved from the initial stages, and to acquire favorable cooperation from citizens by getting the local government to familiarize them with it.

(2) Lessons for this Project

The key to this project is the steady implementation of the waste collection services that the Sanergy has created itself and, due to the highly social and public nature of their business model, the company that was founded in 2010 has spent ten years building good relationships with local and central government, and have obtained the required approval and authorizations for factory construction, etc., without any great conflict with government or the citizens, and are expanding their waste collection business. In 2020, they employed a person from Kenya’s President’s Office, and she heads a special team that deals with top government officials, so as they have strengthened that organization even more there are no particular concerns on that front. In addition, JICA is able to contribute to the communication between Sanergy and the local government through waste management improvement experts, by dispatching experts in 2021 to the Nairobi Metropolitan Service, which is in charge of Nairobi County’s waste administration.

7. Evaluation Results

As described above, this project is in compliance with Kenya’s development issues,

development policies and Japan's cooperative policies, its necessity has been recognized, and there is also an appropriate plan with a sufficient likelihood of success, so it is highly meaningful support through overseas investment and lending.

8. Plan for Future Evaluation

- (1) Indicators to be Used for Future Evaluation: As described in 4.
- (2) Timing (estimate): 2025 Ex-post evaluation

End