

3R Policy and its Practice in Waste Management in Palestine

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INTRODUCTION

In Palestine, the amount of municipal waste generated is rapidly increasing due to population growth and urbanization. Existing sanitary landfills are overloaded, but the remaining capacity of sanitary landfills is limited, and under the occupation of Israel, it is difficult to obtain a land for constructing new landfill. Even now, overflow to open dumpsites has caused problems such as deterioration of public health and environmental pollution, but there are concerns that more serious problems will arise if the amount of waste continues to increase without a new landfill site. In order to minimize the amount of final waste disposal, it is necessary to reduce the amount of waste generated and to reuse & recycle the waste including energy recovery, that is, to promote the 3R (Reduce, Reuse, Recycle), which has been determined in the Palestine's National Solid Waste Management Strategy (2017-2022).

NATIONAL STRATEGY AND 3R POLICY

The National Strategy is composed of 8 strategic objectives: i) Organizational development, ii) Institutional development, iii) Effective SWM service, iv) Sustainable financing, v) Proper treatment of hazardous wastes, vi) Public-private partnership, vii) Public awareness raising, and viii) Information sharing, which consist of 19 sectoral policies and 95 interventions. 3R policy is involved in 4 strategic objectives, iii), v), vi), and vii). Palestinian Authority (MoLG) identified the following four issues as the priority actions: (1) reducing waste amount at source such as source separation, home composting and/or material reusing/recycling, (2) diverting the waste stream such as waste sorting, material recycling, centralized composting, and/or waste-to-energy before landfilling, (3) reduction of the amount of dumped waste and resource/energy recovery from landfills and dumpsites, and (4) Raising public awareness on solid waste problems. The overall waste minimization will be realized through introducing the 3R practice over Palestine based on strengthened public awareness on the environment and sustainable development. And it is possible, because, according to the average composition of waste, more than 80% of generated waste in Palestine is potentially recyclable.

3R PRACTICE AND CHALLENGES

The amount of municipal solid waste generated per capita in Palestine is significantly higher than those in countries of similar economic scale (266 kg/cap/year in West Bank). This indicates that there are many issues at the stage of waste generation, and it is necessary to raise public awareness on the seriousness of the above-mentioned waste problem. Palestine has 15 Joint Service Councils (JSCs) as an implementing agency of municipal solid waste management service, and each JSC has formulated its own Waste Reduction Plan to raise public awareness since 2020. There was almost no practice of source separation as of 2017, but now a

source separation is being practiced in 4 JSCs as pilot projects. In peri-urban areas, a source separation of biodegradable waste has been conducted for home composting as a pilot project, which indicated that the method was effective in waste reduction at the source. For waste diversion, five methods (centralized compost, community compost, paper/cardboard recycling, plastic recycling, and RDF production by cardboard and olive waste) are being implemented in a pilot scale (Fig. 1). Moreover, the Palestinian Authority has concluded to introduce a Waste-to-Energy facility from a medium- to long-term perspective. Detailed plan is under the discussion with relevant parties toward the formation of a DBOO (Design-Build-Own-Operate) project.

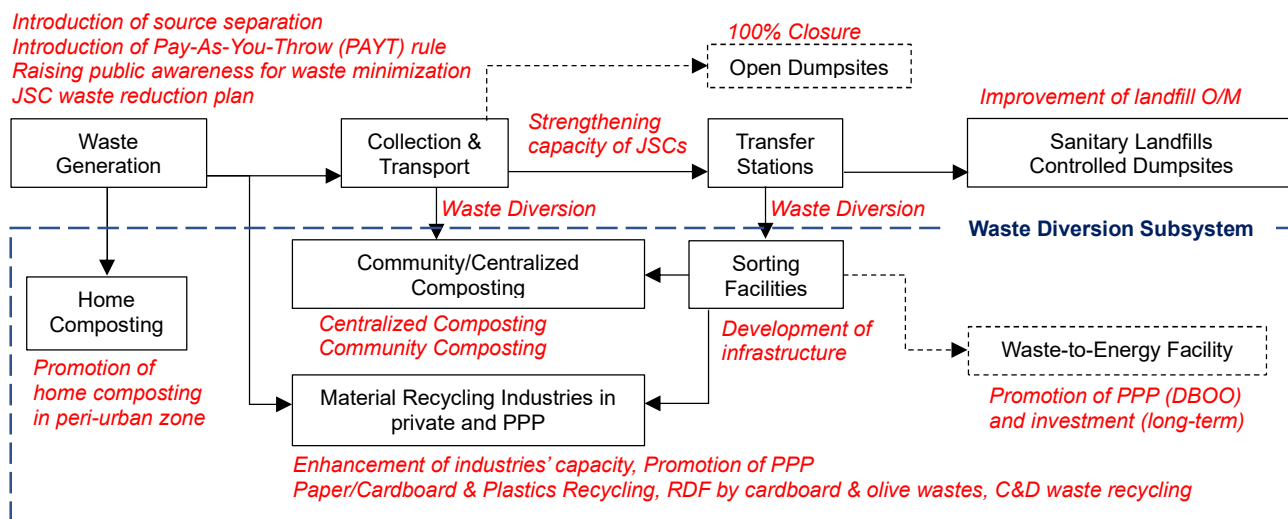


Figure 1: Outline of municipal solid waste management system in Palestine and policy interventions (in *italics*) including pilot projects. Broken line indicates the domain of waste diversion subsystem.

CONCLUSIONS

In Palestine, the introduction of the 3Rs is being promoted with the main purpose of reducing waste, based on the National Strategy. There are two main directions: waste reduction at the source and promotion of reuse and recycle in waste diversion. Although it is still in the stage of verification of effectiveness and efficiency by pilot projects, it is expected that the optimum municipal solid waste management system including 3R approaches will be determined according to the conditions of Palestine.

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