Chapter 19
Design of a Food Waste Management Program in Reducing Urban Food Waste

Olubunmi Racheal Ajayi
Griffith University, Australia

Scott R. Baum
https://orcid.org/0000-0003-1711-2087
Griffith University, Australia

Cordia Chu
Griffith University, Australia

ABSTRACT

Sustainable food systems can contribute to addressing food security, poverty alleviation, and economic growth. With 870 million people around the world being undernourished, and food shortages exacerbated by climate change, the United Nations, in 2013, made food security a priority. This study aimed to develop a food waste reduction program model to assist with designing and delivering effective responses in relevant institutions. This study conducted desktop review of literature, detailing proven practices in food waste management systems and synthesised key success factors. Three cases, from San Francisco, Taiwan, and South Korea, were chosen for further analysis because they have a proven track record of success. The study also proposes a program for designing, implementing, and evaluating future food waste management programs. The findings have identified significant policy opportunities for food waste management strategies and have provided an opportunity to develop food waste guidelines as many work towards the 2030 Sustainable Development Goal of halving global food waste.

INTRODUCTION

Sustainable development is at the core of our human existence and has evolved as a significant policy concern for governments and business organizations (Mebratu, 1998). The Brundtland report (1987) which brought this concept to the forefront defines sustainable development a "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987). In 2015, a universal agreement was signed by 193 UN Members States to end poverty. The 17 goals consisting of 169 targets were adopted to address rapidly changing landscapes and developmental initiatives affecting the environment, economies and the social spheres of existence (United Nations, 2015). It is vital to take into cognizance the universal nature of these goals and the freedom embedded in member states to monitor outcomes and progress nationally, using guidelines provided by the United Nations. With projections of global human population increasing to 9.3 billion by 2050 and forty-seven percent of the growth in sub-Saharan Africa (Hanson, 2013), it is pertinent for Africa to combat food insecurity. The Millennium development goals (MDGs) reflect the commitment to sustaining future generations.

Zero waste, one of the most innovative concept of the century (Zaman, 2003 &Zaman, 2004) is a key area for achieving Sustainable development. Several developed countries have implemented zero waste agendas to conserve depleting resources. Many developing economies can benefit from the zero waste concept. This chapter contributes to institutional development in Africa by elaborating on how African countries can use the zero waste concept to their advantage. Overconsumption trends and the materialistic culture of consumers has resulted in unprecedented increases in waste, which cannot be sustained by current purchase, use and dispose of in landfills practice. Zero waste encapsulates holistic (Song et al., 2014) visionary and closed-loop (Park & Lah, 2015) concepts of managing waste as a resource. One of the critical areas where the concept of Zero Waste is crucial is in the area of food waste. Food waste is defined as '*food, which was originally produced for human consumption but then was discarded or was not consumed by humans'* (Thyberg & Tonjes, 2016).

There can be little doubt that food waste continues to be a global problem and one that is increasing over time. Over 2 billion people in the world experience moderate to severe levels of food insecurity. There are increasing levels of hunger in sub regions of Africa (FAO, 2019). As concern grows about the wide-ranging impacts of food waste on human society, the economy and the environment, local, national and international institutions are introducing programs and policies aimed at addressing the problem (Thyberg & Tonjes, 2016). These efforts are laudable and must continue to be implemented in line with the best evidence. Although difficult to measure and quantify, the available empirical evidence suggests that food waste makes up a significant proportion of global food production. It is estimated that globally, food waste accounts for approximately one-third (by weight) of all food produced annually (Hebrok & Boks, 2017; Hamilton et al., 2005). Moreover, it is suggested that while the problem of food waste is more significant in highly developed economies than in less-developed ones, it is becoming an issue across countries as economic development, urbanization and affluence increases (Baig et al, 2018; Koch et al, 2018; Gustavsson et al, 2015).

The impacts of ever-increasing food waste for the planet and society are primarily acknowledged and have been well described in the literature (Park & Lah, 2015; Secondi et al., 2015; Lundqvist, 2008; Asomani-Boateng & Haight, 1999).

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