

USING GREEN AND DIGITAL TECHNOLOGIES TO REDUCE FOOD WASTE AT THE CONSUMER LEVEL

CASE STUDY: DOHA, QATAR

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Consumer food waste in Doha

More than 90% of solid waste is generated in urban areas in Qatar. The capital, Doha, alone contributes to about 60% of the overall solid waste generated in the country, primarily due to high levels of industrialization. It is estimated that food waste accounts for about 60% of the urban solid waste in Qatar¹ and is considered one of the most pressing environmental problems due to the increasing rate of generation. To date, average food waste in Qatar is estimated between 0.7 kg and 0.9 kg per person per day for the food service sector², and between 0.7 kg and 1.5 kg per person per day for the food waste that makes up part of the country's overall municipal solid waste³.

There is a general lack of awareness about the consequences of food waste in Qatar. There is also no urban composting infrastructure in Doha, and most of the waste generated in the city, including food waste, goes to landfill. Rules about selling food close to the expiration date and food products with damaged packaging are very strict. For instance, some food products can be sold up to 12 nights before their expiration, and will then be removed from the shelves; food with damage to its external packaging is not allowed to be sold or donated.



60% of the overall solid waste in Qatar is generated from Doha.



60% of the urban solid waste in Qatar is composed of food waste.



Average food waste in Qatar is estimated **0.7-0.9 kg** per person per day for the food service sector.

¹ Al-Maaded, M.; Madi, N.K.; Kahraman, R.; Hodzic, A.; Ozerkan, N.G. (2012) An Overview of Solid Waste Management and Plastic Recycling in Qatar. J. Polym. Enviro, 20, 186–194; UN Environment Programme (2019). Waste Management Outlook for West Asia; World Bank What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050 - WB, 2018.

² Abdelaal, A. H., McKay, G., & Mackey, H. R. (2019). Food waste from a university campus in the Middle East: Drivers, composition, and resource recovery potential. Waste Management, 98, 14–20. <https://doi.org/10.1016/j.wasman.2019.08.007>.

³ Estimation based on research by the UNEP "Using Green and Digital Technologies to Reduce Food Waste at the Consumer Level" project.



Tackling the waste problem

The Government of Qatar has pledged to implement the 2030 Agenda for Sustainable Development, including Target 12.3 on food waste. As stated in the Second National Development Strategy (2018- 2022), the country has two targets regarding waste reduction and prevention: to fix the domestic waste generation rate under 1.6 kg per capita/day during the period 2018-2022; and to recycle 15% of the solid waste by the end of 2022. Reducing food waste is also included in the country's National Food Security Strategy 2018-2023.

The Domestic Solid Waste Management Centre (DSWMC) in Mesaieed is the largest composting facility in Qatar. It started operation in 2011 and has full capacity to process 550 tons of waste per day. The Ministry of Municipality and Environment has supported a nationwide initiative at Al Khor Park⁴ to turn food waste and tree leaves into organic fertilizer through a recycling machine. Wahab, a business start-up based in Doha, collects – with the help of volunteers (up to 200) and partners – excess food, package it and deliver to beneficiaries. The Qatar Foundation promotes food waste prevention and reduction through its Education City campus initiative, food services group, and webinars and events. The Sustainability Club at Georgetown University in Qatar has been tackling the challenge of food waste by introducing their campus community to “upcycling” through a collaboration with Qatar Upcycling & Biodegradables

Enterprise, an environmental technology company that offers on-site mobile units that turn food waste into compost.

Household food waste is also addressed through awareness-raising campaigns and information-sharing activities to influence consumer behaviour towards generating less food waste. One example is the Sustainable Ramadan Campaign led by the United Nations Environment Programme (UNEP), which calls on those marking this holy month to adopt sustainable living practices, such as shopping for more sustainable food products, cooking creatively and using leftover ingredients, planning meals ahead of time and controlling portions. Wahab also promotes the use of family compost bins and runs awareness-raising campaigns through social networks, especially via Facebook. Other measures include school education programmes, compost bins in private gardens, technological support to food management and planning services through digital apps.

While all the initiatives against food waste in Doha have been welcomed by the public, implementation remains fragmented, with uncertain impacts and growing pressure from an increasing population.

⁴ Ministry of Municipality and Environment of Qatar, April 2018, “MME launches initiative to turn organic waste into fertilizer”, <http://www.mme.gov.qa/cui/view.dox?id=702&contentID=5485&siteID=2>.



Role of green and digital technologies

Studies show that apps designed to support consumers in reducing food waste could be highly beneficial to international students and workers (representing 88% of the population), who spend a significant part of their income on food. Georgetown University in Qatar and the Qatar Upcycling & Biodegradables Enterprise have placed a machine on the university campus to turn food waste into compost within 24 hours. Wahab is also selling smart bins in Doha for home composting, equipped with advanced technologies to avoid bad odors.

There is also a huge potential to raise awareness about the benefits of separating food waste (source separation) to create value out of waste. Supporting circularity throughout the food value chain by using garden compost or growing indoor plants may play a major role in triggering behaviour changes towards sustainable lifestyles. Wahab is also testing mobile applications (e.g. Food Rescue Hero) to optimize operations by matching supply and demand. A social media surveying tool will be tested to gather information about household food waste through social media.



The way forward

The Municipal Government of Doha can provide better urban waste management infrastructure – such as separate waste collection, recycling and composting stations – in the city, and promote a mandatory separate collection of organic waste. Public entities have an important role in coordinating intervention strategies, including through the creation of stakeholder committees with key actors along the food value chain. They could also take the lead in monitoring and measuring progress towards SDG Target 12.3 and ensure accountability.

As one of the most dynamic cities in the world with a fast-growing economy, Doha has hosted a great number of innovative businesses. There is growing interest from these businesses to address food waste and harness the opportunity arising from the latest green and digital technologies. Civil society groups in Doha could enhance its efforts in engaging with volunteers for awareness-

raising and recycling activities. The philanthropic community can use its influence to drive change and support innovative business models that use green and digital technologies to solve the food waste problem. Media could further highlight the implications of food waste on the environment and disseminate successful stories of champions and pioneers fighting against food waste. Consumers have a key role to play as well. With a population growing at a rate of 1.23% and a median age of 33.7 years, there is great potential to boost behavioural change, particularly in the younger generation, based on better information. According to Qatar University’s Social and Economic Survey Research Institute, a good tool to raise awareness would be through social networks, which are being used by about 95% of the country’s population.



Project partners



Qatar Foundation: Education, Research, and Community Development



Food donation in Qatar | بهو | Wahab



Data Center | Qatar University



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GU-Q Student-Led Sustainability Club - Office of Facilities Management

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