## Status of women in the global waste management sector

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Historically, the solid waste sector has provided limited interest and opportunity for women, as a career choice. However, with the growing global paradigm shift around "waste as resource", the move away from landfilling towards waste prevention, reuse, recycling and recovery, and the fervour around circular economy opportunities, more women are finding the sector an attractive one to develop their careers in. Women are flourishing in all areas of the sector, from entrepreneurs in waste recycling, to researchers, high-level managers, and Ministers. However, socio-cultural barriers and market-oriented risks still exist, and motivational factors, including lack of confidence persist.

A number of studies have been conducted on women in the waste sector, related to effective management of solid waste and resources (Furedy 1990; Gunsilius et al. 2011; Dias and Ogando 2015) and creating wealth from the proper treatment of solid waste (Khanna and Mohan 1995). Most of the studies focus on women in the Global South, and the important role that they play in the sector, including the need for greater empowerment in the economy (Sinha 2004) and in natural resource management (UNEP et al. 2013). Studies have explored the gender roles in waste management (Buckingham et al. 2005; Muhammad and Manu 2013), including women's role in the informal waste sector and the challenges they face (Dias and Ogando 2015; Gunsilius et al. 2011). However, no studies present the statistics on women in solid waste management on a global scale.

"Women of Waste" (WoW), created by women in the waste management industry, to advocate and spotlight women's work and achievements in the waste sector, was launched at the Baltimore ISWA 2017 Congress. At the launch, it was agreed that research be undertaken to establish a 2018 baseline of women working in the waste sector around the world. The intention of the research being to showcase the magnitude and extent to which women are active in the waste sector. Moreover, the study aims to give inspiration and motivation to young women entering the sector.

The research is based on a global online survey, conducted between January and June 2018. The questionnaire was prepared by an international research team and distributed, with the help of ISWA and WoW members, to networks around the world. To encourage a high participation rate of the self-administered questionnaire, and to allow for statistical analysis of the data, the questionnaire was kept short, to seven closed questions. These questions included: (i) participant age, (ii) years' experience in the waste sector, (iii) highest level of education; (iv) main area of work as aligned to the waste hierarchy; (v) type of organisation employed within; and (vi) highest level of responsibility. The online survey has been completed by 768 women. Following data clean-up, a total of 626 useable data points were finally subjected to further statistical analysis using Microsoft Excel .

The authors acknowledge that online purposive samples may contain biases (Barrat et al. 2015). Furthermore, since the population size in this case is unknown, it is recognised that the results presented in this paper cannot be used to draw inferences about the wider population of women working in the global waste sector. The present study intends to provide a first overview of the proportion of women involved on waste management activities around the global, which serve as basis for further analysis on gender and waste.

The results of the 2018 global Women of Waste (WOW) survey, the first global survey of women working in the waste sector, shows that women contribute significantly to the global waste sector, bringing their knowledge and experience to a variety of roles across the waste management hierarchy, and through a diversity of organisations in both the public and private sectors. Data from the online survey shows that women are entering the sector at various stages along their careers, from young, new entrants, to well established, highly experienced women. The majority of responses (88.0%) were received from upper-middle and high-income countries. However, many highly qualified and experienced women are active in low- and lower-middle income countries, with 90.7% of respondents from these countries having a degree or post-graduate degree. While landfilling remains the predominant technology choice for managing waste globally, it is not the career preference for women, with only 12.5% of respondents working in landfill management. 51.6% of the respondents work in waste prevention, reuse/repair/refurbishment and recycling, reflecting the paradigm shift happening in the sector. The majority of respondents currently work in local government (30.2%), followed by private waste management companies

(14.4%) and consulting/engineering companies (13.3%). The largest number of responses were from women who "Work in a team" (32.6%) and who "Manage project / department" (31.8%), however, women have broken into higher management positions, managing regional operations and serving as company directors, chief executive officers and elected representatives in political office.

Building on this global survey, furthermore qualitative research will involve profiling, in more detail, the careers of 20-30 women – women who inspire, challenge and change the world around them. It is also important to the WoW-team to showcase the amazing work that women in the informal waste sector are doing, by diverting waste away from landfill, often from open dumpsites in developing countries.

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