

# Mapping the status of women in the global waste management sector

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## EXECUTIVE SUMMARY

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 626 women across 73 countries 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.

## INTRODUCTION

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 development workers, researchers, high-level managers, government officers 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.

The “Women of Waste” (WOW) group, created by women in the waste sector to empower, advocate and spotlight women’s work and achievements in the waste sector, was launched at the Baltimore ISWA 2017 World 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.

## METHOD

The global survey was conducted by means of an online survey, prepared by an international research team. 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, with seven closed questions. These questions included: (i) country working in, (ii) participant age, (iii) years’ experience in the waste sector, (iv) highest level of education; (v) main area of work as aligned to the waste hierarchy; (vi) type of organisation employed within; and (vii) highest level of responsibility. The survey was conducted using the online, cloud-based software, SurveyMonkey. Awareness of the survey was created through the WOW, ISWA and author networks, and through social media platforms such as Facebook and Twitter. A total of 768 responses were received from the survey.

The data was analysed in Microsoft Excel. The first step involved data cleaning. This included removing all responses marked as “*No, I am not*” in response to the question “*Confirm that you identify as a woman working in this area*” and all duplicate data entries. The response time taken to complete the questionnaire was also considered to see if the dataset included any “*speeders*”. Following data clean-up, a total of 626 useable data points were subjected to further statistical analysis.

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.

## RESULTS AND DISCUSSION

The results of the data analysis are presented below.

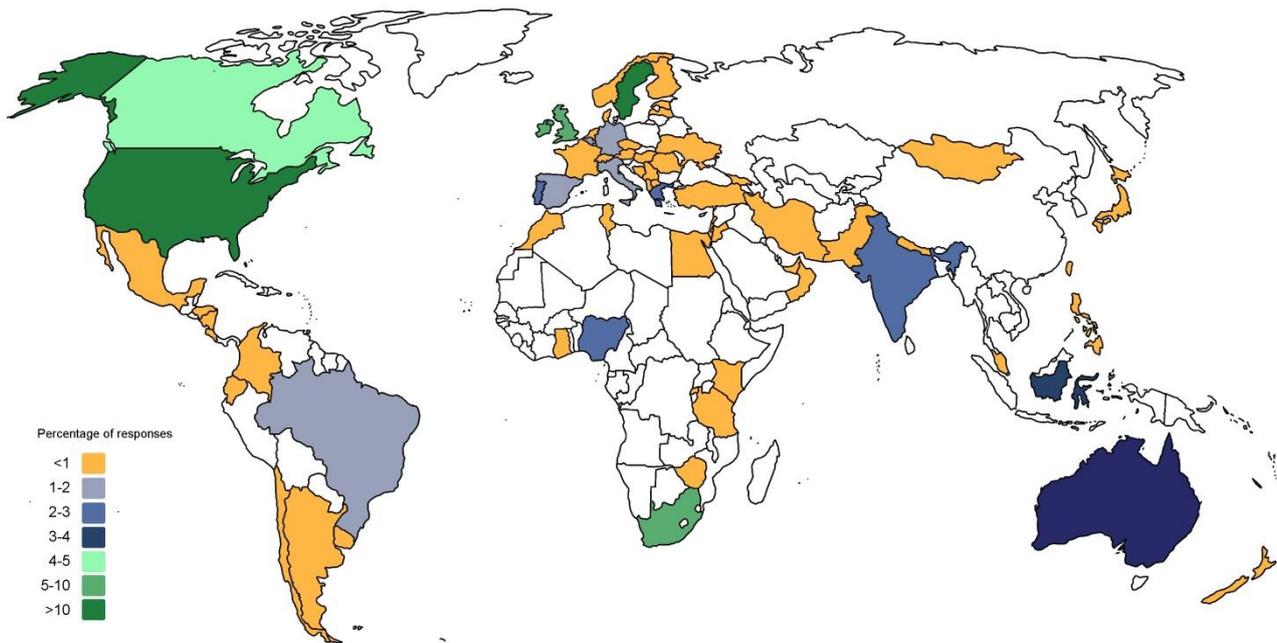
### Spatial Distribution

Responses were received from 73 countries around the world, with the majority (71.9%) from high-income countries (Table 1), but with good spatial distribution (Figure 1), including high response levels across Europe, North America and Sub-Saharan Africa.

**Table 1 Spatial distribution of responses**

<b>Geographic region</b>	<b>% of responses</b>	<b>Geographic region</b>	<b>% of responses</b>
East Asia & Pacific	8.3	North America	17.7
Europe & Central Asia	49.0	South Asia	2.9
Latin America & Caribbean	6.9	Sub-Saharan Africa	12.9
Middle East & North Africa	2.2		

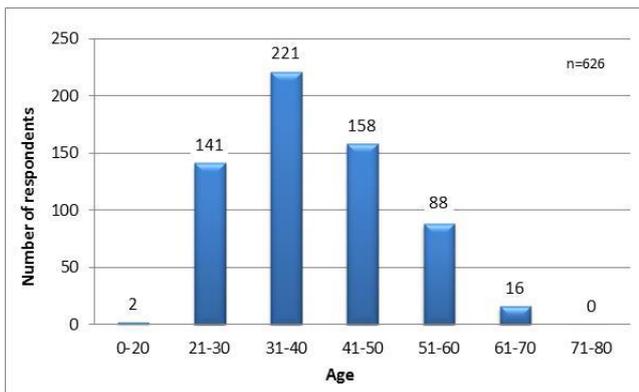
<b>World Bank country income level</b>	<b>% of responses</b>
Low-income	1.0
Lower-middle income	11.0
Upper-middle income	16.1
High-income	71.9



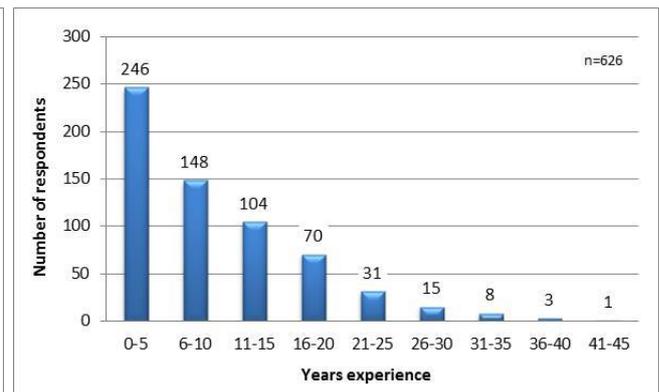
**Figure 1 Responses received from the global Women of Waste survey**

### Age and Experience

A wide range in ages and years of experience of respondents was received (Figures 2 and 3). The average age of respondents was 39 years and the average years of experience working in the waste sector was 10 years. A plot of age versus experience shows that many women have spent their entire working careers in the waste sector. In addition, many young women are just starting their working careers in the sector, and many women are moving into the waste sector at various stages throughout their working careers. The high number of young, new women to the sector is very exciting. An analysis of age and experience of respondents according to World Bank country income level (World Bank 2018), shows a younger average age and a lower average years' experience for women in low-income (33, 6) and lower-middle income (35, 6) countries compared to upper-middle income (42, 11) and high-income (38, 10) countries.



**Figure 2 Age distribution**



**Figure 3 Experience (years worked in sector)**

### Highest Level of Education

The data shows that 56.7% of respondents have a post-graduate degree (master's or doctorate) and 85.6% have a university degree or post-graduate degree, showcasing a very high level of education of respondents (Figure 4). There is no significant correlation between the average age and years' experience of women, and the highest level of education, although as to be expected there is a slight increase from bachelors to master's to doctorate (Figure 5).

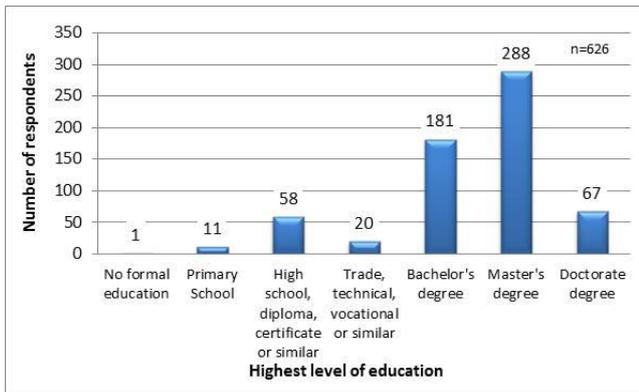


Figure 4 Highest level of education

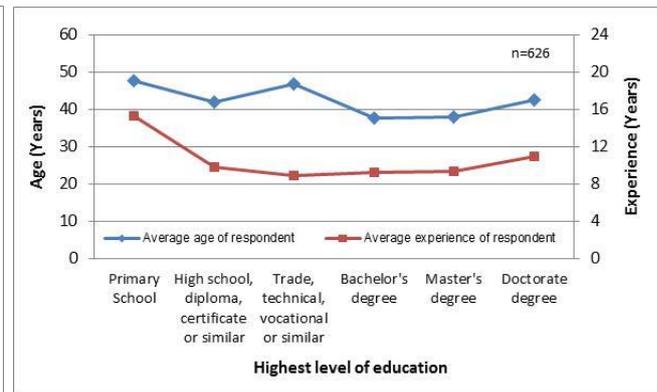


Figure 5 Average age and years' experience

There is also no real difference in the highest level of education between respondents from different countries, when analysed against World Bank country income level, with roughly 45-46% of respondents across low/lower-middle, upper-middle and high-income countries having master's degrees, and 9-16% having doctorates. Interestingly, a higher percentage of respondents from low/lower-middle income countries had doctorates (16.0%).

### Main Area of Work (as per Waste Hierarchy)

Responses were received from women working across the waste management hierarchy, although the number of women working in "Waste re-use, repair or refurbishment" and in "Waste sorting", were relatively low (Figure 6). The highest number of responses (27.5%) were in "Waste recycling", followed by "Waste prevention / cleaner production" (20.0%). As with education level, no significant difference in age and years' experience was evident across the different areas of work, although women working in landfilling had a higher level of years' experience than the other areas. The results highlight the opportunities for women in building careers across the waste management hierarchy. An analysis of areas of work by country income level, shows a greater number of responses from women working in "Waste recovery - (typically energy recovery)" in high-income countries (Figure 7). This is not surprising since waste recovery, as a technology solution, has not been widely adopted in most low-, low-middle and upper-middle income countries, and as such, offers limited employment opportunities at present.

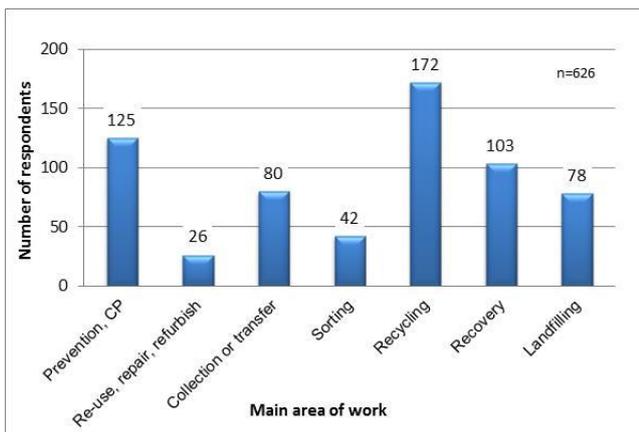


Figure 6 Main area of work (waste hierarchy)

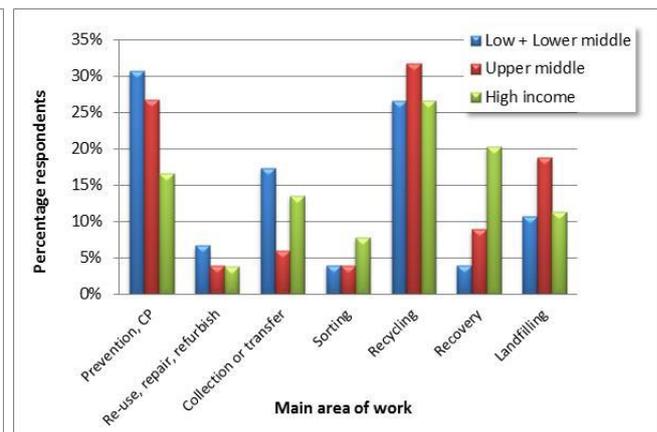


Figure 7 Main area of work (by country income level)

### Type of Organisation (Place of Work)

The majority of respondents currently work in "Local government, municipality or similar" (30.2%), followed by "Private waste management company" (14.4%) and "Consulting / Engineering company" (13.3%) (Figure 8). As with previous results, no significant difference in age and years' experience was evident across the different organisation types (Figure 9). The results highlight the opportunities for women in building careers across different organisation types in both the public and

private sectors. An analysis of type of organisation by country income level, shows a greater number of responses from women working in “Associations, NGOs, voluntary groups, or similar” in low/lower-middle income countries (28.0%) than in high-income countries (6.7%). A high percentage of responses from women working in “Local government, municipality or similar” was evident for high-income countries (39.8%) compared to low/lower-middle income (8.0%) and upper-middle income countries (4.0%). A higher number of responses were also received from women working in “Academia / Research and Development” in upper-middle income (18.8%) and low/lower-middle income (16.0%) compared to high-income countries (8.7%).

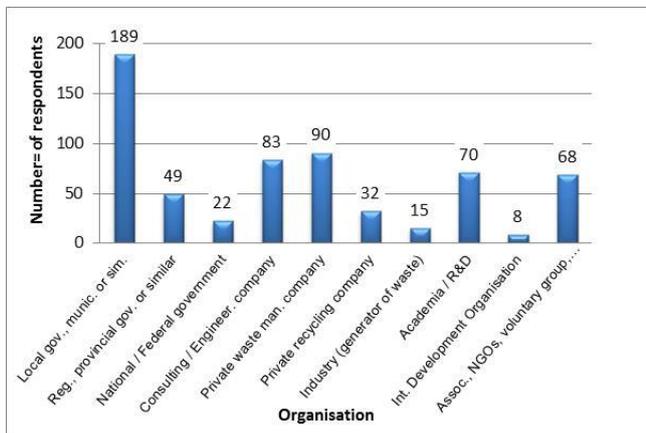


Figure 8 Type of organisation

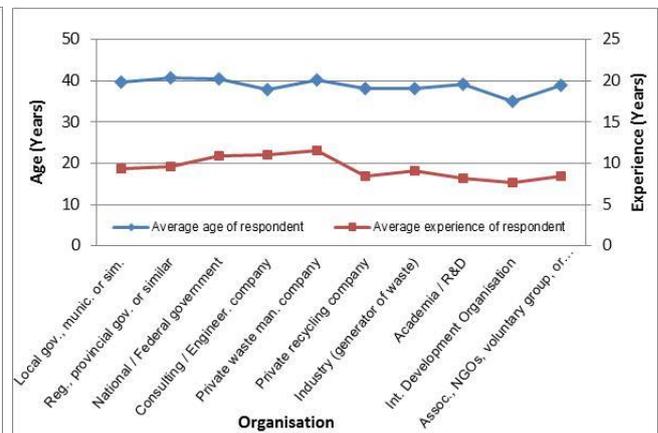


Figure 9 Average age and years' experience

### Highest Level of Responsibility

The largest number of responses, in terms of highest level of responsibility within the organisation, were from women who “Work in a team” (32.6%) and who “Manage project / department” (31.8%) (Figure 10). The majority of responses would however, be considered from women in teams and lower/middle level management positions (82.3%). Unlike the other parameters, an increase in age and in years' experience is evident as women move from working in a team and working independently, to managing regional operations and company or facility director (Figure 11).

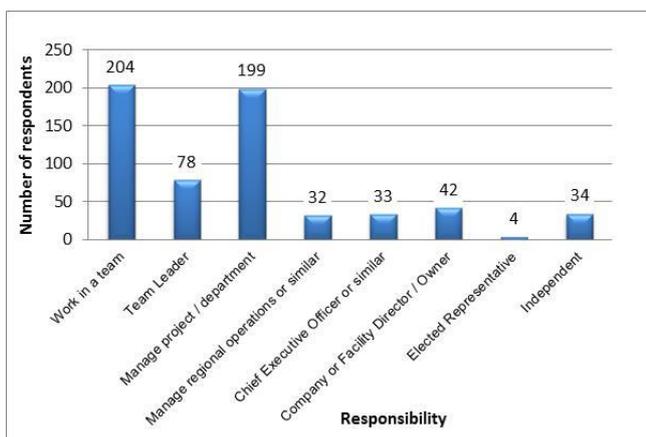


Figure 10 Highest level of responsibility

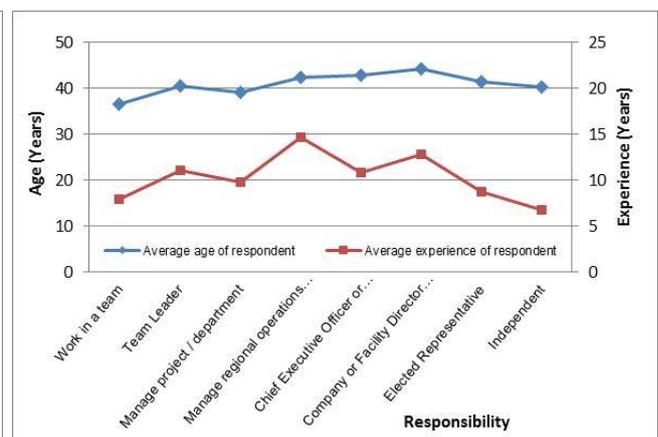


Figure 11 Average age and years' experience

## CONCLUSIONS

The results from the analysis of 626 data points from 73 countries shows that women are active in the waste sector, with careers across the waste management hierarchy and across different organisation types, both in the public and private sectors. Very little correlation was found between age and years of experience for most parameters, suggesting that opportunities exist for women of varying age and experience. This is true also across countries of different income level. From the responses received, 58.1% of women are below the age of 40. The number of young, new women to the waste sector is

very encouraging, both as a career of choice, but also in providing new and innovative perspectives to tackling the waste issues facing countries globally. 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 low- and lower-middle income countries having a degree or post-graduate degree. While landfilling remains the dominant technology solution for dealing with waste globally (World Bank 2012), it is not the major career preference for women in the sector, with only 12.5% of respondents working in landfill management. What is exciting, is the 51.6% of respondents working in waste prevention, reuse/repair/refurbishment and recycling, reflecting the paradigm shift that is happening in the sector, which is grabbing the attention of the youth. Building on this global survey, further quantitative and qualitative research is planned by WOW, and will involve profiling in more detail the careers of women who inspire, challenge and change the world around them, including the valuable work by women in the informal waste sector.

## ACKNOWLEDGEMENT

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