





## THE AWARENESS AND UNDERSTANDING OF ENVIRONMENTAL DEGRADATION IN DHAKA (BANGLADESH) URBAN AREA: A GENDER PERSPECTIVE

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### Abstract

Growth efforts and the growing population have been creating an adverse impact on our bio-diversity therefore human health is at higher risk, and human civilization came closer to a severe Environmental crisis. Impacts of environmental degradation especially of air and water pollution have been severe and challenging in Bangladesh, and generally, city dwellers face higher pollution levels than rural residents in their everyday lives. The broad aim of this study is to assess the environmental awareness level of the population of Dhaka city. Based on both primary and secondary data, the study reveals a huge lack of awareness of environmental challenges and the necessity of handling these concerns with appropriate initiatives. Gender perspective reveals women's potential areas of contribution to handling environmental challenges. Both men and women need to be brought under strategic environmental awareness and education programs for sustainable and healthy urban life in Bangladesh, the study concludes.

**Keywords:** Environmental crisis. Awareness. Bio-diversity. Gender. Urban Dhaka.

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# 1 Introduction

## Background

**R**apid economic growth, increasing population, fast urbanization, and modern lifestyle have exponentially triggered the pace of consumerism and added piles of residue on a daily basis to the environment. This is creating an adverse impact on our bio-diversity therefore human health is at higher risk. As a result, human civilization came closer to a severe Environmental crisis. Currently, environmental crises and their challenges have become a serious concern across the world. Unfortunately, common people do not have generic awareness of the potential extent of the impact of the deterioration of weather and environmental conditions. A common person hardly knows that air pollution is one of the deadliest, and contributed to 6.7 million deaths which is ranked fourth among global risk factors for mortality, after high blood pressure, tobacco consumption, and poor diet, State of Global Air Report (SGAR, 2020). The increasing population has consistently been contributing by raising the amount of solid and liquid wastes and the associated costs without realizing their long-term implications for the upcoming generations (AHSAN; ZAMAN, 2014). Environmental challenges are particularly disastrous in low-income countries having even lower levels of understanding and awareness. These countries cannot keep themselves away from addressing the critical environmental challenges of climate change and emissions that are mainly produced by developed nations. According to a World Bank (WB, 2022), estimation, 75-80% of the effects of climate change are being felt by the least developed countries.

Level of environmental awareness and understanding vary across countries, regions, cities, and even within different parts of the communities. Overall, about 40% of adults worldwide have never heard of climate change, and this rises to more than 65% in some developing countries, like Egypt, Bangladesh, and India (LEE, et al., 2015). Developed countries are relatively better positioned in this regard. According to a study by Hobson (2002), in North America, Europe and Japan, more than 90% of the public is aware of climate change. In this context, basic and environmental education are among the determining factors. A study has mentioned, improving basic education, climate literacy and public understanding of the local dimensions of climate change is vital for public engagement and support for government for climate action and solutions (LEE, et al., 2015). Environmental education can nurture the awareness that the sustainable development of a society can be achieved if individuals adopt environmentally friendly behaviors and an environmentally oriented lifestyle (SHUTALEVA, et al., 2022).

The impacts of environmental degradation especially of air and water pollution have been severe and challenging in Bangladesh. Within the country, generally, city dwellers face higher pollution level than rural residents in their everyday lives (BERNHARD, et al., 2013). According to a recent World Bank (WB, 2022) estimation, air and water pollution caused nearly 28% of deaths in the country. The situation in the urban area is even worse as compared to the rural population. When it comes to air pollution, the quality of air is extremely unhealthy in the capital Dhaka and other metros for almost 114 days and that is mostly due to brick kilns operation in winter (KEMPER; FAN, 2018). As a matter of fact, lack of awareness and understanding and faulty consumerism are widely visible among people of the country. To tackle the devastating impact of the environmental crisis, common people both male and female must be brought under the spectrum of deep understanding and action. Unfortunately, urban Dhaka is not apart from others even though is better in access to education and major amenities of modern life as compared to the rural inhabitants of the country.

## Research Questions and Objectives

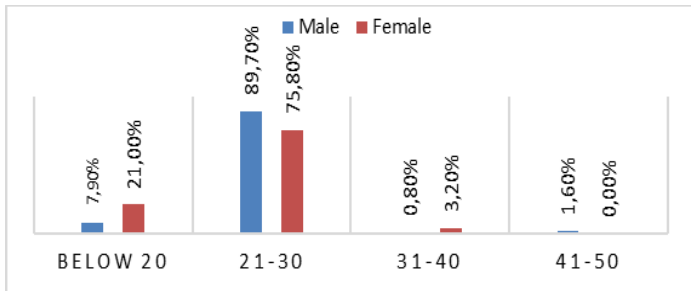
Against the above background, the study identified research questions focusing on the youths (male-female) of the capital city of the country who might be the future agents of change: What is the current status of environmental awareness and understanding amongst the young males and females in Dhaka, the capital city of Bangladesh? What types of activities and common practices are there to tackle environmental degradation associated with the use of consumer goods and handling garbage? Are they engaged in any recycling or reuse practice as part of the reflection of their environmental awareness and understanding?

The broad aim of this paper is to assess the environmental awareness level of the population of the Dhaka city. Specific objectives of the study are: one, to examine environmental awareness among population of the Dhaka city; two, to analyze gender differences in terms of environmental awareness in connection with pursuing household activities and associated behaviors; and three, to reveal the areas to be focused on to improve awareness amongst the population of the Dhaka city.

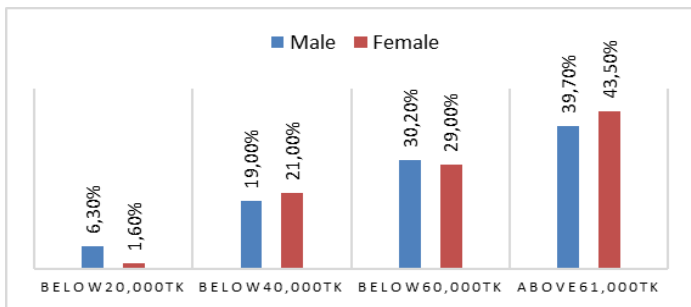
## 2 Methodology

The study is based on published research and survey. Apart from published articles from journals, reports published by some International Organizations and local NGOs were important sources. The survey was conducted among the educated urban people of Dhaka city.

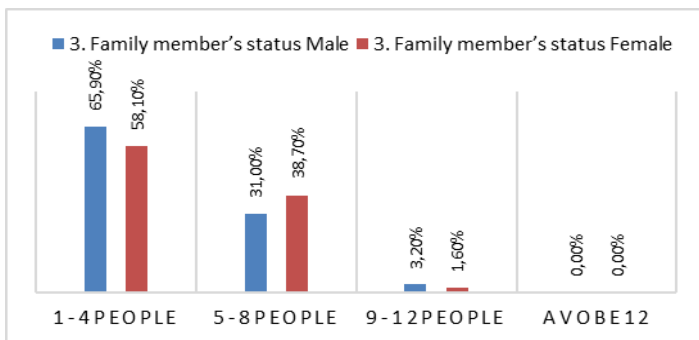
A total number of 250, male and female respondents of different age groups, the majority from 21-30 years were covered from urban Dhaka city<sup>1</sup>. Before finalizing the questionnaire for gathering primary information, a pilot survey was conducted. The age distribution, income distribution, and family structures of the respondents are shown in Figures 1, 2, 3. Youth groups are particularly focused in the study, and of the male respondents, 90% and of the females 86% were unmarried respondents.



**Figure 1.** Age Distribution of Respondents.



**Figure 2.** Monthly Family Income.



**Figure 3.** Number of Family Members of the Respondents.

### 3 Results and Discussion

#### Awareness of Environmental Sustainability and Recycling Practices of Urban Areas: Literature Review

<sup>1</sup> Youth below 30 are particularly crucial for the prospects of the country. The National Youth Policy (2017) estimated that the youth population, (aged 18-35) constitutes above 33% of the country's total population. Therefore, it is necessary to address young population of the urban area especially capital Dhaka.

Rapid population growth especially caused by natural increase, and rural to urban migration, is likely to pose important challenges to the sustainability of urban settlements (SZABO, et al. 2016). This is a desired trend to shift to better living and luxurious lives. While humanity desires a luxurious life, it does not consider the environmental problems in its thinking, behavior and achievements (WATSON;HALSE, 2005; NEGEV, et al. 2010). Environmental attitudes are a latent construct; therefore, one cannot observe them directly, and can only infer it from overt responses (LEONE, 1993). However, awareness of environmental concerns improved. Several studies have shown that the majority of people in industrialized countries are increasingly aware of and concerned about climate change and the greenhouse effect (LEISEROWITZ, et al., 2007; TOBLER, et al., 2012). Some studies (e.g. TCHAKERT, 2007; SCRUGGS; BENEGAL, 2012) observed that people with low incomes and poor health may be more likely to be aware of and perceive climate change as a threat than individuals with high incomes and better health. Adomssent found that the level of environmental knowledge could be crucial in turning individuals' behavior toward sustainability (ADOMSSENT, 2013). Generally, the most important dimensions of an individual's environmental awareness appear to be environmental knowledge, values, attitudes, willingness to act, and actual behaviors (AJZEN, 1985; ZSOKA, 2008). Awareness and percent level varies from country to country, and in different regions. Generally, people in most developing countries perceived climate change as a much greater threat than people in developed countries (LUTHANS, 2011).

Environmental awareness is reflected in the lifestyle and behavior of the common people concerning the tendency of using natural resources and protecting the environment and nature.

An environmentally conscious lifestyle means responsible behavior in using natural resources in order to preserve them and includes simple but effective everyday actions such as saving water and electricity, buying ecological goods, recycling, using environmentally friendly means of transportation, as well as bike-sharing (MARANZANO, et al., 2021). Recycling is the best solution to overcome solid waste. Moreover, recycling supports economic productivity, and provides safe, dignified, and secure employment (EZEAH; ROBERTS, 2012).

Gender influences all aspects, including social, economic, and health (NIERENBERG, 2002). In the context of environmental concerns, it is a complex and multidimensional concept that can be defined as the extent that the men and women are emotionally and sensitively committed to environment-related problems and providing support to various environmental protection activities (CHENYANG; AARON, 2015).

Women's and men's roles in environmental protection vary from one country to another and within countries and cultures. It mainly depends on the knowledge, experience, awareness, needs, risks and vulnerabilities, and decision-making power of the respective gender; and women typically report higher levels of concern about environmental and technological hazards in the management of household waste compared to men (PIDGEON; HENWOOD; IRWIN, 2008).

Young people are the key forces having environmental concerns and awareness issues. Young people found a way to claim their concern about this complex problem by participating in an international protest environmental movement, called Fridays For Future, demanding to policymakers to take action to prevent global warming and climate change and make it a priority on the international political agenda (FFF, 2020). This circumstance makes it necessary to educate young people who are receptive to global challenges and ready to solve the urgent problems of our time (GIOLITTO et al., 1997).

Dhaka, the capital of Bangladesh, contributes 40% to the country's total GDP, (ALAM; MAMUN, 2022). A decade of strong economic growth helped Bangladesh reach lower middle-income, but like many other countries in the world, such progress has come at a considerable environmental cost. Rivers around Dhaka are polluted (KEMPER; FAN, 2018).

Air Quality Index (<https://www.iqair.com/bangladesh>), also mentioned that environmental pollution is more acute in this megacity, and Dhaka is one of the worst polluted cities in the world. As Dhaka is an economic and political hub of the country, people from other districts come to this city for better educational facilities, health care services, and job opportunities, overcrowding the city.

Nahar Najmun et al (NAHAR; HOSSAIN; MAHIUDDIN, 2022) found that people over the age of 40, with high levels of education, jobs, and high incomes were more concerned about the environment than others and females in Dhaka (34.67%) were more aware of environmental norms than males through their actions.

Dhaka is having highest density of population. Asia Foundation (AF, 2012) finds that the combination of high population density, low income, weak infrastructure, and its location on a low-lying delta makes Bangladesh especially subject to frequent natural disasters and especially vulnerable to the impacts of climate change. According to the housing census, 31.51% of people live in cities and 68.49% live in rural areas. Urbanization in Dhaka city is taking place rapidly (at an annual rate of 4%) (YUSUF; RAHMAN, 2007).

Due to the highest population density and Dhaka-centric growth, the capital city is struggling to manage garbage and related wastes from households and lacks landfill areas in the city's surroundings. The Dhaka City Corporation is responsible for the collection and disposal of everyday municipal solid waste from the city's 90 wards (local geo-administrative sub-division), however, can collect and dispose of only 40-50% of the total waste generated day due to the lack of funds and infrastructure (HAIL; ALI, 2005).

A significant amount of health and environmental problems are created by the improper waste management systems in Dhaka (AHSAN; ZAMAN, 2014). As a result, the uncollected waste is primarily dumped illegally in the neighborhood's streets, wastewater drains, ponds, lakes, etc. or managed informally (MATTER; DIETSCHI; ZURBRUGG, 2013).

In 2002, Bangladesh was the world's first country to ban plastic shopping bags. Unfortunately, after some time, it became one of the top plastic-polluting countries due to mismanagement of plastic waste. And in the duration of the last 15 years, in urban Bangladesh annual per capita plastic consumption tripled from 3.0 kg in 2005 to 9.0 kg in 2020 (WB, 2021).

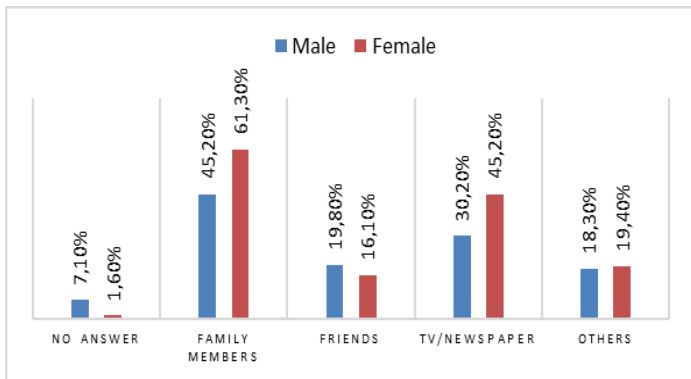
On a positive note, Bangladesh is one of the most vulnerable countries, has adopted Climate Change Strategy and Action Plan (BCCSAP, 2009) in July 2009, the first country in the world to do so, and has also set up the Bangladesh Climate Change Trust Fund (BCCTF) in 2009, which has been receiving annual budgetary allocations for climate action (GoB, 2021). The government has embraced better planning by making environmental sustainability a cornerstone of its Seventh Five-year Plan through 2020.

### **Awareness and Understanding of Environmental Degradation in Urban Dhaka**

Information is crucial for awareness. Family members and media (TV and newspaper) are the main sources regarding environmental issues and concerns for both men and women. It is revealed from the survey that males and females cannot be distinguished significantly in terms of their sources of environmental information (Figure 4).

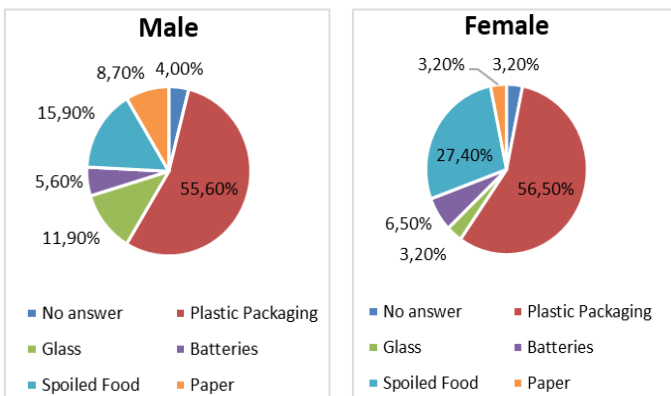
It reveals that media is playing an important role (especially television and newspaper) in awareness building, which is important. Women have extensive reliance on family members on environmental concerns and information seems logical considering the relatively greater family orientation and attachment of women as compared to that of men.

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**Figure 4.** Source of Information about Environmental Pollution/Concerns.

There are common familiarity of the terms associated with environmental pollution- air pollution, high temperature, water and sound pollution, industrial pollution, soil erosion and quality degradation, flood, natural disaster, deforestation, etc. among both men and women, as observed in the survey. According to the survey, nearly half of the male and female respondents are not sure about the term hazardous household waste meaning, whereas only 5.60% of males and 6.50% of females exactly understand and are aware of battery, which is harmful if disposes of along with other household wastes, sounds alarming in this modern hi-tech society, where people are using advance information tools that run on lead powered batteries, etc. (Figure 5).



**Figure 5.** Responses on the knowledge about Hazardous Household Wastes for Environment.

Respondents mentioned the most important environmental issues they face in their surroundings, such as water logging, air pollution, energy wastage, high temperature, garbage management, untimely rain, traffic congestion, etc. Air pollution, water logging, and traffic congestion are identified as most challenging issues around the surroundings for both males and females.

Significant differences between males and females (21.4% and 46.8%) regarding ‘Traffic Congestion’ may be explained by the fact that women always face greater difficulty in public transport in the huge traffic of Dhaka city as compared to that of the man commuters (Figure 6).

When it comes to global environmental issues, respondent males mentioned, food contamination by pesticides, water pollution, air pollution, and climate change main serious issues respectively, on the other hand, females pointed out climate change, air pollution, and food contamination by pesticides as the major challenges. Unfortunately, many males are yet unaware of the global environmental crisis however this number is roughly half of the female respondents (male-56.3%, female-30.6% (Table 1).

**Table 1.** Responses on most concerning environmental Issues globally.

Most Concerning - Global Environment Issues	Male [%]	Female [%]
No answer	56.3	30.6
Climate Change (Polar melt, Global warming, and rising Sea Level)	48.4	51.6
Ozone Hole	19.8	12.9
Air pollution	48.4	33.9
Safe drinking water	31.0	25.8
Sound pollution	25.4	21.0
Desertification	17.5	12.9
Waste disposable and landfill	16.7	16.1
Industrial Pollution	28.6	16.1
Water Pollution	49.2	21.0
Electromagnetic (power lines, cell phones, etc.)	15.1	9.7
Food contamination by Pesticides	56.3	30.6

Note: Multiple Responses. Source: Author’s Data Analysis (2023).

Some daily life behaviors by individuals and family practices also play important roles when it comes to creating awareness on efficient use of energy, willingness to recycle, and a disciplined consumer habit and assisting, government and local bodies’ assistance in policy design for waste collection and management and recycling infrastructure facilitation. Most people use a mixture of modes for transportation, moreover, it is encouraging that the majority of the females use an environment-friendly mode of commuting, rickshaw (40.3%) then public transport, private cars, and auto rickshaw (27.4%, 21%, 16.1%) and rented taxi like Uber. On the other hand, males prefer public transport then rickshaw and walking (44.4%, 38.9%, and 22.2%). The use of office vehicles and bicycles is the least used and unfortunately, no one is interested in car pools (Table 2).

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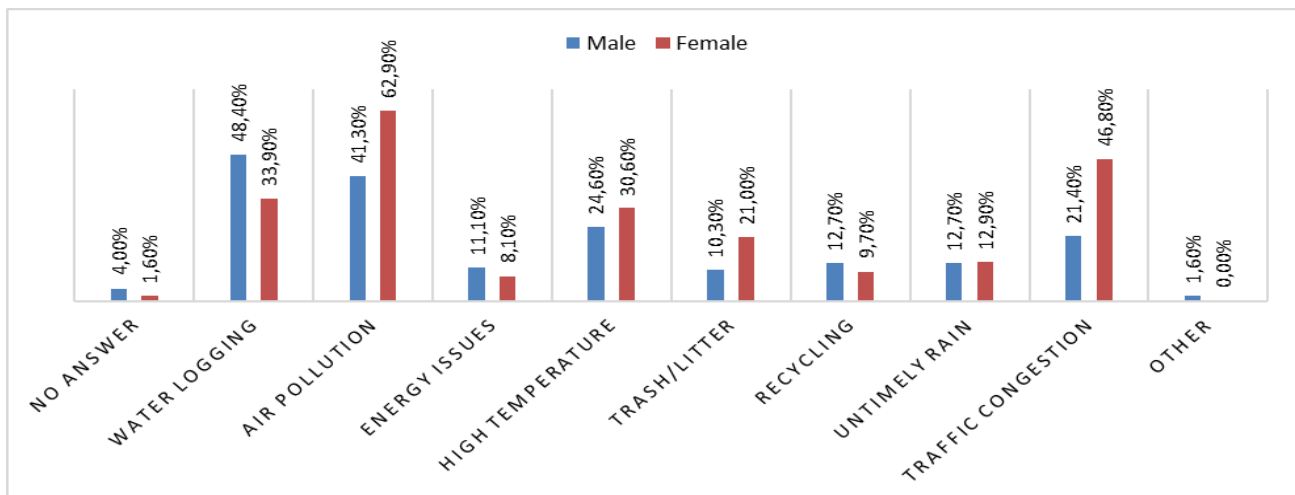


Figure 6. Environmental Problems/Challenges around the Surroundings (Multiple Responses).

Table 2. Responses on Use of Transportation modes in working life/daily life.

Transportation mode in working / daily life	Male (%)	Female (%)
No answer	6.3	8.1
Private car	14.3	21.0
Public transport	44.4	27.4
Office vehicle	0.8	3.2
Car pool	0.0	0.0
Bicycle	2.4	4.8
Rented public transport (Taxi, Auto rickshaw)	12.7	16.1
Walking	22.2	12.9
Rickshaw	38.9	40.3
Others	16.7	6.5

Note: Multiple Responses. Source: Author's Data Analysis (2023).

Home garbage and waste management have huge implications on the environment, and unaware approach to handling that is not uncommon in Dhaka city. When it comes to garbage disposal and management, a portion of (no answer indicates their unawareness/unconcern mostly males-21%) are not aware/concerned about it and others said it is mostly taken care by the mother and other household help. It is the women and other family members that mostly take care of the home trash/disposal and management in Dhaka city (Table 3), and thus awareness of family members especially of women is crucial for handling the environmental impact of home trash/garbage.

Unfortunately, challenges of using plastic bag in Dhaka city, and the necessity of reusing and recycling plastic bags are hardly an issue to bother to a significant number of males (46%) and females (33.9%) in Dhaka city.

Table 3. Handling (Management and Disposal) Trashes/Garbage in Houses (Multiple Responses).

	Male [%]	Female [%]
No answer	21.0	10.0
By you	20.0	12.0
By spouse	0.0	2.0
By other family members	49.0	66.0
House help	27.0	48.0
Others	15.0	2.0

Source: Author's Data Analysis (2023).

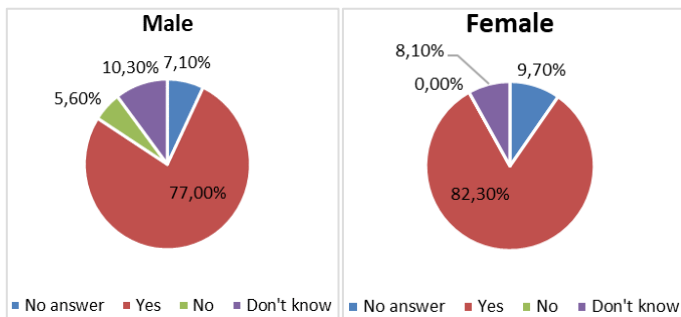
The use of plastic, especially for shopping purposes is common but it is a matter of great concern that yet many are not bothered but some are motivated to reuse it for environmental protection and trying to make it their habit. This tendency is more visible in females (Table 4). The responses (Table 4) also indicate a lack of general awareness among Dhaka inhabitants on the necessity of reusing and recycling plastic banks to save the environment/nature (Table 4).

Table 4. Responses on the Challenges of using Plastic bags and necessity of Reusing/Recycling.

	Male [%]	Female [%]
No answer	46.0	33.9
To save money	10.3	8.1
To protect the environment	23.8	38.7
Habit	18.3	17.7
Moral obligation	6.3	1.6
Other Reasons	10.3	16.1

Source: Author's Data Analysis (2023).

Changing weather pattern is clearly visible around the globe, and these are felt strongly in urban areas like Dhaka city. Most respondents mentioned that they are aware of the changing weather pattern (females 82.3%, males 68.3%) and showed their concerns. Still, though small, a section of inhabitants of Dhaka city do not find any such visible changes in weather patterns (15.1% of males, and 11.3% of females). However, significant portions of both males and females have experienced some forms of health problems due to air pollution and other environmental pollutions in Dhaka city, as claimed. According to the survey, 77% of males, and 82.3% of females experienced adverse health impacts due to air pollution, one of the serious concerns of environmental pollution, which strongly reveals the worst air quality in the capital city Dhaka (Figure 7).



**Figure 7.** Negative Impact of Air Pollution on Personal Health.

Energy Saving is particularly essential to protect the environment and the interest of the future generation. In every household, awareness among individuals might contribute significantly towards that end. The habit of switching off lights/Fans/ACs are crucial step not only for saving the environment but also for saving money. These are ethical issues as well. A significant portion of males (18.3%) and females (21%) are yet not motivated to save energy and are not bothered to switch off lights/fans/ACs after use as a way to save the environment. For about 37% of males, this issue is hardly bothering, which is true for about 27% of females (Table 5).

**Table 5.** Responses on the Concerns on Switching of Light/Fan/AC after Use.

Responses	Male [%]	Female [%]
No answer	36.5	27.4
To save money	22.2	32.3
To protect the environment	18.3	21.0
Habit	9.5	32.3
Moral obligation	11.1	14.5
Other Reasons	7.9	9.7

Source: Author's Data Analysis (2023).

Most male/female are found to be indifferent about the challenges and need of recycling and reusing of glass containers and packaging materials used in the household of the Dhaka city ('No Answer' in Table 6). Especially, the male (54.8% and 54%) have huge lack of awareness on the issue. And higher portion of female respondents is inclined to recycle/reuse glass bottles and jars (packaging containers) for environmental and health reasons (Table 6).

**Table 6.** Responses on the Concerns on Recycling of Glass, Containers, and Other Items used in the Households.

Responses	Glass Recycling		Container/Other Recycling	
	Male [%]	Female [%]	Male [%]	Female [%]
No answer	54.8	33.9	54.0	32.3
Convenience	6.3	1.6	7.1	3.2
To save money	4.8	11.3	7.1	12.9
To protect the environment	20.6	40.3	21.4	45.2
For my health	2.4	4.8	1.6	3.2
Habit	3.2	6.5	6.3	8.1
Moral obligation	6.3	8.1	4.8	3.2
Other Reasons	2.4	0.0	1.6	0.0

Source: Author's Data Analysis (2023).

Regarding accountability to handle the environment, most of the respondents (both males and females) of Dhaka city agree that individuals are responsible/accountable to handle the adverse state of the environment (male 30.2% and female 30.6%). Moreover, national governments and environmental organizations also have great roles to play (Figure 8).

Concerns and awareness of the food quality are important aspects. Environmental degradation is affecting food quality, and health as well. In response to that, organic foods are getting popularity among environmentally aware consumers. Health reasons are identified as the most important factor for buying/preferring organic food by consumers. Currently, people in Dhaka city are increasingly inclined to buy healthy and organic food and mainly females are more motivated to do whereas most males are indifferent (Table 7).

It is good to observe (as claimed) that a significant portion of males and females in Dhaka city have willingness to be part of actions to handle environmental degradation. Due to continuous adverse natural disasters and adverse impacts, the majority of both males and females are ready to educate themselves on environmental issues to fight, whereas females are more interested, as found in the survey (Figure 9).

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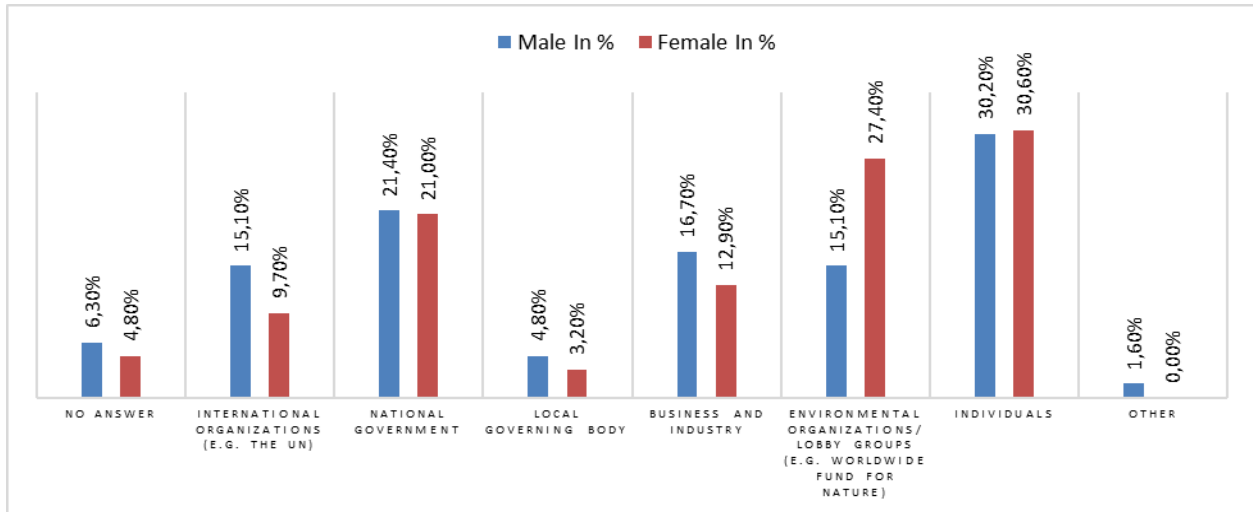


Figure 8. Accountability to Handle Environmental Degradation.

Table 7. Rational for Buying Organic Foods.

	Male [%]	Female [%]
No answer	44.4	27.4
To protect the environment	6.3	8.1
Health	27.8	48.4
Habit	8.7	9.7
Other Reasons	15.8	20.1

Source: Author's Data Analysis (2023).

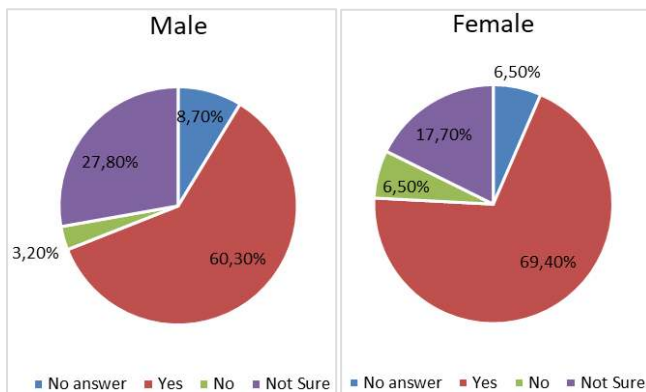


Figure 9. Willingness to be Part of Environment/Recycling Awareness Campaign.

## 4 Conclusions

To handle the devastating impact of environmental degradation, common people both male and female must be brought under the spectrum of deep understanding and action where the capital Dhaka needs major attention. Though urban Dhaka is better in access to education and major amenities of modern life as compared to the rural inhabitants of the country, the data analyses of the study reveal a huge lack of awareness of environmental challenges and the necessity of handling these concerns with appropriate initiatives.

Despite the popularity of TV/media and social media, it is family members that are found to be the most crucial sources of environment-related information. It might be because of the fact that TV/media or social media are not extensively used to draw this information. It indicates that only channeling information through TV/media or social media may not be sufficient to improve environmental awareness among the common people of Dhaka city. Government and other key stakeholders must search for an effective complementary strategic approach to improve the environmental awareness of the population.

It is interesting to observe greater environment-related challenges confronted and concerns raised by the women as compared to that of the men in pursuing household and commuting in Dhaka city. It might be attributed to the greater involvement of women than men in household and family matters, and also their immense struggle in public commuting in the changing weather condition of Dhaka city. Women are also found to be more reliant (than men) on vehicles that are not environmentally harmful. As a whole women are found to be more aware and concerned about environmental challenges, the need for reusing/recycling, and resource-saving.

It is obvious that the level of awareness among the population of Dhaka city is low that demand much improvement for a sustainable and environment-friendly Dhaka city. Though the majority of the population faced health-related challenges due to air pollution and environmental degradation in Dhaka city, their visible participation in the corrective actions is missing. Gender perspective reveals women's potential areas of contribution to handling environmental challenges in the country. As a whole, both men and women need to be brought under strategic environmental awareness and education programs for sustainable and healthy urban life in Bangladesh.

## CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

PS researched and wrote the article. US assisted in data formatting.

## DECLARATION OF INTEREST

The authors declare that there are no conflicts of interest in the course of this study either directly or indirectly.

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