

## WATER GUIDANCE NOTE

# A Data-Driven Framework to Address Gender Issues in Managing Flood Risks

## Flood Risk Management Support Project for the City of Buenos Aires, Argentina

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This study contributes to the broader literature demonstrating the devastating impact of floods on the poor, particularly women, making it very difficult to move out of poverty. Research on flood impacts in low-income communities in Buenos Aires found that most first responders to floods are women and it is them who assume leadership roles in high-risk situations, despite the serious gender gaps in education and economic opportunities they face. They are also affected differently and more adversely than their male peers, bearing primary responsibility for restoring their family's housing and livelihoods after the flood, and for household chores and care duties for children and older adults. The results of this analysis can help decision makers design gender-inclusive approaches for flood risk management, promoting and empowering women as positive agents of change. Gender gap analysis is essential to prevent existing inequalities from being maintained or accentuated as a part of the recovery process.



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## Incorporating a Gender Analysis into a Flood Risk Management Project for the City of Buenos Aires

As a coastal city, Buenos Aires is exposed to extreme weather conditions. Floods are one of main hazards the city faces (figure 1). The main causes are intense rainfall and exceptionally high tides in the La Plata River. Increasing rainfall intensities, combined with extremely low slopes and rapid urbanization that have modified the natural drainage network by diminishing the capacity of soil to absorb water, pose big challenges for appropriate flood risk management in the city.

The “Flood Risk Management Support for the City of Buenos Aires (CBA)” project,<sup>5</sup> approved in 2016, aims at strengthening the city’s capacity to efficiently manage flood risks and improve drainage systems. The project introduced an innovative approach regarding gender roles and differential impacts of floods on men and women. To supplement quantitative analyses drawing on government surveys and other data, an ethnographic and qualitative approach was also taken after the first analysis. As a result of the World Bank’s encouragement, the Government of CBA assessed the different effects of floods by gender. For this purpose, 500 interviews were conducted in two of the city’s basins; 250 were carried out in one of the city’s most vulnerable settlements, Villa N°6, in the Cildañez Stream Basin (CSB). Women from the settlement who had experienced a major 2013 flood participated in the in-depth interviews, which helped reveal the role they played during the event. The interviews consisted of open-ended and closed questions aimed at men and women over 18,

and allowed for a participatory diagnostic, enabling the project’s beneficiary population to identify problems and co-create solutions based on the challenges identified.

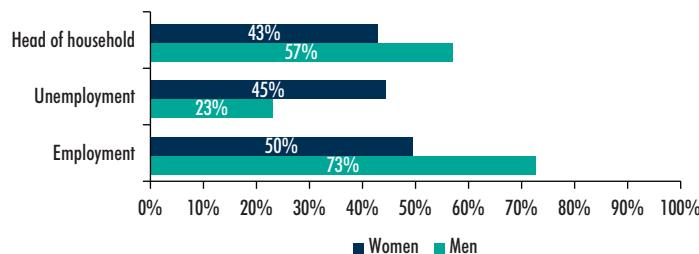
## Social and Economic Challenges in Villa N°6

The quantitative analysis revealed that social and economic vulnerabilities in Villa N°6 exacerbate the existing gender gaps (figure 2).

Moreover, gender inequalities in Villa N°6 are greater than in the rest of the city. For instance, 7 out of 10 women older than 25 years have not completed secondary studies (Figure 3).

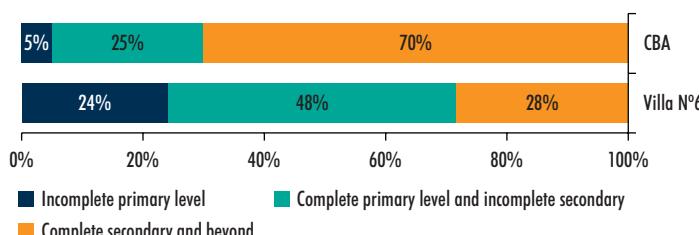
Furthermore, women from this settlement are generally self-employed, work in unstable occupations, and have higher levels of job informality than men. They are usually domestic workers or employed in jobs in the vicinity of the neighborhood (such as commerce or social organizations). Women in Villa N°6 belong to the lowest-income decile in the city, yet are among the hardest working; their participation rate in unpaid work tasks at home is 5 percentage points higher (93.6 percent) than the average time women spend in unpaid work in the city (88.1 percent), according to the city’s Survey on Unpaid Work and Use of Time (Instituto Nacional de Estadísticas y Censos (INDEC), 2013),

**FIGURE 2. Differing Social and Demographic Characteristics of Women and Men in Villa N°6**



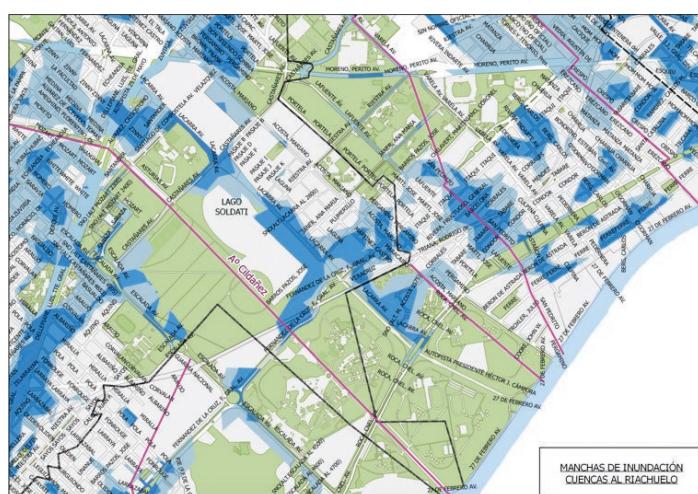
Source: General Directorate of Statistics and Census, 2017.

**FIGURE 3. Low Levels of Education Achieved by Women over 25 in Villa N°6, Compared to the City of Buenos Aires Average**



Source: General Directorate of Statistics and Census, 2017.

**FIGURE 1. Model Output Showing Affected Areas (in Blue) in the Cildañez Stream Basin**



Source: UPE Hydraulic Plan Unit of the City of Buenos Aires, 2018.

Also, it is mainly women who travel outside the area daily. They walk or use public transportation to carry out a variety of daily activities such as shopping, taking children to school, and going to the doctor. When confronted with extreme events, like floods, they are more exposed to insecurity and physical risk due to deficiencies in the urban environment, such as water-logged streets.

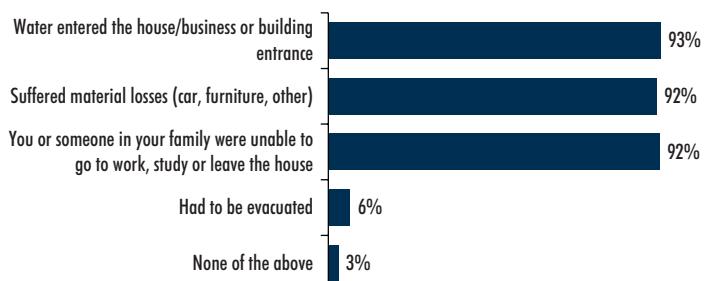
## How Do Floods Affect Women in Villa N°6?

On April 2, 2013, a flood affected 350,000 people in Buenos Aires and resulted in 8 deaths. In the Cildañez Stream Basin, 82.5 percent of the population was flooded; 64.6 percent of residents had to cope with more than 1 meter of water inside their homes (UPE Plan Hidráulico de la Ciudad de Buenos Aires, 2018). Furthermore, more than 90 percent of the Basin's inhabitants suffered material losses and/or were unable to continue their routines, as shown in Figure 4.

The floods affected women's and men's daily routines differently. As seen in Figure 5, a higher percentage of women, compared to men, were unable to carry out activities outside the household, such as studying (70 percent) and working (94 percent). Similarly, the percentage of women who did not suspend their household care activities, such as shopping, running errands or taking family members to health care appointments, was higher than the percentage of men, indicating that women continued to be responsible for household-related activities during and after floods.

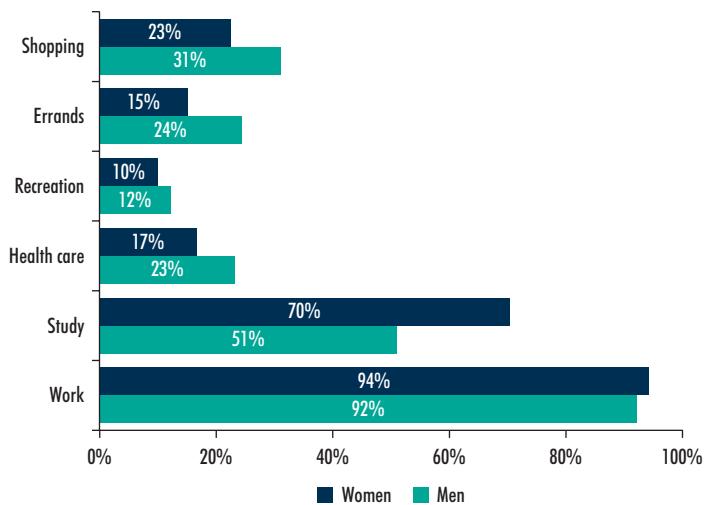
Given the low levels of educational attainment by women, the interruption of their studies due to floods is an additional deterrent to the development of their capacities and employment potential.<sup>6</sup> Similarly, considering that many women in Villa N°6 are employed in domestic work, absenteeism resulted in a loss of their daily income of approximately Arg\$282 (General Directorate of Statistics and Censuses, 2017).

## FIGURE 4. Type of Damages Suffered in Villa N°6 as a Result of April 2, 2013 Flood



Source: UPE Hydraulic Plan Unit of the City of Buenos Aires, 2018.

## FIGURE 5. Activities Suspended by Men and Women of Villa N°6 due to April 2, 2013 Flood



Source: UPE Hydraulic Plan Unit of the City of Buenos Aires, 2018.

## What Roles Did Women in Villa N°6 Play During the Flood?

The in-depth interviews built into the project helped identify that 85 percent of first responders were women and that both men and women helped to protect their property, assets, vulnerable family members, and even neighbors. Yet, after the event, women remained in the house and took primary responsibility for the recovery of the family's housing and livelihood, regardless of whether they worked outside the home or not, while men returned to work immediately. The interviews show that women assume leadership roles in high-risk situations, acting collectively to respond to threats directed to their families and communities.

*Everything must be redone. You have to start over, repair many things, bear the burden. Men suffer, but in a different way.*

—Female interviewee

Qualitative information obtained through the study, along with prior quantitative analysis, helped to illustrate women's potential role as agents of change when responding to flood-risk management challenges. These findings suggest that addressing gender issues in climate-threat scenarios can help adjust policies throughout the project implementation cycle, to provide holistic solutions that reduce the gender gap while managing water-related risks.

## A Framework to Empower Women in Flood Risk Management

A data-driven framework that acknowledges the existing gender issues in the community is vital to ensure that investments respond equally to women and men's needs before, during, and after floods. While projects traditionally focus on addressing risks and threats to citizens' lives and assets, a gender-sensitive framework may allow the initiatives to consider women's livelihoods in particular and value their different social roles as well.

As stated, traditional gender inequalities worsen women's vulnerability during natural hazards, particularly because women are primarily responsible for household chores and care duties, including the rescue or support of children and older adults. The consequences of floods remain with them even after the events have passed, as they take on more responsibilities than their male counterparts in the restoration of their houses and households.

The co-design of household- and community-based nonstructural measures for flood risk management with community participation, and rebuilding a positive relationship with water, can promote gender equality and empower women. Women's key role in the community ought to be recognized and emphasized to encourage innovative approaches that respond to their needs and promote sustainable development. The gender-inclusive flood risk management framework also seeks to strengthen links among women within the community, as well as foster initiatives that address the existing gender gap and recognize its exacerbation due to marginalization and other forms of discrimination because of age, race, ethnicity, disability, and/or migration status.

This framework is organized in three spheres: a gender-inclusive team, a gender-inclusive process, and a gender-inclusive outcome (see Figure 6). It incorporates policy guidelines for every stage of flood risk management: *before*, *during*, and *after* the event, allowing decision makers to understand and act upon the need for an integrative approach and the importance of taking into consideration the different social roles that men and women play in water management.

To develop an *inclusive team*, activities include the creation of a diverse design team to ensure the participation of professionals who can focus on incorporating gender-based experiences identified in the diagnosis phase. The framework also strengthens the implementation agency and

management teams, as well as contractors and supervisory crews, by building incentives in the bidding procedures, as rewarding companies that encourage the hiring and promotion of women.

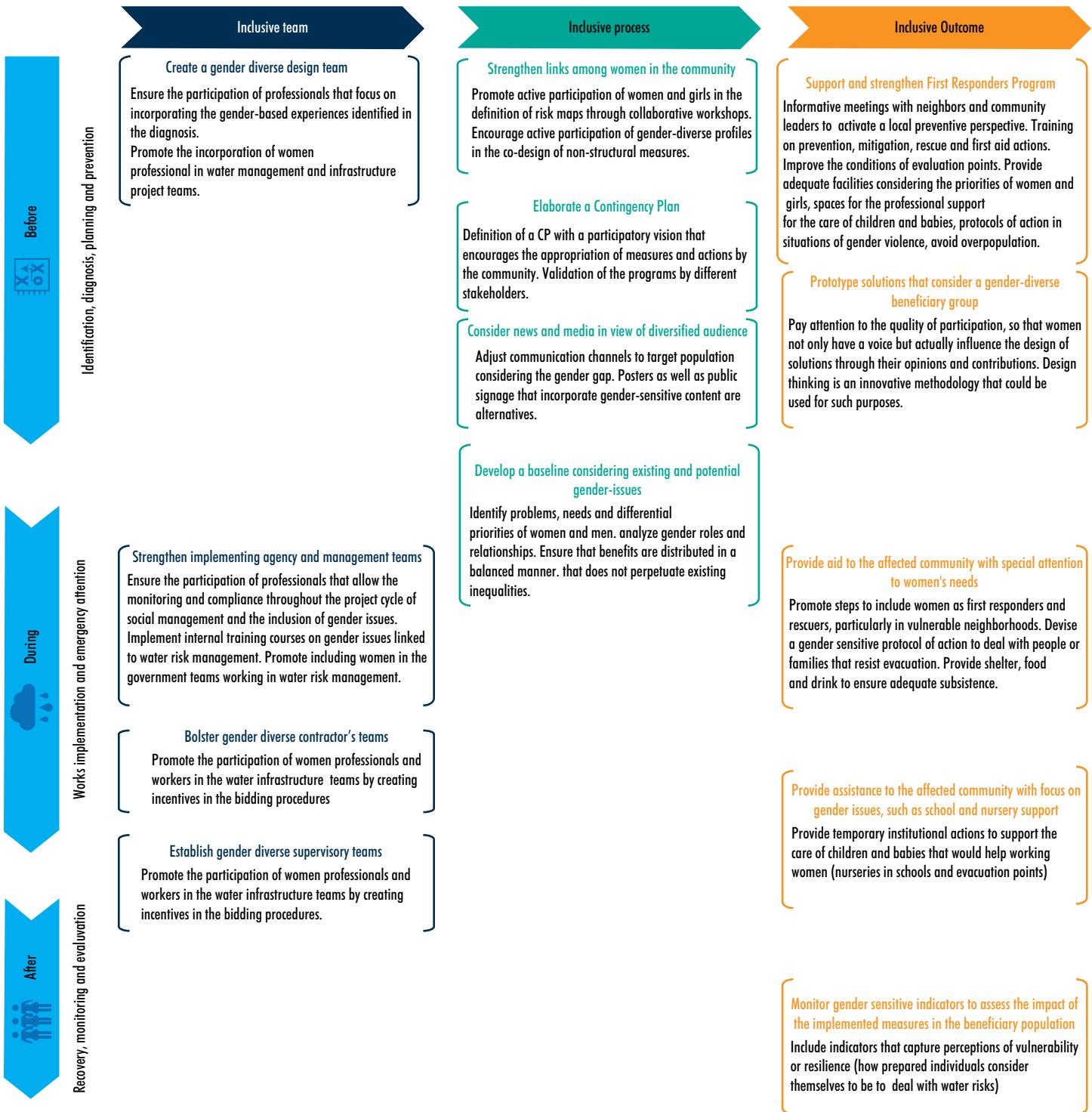
Second, to assure an *inclusive process*, the framework highlights the importance of consolidating the links among women in the community, devising a contingency with these key stakeholders, that helps the population be prepared for such events. It incorporates steps to work with news and other forms of media to adjust communication channels to target a diverse population, taking both men's and women's interest into consideration.

Third, the framework calls for taking steps before floods occur to promote gender-inclusive outcomes. Given that 85 percent of first responders are women, these steps include supporting the First Responders Program, led by Civil Defense, aimed at capacity building for emergency attention in slums and poor neighborhoods. The framework also calls for improving the physical condition of evacuation points and providing adequate facilities considering the priorities of women and girls, including their safety from physical and emotional abuse, and the need for infant and childcare. In addition, the framework supports the prototyping of innovative solutions that take into account a gender-diverse beneficiary group.

For the periods *during* and *after* the flood, the framework focuses on providing aid and assistance to the affected community, with a special focus on women's needs. For instance, guaranteeing temporary institutional actions that support the care of infants can free up affected women to continue their daily activities, especially working and studying, and thus reduce existing inequalities. In addition, gender-sensitive indicators that monitor the efficiency of the framework to address different stakeholder's needs can help ensure that interventions contribute to improving women's socioeconomic situation, especially in vulnerable settlements.

All in all, a data-driven framework, based on a gender-inclusive assessment, enables a more accurate understanding of the vulnerabilities, challenges, and opportunities faced by women and men, and allows the design of suitable actions to meet their different needs. Measures taken before, during, and after a disaster to manage risk that focus on building and strengthening gender-inclusive teams, processes, and hence outcomes can act as positive reinforcements to narrow inequalities between women and men.

## FIGURE 6. Proposed Actions for a Gender-Inclusive Framework for Flood Risk Management



## NOTES

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2. Senior Water and Sanitation Specialist, World Bank.
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4. Water and Sanitation consultant, World Bank.

5. Project # P145686, IBRD Loan # 8628-AR.
6. The Directorate General of Statistics and Censuses (Gobierno de la Ciudad de Buenos Aires, Ministerio de Hacienda, Dirección General de Estadísticas y Censos, 2017) found that on average women's income in the city increases by 33.2 percent when they achieve a secondary level of education.

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