



(REVIEW ARTICLE)



## Empowering women in climate-resilient adaptation: A women, peace, and security (WPS) approach to addressing climate challenges in Bangladesh

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### Abstract

Bangladesh faces serious threats from climate change, especially for vulnerable groups like women. Existing vulnerabilities are made worse by the combination of gender inequality and climate change, particularly in rural areas with little adaptation capacity. In order to empower women in climate-resilient adaptation initiatives, this article studies how the Women, Peace, and Security (WPS) framework can offer a transformative lens. This study identifies ways to improve women's agency in decision-making, ensure their protection against climate-induced vulnerabilities, and fortify their ability to promote sustainable adaptation by incorporating the WPS pillars—participation, protection, prevention, and relief and recovery—into climate action strategies. The study highlights the need of inclusive governance, capacity building, and community-based initiatives in addressing the gendered implications of climate change, drawing on case studies and empirical data from Bangladesh. The results highlight the necessity of coordinating national climate policies with international WPS directives in order to build a society that is more resilient and equitable.

**Keywords:** Women; Peace and Security (WPS); Climate resilience; Gender equality; Bangladesh; Adaptation; Climate change policy

### 1. Introduction

The relationship between gender inequality and climate change has become more apparent in discussions about sustainable development around the world. Women are disproportionately affected by climate change, especially in climate-vulnerable areas like Bangladesh, where it exacerbates pre-existing socioeconomic, cultural, and institutional inequities. Due to its low-lying terrain and significant reliance on climate-sensitive industries like agriculture and fishing, Bangladesh frequently experiences climate-related disasters like droughts, floods, cyclones, and rising sea levels. In this situation, women are frequently the ones who suffer the most from these calamities, and they are particularly vulnerable because of their restricted mobility, limited access to resources, and social norms that limit their ability to make decisions. Gender equity and climate resilience must be given top priority in an all-encompassing, intersectional strategy to address these gendered imbalances.

In this context, the Women, Peace, and Security (WPS) agenda's tenets provide a useful framework for tackling the gender-climate relationship. The WPS framework highlights the vital role that women play in peacebuilding, security, and conflict resolution processes. It was created by United Nations Security Council Resolution 1325 (UNSCR 1325) and later resolutions [1]. This study makes the case for expanding the WPS agenda to address the escalating security threats brought on by climate change, even though it has historically been applied to conflict and post-conflict environments. Particularly in areas like Bangladesh, where livelihoods and human security are intricately linked to environmental stability, climate-related hazards like resource scarcity, natural catastrophes, and displacement have a substantial impact on peace and security.

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The fundamental principles of the WPS framework are in line with empowering women as important participants in climate adaptation initiatives. Bangladesh can promote inclusive and sustainable solutions to its climate challenges by incorporating the WPS principles—participation, protection, prevention, and relief and recovery—into its climate policies and practices. For instance, increasing women's involvement in decision-making ensures that policymakers take into consideration their particular strengths and vulnerabilities. The increased risks of gender-based violence and exploitation that women experience during climate-induced disasters are also addressed by using a protection-oriented strategy.

In order to close the gaps between gender, security, and climate resilience in Bangladesh, this research aims to investigate how the WPS agenda may be operationalized. It draws attention to the transformative power of seeing women as change agents who can promote community resilience and adaptation rather than just as victims of climate change. Bangladesh can lead an integrated strategy to address the simultaneous problems of gender inequality and climate vulnerability by promoting synergies between gender-responsive climate policies and the WPS agenda. Other countries impacted by climate change that want to attain sustainable and equitable development can use this strategy as a model.

## 2. A WPS Approach to Climate Resilience

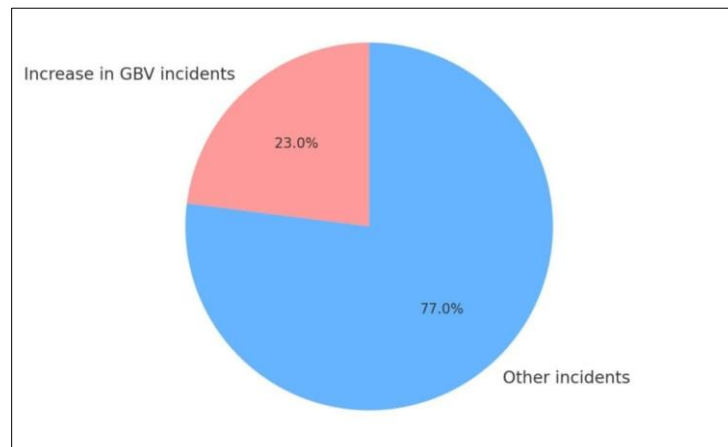
The Women, Peace, and Security (WPS) paradigm offers Bangladesh a crucial perspective for incorporating gender equality into plans for climate resilience. In order to operationalize the WPS framework, national climate adaptation policies and programs must incorporate its four pillars: participation, protection, prevention, and relief and recovery.

### 2.1. Participation

- **Representation in Governance:** In Bangladesh, women are still underrepresented in bodies that make decisions about the climate. For example, women only head 8% of local disaster management committees (UN Women, 2021) [2]. This disparity can be closed through quotas and initiatives to increase the capacity of women in these positions.
- **Grassroots Leadership:** Scaling up women's grassroots networks—like those in charge of agricultural cooperatives and water resources—is necessary to have an impact on national and regional policies. In the Sundarbans, for instance, women-led cooperatives have effectively overseen community money for cyclone recovery.

### 2.2. Protection

- **Addressing Gender-Based Violence:** Displacement brought on by climate change increases susceptibilities to gender-based violence. The number of recorded incidents of violence against women in shelters after Cyclone Amphan in 2020 increased by 23%, according to data from the International Organization for Migration (IOM) [3]. This danger can be reduced by incorporating safety precautions tailored to women into disaster preparedness strategies.



**Figure 1** Gender – Based Violence (GBV) Incidents Increased After Cyclone Amphan (2020)

- **Legal Safeguards:** Current legislation that addresses violence against women must take climate-related factors into account, such as guaranteeing women's safety in makeshift shelters and their access to post-disaster legal systems.

### 2.3. Prevention

- **Economic Resilience:** Targeted interventions can lessen vulnerabilities associated with poverty, such as microfinance for female entrepreneurs in climate-vulnerable areas. According to a 2018 study [4], households headed by women who had access to microfinance had a 30% higher chance of recovering from floods in less than six months than those who did not.
- **Education:** Adult literacy initiatives and school curriculum that incorporate climate adaptation can equip women with the knowledge and abilities they need to adapt successfully.

### 2.4. Relief and Recovery

- **Gender-Responsive Recovery Programs:** The unique requirements of women, such as access to healthcare for mothers or menstruation supplies, are frequently disregarded by relief initiatives. In order to fill these important gaps, policies must guarantee that recovery strategies are inclusive.
  - **Building Back Better:** Women should be at the forefront of planning and carrying out recovery initiatives, making sure that community resources, housing, and infrastructure are reconstructed in a way that is more resilient and gender-responsive.

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## 3. Empirical Evidence

### 3.1. Gendered Impacts of Climate Change in Bangladesh

The effects of climate change are not gender-neutral; rather, they make Bangladeshi women and children's pre-existing socioeconomic vulnerabilities worse. Economic inequality, cultural norms, and restricted access to resources are some of the elements that influence these vulnerabilities.



**Figure 2** Displaced woman - led family at Khulna (2007) living in a temporary shelter

### 3.1.1. Displacement and Migration:

In Bangladesh, relocation brought on by climate change is one of the most obvious effects. Over 700,000 people have been relocated each year due to rising sea levels, stronger cyclones, and river erosion; estimates indicate that by 2050, this figure might reach 13 million (World Bank, 2021) [5]. Over 80% of the displaced population is made up of women and children, who confront particular difficulties. Traditional family structures have been shredded by displacement, which frequently pushes women into makeshift shelters where they lack access to basic essentials like food, water, and sanitary facilities.

One major issue in situations involving displacement is gender-based violence (GBV). Displaced women are more likely to experience domestic abuse, underage marriage, and human trafficking, according to research from coastal areas like Khulna and Satkhira. Due to their limited involvement in relocation planning processes, women in these communities also experience a major loss of autonomy and dignity. There is an urgent need for policies that address these overlapping vulnerabilities, such as community-based GBV prevention initiatives and gender-sensitive relocation methods.

### 3.1.2. Agriculture:

Women in Bangladesh are especially at risk from climate-related disruptions in agriculture because they are the major caregivers and food suppliers. For example, women who depend on subsistence farming are immediately impacted by the reduction of arable land caused by frequent flooding and saline intrusion. According to research by the International Rice Research Institute (2019), over a two-decade period, agricultural yields in saline-affected regions fell by 27%, with women disproportionately affected because they had less options for other livelihoods [6].

Furthermore, women's limited access to financial resources, agricultural extension services, and decision-making authority makes it more difficult for them to implement climate-resilient practices. For example, just 15% of Bangladeshi women farmers reported receiving formal instruction on climate-smart practices, such as using drought-tolerant crop types or water-efficient irrigation systems, despite their substantial contribution to agricultural labor (FAO, 2020) [7]. Targeted interventions are needed to bridge this gap, such as extension programs geared at women and microfinance projects for sustainable agriculture.

### 3.1.3. Health Impacts:

Women's health vulnerabilities are exacerbated by climate change. According to research, women are 14 times more likely than men to perish in disasters; this difference is ascribed to logistical and cultural obstacles [8]. For instance, because of social conventions that limited female freedom of movement without male companionship, many women were reluctant to flee during Cyclone Sidr in 2007.



**Figure 3** Himani Roy (38) a victim of cyclone Alia (2009) collecting saline free drinking water



Beyond the short-term effects of disasters, climate change presents long-term health risks to women. Pregnant women are especially vulnerable; research indicates that maternal mortality rates rise when prenatal and postnatal care services are interrupted during catastrophes. Furthermore, waterborne illnesses are rendered worse by climate-induced water scarcity and contamination, which disproportionately impact women and girls who are in charge of fetching water for domestic use. Investments in inclusive disaster risk reduction planning and gender-responsive healthcare infrastructure are necessary to address these problems.

### 3.2. Women's Role in Climate Adaptation

The importance of women's contributions to climate adaptation in fostering community resilience is becoming more widely acknowledged. Women in Bangladesh have shown leadership in putting creative and long-lasting adaptation solutions into practice in spite of structural obstacles.

#### 3.2.1. Disaster Preparedness:

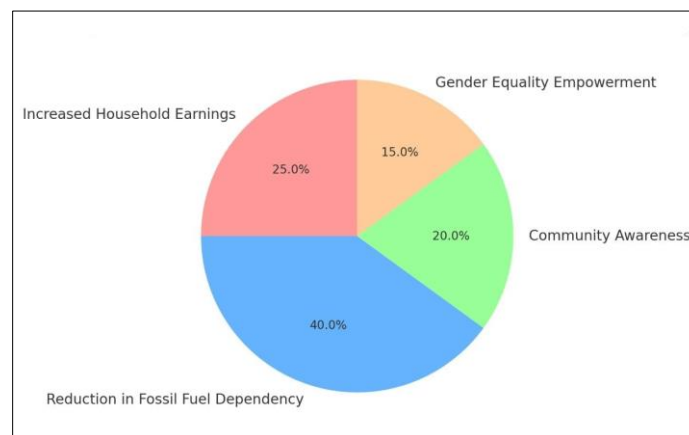
One example of how grassroots leadership may save resources and lives is shown in women-led disaster preparedness teams. Villages with these teams reported far reduced casualty rates following Cyclone Sidr because of their proactive efforts. These teams' female members perform vital functions like supervising the distribution of food and resources during emergencies, organizing evacuation attempts, and distributing early warnings.

In order to ensure that evacuation centers meet the requirements of women, children, and the elderly, these teams also use gender-sensitive strategies. To create a safer and more welcoming atmosphere, women-run cyclone shelters in the Sundarbans, for instance, have designated spaces for nursing moms and supplies for menstruation hygiene. Such models may greatly improve preparedness for disasters if they were scaled nationally.

#### 3.2.2. Renewable Energy and Green Livelihoods:

Community resilience has been found to be significantly influenced by women's involvement in renewable energy projects. Thousands of women are now empowered to start their own renewable energy businesses thanks to initiatives like Grameen Shakti's Solar Technician Training. In addition to installing and maintaining solar systems, these women inform their communities about the financial and ecological advantages of switching to clean energy.

Women-led renewable energy initiatives in rural Bangladesh have increased household earnings by an average of 25% while lowering dependency on fossil fuels, according to a UNDP (2020) research [9]. Furthermore, by giving women the chance to defy gender norms, these initiatives promote greater gender equality and female empowerment.



**Figure 4** Impact of Women-led renewable energy initiatives in rural Bangladesh

#### 3.2.3. Natural Resource Management:

When it comes to climate adaptation, women's indigenous knowledge of regional ecosystems has proven important. In Cox's Bazar, for example, women have spearheaded efforts to reforest mangroves, planting more than 500 hectares of mangroves as organic barriers against storm surges. In addition to protecting coastal villages, these projects give women a living through carbon credit programs and ecotourism.

Because of their careful attention to detail and involvement in the community, women-led mangrove restoration initiatives have 30% higher survival rates for planted trees, according to research from the International Union for Conservation of Nature (IUCN) [10]. Increasing funding for these female-led projects can improve women's economic prospects and ecological resilience.

#### 4. Global Comparative Data

Bangladesh's gender-responsive adaptation initiatives show an increasing adherence to international best practices for gender equality and climate resilience. Bangladesh shows how gender-inclusive strategies can improve community-level results by incorporating women into important parts of adaptation and resilience planning. This is in line with successful models in nations like Kenya and the Philippines, where creative approaches have produced real advantages for women and more general climate objectives.

Women's participation in climate-resilient farming techniques has been given priority in Kenya by the Climate-Smart Agriculture Program, which provides them with resources, funding options, and training. Women farmers' agricultural output has increased by 40% as a result of this program, which has also improved food security for thousands of households [11]. More than 60% of participating women farmers currently use climate-adaptive technologies, such as precision irrigation systems and drought-resistant seeds, which are also encouraged by the program [12]. Kenya exemplifies how gender-sensitive strategies may bring about revolutionary change in marginalized communities by empowering women as leaders and beneficiaries in sustainable agriculture.

In the same spirit, the Philippines' Women-Friendly Early Warning Systems effectively incorporate gender issues into disaster risk management. These systems consist of culturally aware evacuation plans, focused communication tactics, and specific assistance for expectant moms and mothers of small children. Over the past ten years, these advances have helped to reduce the number of disaster-related deaths in typhoon-prone areas, such the provinces of Leyte and Samar, by 15% [13]. The efficiency of disaster response activities has been further increased by the active participation of women in the design and execution of these measures, which has also improved community cohesiveness and trust.

While demonstrating its own accomplishments on international forums such as the Green Climate Fund and the United Nations Framework Convention on Climate Change (UNFCCC), Bangladesh may learn a lot from these international models. Initiatives like the Cyclone Preparedness Program, which has decreased cyclone-related deaths by more than 90% since it began, demonstrate Bangladesh's pioneering role in combining gender-responsive and community-based strategies [14]. Bangladesh can improve its influence, obtain more international finance, and encourage other climate-vulnerable countries to implement inclusive and equitable climate plans by sharing its success stories and learning from others.

**Table 1** Gender-responsive adaptation initiatives and their impact

| Country     | Initiative                           | Focus   | Impact   |
|-------------|--------------------------------------|---|--|
| Bangladesh  | Cyclone Preparedness Program         | Gender-responsive and community-based disaster resilience | Reduced cyclone-related deaths by over 90% since inception; positioned Bangladesh as a leader in climate adaptation at global platforms like the UNFCCC. |
| Kenya       | Climate-Smart Agriculture Program    | Gender-sensitive support for women farmers                | Increased women farmers' agricultural output by 40%, improved food security for thousands, with over 60% using climate-adaptive technologies.            |
| Philippines | Women-Friendly Early Warning Systems | Gender-inclusive disaster risk management                 | Reduced disaster-related deaths by 15% in typhoon-prone areas over a decade; enhanced disaster response efficiency and strengthened community cohesion.  |

## 5. Case Studies: Women-Led Climate Adaptation in Bangladesh

### 5.1. Case Study 1: Women's Resilience to Climate Change (WRCC) Program [15]

In coastal districts like Khulna and Bagerhat, the WRCC program teaches women how to manage community resources in times of crisis and adopt climate-resilient farming practices. The planting of floating vegetable gardens and saline-resistant rice cultivars in flood-prone locations are two noteworthy examples. Women participants reported more food security and household income, which strengthened their position in family decision-making and decreased their reliance on markets controlled by men.

The initiative also uses local women as trainers to make sure that knowledge is shared in a sustainable and culturally relevant way. As demonstrated by WRCC, women-led farming projects not only increase resilience but also stimulate local economies by encouraging nearby communities to follow suit.



**Figure 5** A successful woman of Bagherhat irrigating saline-resistant rice cultivars

### 5.2. Case Study 2: Women-Led Cyclone Shelters in the Sundarbans [16]

In the Sundarbans, women-run cyclone shelters constitute a crucial advancement in disaster risk reduction. In addition to providing instant shelter during storms, these shelters also function as community resource centers outside of times of crisis.

These shelters are run by women who have received training in disaster response coordination, first aid, and gender-specific requirements, including addressing the dangers of gender-based violence during evacuations. Because women-driven efforts engender trust in the community, shelters led by women had greater occupancy rates in Cyclone Amphan (2020). These shelters are more inclusive and efficient in times of crisis since they also have secluded quarters for nursing moms and areas that are kid-friendly.

### 5.3. Case Study 3: Women's Role in the Char Livelihood Program (CLP) [17]

In riverine islands (chars), the Char Livelihood Program provides women with alternative skills for generating income, including micro-entrepreneurship, handicrafts, and livestock rearing. These abilities are especially important in places where riverbank erosion frequently results in displacement.

For example, CLP-trained women have mobilized community savings clubs after seasonal floods, guaranteeing access to emergency cash for food supply purchases and home reconstruction. In order to promote teamwork and resilience against shocks brought on by climate change, the initiative also encourages the establishment of cooperatives run by women.

#### 5.4. Case Study 4: Coastal Women’s Network for Mangrove Conservation [18]

A women-led project in Cox's Bazar is reforesting mangroves as a natural defense against increasing sea levels and storms. Women have a crucial role in the cultivation and preservation of mangroves because they integrate ecological science and cultural knowledge.

Through carbon credit programs and ecotourism initiatives, this strategy not only preserves coastal communities from erosion and storms but also provides economic empowerment for women. Because of the program's success, similar networks have been established in other coastal locations, proving that women-centered climate initiatives are scalable.



**Figure 6** A women - led project in Cox’s Bazar reforesting mangroves

#### 5.5. Case Study 5: Women’s Leadership in Renewable Energy Projects [19]

Women have been at the forefront of renewable energy projects in rural off-grid communities, including solar lantern distribution and microgrid management. Energy poverty has been addressed by organizations such as Grameen Shakti, who have taught women technicians to earn a living.

A group of female technicians in Satkhira formed a joint venture to offer solar home system maintenance services. This program reduces carbon emissions and improves energy security by decreasing dependency on fossil fuels, demonstrating how women's leadership in green energy supports sustainable development and climate resilience.





Figure 7 Women receiving training on solar home system maintenance services in Satkhira

## 6. Recommendations

The following particular and feasible recommendations are put forth in order to empower women in climate-resilient adaptation in Bangladesh through a Women, Peace, and Security (WPS) approach:

### 6.1. Mainstream Gender in National Climate Policies

- **Incorporate WPS Principles in BCCSAP and NDCs:** Make sure the WPS pillars—participation, protection, prevention, and relief and recovery—are expressly incorporated into the Nationally Determined Contributions (NDCs) and the Bangladesh Climate Change Strategy and Action Plan (BCCSAP). This might entail requiring gender impact analyses for all projects pertaining to climate change.
- **Set Gender-Specific Targets:** Set quantifiable goals for women's involvement in climate governance, such as quotas for them in committees that make decisions, like the management committees of the Climate Change Trust Fund (CCTF).

### 6.2. Invest in Women-Centered Capacity Building

- **Skill Development Programs:** Enhance training for women in rural and vulnerable areas on sustainable livelihoods, renewable energy technology, and climate-resilient farming methods.
- **Leadership Training:** Provide opportunities for women leaders to get training in disaster management, policy advocacy, and negotiation to enhance their positions in national and international climate forums.
- **Education and Awareness Campaigns:** Incorporate climate resilience and the importance of local knowledge in adaptation measures in adult literacy programs aimed at women.

### 6.3. Strengthen Legal and Social Protections

- **Combat Gender-Based Violence:** Create and put into place regional procedures to stop and address gender-based violence during relocation brought on by climate change, especially in regions that are vulnerable to natural disasters. Make sure shelters and legal aid groups have enough money.
- **Secure Land Tenure for Women:** Encourage legislative changes that will ensure women own and have access to land, allowing them to make investments in climate adaptation and sustainable farming practices.
- **Expand Social Safety Nets:** To ensure financial stability during emergencies, implement climate-sensitive cash transfer programs for women impacted by drought, displacement, or other climate shocks.

#### 6.4. Enhance Resource Access and Economic Opportunities

- **Financial Inclusion for Women:** Collaborate with microfinance organizations to offer climate adaptation loans tailored to female entrepreneurs, including money for launching environmentally responsible companies or implementing renewable energy sources.
- **Access to Climate-Resilient Technologies:** Provide subsidized initiatives that give women access to resources such as solar panels, water-efficient irrigation systems, and materials for disaster-resistant houses.
- **Employment in Green Sectors:** Promote women to work in green businesses like mangrove restoration and renewable energy by forming public-private partnerships.

#### 6.5. Promote Community-Based Governance Models

- **Women-Led Adaptation Committees:** To ensure grassroots involvement in the planning and oversight of local adaptation projects, support the establishment of village-level committees headed by women.
- **Inclusive Early Warning Systems:** Enable women to take the lead in disaster early warning systems, utilizing their robust local networks to guarantee efficient alarm distribution.
- **Cultural and Indigenous Knowledge Integration:** Encourage projects that record and use indigenous knowledge held by women into climate planning, especially when it comes to natural resource management.

#### 6.6. Mobilize International Climate Finance for Gender-Responsive Projects

- **Leverage Global Funds:** Create gender-sensitive recommendations that are in line with WPS objectives to promote greater access to global climate funding, such as the Adaptation Fund and the Green Climate Fund (GCF).
- **Corporate and NGO Partnerships:** For maximal scalability and sustainability, collaborate with non-governmental and private organizations to co-finance adaptation programs that are aimed at women.

#### 6.7. Monitor and Evaluate Gender Outcomes in Climate Programs

- **Develop Gender-Sensitive Indicators:** Create mechanisms to track and assess the results of climate projects that empower women, including shifts in leadership positions, income levels, and resource accessibility.
- **Incorporate Participatory Feedback:** Make sure female recipients are actively involved in evaluating the success of the program and making suggestions for enhancements by using participatory assessment techniques.
- **Public Reporting:** Encourage accountability by requiring open reporting on gender outcomes in climate adaptation projects supported by the government and donors.

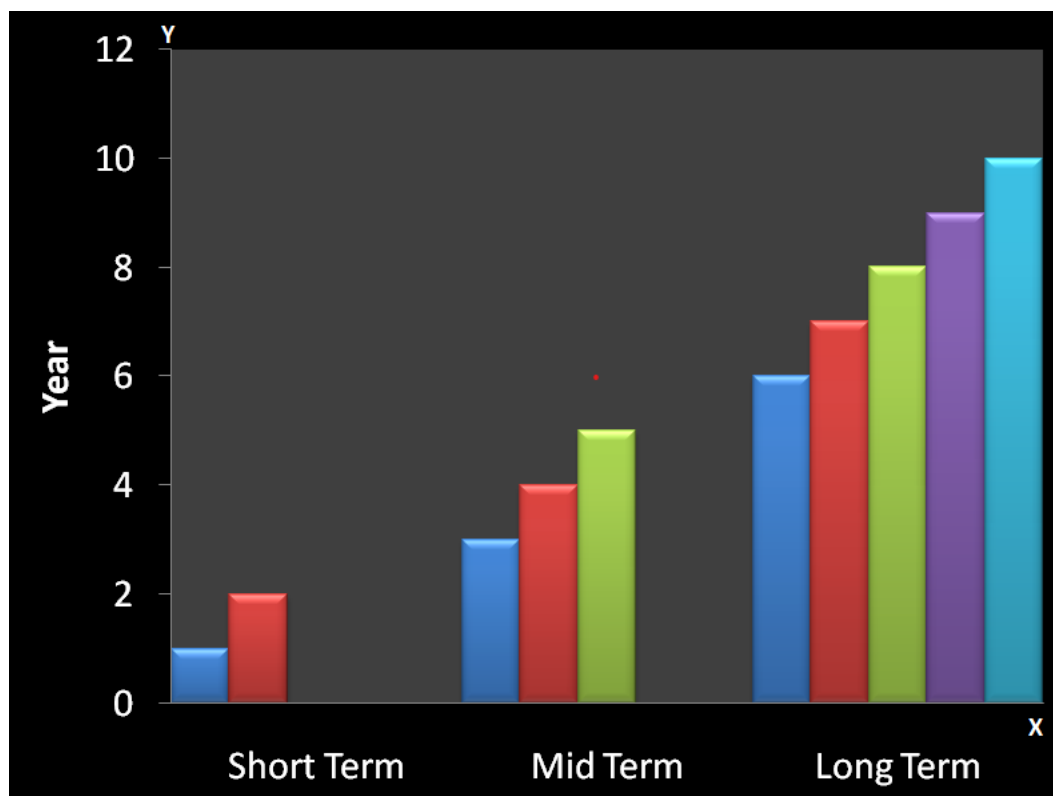
#### 6.8. Integrate Climate and Gender Issues into the WPS National Action Plan

- **Align National Plans:** Revised Climate adaptation will be a key component of Bangladesh's WPS National Action Plan, which will highlight women's leadership in resolving disputes and displacement brought on by climate change.
- **Strengthen Coordination Mechanisms:** To coordinate policies and implementation initiatives, encourage cross-sectoral cooperation between the Ministry of Women and Children Affairs and the Ministry of Environment, Forests, and Climate Change.

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### 7. Implementation Roadmap

- **Short-Term (1–2 Years):** Build institutional capacities, increase the number of women-led pilot initiatives, and conduct gender reviews of current climate policy.
- **Medium-Term (3–5 Years):** Expand effective women-centered programs, enact land rights legislation, and create WPS plans tailored to the climate.
- **Long-Term (6–10 Years):** Achieve gender parity in positions that make decisions about climate change, establish gender-inclusive governance frameworks, and obtain ongoing international funding.



**Figure 8** Implementation Roadmap

## 8. Conclusion

Addressing the complex issues raised by climate change and attaining sustainable development need empowering women in climate resilience. The Sustainable Development Goals (SDGs), the Paris Agreement, and the Sendai Framework for Disaster Risk Reduction are just a few of the international frameworks that are in line with incorporating gender-responsive approaches into climate policies. In order to reduce climate vulnerabilities and encourage adaptation, inclusive and equitable methods are crucial, as highlighted by SDGs 5 (Gender Equality) and 13 (Climate Action). Article 7 of the Paris Agreement specifically emphasizes the importance of gender-responsive adaptation strategies, giving Bangladesh the chance to push for more international funding and technical assistance for climate change. The Sendai Framework, which highlights women's participation in disaster risk management, also aligns well with the Women, Peace, and Security agenda's tenets.

For other countries with comparable risks, operationalizing the Women, Peace, and Security (WPS) paradigm inside climate policy offers a road map. Bangladesh can set an example by prioritizing women in climate resilience programs, demonstrating the mutually reinforcing nature of gender equality and climate action. Such a strategy can aid in bridging the gap between global climate governance and local adaptation initiatives. Furthermore, coordinating national policies with international frameworks improves access to crucial resources, such as money and capacity-building initiatives, and fortifies lobbying on the international scene. Fostering long-term sustainability and making sure that adaptation strategies are both inclusive and successful depend on this alignment.

Policymakers, civil society, and international organizations must work together to achieve this goal. Women must be acknowledged as important change agents who can spur resilience and innovation, rather than only as victims of climate change. To achieve this, socioeconomic barriers must be removed, women must be given leadership and educational opportunities, and gender-sensitive strategies must be incorporated into all tiers of climate planning and action. Bangladesh can position itself as a global leader in tackling the convergence of gender, security, and environmental concerns by incorporating the WPS framework into its climate strategy and ensuring a fair, sustainable, and just response to the climate catastrophe.

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## Compliance with ethical standards

### *Author's Contribution*

The author's work, "Empowering Women in Climate-Resilient Adaptation: A Women, Peace, and Security (WPS) Approach to Addressing Climate Challenges in Bangladesh," is exclusively her own. The idea, research design, data collection, analysis, and writing were all completed without any additional assistance. Throughout the procedure, the author made sure that all sources were appropriately cited and that ethical research guidelines were followed. The study adds to the conversation on gender-sensitive climate resilience within the framework of the Women, Peace, and Security agenda by adhering to the values of integrity, transparency, and accountability.

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