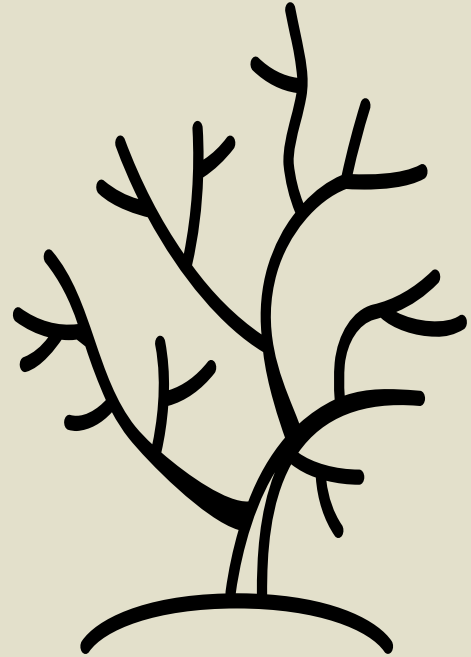




Canada



**ASSESSING THE
IMPACT OF CLIMATE
CHANGE ON WOMEN
AND GIRLS'
REPRODUCTIVE
HEALTH IN EGYPT**



**Final Report
December 2023**



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In accordance with the UNFPA, the overall objective of this study is to contribute to the national climate policy discourse. This includes the follow up actions of the Egypt National Climate Change Strategy 2050 and other national documents through gender-inclusive considerations. The study particularly focuses on the impact of climate change on reproductive health and aims to identify desired responsive actions and indicators for the monitoring and evaluation framework.

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Table of Abbreviations

Abbreviation	Description
AoI	Areas of Influence
CAPMAS	Central Agency for Public Mobilization and Statistics
CC	Climate Change
CEDARE	Center for Environment and Development for the Arab Region and Europe
DECA	Demographic Explorer for Climate Adaptation
EEAA	Egyptian Environmental Affairs Agency
FGDs	Focus Group Discussions
GBV	gender-based violence
GDP	Gross Domestic Product
HBRC	Housing and Building Research Centre
HP	harmful practices
ICPD	International Conference on Population and Development
INDCs	Intended Nationally Determined Contributions
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
KIIs	Key Informant Interviews
M&E	Monitoring and Evaluation
MALR	Ministry of Agriculture and Land Reclamation
MoE	Ministry of Environment
MoE	Ministry of Education
MoHP	Ministry of Health and Population
MoLD	Ministry of Local Development
MoSS	Ministry of Social Solidarity
MoWRI	Ministry of Water Resources and Irrigation
NAPAs	National Adaptation Programs of Action
NCCC	Egypt National Climate Change Council
NCCS	National Climate Change Strategy
NCW	National Council for Women
NDCs	Nationally Determined Contributions
RH	Reproductive Health
SLR	Sea Level Rise
STIs	Sexually Transmitted Infections
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	United Nations Population Fund

Executive Summary

Introduction

Egypt has been identified as one of the particularly vulnerable countries to climate change, with a ranking of 104 out of 185 countries in the 2021 ND-GAIN, despite contributing only 0.6% of the global greenhouse gas emissions. The Intergovernmental Panel on Climate Change (IPCC) has named Egypt's Nile Delta as one of the world's three hotspots of "extreme" vulnerability to climate change events. Additionally, future projections indicate that Egypt will suffer from the following climate change events: sea level rise; water scarcity and deficit; and an increase in the frequency and intensity of extreme weather conditions such as heat waves, flash floods, heavy rains, sand, and dust storms.

UNFPA has committed to three transformative results by 2030: ending preventable maternal mortality; ending unmet need for family planning; and ending gender-based violence (GBV) and harmful practices (HP) by 2030. Women and girls who have the least access to economic and social resources are less able to adapt to climate change impacts.

This brief presents an introduction to the link between climate change and reproductive health. The study was developed utilizing a thorough review of available literature addressing the impacts of climate change on women's Reproductive Health (RH) as well as clear identification of hotspots and areas that witnessed critical climatic events during the previous five years. Additionally, it was supported by a primary data collection that employed focus group discussions and in-depth interviews with various stakeholders.

Approach and Methodology

The study team carried out extensive research, culminating in a comprehensive literature review. Both primary and secondary data from various sources was collected. Primary data was principally qualitative data, and therefore negating the possibility for making inferences and generalizations. Various stakeholders were consulted using diversified surveying tools.

The geographical scope of work covered six Egyptian governorates, namely, Alexandria, Aswan, Red Sea, Sohag, Menya, and Beheira. These governorates represent the majority of climatic zones and regions in Egypt.

The consulted groups included; Egyptian Environmental Affairs Agency (EEAA), MOHP, Health Directorates, Healthcare Units, Ministry of Agriculture and Land Reclamation (MoALR), Ministry of Social Solidarity (MOSS), National Council for Women (NCW), NGOs working with women and environment, Ministry of Planning, IDSC - Crises management central department (CM), National Research Centre, General Secretary of the governorate and community groups (women, girls, men and young men).

Key Findings

I. Climate Change Incidents in Egypt

Local hotspots which are particularly vulnerable to the impacts of climate change have been identified within the governorates. Specific regions and areas near the coast were identified as vulnerable due to deteriorating infrastructure, proximity to the sea, coastal erosion, and susceptibility to flooding. Other hotspot regions susceptible to extreme temperatures, heavy rains, and desertification were also identified.

The alterations witnessed in various climate change-related phenomena over the past five years varied across different governorates. The data indicated that elevated temperatures have been the most prevalent phenomenon across all governorates, followed by heavy rains/flooding that caused infrastructure damage. Other phenomena such as droughts, drinking water shortage, and irrigation water shortage received limited mentions. Notably, Cairo seems to experience relatively less severe impacts compared to other governorates.

The impacts of weather changes, specifically torrential rains and high temperatures have had severe consequences on the livelihoods of communities in different governorates in Egypt. These impacts include economic impacts, impacts on emotional wellbeing, and health-related implications, in addition to infrastructure damage, loss of income, and food shortages. Lack of employment opportunities exacerbate these hardships. However, communities have demonstrated resilience by coming together to repair infrastructure and support each other.

II. Climate Change Impacts

Climate change impacts, such as increased water stress and scarcity of natural resources, limited access to skilled care due to health systems, migration, and increased pressure and stress within families and communities, are significantly impacting gender equality. Simultaneously, women and youth's vulnerability can obscure the fact that they are also potential beneficiaries in the efforts to cope with climate change impacts, who would be essential actors in efforts to cope with climate change impacts.

a) Gaps in disaster risk reduction

Recent reviews of gender and RH inclusivity in the Nationally Determined Contributions (NDCs), including the review commissioned by UNFPA, have identified significant gaps in critical sectors, including disaster risk reduction, adequate systems to ensure women's and girls' agency, agriculture, and climate finance. Even in reviews and reports where gender dimensions are incorporated, they are often not prioritized as essential and lack the required capacities, resources, and monitoring mechanisms to ensure successful implementation.

b) Impacts on Lives of Women, Girls and Infants

Climate change may be associated with diarrhea and poor nutrition. Accordingly, both the lives of women and their fetus might be endangered¹. Adverse birth outcomes, including low birthweight (LBW), small gestational age (SGA), and preterm birth, contribute to 60%–80% of infant mortality worldwide. The impact of diarrheal diseases on children and infants is well established.

c) Threats to Human Sustainable Development

Climate change poses major threats to the vision of human-centered sustainable development, which is outlined in the International Conference on Population and Development (ICPD) Programme of Action and reinforced by the 2030 Agenda for Sustainable Development. Such threats include significant negative impacts on gender equality, including women's and girls' reproductive

¹

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC636884/>

health across the development, humanitarian, and peace nexus.

d) Impacts Related to Fatigue and Dermatitis

Based on both primary data collection and the literature review, both young girls and women experienced health issues like dermatitis and fatigue due to weather variations. Women being obliged to do the cooking in small kitchens increased their feeling of heat. They also mentioned using the washroom frequently, exposing them to cold and flu.

The targeted governorates reported that heat has a major impact on female domestic labor. Heat obliges women to work for significantly longer times to perform the same volume of work. These losses mean more time and effort spent completing domestic tasks such as cooking, cleaning, and obtaining food and water for the family plus diminished income from paid work. On the other hand, women might be obliged to support their spouses during the irrigation of their lands (during nighttime).

e) Impacts Related to RH and Access to Services

Focus Group Discussions (FGD) with participants revealed that during floods and heavy rains there is a limited access to reproductive health services despite the availability of services, since it limits the mobility of individuals, both citizens and health staff, to reach the primary health center. Health professionals, with support from the Ministry of Health, community organizations such as Red Crescent, and community members, reach out to women (especially pregnant women) to provide care whenever possible. Moreover, follow-up by phone calls from health workers support women to receive their family planning supplies.

f) Socioeconomic Implications

The socioeconomic implications of climate change in Egypt have been emphasized by different stakeholders, especially for the vulnerable communities, such as those living in informal settlements, border, and rural areas. These communities often lack access to basic services, have limited resources to adapt to changing conditions, and face increased risks of displacement.

The impact of climate change on individuals' livelihoods is not uniform across gender lines. The experiences of women, young girls, and men in different governorates of Egypt highlight the dissimilar effects of climate change on different aspects of their lives. Some women are becoming more vulnerable to diseases and the burden of household responsibilities. In addition, they experienced the loss of lives of their relatives due to floods. On the other hand, men suffer more from economic hardships and psychological distress.

g) Gender Based Violence

The study highlights the occurrence of gender-based violence (GBV) during climate change-related incidents in Egypt. Participants identified various factors contributing to GBV, including unemployment, tensions, and psychological distress among men. The occurrence of GBV during climate change-related incidents was reported in upper Egypt (e.g. abusive attitudes, ...etc.).

Women's reactions to GBV varied, with some tolerating it for the sake of the family unity, while others sought intervention from their extended families or pursued legal action. However, the majority of women exposed to GBV tended to be submissive. The availability of GBV services and the awareness of their

existence varied across regions. There is a clear lack of awareness about the supporting services and organizations among all governorates.

h) Impacts on Pregnant Women and Newborns

Pregnant women and their newborns have been suffering from adverse effects associated with rising temperatures and insufficient access to proper nutrition. Additionally, heavy rainfall created obstacles for access to the necessary medical follow-up visits. Moreover, the impacts of climate change on the availability and distribution of food supply exacerbates reproductive health issues.

i) Impacts Related to Women Vulnerability

High temperatures were recognized as a causal factor for marital conflicts among women. Women are disproportionately affected by the impacts of climate change due to a combination of factors such as economic resources, gender roles, and biological differences in heat sensitivity.

Economic constraints limit women's ability to afford expensive adaptive measures. Cultural norms, such as traditional clothing and their position in the family hierarchy, may hinder their survival during climate-related events. Furthermore, biological factors, such as pregnancy, can also increase women's vulnerability during disasters.

Various barriers to adaptation to climate changes have been identified in different regions of Egypt. These include limited educational levels, and adherence to gendered roles. Hence, adaptation solutions should address these specific challenges faced by women and girls in different regions.

III. Knowledge and awareness

The findings provide valuable insights into the participants' understanding and awareness of climate change. While there were variations in the level of knowledge, overall, the responses demonstrated a general awareness of the key features associated with climate change.

Local participants and officials recognized phenomena like desertification, drought, hurricanes, rising sea levels, and deviations in weather patterns, however few acknowledged the long-term shifts in temperature or weather patterns.

IV. Resilience of Climate Change Policies and Interventions in Egypt

In Egypt, efforts are being made to integrate women-specific aspects into national policies and strategies, emphasizing the importance of women's participation and consultation. However, the action plans and relevant monitoring indicators are not yet in place.

Egypt's National Strategy for Adaptation to Climate Change and Disaster Risk Reduction includes objectives to mitigate health risks, improve the efficiency of health facilities, and support the social and economic resilience. On a community level, mobile health teams and community-based organizations play a vital role in providing emergency health services and follow-up measures on women's health, specifically pregnant women.

The existing policies and programs addressing climate change impacts on women and girls' reproductive health (RH) in Egypt show both progress and areas for improvement. While efforts are being made to address the health-related risks associated with climate change, it is essential to continue prioritizing gender-

responsive adaptation measures, involving women in decision-making processes, and ensuring equal access to healthcare services for all citizens.

Egypt's Second Nationally Updated Determined Contribution 2030 aims to enhance the healthcare sector's efficiency in dealing with climate change and increase awareness of proactive health measures, although reproductive health (RH) was not specifically addressed in this context. The first comprehensive National Climate Change Strategy (NCCS) 2050 is highlighting the importance of considering the disproportionate impacts on women, girls, and vulnerable populations. Integrating gender and reproductive health into adaptation efforts is essential.

Despite these initiatives, there is still efforts to be exerted in order to increase the familiarity among government officials regarding Egypt's national climate change strategy and gender mainstreaming efforts. This knowledge gap might pose challenges to effective coordination and implementation at the governorate and directorate levels.

On the governorate level, initiatives were taken to address climate change, including awareness raising, tree planting, increasing green spaces, recycling, and substitution to clean energy.

Efforts have been made to establish early warning systems and raise awareness about climate change. The National Council of Women, Health Directorates, and Ministries of Agriculture and Water Resources and Irrigation are actively involved in these initiatives. Ensuring collaboration between these different entities and the dissemination of information through workshops, web pages, and local administrations will improve the

social protection programs and risk management.

V. Challenges and Obstacles

In Egypt, there are challenges that need to be addressed. Rural and remote areas face difficulties in service delivery due to the lack of infrastructure and well-equipped vehicles. Therefore, more challenges are faced when providing adequate quality service during crises and disasters. Additionally, there are shortages in supplies, equipment and medical staff, particularly in reproductive health services. While limited support was reported by some governorates, others highlighted the role of organizations, community leaders, NGOs, and political parties in assisting the communities. The role of community organizations was emphasized as they provide immediate interventions during the time of crises in supporting the community.

To address the current challenges and gaps, it is crucial to enhance the knowledge among various stakeholders including but not limited to government officials, strengthen coordination, and ensure effective implementation of strategies at all levels. Furthermore, improving awareness, and promoting gender equality and women's empowerment are vital for a more resilient and inclusive response to climate change in Egypt.

To activate connections between climate change and social protection policies, promoting awareness, implementing joint training programs, and establishing cooperation protocols are essential. There is also a need to improve infrastructure, and provide supplies and medical staff.

Recommendations

Despite the promising efforts that have been undertaken in the application of innovative measures and social protection in Egypt towards addressing the challenges posed by climate change. For example, the National Initiative for Smart Green Projects encourages and endorses “Green Hospitals” that mitigate the impacts of climate change. In addition, the use of technology and social media has been recognized as important tools for managing climate change phenomena and disseminating information, especially in remote areas. However, challenges such as internet and mobile network disruptions during heavy rain or floods have been reported, leading to the use of traditional means of communication like landlines.

Due to their particular social positioning, women and youth can help curb the harmful effects of climate change as innovators, leaders, educators, and caregivers. Through integrating a gender perspective into climate change projects, policies, and funds, women and youth can be able to contribute to and benefit from equitable climate solutions and finally become recognized as essential and indispensable agents of such contributions and reapers of such benefits.

I. Sectoral-Based Interventions

1. The Health Sector

The health sector needs to tackle the responsibility of raising awareness in full cooperation with EEAA and the National Council for Women. The main proposed awareness messages are summarized as follows:

- Disclose the national strategy for integrating gender into climate change considerations for various stakeholders;
- The linkage between climate change and

women should be disclosed to target stakeholders;

- Raise awareness and education about using alternative resources in handicrafts;
- Raise the knowledge of women and support them to gain skills in order to elevate their readiness to work in the event of displacement as a result of climate change incidents;
- Empowering women and focusing on their education so that they can be aware of warnings about climate change and deal with climate incidents to reduce the damage resulting from them;
- Including the effects of climate change in nursing school curricula; and
- Capacitate the primary care sector to be able to meet climate change aspects.

2. Other Sectors

Other sectors (e.g. social solidarity, environmental, research institutes) need to realize that they are key stakeholders and contributors for achieving better outcomes in the society. They should be responsible for climate resilience impact of their sectoral plans. Each RH and gender related policy, and/or initiative adopted by the sector, should be reviewed and updated to meet the climate change obligations.

II. Strengthen Gender Mainstreaming in the Current Egypt National Climate Change Strategy

- The Egyptian Environmental Affairs Agency (EEAA) and the National Council for Climate Change (NCCC) should work on the national level for gender mainstreaming climate change.
- Coordination and implementation on subordinate levels with gender equity.
- Realization of the strategic goals and setting action plans for climate resilience.

- Documentation of activities and lessons learned.

III. Proposed Adaptation Program to be Included in the Green Bond Framework as Per Goal 4 in Egypt National Strategy

- There is a need to capitalize on the efforts in addition to the implementation of more adaptation programs and plans in accordance with the NCCS 2050 and international guidelines and recommendations. Specifically, Goal 4 which aims for “Enhancing Climate Financing Infrastructure”. The green bonds can be implemented with gender and socially equitable way:
- Make use of green bonds to cover sectors that have not yet been covered.
- Encourage the adoption of innovative financing mechanisms such as results-based financing.
- Provision of green financing opportunities to micro, small and medium enterprises.

IV. Develop a Gender Responsive Climate Actions

- Increase awareness of climate change impacts and existing strategies.
- Improve healthcare services including RH and maternal health to adapt to the emerging needs of climate change in addition to withstanding the impact of adverse weather events.
- Prevent and mitigate the impacts of Gender based Violence (GBV).
- Adopt innovations and technologies in services and adaptation measures.
- Enhance social protection and improve livelihood.

V. Recommendation to enhance warning system to be supportive to social protection programs and manage risks to RH services

Early warning system is essential to provide timely actions and mitigate risks. Therefore, it is recommended to provide the following:

- Continue efforts exerted to disseminate weather forecasts and recommendations for protective measures to the public through several outlets including social media.
- Include climate change impacts in regular planning for health and social services.
- Continue the efforts exerted to organize multisectoral preparedness committees on local levels to coordinate mitigation actions including protection of livelihoods and health emergency.
- Family Planning sector to update and enhance plans to cope with climate change.
- Adapt and improve readiness of family planning mobile clinics to reach the disaster impacted areas.
- Coordinate all reproductive health services to be provided by any mobile clinics as part of the emergency preparedness.
- Conduct capacity building courses to relevant service providers on preparedness and response including crises management to provide RH/FP services.

VI. Monitoring and Evaluation Indicators and source of data to monitor progress and impact

- The Ministry of Health and Population is recommended to develop monitoring indicators under a robust surveillance program. The data required to serve the purpose should be clearly defined in full

compliance with the National Strategy for Mainstreaming Gender in Climate Change in Egypt which includes a comprehensive chapter devoted to assessing the impact of climate change on women's health. The developed indicators should further outline selected actions aimed at mitigating climate change impacts, along with indicators designed to measure the effectiveness of these interventions. Notably, the strategy places significant emphasis on the climate's influence on the nutrition of women and children.

- Within the health sector, the strategy sets a range of objectives. These include enhancing the technical and scientific capabilities of national and professional institutions in the realm of climate change and health, fostering a broader understanding and awareness of the gender-related aspects, promoting awareness of the interconnectedness between health and climate change, and fostering collaboration with non-governmental organizations and civil society entities actively engaged in the field of health.
- Finally, evaluation of interventions and surveillance programs should be determined to reflect various interventions goals and objectives.

VII. Role of Citizens to mitigate the impact of Climate Change

- Raise the awareness of ordinary people on the threat of Climate change and sustainable consumption.
- Spread the culture of safe disposal of waste, the harms of using plastic and the culture of recycling.

Final Note

Based on the analysis of primary data and secondary sources. In conclusion, Egypt can effectively address climate change challenges and ensure the well-being of its citizens both women and men through implementing innovative measures and strengthening cross-sectoral coordination. The continuation of efforts and the use of technology will be crucial in achieving sustainable development goals. management.

Conclusion

Egypt can effectively address climate change challenges and ensure the well-being of its citizens, both women and men, through implementing innovative measures and strengthening cross-sectoral coordination. The continuation of efforts and the use of technology will be crucial in achieving sustainable development goals.

1 INTRODUCTION

1.1 Overview

Egypt has been identified as one of the particularly vulnerable countries to climate change, with a ranking of 104 out of 185 countries in the 2021 ND-GAIN, despite contributing only 0.6% of the global greenhouse gas emissions. The Intergovernmental Panel on Climate Change (IPCC) has named Egypt's Nile Delta as one of the world's three hotspots of "extreme" vulnerability to climate change events. Additionally, future projections indicate that Egypt will suffer from the following climate change events: sea level rise; water scarcity and deficit; and an increase in the frequency and intensity of extreme weather conditions such as heat waves, flash floods, heavy rains, sand, and dust storms.

According to the recently released IPCC report, tens of millions of people in North Africa will be exposed to vector-borne diseases, including the Dengue and Zika viruses. The rising temperatures in parts of North Africa are projected to increase death rates; over 15 additional deaths per 100,000 people annually are projected². The report indicates that climate change will reduce water availability and increase the level of water scarcity³, especially in Southern and North Africa, and that meteorological drought frequency will increase. It is predicted that the duration of these events will double from 2 to 4 months over North Africa, with a temperature rise of above 2°C.

Projections have also indicated that Egypt might be one of the countries in Africa most affected by Sea Level Rise (SLR) in a 4°C-warming scenario, especially with regards to the number of people (8 M) at risk of facing floods annually⁴. These projections are also coupled with a lack of adaptation action, which furthers Egypt's vulnerability. Moreover, Egypt ranks among the top 20 countries globally for projected damages, seeing as the frequency of flood events are projected to increase to 1 in 40 years at 1.5°C and 2°C global warming, and 1 in 21 years at 4°C warming with a current return period of 100 years⁵. Despite this urgency, only 46% of adaptation commitments in Africa were disbursed from 2014 to 2019, with North Africa receiving 15% of the share, which is the lowest in the African region⁶. Potential impacts of this stagnation in adaptation actions and commitments include major disruptions to infrastructure, beaches, and fertile land in the Nile Delta, as they are subject to erosion, saltwater intrusion, and inundation. Consequently, several climate change impacts will occur, such as food insecurity, deteriorating human health and economy, and disturbed ecosystems in Egypt. Climate change risks are a grave concern and threat for Egypt in its effort to achieve the SDGs.

Women and girls who have the least access to economic and social resources are less able to adapt to climate change impacts. Climate change impacts, such as increased stress and scarcity of natural resources, limited access to skilled care due to fragile health systems, migration, and increased pressure

²IPCC's 6th assessment

³ Mekonnen and Hoekstra 2016

⁴ Hinkel et al. 2012

⁵ Alfieri et al. 2017

⁶ Savvidou and Atteridge 2021

and stress within families and communities, are significantly impacting gender equality. Simultaneously, women's and youth's vulnerability can obscure the fact that they are also potential agents in the efforts to cope with climate change impacts, who would be essential actors in efforts to cope with climate change impacts. Due to their particular social positionings, women and youth can help curb the harmful effects of climate change as innovators, leaders, educators, and caregivers. Through integrating a gender perspective into climate change projects, policies, and funds, women and youth can be able to contribute to and benefit from equitable climate solutions and finally become recognized as essential and indispensable agents of such contributions and reapers of such benefits.

New global evidence shows that climate change has direct and indirect impacts on women's reproductive health (RH), which continue to be the basis of research and programme responses. Heat negatively impacts maternal and neonatal health outcomes, as research suggests that an increase of one degree Celsius in the week before delivery correlates to a six percent greater likelihood of stillbirth^{7,8}. Climate-related loss of livelihoods increases poverty, which indirectly impacts maternal health⁹. Additionally, the climate change impact of natural resource stress and scarcity can increase gender-based violence (GBV) and harmful practices (HP), such as child, early and forced marriages and its interlinkage with female genital mutilation (FGM)¹⁰. The aforementioned GBV and HP are also increasing with the events of disasters and extreme weather conditions¹¹. Other climate change impacts such as floods, droughts, and other disasters can also lead to increased pressure on families, which may (and often does) result in early, forced, and child marriages^{12,13}.

Climate change poses major threats to the vision of human-centered sustainable development, which is outlined in the International Conference on Population and Development (ICPD) Programme of Action and reinforced by the 2030 Agenda for Sustainable Development. Such threats include significant negative impacts on gender equality, including women's and girls' reproductive health across the development, humanitarian, and peace nexus. The Intergovernmental Panel on Climate Change has noted the likelihood that both climate change and gender-blind climate-change interventions could intensify and exacerbate gender inequality. At COP26, multiple commitments were made by Member States to support gender-responsive climate action, including continued implementation of the Gender Action Plan. However, there are so much thoughtful plans needed to be put in place and effective actions needed to be carried out.

1.2 Project Background

The Nationally Determined Contributions (NDCs) review, including UNFPA's input, highlights substantial gaps in key areas like disaster risk reduction, women's and girls' empowerment, agriculture, and climate finance. It notes that gender aspects, though recognized, often lack prioritization, necessary resources, and effective monitoring for successful implementation. UNFPA's commitment

⁷ Kuhn & McCormick 2017

⁸ Bekker et al., 2020

⁹ Das Gupta, 2013

¹⁰ McLeod, 2019

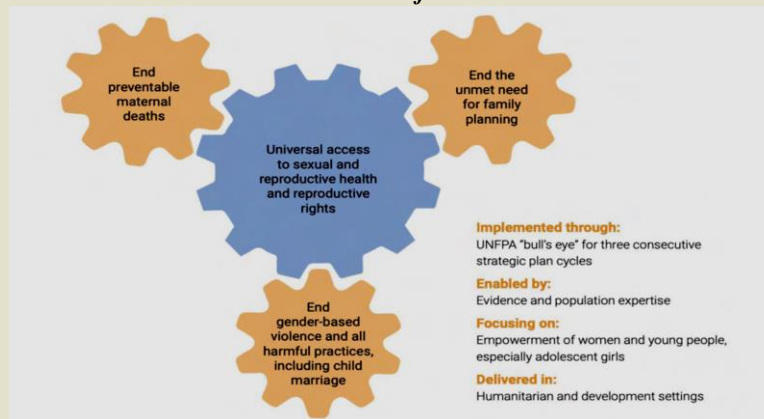
¹¹ Mason, 2016

¹² Leon, 2019

¹³ CARE, 2015

to achieving three transformative results by 2030—ending preventable maternal mortality, unmet need for family planning, and gender-based violence—is challenged by the accelerating pace of climate change.

UNFPA three transformative results



In this context, UNFPA adopted a multipronged programme of action to help to engage governments and other organizations with a clear offer of support on climate change policies and actions:

1. Strengthen individual and community resilience-building through investments in RH;
2. Strengthen the climate resilience of key systems, particularly those of health and protection;
3. Enhance preparedness and anticipatory action on climate-related emergencies.
4. Strengthen population, health and gender data for climate-related vulnerability and impact assessment.

In Egypt, UNFPA's programs respond to the national strategic priorities, such as those outlined in the National Strategy for the Empowerment of Egyptian Women 2030, which address women's political, social, and economic empowerment and their protection from all forms of violence.

The last review of the impact of climate change and gender in Egypt was conducted in 2011 and led to the development of the National Strategy for Mainstreaming Gender in Climate Change in Egypt, a collaborative work between the International Union for Conservation of Nature (IUCN) Gender Office, the IUCN Regional Office for West Asia (ROWA), the Center for Environment and Development for the Arab Region and Europe (CEDARE), the Global Gender Office of IUCN, and other key national institutions in Egypt. This national strategy informed the 2016 Egypt Third National Communication to the United Nations Framework Convention on Climate Change (UNFCCC). In 2017, Egypt submitted the Intended Nationally Determined Contributions (INDCs). However, the document neither explicitly addressed the disproportionate impact of climate change on women nor identified specific gender-sensitive actions. In 2021, the Egypt National Climate Change Council (NCCC) requested the development of the first comprehensive National Climate Change Strategy (NCCS) for Egypt until 2050.

In 2021 at COP26, the government of Egypt announced that they are working on the new National Climate Change Strategy 2050. The NCCS will enable Egypt in planning and governing climate change on different levels; in a way that supports the achievement of the desirable economic and development

goals of the country and following a low emission resilient approach. The draft executive summary was shared and states that the strategy’s vision is to “effectively address the impacts of climate change which contributes to improving the quality of life for the Egyptian citizen, achieving sustainable resources and ecosystems, and strengthening Egypt’s leadership at the international level in the field of climate change”.

Current efforts to adapt to climate change in Egypt need to account for the disproportionate impacts on women and girls, as well as other populations in vulnerable situations socio-economic and/or geographically. There is a strong basis for action, including the integration of gender and reproductive health in climate change adaptation. Recognizing the links between climate change (CC), Reproductive Health (RH) and gender equality (specifically its impact on women’s socio-economic opportunities, well-being, and protection from violence; and the intersectional factors of different positionings or levels of analysis such as class, race, citizenship status, etc.) is critical to create effective adaptive responses, and align efforts while also improving the 3TRs. In order to strengthen gender-responsive climate action in Egypt, a review of the evidence linking climate change, gender, and RH is necessitated, as well as an assessment of the gaps at the policy level, and the creation of an institutional framework to identify opportunities to strengthen gender-sensitive climate adaptation action.

UNFPA contracted EcoConServ Environmental Solutions to carry out an assessment of the climate change impacts on women’s and girls’ reproductive health on the 11th of August 2022.¹⁴

1.3 Key Objectives of the Study

The objective of this study, as per the UNFPA, is to contribute to the national climate policy discourse. This includes considering gender-inclusive perspectives and addressing the impact of climate change on reproductive health. The study also aims to identify responsive actions and indicators for the monitoring and evaluation framework, taking into account the follow-up actions of the Egypt National Climate Change Strategy 2050 and other national documents. More specifically, the study seeks to achieve the following specific objectives:

1. To identify/highlight the linkage between climate change, women, girls and RH with specific evidence.
2. Identify existing national public policies, programs and initiatives with a climate change, women and girls, and RH perspective as well as the gaps in their implementation to ensure the integration of gender and RH in national climate policies;
3. To identify gender-responsive actions that could be considered in the strategy and its associated M&E indicators;
4. To contribute to strengthening the country-driven process to present more evidence at the national and subnational level on the correlations between climate change, women and girls, and RH, as well as analyze the gendered impacts of climate change at the individual, community, and systems level and during emergency responses.
5. The study will also provide a narrative on adaptive capacity to improve the understanding of climate change impacts on women’s and girls’ reproductive health at the local level and the

¹⁴ “Assessing the Impact of Climate Change on Women and Girls and Reproductive Health in Egypt” Terms of Reference.

available capacity for transformation. The target audience for this assessment are key stakeholders including policy makers, research institutions, and experts in the field of RH and climate change.

1.4 Research Constraints, Limitations and Risks

- Egypt is generally still facing sever challenges with science-based data in regard to climate change, as the country largely relies on data extrapolation from older studies and there is limited research available on attempting to understand or project climate related impacts. This was evidenced through the recently submitted Nationally Determined Contributions (NDCs) submitted in 2022.
- Thus, there are still significant gaps in information on the national level in terms of climate change and its impacts on health, health facilities and access to services.
- Almost no information was available on the hotspots and the criteria of hotspot selection. Accordingly, the study team was obliged to develop the definition of criteria and identification of a hotspot.
- There is still a lack of understanding on the community level adaptation needs for Egypt, especially in areas related to public health.
- Research and reports on Gender and Climate Change issues in Egypt are still limited.

1.5 Structure of the Report

This report is divided into the following chapters:

- **Chapter 1:** Provides an overview of the project background, including the study objectives and constraints and limitations that may affect the research.
- **Chapter 2:** Sheds light on the overall approach and scope of work. As well as it presents how the geographical areas were selected.
- **Chapter 3:** Summarizes the key findings of the literature review.
- **Chapter 4:** The core chapter of this study which elucidates the main findings of collected data.
- **Chapter 5:** outlines the key findings and the recommendations.

2 APPROACH AND METHODOLOGY

This chapter outlines the approach and scope of work as well as the selection criteria of target areas. This survey employed both secondary and primary data. The primary data utilized Focus Group Discussions guides, In-depth interviews and group discussions. However, the secondary data was collected from published reports and carrying out web-search.

2.1 Approach and Scope

The Consultant adopted a Participatory Rapid Appraisal approach that employs and utilizes various primary and secondary sources of data. The study focused on the following:

- Review existing national level data, documents, available disaggregated data, and studies to identify potential linkages between climate change impacts, gender, and RH (including the gender implementation of the existing Egypt National Climate Change Strategy).
- Identify relevant hotspots.
- Conduct fieldwork to collect data that provides answers to the research questions and identify relevant hotspots.
- Conduct key informant interviews with different stakeholders (including relevant government ministries and women's organisations, private sector, or independent entities) and ensure women's and youth organizations' perspectives are included.
- Conduct focus group discussions with key groups including service providers in healthcare system, protection, and beneficiaries (women, girls, and men)
- Conduct analysis to provide evidence on implications and a narrative on adaptive capacity to improve understanding to impacts of climate change on women and girls and the available capacity for transformation.
- Identify and propose women's and girls' responsive actions for incorporation in relevant national documents and to inform policy makers, including advise on development of local adaptation plans to materialize local climate actions as relevant to responsive indicators for the M&E framework.
- Recommend specific adaptation actions to be integrated into development programmes to deliver a whole-of-society approach and catalyze more public and private investment in adaptation action.

2.2 Team Mobilization

The Consultant has nominated a team of qualified experts with the required expertise to execute the activities under this assignment; The experts mobilized for this assignment include a multidisciplinary team with national as well as international experience that successfully engaged in similar assignments. The team encompasses expertise on climate change, gender, health, and coastal management activities. The team can transfer the gained international experience from similar projects in the region to the local conditions which they are fully familiar with. (Appendix I presents the study team).

In parallel to the experts, 18 enumerators and note takers were recruited for data collection and management. They were segregated into 6 teams where a team was assigned to work in one governorate. The total number of enumerators is 18 persons, each team consisted of three persons. A male enumerator was responsible for carrying out the in-depth interview with various stakeholders, however, two enumerators were female, to conduct the focus group discussions (FGDs) with women freely.

2.3 Data Collection

The Consultancy team utilized a mixed-method approach, combining quantitative and qualitative methods, to successfully carry out the assignment. The team's main emphasis was on gathering primary qualitative data through various field activities, such as site visits, fieldwork activities, and stakeholder consultations. Additionally, they acquired quantitative (secondary) data by conducting thorough literature reviews and analyzing statistical information.

For this assignment, a comprehensive data management framework was implemented, encompassing the systematic collection, compilation, classification, analysis, interpretation, presentation, and dissemination of incoming data. This data encompassed a wide range of sources, including insights, opinions, recommendations, literature, reports, policies, laws, structures, questionnaires, and interviews conducted with representatives of stakeholders.

All qualitative collected data was transcribed and analyzed through thematic analysis approach.

Quantitative data obtained through a comprehensive literature review was utilized to assess the direct and indirect effects of climate change on reproductive health (RH) and maternal outcomes, encompassing stillbirth, abortion, preterm birth, low birthweight, and neonatal mortality. In addition to this, primary qualitative data was collected through face-to-face interviews conducted with local residents in three governorates: Menya, Sohag, and Red Sea. This primary data aimed to evaluate the impact of climate change on family planning access and utilization.

The data collection process involved the use of qualitative tools alongside the collection of secondary quantitative data. A gender-sensitive approach was adopted in the design of data collection and analysis, ensuring that findings were disaggregated by age, gender, and other relevant criteria whenever possible. The methodology for this study employed multiple and high-quality data collection and analysis methods, actively engaging with a diverse range of stakeholders. This approach facilitated the triangulation of data, enhancing the reliability and validity of the findings.

Furthermore, to ensure the integrity of the results, the obtained findings was shared with key stakeholders for validation and further input. This collaborative approach fosters a collective understanding of the research outcomes and promotes a sense of ownership among stakeholders.

For qualitative data collection, the enumerators were trained on the question guides. Thereafter, the tools were tested, and questions were adjusted be asked using appropriate language to the stakeholders. The FGDS was carried out by a moderator and documented by a notetaker. After carrying out the FGD, it was transcribed by the note taker. Hence, this ensures the reliability of data. The FGDs participants were homogenous and selected using a pre-established selection criterion. To maintain consistency and facilitate meaningful discussions, participants for the FGDs were carefully selected using a pre-established selection criterion. This criterion ensured that the participants were homogeneous, allowing for focused and relevant conversations.

During October 2022, fieldwork was carried out in seven governorates known for their high vulnerability to climate change, either partially within designated hotspots or entirely. These governorates encompassed Cairo, Alexandria, The Red Sea, Beheira, Menya, Sohag, and Aswan. In four of these governorates (Cairo, Alexandria, Beheira, and Aswan), data collection was focused at the governorate level, while in other governorates, interviews were conducted at various local levels, including villages, Shiakha (tracts), hotspots, as well as district and governorate levels.

The interviewees consisted of senior government officials, including undersecretaries of ministries and director generals of specific government administrations. Additionally, intermediaries such as district managers and employees at the governorate level, ranging from nurses to small NGO functionaries, were also included in the interviews.

This comprehensive approach ensured a diverse range of perspectives and insights, providing a comprehensive understanding of the impact of climate change across different levels of governance and among various stakeholders.

FGDs were conducted in the Red Sea, Menya, and Sohag governorates to assess participants' knowledge, awareness, and experiences regarding the manifestations of climate change in their surroundings. The discussions aimed to understand the impact of climate change on the overall health of the community, with a specific focus on reproductive health and its association with gender-based violence (GBV). Additionally, the availability and quality of health and reproductive health services were examined. Lastly, the FGDs sought the perspectives and evaluations of the local populations in these governorates regarding the response of public institutions to the challenges posed by climate change.

The Consultancy team conducted thorough research and analysis of national and international data, as well as scientific studies, to examine the impact of climate change on women, girls, and reproductive health. This comprehensive approach provided a solid foundation for identifying vulnerable hotspots, which subsequently facilitated the initiation of stakeholder consultation and validation meetings. These workshops aimed to enhance understanding of the on-ground health impacts experienced by the female population.

Additionally, an extensive research and analysis process was undertaken to evaluate the steps taken in the Egyptian Climate Change Implementation Strategy, utilizing the strategy's stated performance indicators. Through a combination of literature review and stakeholder validation workshops, valuable recommendations were formulated for gender-responsive adaptive actions. Furthermore, suggestions were put forth to enhance the Monitoring and Evaluation (M&E) Framework and relevant national documents with new inputs.

2.4 Sample Selection

The study's official sample was purposefully selected to specifically target certain groups of stakeholders. However, the sample of beneficiaries (both women and men) was randomly met on the day of the visit from the pool of individuals receiving health services in primary care units on the day of field visit. The following is a list of the groups that were consulted. (Appendix V contains detailed sample and analysis of FGD participants quantitative data). Additionally, a long list of references was enclosed in reference chapter and the Appendix IV.

2.5 Identifying Connections between Climate Change and Human Health

Climate change is one of the most critical challenges facing human beings, as it severely impacts people, economies, and the environment at global, national, and local levels. Climate change may result in direct and indirect impacts¹⁵.

¹⁵ [Social Consequences of Climate Change: Building Climate Friendly and Resilient Communities Via Transition from Planned to Market Economies, Dec. 2019.](#)

2.5.1 Direct Impacts

- Heat worsens maternal and neonatal health outcomes, an increase of one degree Celsius in the week before delivery corresponds with a six per cent greater likelihood of stillbirth¹⁶.
- Human health is affected by dangerous infections and ecosystem-mediated impacts. There is a high risk of health threats, including tularemia, anthrax, Western tick-borne encephalitis, hemorrhagic fever with renal syndrome, Crimean-Congo hemorrhagic fever, West Nile fever, brucellosis and Q Fever, as well as, dangerous infections such as cholera, malaria, tick typhus, leishmaniasis, leptospirosis and others since temperature and precipitations affect the spread and survival of such diseases.
- Flooding and windstorms increase the risks of drowning, injury, hypothermia, and infectious diseases.
- Global heating increases water salinity and drinking saline water is also linked to poor maternal health outcomes¹⁷.

2.5.2 Indirect Impacts

- Access to healthcare services : Inability of health service providers to provide primary health care services, as they will be indulged in combatting emergencies and crises.
- Food Insecurity: some countries are more cautious regarding the risks associated with the impacts of warming, such as damage to the physical infrastructure in rural areas, water stress, droughts and crop losses in years of extreme weather. Macro- and micronutrient deficiencies caused by food insecurity and undernutrition among pregnant women can affect pregnancy, nursing, and newborn outcomes and lead to low weight births, miscarriages, and perinatal mortality
- Shortage of safe drinking water
- Damage to physical infrastructure
- Energy shortage: Climate change and extreme weather events will affect energy supplies through the impacts of higher mean temperatures, changing patterns of rainfall and wind, cloud cover. Detailed selection criteria are outlined in Appendix VIII of this report.

2.6 Identification of Hotspots

Provincial officials tended to exhibit a more localized perspective when it came to identifying hotspots within different governorates. In the case of Alexandria, residents often referred to specific quarters of the city, such as Al Jumrok, Karmooz, Gheit Al Enab, Al Ajami, and Al Dikhalia, as well as areas like Western Alex and Sidi Krir, as the most vulnerable regions within the governorate. These areas were deemed susceptible due to factors such as aging infrastructure, their proximity to the coast which exposed them to high waves and heavy rainfall, and the low-lying nature of the castle and Sidi Krir areas, predisposing them to flooding. However, it is worth noting that they argue the situation has

¹⁶ Kuehn L., McCormick S. (2017). HEAT Heat Exposure and Maternal Health in the Face of Climate Change. *Int J Environ Res Public Health*;14(8):853. Published Jul 29 2017. doi:10.3390/ijerph14080853

¹⁷ Khan, A.E., Ireson, A., Kovats, S., et al. (2011). SALINATED WATER - Drinking Water Salinity and Maternal Health in Coastal Bangladesh: Implications of Climate Change. *Environ Health Perspect* 119:13281332 . Available at: <https://doi.org/10.1289/ehp.1002804>

been improving due to the demolition of informal settlements and their replacement with the Bashaier Al Khair project buildings, which boast enhanced infrastructure.

Similarly, officials in the Red Sea governorate highlighted areas such as Halaib, Shalateen, Ras Ghareb, and Al Qusair, which experience very low temperatures and heavy winter rains, coupled with scorching summer temperatures exceeding 50 degrees Celsius. Other regions, including Arab Ayesh, Al Zaaferana, and Al Saqala, are prone to torrential rains. In Beheira, employees affiliated with the governorate reported the potential threat of climate change to coastal areas in Edfu and Rashid, as these regions are witnessing coastal soil erosion. Additionally, they made reference to the desert hinterlands in Hosh Eisa, Abo Al Matameir, and Al Nubaria, which are subject to extreme temperature variations.

In the context of Menya in Upper Egypt, specific areas in close proximity to the Nile or Bahr Yousef, as well as the village of Nasr situated on the outskirts of the desert, have been identified as being susceptible to the effects of climate change. The mountainous regions of Sohag, along with areas where dwellings are constructed using clay or adobe, were considered to be at the highest risk. Moreover, an extensive study conducted in Aswan led officials to assert that the entire governorate is subject to the impacts of climate change. This assertion is based on the fact that Aswan is a bordering and mountainous governorate, characterized by the presence of 36 prominent torrential waterfalls. Additionally, the region grapples with the issue of desertification.

3 LITERATURE REVIEW

The following literature review aims to highlight and detail the links between Climate Change and Sexual and Reproductive Health Right (SRHR). The objective is to assess any gaps at the policy level, as well as the institutional framework, and to identify opportunities to strengthen SRHR climate action in Egypt.

3.1 Introduction to Climate Change

Climate change, caused by both natural factors and human activities, is a major global health concern. It leads to increased natural disasters, vector-borne diseases, reduced agricultural productivity, compromised air quality, and extreme temperature fluctuations. These effects directly and indirectly impact human well-being and undermine healthcare services¹⁸. Climate change also results in population displacement, disruptions in familial structures, increased violence, erosion of social norms, exacerbated poverty, conflicts, and even wars. It profoundly affects water quality and availability, food security, public health, economic infrastructure, and citizen safety, intensifying its negative impact on human health¹⁹.

Climate change affects different regions, genders, age groups, economic statuses, educational backgrounds, and occupations unevenly. In 2018, Europe and the Eastern Mediterranean experienced increased drought. The Eastern Mediterranean, with its aging population, high prevalence of chronic diseases, and urbanization, is particularly vulnerable to extreme heat. In the Arab States, climate change worsens resource depletion, conflict, displacement, food insecurity, and service disruptions²⁰. Globally, over 500 million people living in agriculturally productive river deltas are at risk from rising sea levels. The Nile River Delta, for instance, could be significantly submerged with just 1-meter increase in sea level, impacting agriculture and the lives of its inhabitants²¹.

Egypt ranks 104th out of 185 nations in the 2021 ND-GAIN Index, indicating its vulnerability to climate change. Escalating temperatures and reduced precipitation in the upper Nile Basins and East Mediterranean coastal region pose challenges. Natural calamities have claimed 1,500 lives and cost \$346.7 million in the last two decades. Extensive flooding in 2010 displaced individuals and damaged over 4,000 residences²².

3.2 Climate Change Incidents in Egypt

The future outlook for Egypt is concerning. Rising sea levels threaten the northern Nile Delta, including vital agricultural land, infrastructure, and urban areas. Anticipated water scarcities exacerbate

¹⁸ Zalak D Z and Zhang Y (2021) : “ Climate Change and Women's Health: A Scoping Review . GEO Health, Review Article, Advancing Earth and Space Science 10.1029/2021GH000386

¹⁹ Hussaini S ,Davies SE (2022) : “Case report : another burden to bear : the impact of CCon Access to SRHR and services in Bangladesh . Frontiers in Climate vol 4 Article 875516. <https://doi.org/10.3389/fclim.2022.875515>

²⁰ UNFPA(2020) UNFPA and the CLIMATE CRISIS Strengthening Resilience and Protecting Progress within the Decade of Action <https://esaro.unfpa.org/en/publications/unfpa-and-climate-crisis>

²¹ Evans H , Larsen J (2021) Solutions Through Reproductive Health: Why Family Planning Matters to Climate Change. Published by Population Connection, and One Planet Strategies LLC
<https://populationconnection.org/.../Solutions-Through-Repro-Health>

²² Climate Risk Country Profile: Egypt (2021): The World Bank Group
https://climateknowledgeportal.worldbank.org/sites/default/files/2021-04/15723-WB_Egypt%20Country%20Profile-WEB-2_0.pdf

water-related issues. Egypt is projected to face more frequent and intense extreme weather events like heatwaves, storms, floods, landslides, and heavy rainfall. The urban poor are particularly vulnerable. Coastal flooding and rising sea levels could impact around 2.4 million individuals by the 2080s, with an additional 1.1 million people at risk of annual river floods by the 2030s. Climate change could be responsible for approximately 15.2% of deaths in Egypt. Heat-related fatalities are expected to increase to around 47 deaths per 100,000 individuals by the 2080s. Women are especially vulnerable, and climate change will affect sectors such as health, water resources, agriculture, fisheries, housing, biodiversity, telecommunications, energy, tourism, and coastal zones²³.

3.3 Climate Change Linkage with Health

Understanding the relationship between climate change and health is challenging due to its complex nature. Establishing a clear causal link is difficult because multiple factors interact and contribute to health outcomes. Climate change has both direct and indirect effects on health, including injuries from flooding and dehydration from heat. Indirect impacts include stress-induced by flooding leading to unfavorable birth outcomes and difficulty concentrating due to heat leading to occupational injuries²⁴. Disadvantaged populations with limited capacity and resilience are most affected by poor health outcomes. Women, especially those facing gender inequalities, are particularly vulnerable to the consequences of climate change, which worsen their SRHR during and after climate-related events. The climate emergency poses a significant threat to women's SRHR, as well as the health of newborns and children²⁵.

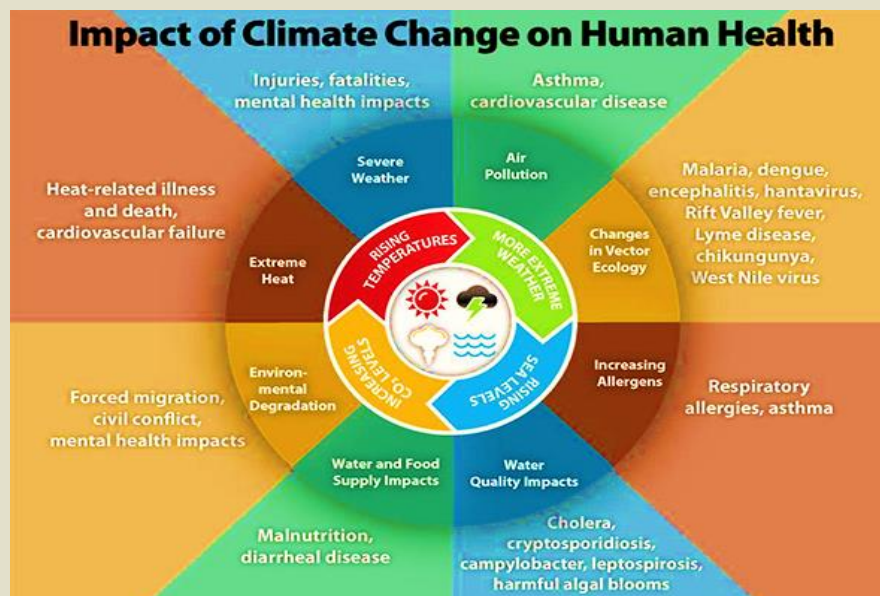


Figure 3-1: Impact of Climate Change on Human Health²⁶

²³ Ibid

²⁴ Rocque RJ , Beaudoin C, Ndjaboue R , Cameron L, Poirier-Bergeron L, Poulin-Rheault R, Fallon C, Tricco AC , Wittman HO (2021) Health Effects of Climate Change : An Overview Of Systematic Reviews . BMJ Open 2021;11:e046333.

²⁵ Hussaini S ,Davies SE (2022) : “Case report : another burden to bear : the impact of CCon Access to SRHR and services in Bangladesh . Frontiers in Climate vol 4 Article 875516. <https://doi.org/10.3389/fclim.2022.875515>

²⁶ Hussaini S ,Davies SE (2022) : “Case report : another burden to bear : the impact of CC on Access to SRHR and services in Bangladesh . Frontiers in Climate vol 4 Article 875516. <https://doi.org/10.3389/fclim.2022.875515>

3.4 Climate Change Impacts on Vulnerable Groups (women)

Climate change has a significant impact on vulnerable communities, particularly women, who face increased dangers and vulnerabilities. Women often bear the responsibility for managing household affairs and essential resources, but they experience gender disparities in reproductive rights, education, and legal recourse, which are exacerbated during environmental disasters. Sociocultural traditions and familial obligations can prevent women from relocating to safer areas. Additionally, women are disproportionately affected by gender-based violence and are more likely to perish in disasters. Their limited socio-economic influence hinders recovery efforts, including infrastructure, employment, and suitable housing. Despite having female environmental ministers and top managerial positions allocated for women, the majority of women still have limited involvement in decision-making and environmental governance processes²⁷.

Studies suggest that climate change impacts women disproportionately. Combined factors of little economic resources, gender patterns in the division of labour, cultural patterns and biological differences in heat sensitivity make women and girls particularly vulnerable to extreme weather and other climate-related events. Adaptation responses are likely to reduce some of these vulnerabilities. However, as climate change is likely to impact more severely on women than men, similarly the costs and benefits of adaptation could be unevenly distributed between them. If adaptation measures are not carefully designed with gender perspective, they may contribute to gender inequalities and reinforce women's vulnerability to climate change.

3.5 Climate Change Barriers of Adaptation

Egypt's Second Nationally Updated Determined National Contribution 2030 recognizes women's differences in adaptation and proposes that sectors should have tailored adaptation for them especially pregnant women who need health services and protection from malnutrition. It also emphasizes on the need to ensure participation and consultation of women in climate change initiatives by integrating women-specific aspects of national policies and action plans

In Egypt, adaptations to heat waves in urban informal settlements were studied (particularly the heatwave of 2015)²⁸. The following were key barriers for adaptations:

- Availability of electricity is an important factor that influences sensitivity to heat. Because of the high costs of electric appliances and electricity, the use of fans or air conditioners is often not affordable for families living in informal settlements. Also, power cuts which is reported by women living in Khosooos to occur more frequently in hot weather.
- Although pregnant women had the knowledge of preventive behaviors such as staying indoors, taking showers, ventilating their homes, drinking a lot of liquids and taking rest. Most of them said that they spent a lot of time in the kitchen, going to the market, or accompanying their children to school or kindergarten and were therefore subjected to heat.

²⁷ Hussaini S ,Davies SE (2022) : “Case report : another burden to bear : the impact of CCon Access to SRHR and services in Bangladesh . Frontiers in Climate vol 4 Article 875516. <https://doi.org/10.3389/fclim.2022.875515>

²⁸ Katzan, J. (2017). Protecting health from heat stress in informal settlements of the Greater Cairo Region.

- Seeking healthcare in case of emergency: In areas with no healthcare facility (e.g. Ezbet El Haganna) women need to travel long distances to seek health care. Another barrier is limited affordability and quality. Inhabitants from all settlements complained about the poor quality of the health care services and a lack of equipment and medication of medication and overcrowding.

As mentioned, the Egypt's Mediterranean coastline is experiencing the consequences of sea level rise which causing deterioration in agricultural land. Hence, the government is adapting several reclamation and irrigation projects including Salam Canal which Egypt's largest land reclamation and irrigation project. The settlers were selected through a formalized application process with quota of at least 20 percent female settlers. However, only few women applied. Additionally, many women later reported giving control over land to male family members, in conformity with gendered roles and expectations²⁹.

The intersection between Sexual and Reproductive Health and Rights (SRHR) and climate change has several important implications. Climate change can directly and indirectly impact access to SRHR services, as extreme weather events can disrupt health facilities, infrastructure, and medical supply chains. This can result in increased maternal mortality and morbidity, sexually transmitted infections, unwanted pregnancies³⁰ and unsafe abortions which account for more than 13% of maternal deaths globally.

Box 3-1: Climate change incidents – Bangladesh case study

Drinking Water Salinity and Maternal Health in Coastal Bangladesh:

Climate change induced decreases rainfall in dry season and sea level rise in addition to reduced river flows, increased upstream withdrawal cause salinity intrusion. The estimated salt intake from drinking water in this population exceeded recommended limits. This salt intake from drinking water is a contributing factor to hypertension in pregnancy. Average estimated sodium intakes from drinking water ranged from 5 to 16 g/day in the dry season, compared with 0.6–1.2 g/day in the rainy season.

The annual hospital prevalence of hypertension in pregnancy was higher in the dry season OR12.2% compared to 5% in rainy season.

Maternal and neonatal health which are affected by climate change, heat and air pollution witnessed higher rates of miscarriage, preterm birth, and negative neonatal outcomes. Climate change also affects patterns of vector-borne diseases like malaria, further impacting maternal health. Access to clean water is crucial for safe births and pregnancies, and the intake of salinized water can have negative effects on pregnancy outcomes. Climate change can contribute to early, forced, and child marriages as families face pressure due to climate impacts. Humanitarian settings may see an increase in child marriages as

²⁹ MARISA O. ENSOR (2020). Gender, climate change and security risks in Egypt: Opportunities for synergistic action. Gender, climate and security - Sustaining inclusive peace on the frontlines of climate change.

³⁰ UNFPA report (2021): "Sexual & Reproductive Health and Rights (SRHR) In National Climate Policy . A Review Of 50 National Determined Contribution Documents. UNFPA, Queen Mary University of London, Safe Young People Programme (SYPE)

a means to protect girls from sexual violence. Pollutants and toxins, combined with the climate crisis, impact safe and sanitary conditions, disrupt food and water systems, and affect fertility³¹.

3.6 Climate Change and Gender Based Violence

Gender-based violence (GBV) is also exacerbated by climate change, as stress, scarcity, and humanitarian crises increase instances of GBV, child marriages, and trafficking following disasters. Women and girls who have to travel long distances for necessities are at higher risk of violence. Disruptions in access to natural resources can also lead to violence³².

Extreme weather events cause disruptions in accessing reproductive health services, interrupt the supply chain for medical resources, lead to the loss of medical records, and result in the unavailability of contraceptive services. These circumstances contribute to unmet needs and give rise to complications such as unintended pregnancies and maternal mortality. Additionally, the absence of counseling and psychological support for young mothers, inadequate post-abortion care, and insufficient testing and treatment for sexually transmitted infections (STIs) can have severe consequences like infertility, tubal and ectopic pregnancies, and cervical cancer, among other health issues.³³.

Climate-related disruptions in supply chains hindered access to health services, including HIV management. Climate-related events can increase the risk of contracting HIV, particularly for young women in drought-affected areas. Reduced access to reproductive health supplies increases the likelihood of HIV transmission³⁴.

Box 3-2: Climate change incidents – South Africa Case Study

South Africa Case Study

The impact of climate change on farmers both men and women were studied. Women participating in the study reported that, it is their role and responsibility to ensure household food security, therefore they work harder to find the means and resources to sustain food supply in the household. Women participate in various income activities.

So, they tend to work longer hours than the men. Men were reported to have more leisure time as compared to women.

³¹ UNFPA report (2021) : “ Sexual & Reproductive Health and Rights (SRHR) In National Climate Policy . A Review Of 50 National Determined Contribution Documents . UNFPA , Queen Mary University of London, Safe Young People Programme (SYP)

³² Ibid

³³ Hussaini S ,Davies SE (2022) : “Case report : another burden to bear : the impact of CCon Access to SRHR and services in Bangladesh . Frontiers in Climate vol 4 Article 875516. <https://doi.org/10.3389/fclim.2022.875515>

³⁴ UNFPA report (2021) : “ Sexual & Reproductive Health and Rights (SRHR) In National Climate Policy . A Review Of 50 National Determined Contribution Documents . UNFPA , Queen Mary University of London, Safe Young People Programme (SYP)

Population dynamics, urbanization, and population growth impact both climate change and the health of the planet. Unequal access to education, limited access to SRHR services, and high birth rates are interconnected. Recognizing SRHR as a fundamental right is crucial for just responses to climate change.

Box 3-3 below outlines a case study in Indonesia which clearly presents linkages between natural disasters, in this case, and earthquake, with SRHR³⁵.

Box 3-3: Earthquake in Indonesia

Earthquake in Indonesia

The earthquake in Yogyakarta and the Central Java Province, in 2006 has impacted the contraception use during and after the crisis. The unmet needs lead to unplanned pregnancy. Additionally, women reported loss of their contraceptive method at home, lack of access in the healthcare facility or lack of knowledge. After the crisis, some of those women who did not have access to their usual contraceptive methods, switched to a different method. However, due to lack of counseling from a healthcare worker. They experienced more unwanted pregnancy than the group of women who were able to access their usual method.

3.7 Interconnections between Climate Change, Sexual and Reproductive Health

In the research context the interconnections between climate change and sexual and reproductive health and rights (SRHR) have been overlooked, despite their importance in addressing gender inequality and ensuring access to SRHR services. The lack of research and evidence in this field is due to the challenges of analyzing the attribution of SRHR to climate change and the complexity of vulnerability factors. It is crucial to address these gaps to understand the dynamics between climate change and SRHR, enabling informed decision-making, responsive policies, and impactful interventions that mitigate climate change effects and promote gender equality and SRHR for all³⁶.

The failure to achieve sexual and reproductive health and rights (SRHR) can impede the involvement of women and girls in climate action and policymaking. When opportunities for education and livelihood development are hindered due to gaps in SRHR, women may be excluded from participating in decision-making at the household and community levels. Additionally, girls who are forced into early marriages before completing their education may face limitations in accessing and responding to climate information and alerts provided by disaster early warning systems. The realization of SRHR, especially for those who already face discrimination, can empower individuals to exercise their agency and actively engage in climate action. By addressing the needs and priorities of

³⁵ Hapsari, E. D., Nisman, W. A., Lusmilasari, L., Siswishanto, R., & Matsuo, H. (2009). Change in contraceptive methods following the Yogyakarta earthquake and its association with the prevalence of unplanned pregnancy. *Contraception*, 79(4), 316-322.

³⁶ [Women Deliver \(2021\): The Link Between Cc And Srhr An Evidence Review 2021 Report: Why Women Are More At Risk Of Cc And Prone To Adverse Effect? https://womendeliver.org/wp-content/uploads/2021/02/Climate-Change-Report.pdf](https://womendeliver.org/wp-content/uploads/2021/02/Climate-Change-Report.pdf)

marginalized groups, including in climate action and policymaking, the realization of SRHR can promote greater inclusivity and equality³⁷.

3.8 Women's Status; Reproductive Health; Climate Change; and the Effect of Climate Change on Health In Egypt

Egypt has fully embraced the 2030 agenda for Sustainable Development Goals, with a focus on achieving (Goal 5) gender equality and empowerment for women and girls. The country has set specific targets to address discrimination, violence, child marriage, and female genital mutilation. Egypt aims to create an environment where women and girls can thrive by promoting shared responsibilities, decision-making, and access to sexual and reproductive health services. The National Strategy for the Empowerment of Egyptian Women 2030 outlines key interventions to enhance reproductive health services, raise awareness about risks, and improve healthcare capacities. Climate change was included in the strategy's proposed interventions, to raising women's awareness how to cope and to take necessary protecting procedures, using appropriate environmentally friendly procedures, and training. Egypt's efforts align with the SDGs and demonstrate its commitment to creating a society with equal opportunities and rights for women and girls.

The Nationally Determined Contribution documents (NDCs) play a crucial role in defining each country's pledges and approaches to combat climate change. Egypt's submission of its NDC acknowledges the influence of population dynamics on climate change. Among 14 nations, including Egypt, there is a recognition of population dynamics as a significant element impacting emissions, public systems, and the security of food and water resources. In its NDC, Egypt emphasizes the strategy of managing population growth. Although the NDCs of Egypt do not explicitly mention sexual and reproductive health and gender considerations, the nation demonstrates a commitment to enhancing awareness about climate change and to strengthening the response of the health sector. Climate change initiatives in Egypt are orchestrated through multiple agencies and committees, including the Egypt's Environmental Affairs Agency, the Ministry of State for Environmental Affairs, and the National Committee of Climate Change, along with the Disaster Risk Management (DRM) department. However, it's observed that the participation of the Ministry of Health and Population could be further expanded in these activities.

4 FINDINGS

The main empirical findings of the study were planned to be presented in the form of case studies. However, due to the similarity between governorates, particularly, due to facing the same climate change incidents e.g., flood/ heavy rains and significant change in the temperatures. Accordingly, the data was collectively analyzed to reflect the objective of this study.

³⁷ UNFPA report (2021): "Sexual & Reproductive Health and Rights (SRHR) In National Climate Policy . A Review Of 50 National Determined Contribution Documents . UNFPA , Queen Mary University of London, Safe Young People Programme (SYP)

4.1 Climate Change Impacts on Women, Girls, and Reproductive Health in Egypt

This section reports on the empirical findings resultant of the interviews conducted with governmental and non-governmental officials³⁸ on the issue of the impact of climate change on women and girls. More specifically, it addresses questions related to a number of issues including knowledge and understanding of climate change and familiarity with the Egyptian National Strategy of Climate Change. The impact of climate change on health at large, and reproductive health in particular as well as hurdles they confront addressing these phenomena. Furthermore, it analyzes the institutional capacities and capabilities of dealing with climate change and the problems they confront in this respect. Additionally, they discuss access to facilities during times of severe climate conditions i.e., floods, heat waves, droughts and quality of provided health services and modes of response and adaption of the population and institution. The section also reports on the proposed recommendations to reduce risks of climate change and securing Reproductive Health services.

It is crucial to shed light on the limitation of this section that was based on feedback from the interviewees. There was no specific quantitative data or laboratory and clinical studies. Accordingly, some of the information presented merely reflects the perception and persona views of participants.

4.2 Defining Climate Change & Assessment of Current Awareness

Climate change refers to long-term shifts in global temperatures and weather patterns. While natural factors like solar activity and volcanic eruptions can contribute, human activities, particularly the burning of fossil fuels, are the primary cause. These activities release greenhouse gases, acting as a blanket that traps heat and raises temperatures. Human activities are responsible for almost all global warming in the past 200 years. Greenhouse gas emissions have caused temperatures to rise faster than any period in the last 2,000 years. The Earth's surface is now about 1.1°C warmer than in the late 1800s, and it's the warmest it has been in the past 100,000 years. The last decade was the warmest on record, with each successive decade getting hotter since 1850³⁹.

In the course of the official interviews conducted, participants were asked to provide their understanding of the concept of climate change. While it was not expected for interviewees to recall the exact definition, their responses demonstrated an awareness of the key features widely recognized as symptoms or outcomes associated with climate change. Specifically, they highlighted the occurrence of desertification, drought, hurricanes, scarcity of green areas, rising sea levels, and deviations from the usual weather patterns, such as untimely or heavier rainfall, as well as unseasonably high or low temperatures.

Interestingly, only a few officials explicitly acknowledged or mentioned "long-term shifts in temperature or weather patterns" as a distinct characteristic of climate change. Notably, two official interviewees in Alexandria and Aswan, who possess experience in addressing environmental risks, identified this feature as a defining aspect of climate change. The majority of interviewees attributed

³⁸ All interviews were conducted with government officials except in Aswan where an official in an NGO was also interviewed alongside government officials.

³⁹ <https://www.un.org/en/climatechange/what-is-climate-change>

climate change predominantly to human activities, particularly industrial activities. In contrast, natural events were seldom cited as causes of climate change by the interviewees.

In certain areas, local officials displayed limited recognition of climate change, associating it primarily with changes in temperature, heavy rainfall leading to the spread of diseases, and global warming. In Beheira, climate change was defined as an increase in the ratio of carbon dioxide and sea level, resulting from global warming and the release of harmful smoke from the burning of agricultural waste. A local health professional expressed the perspective that nature is expressing its discontent, citing the daily experience of witnessing the four seasons, rain, dust, and extreme temperatures.

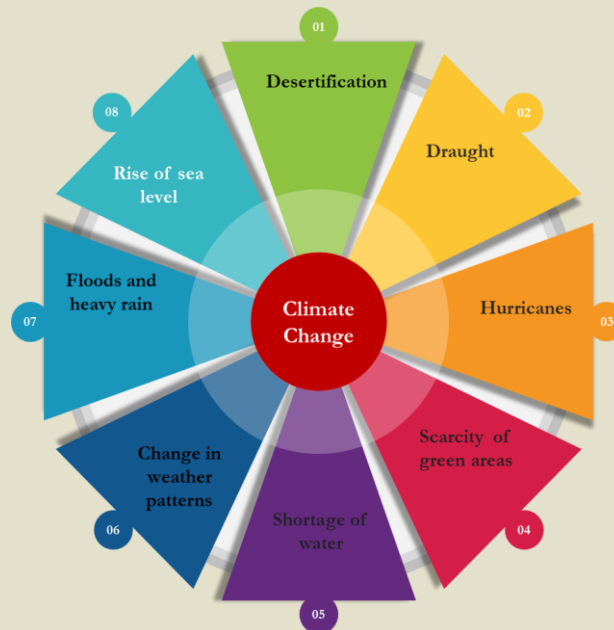


Figure 4-1: Aspects and Dimensions of Climate Change

During the focus group discussions held in Red Sea, Menia, and Sohag governorates, female participants exhibited a strong awareness and knowledge of climate change, particularly in relation to heavy and torrential rains. The majority of participants across all three governorates demonstrated a comprehensive understanding of climate-related issues, including ozone depletion, the emergence of new diseases and viruses, and the occurrence of heatwaves and bitter cold spells. In the Red Sea governorate, one participant shared a personal experience of widespread devastation caused by torrential rain seven years ago, which resulted in the loss of homes. This event had a lasting impact, leading her and others in the governorate to closely monitor changes in the climate. Other female participants expressed agreement on climate changes and revealed their engagement in following the activities of COP-27 to gain a deeper understanding of the measures taken to address climate change.



Figure 4-2: Heavy rain in Alexandria 2021



Figure 4-3: Flood in Aswan 2022

In Menya, female participants confirmed their firsthand experiences of heavy rains, high temperatures, and droughts. They also highlighted the negative effects on men's employment, as extreme weather conditions hindered their ability to reach workplaces. Pregnant women faced challenges, including increased tension and limited access to public health units during rainy periods due to road conditions.

In Sohag, male participants were aware of changes in weather patterns, using the term "*Takbleef Al Jam*"⁴⁰ to describe the rise in temperatures during summer and freezing cold temperatures during winter, accompanied by longer summer and winter seasons. They attributed these phenomena to emissions from factories, high-rise buildings, and mobile phone towers, which they believed contributed to more desertification and reduced agricultural income. The participants also observed a pattern where a hot summer was followed by a cold winter. Additionally, they experienced torrential rains four years ago, further underscoring the unpredictable nature of the climate.

Young females in Sohag echoed their male counterparts' understanding of climate change. They emphasized the impact of higher temperatures and humidity, particularly in July and August, on health and living costs. They highlighted the financial strain caused by high prices, leading to difficulties in affording an adequate amount of food. One young girl used the phrase "*Sometimes families sleep half full (Nos Batn)*" to illustrate the challenges faced due to limited resources. Traditional cooling methods, such as fans and desert air conditioners, were no longer effective due to increased humidity. Participants also expressed concerns about the damage caused by high temperatures to electrical appliances and the resulting allergies in their children. One woman shared her experience of the collapse of her roof due to torrential rains.

4.3 Potential Impacts of Climate Change in Egypt

Regarding the impact of climate change on the environment in Egypt, interviews with officials highlighted various concerns and challenges related to climate change, including extreme weather events, desertification, water scarcity, agricultural disruptions, health implications, and the need for international cooperation. The findings underscore the urgent need for sustainable practices and environmental stewardship to mitigate the adverse effects of climate change in Egypt. Several challenges have been reported that identify potential areas for intervention and adaptation.

⁴⁰ "Takhleef" is probably a very local version of "Tkhtilaf" in formal Arabic language meaning change.

Geographically, regional differences in climate change impacts were reported across the six governorates. Coastal areas like Alexandria and the Red Sea were found to be particularly vulnerable due to rising sea levels, coastal erosion, and the increased frequency of high-impact gales and torrents, which increased the risk of flooding and infrastructure damage. Rural areas also faced challenges related to changes in agricultural practices and reduced crop productivity, affecting the predominantly agricultural and working-class populations. In Upper Egypt, governorates such as Aswan and Menia experienced desertification and extreme heatwaves, with temperatures reaching up to 45 degrees Celsius, further exacerbating the vulnerability of these regions to climate change impacts.

The provincial representatives emphasized the need for urgent action to address these challenges. This includes adopting sustainable practices, improving water resource management, and fostering international cooperation to effectively mitigate the adverse effects of climate change in Egypt.

Central key ministries Representatives have identified several regions that are particularly vulnerable to the impacts of climate change. Their focus primarily centers on the coastal areas, with minimal emphasis on the regions in Upper Egypt. The identified vulnerable regions include the Red Sea, Alexandria, border areas such as Sinai, the Western Desert, Matrouh, and the Delta region. The low-lying nature of the Delta lands makes them susceptible to flooding, especially in the context of rising temperatures and melting ice caps. Alexandria, in particular, faces significant threats that surpass those in Upper Egypt.

Coastal areas, including Matrouh, the Red Sea, South Sinai, Alexandria, Ismailia, and Port Said, are also at risk of flooding due to climate change. They anticipated that the Nile Valley regions will experience a rise in temperatures, leading to increased rates of evaporation, plant desiccation, and the emergence of pests and diseases previously absent in the region.

It should be noted that the representatives did not specifically mention Cairo as one of the hotspots of climate change despite the de-greening of Cairo that has occurred in recent years or the growing urban density and rising temperatures in its informal settlements as signs of an escalating climate change crisis⁴¹.

4.3.1 Impacts on Environment and Infrastructure

One key area of concern identified by the officials was the impact on the environment and infrastructure. The rise in desertification and the conversion of agricultural land into fallow areas were reported, leading to unprecedented heat waves in Upper Egypt and posing a significant threat to the agricultural sector and overall food production. Additionally, heavy rainfall and rising sea levels have resulted in increased instances of flooding, causing damage to homes, buildings, and drainage systems, particularly in coastal areas like Alexandria and the Red Sea. These extreme weather events have had a catastrophic impact, disrupting the livelihoods of predominantly agricultural and working-class communities.

⁴¹ See for example, <https://health.bmz.de/toolkits/climate-health/vulnerability-assessments/a-vulnerability-assessment-in-cairo-egypt/>

4.3.2 Impacts on Soils and Coastlines

Coastal erosion and the rising sea level were identified as significant challenges, with more concerns from the participants regarding the land erosion in Alexandria and the submergence of low-lying areas. Furthermore, desertification and the conversion of agricultural land into fallow areas were observed in Upper Egypt and Behira, posing risks to agricultural productivity and food security in these regions.

4.3.3 Impacts on Public Health

The officials also discussed the impacts of climate change on public health. Increased levels of pollutants, including carbon dioxide emissions, have been linked to respiratory issues, infertility, birth defects, and other diseases. Climate change exacerbates these health risks, particularly in areas with high pollution levels. Rising temperatures, heatwaves, and extreme weather events were identified as contributing factors to health issues, with vulnerable populations such as the elderly and pregnant women experiencing fatigue, fainting, and shortness of breath during periods of high temperatures. Health professional reported that despite the presence of iodine-rich air in Alexandria governorate's, pollutants have been found to have detrimental effects on the thyroid gland, resulting in thyroid hormone problems.

4.4 Impacts Observed in Egypt in the Past 5 Years

The interviewees were requested to furnish data pertaining to the alterations they have witnessed in various phenomena commonly linked to climate change within the past five years. These phenomena encompassed heavy rainfall and flooding, elevated temperatures, droughts, scarcities of potable and irrigation water, as well as infrastructure damage. The ensuing table provides a condensed overview of the incidence of the aforementioned events across the governorates being examined in this report.

Table 4-1: Occurrence of Phenomena Associated with Climate Change in the Seven Governorates During the past five years

Governorate	Phenomena						
	Heavy Rains/ Flooding	High Temperatures	Droughts	Drinking Water Shortage	Irrigation Water Shortage	Damage to Infra structure	Number of Events
Cairo	NR*	Yes	NR	No	NA*	NR	1
Alexandria	Yes	Yes	NR	No	NA	Yes	3
Red Sea	Yes	Yes	No	No	NA	Yes	3
Beheira	Yes	Yes	No	No	NR	Yes	3
Menya	Yes	Yes	NR	No	Yes	Yes	4
Sohag	Yes	Yes	NR	Yes*	NR	Yes	4
Aswan	Yes	Yes	Yes	No	NR	Yes	4
Total	6	7	1	1	1	6	22

* Only in the village of Naser 6 ; NR= Not Reported ; NA= Not Applicable as the governorate is classified as entirely urban or has a Bedouin but not rural economy.

The data depicted in the table clearly indicate that elevated temperatures have been the most prevalent phenomenon observed across all seven governorates during the previous five years. Following closely behind are occurrences of heavy rains/flooding and infrastructure damage, which are tied for second

place in six of the governorates, except for Cairo. Conversely, other phenomena listed in the table, such as droughts, drinking water shortage, and irrigation water shortage, received limited and sporadic mentions, ranking a distant fourth with only one mention each.

Significantly, Cairo, being the capital of Egypt, seems to be experiencing relatively less severe impacts than the other governorates. The primary impact in Cairo appears to be restricted to elevated temperatures, with no reported instances of infrastructure damage. From a policy perspective, these findings emphasize the necessity for greater equity in resource allocation among the governorates, particularly considering the effects of climate change on the country's periphery.

Behera governorate official stressed that the need for significant improvements to the sewage and drainage system, as well as the coverage of Al Mahmoudia Canal, due to the regular occurrence of heavy rains and flooding. In the Red Sea Governorate, heavy rains caused extensive damage, including the washing away of major road sections, the collapse of houses in Ras Ghareb and Al Qusair, and widespread blackouts. Measures such as enhancing the carrying capacity of torrents, managing overflow, and regular cleaning have successfully reduced the impact of heavy rains. In Behera, heavy rains resulted in the submergence of islands in the Nile and the collapse of old houses in Balteem, with the village of Ofouna serving as a notable example. In 2015, a 12-day period of heavy rain caused significant losses of physical, the flooding of the village's agricultural area, and multiple fatalities.

In the governorates of Sohag and Menya, which are among the highest poverty rates five governorates over the years, approximately 60% and 55% of their respective populations were classified as poor in 2017/2018. The primary consequence observed in these regions has been the significant collapse of old houses⁴². In the case of Aswan, the occurrence of torrential rains has disrupted the natural behavior of reptiles, such as scorpions and snakes, causing them to emerge from their burrows unexpectedly. This has posed a major safety threat to the local community.

The subsequent sections provide an illuminating examination of the occurrences witnessed in the past five years as a result of climate change. These phenomena encompassed a range of significant impacts, including heavy rainfall and flooding, elevated temperatures, droughts, scarcities of potable and irrigation water, as well as impact on infrastructure damage and food as obtained through various FGDs.

4.5 Climate-Change Induced Impacts

4.5.1 Torrential and Heavy Rains

During the Focus Group Discussions (FGDs), participants were specifically asked to reflect on the frequency of torrential and heavy rains and how these weather events impact their livelihoods. The discussions encompassed the economic, emotional, and health-related effects, with a particular focus on reproductive health. In Ras Ghareb, located in the Red Sea governorate, it was reported that torrential rains occurred five years ago. When discussing the health implications, participants noted that the rain had a negative impact on their well-being. The cold and wet weather resulted in various health issues, including high fever, chest allergies, and sinus problems. One woman described her experience, mentioning that she and her husband had to remove water from their house at 3 am. She

⁴² <https://www.almasryalyoum.com/infographics/details/1548>

said “I had to dewater the house at 3 am along with my husband. Though I was wearing heavy clothes, the cold and wet weather causes allergy and paranasal sinuses. I also feel pain in my feet”.

In Edwa, located in the Menya Governorate, it has been reported that heavy rains that occurred last year had severe consequences, including the collapse of houses, widespread unemployment, loss of income, food shortages, closure of shops, schools, and private tutoring centers, as well as the deterioration of infrastructure and limited means of transportation. Accessing medical institutions for essential services became challenging, leading women to resort to using herbal remedies for treatment. The entire school semester had to be canceled due to the unfavorable conditions.

Women in Ras Ghareb said that rains caused cracks in the walls and ceramic of their homes. They complained that the added cost of such problems competes with other necessary expenses such as those which are supposed to be devoted for the education of children.

Box 4-1: A case study in Ras Ghareb

“Since our homes are spacious, it costs a lot to repair. During one of those heavy and torrential rain episodes water radiated up to two meters and we were fearful of touching the walls lest we should get electrocuted. During that time, we were unable to go to the clinics, but the clinics sent the rural pioneers to our homes. Furthermore, the Red Crescent reached out and provided food and medications. Speaking for myself, as I suffer from Type A diabetes, I was unable to obtain Insulin either because it was not available or because it was ruined because of power cut offs in the pharmacies. The Red Crescent provided medicine, dry meals and other necessities and so did The Food Bank. Social Problems appear not to be alien to the impacts of draughts.”

In Menya, adobe houses melted, cracked, or tilted due to heavy rains. The authorities disconnected electricity to prevent accidents, resulting in no Internet, closed shops, and some sinking underwater. This led to challenges in obtaining food due to scarcity and high prices. Women exerted extra effort to remove water from their homes. Women's discussions confirmed the girls' concerns and added that the rains caused health issues and common colds. Some individuals purchased dust to dry and clean the streets. Men reported that wooden homes drowned, and electrical appliances were damaged. The absence of taxis, tuk-tuks, and doctors unable to reach clinics hindered transportation, causing income decline and making it challenging to manage sickness effectively.



Figure 4-4: Collapsed house in Aswan 2022

In Sohag, similar situations and narratives prevailed, and it was added by young girls that whenever the infrastructure of a given home was undermined its residents “temporarily joined the living quarters of neighbors and relatives”. Last year electricity caught fire because of the rains and two kids were electrocuted and died.

Box 4-2: Menya Case Study

“As far as I am concerned, torrential rains ruined my entire life for good. I had a four rooms house that went down the drain in the rain. I’m still unable to make up for half of the losses I incurred. My husband is a clandestine worker and when it rains, he is out of work. With four children ends do not meet”.

Reported by a female participant.

Young girls said that older homes were the most affected and lots of people either died or lost their work or crops. The infrastructure was destroyed transportation vanished and reaching health facilities was difficult “people were originally unable to leave their homes and both road and cars were in ruins. Whoever was suffering from any illness just took whatever at home available medication and that’s it”

Of significant concern is the impact on reproductive health services. Due to the lack of employment opportunities resulting in shortage of financial resources. Accordingly, there were significant difficulties for women to access reproductive health services. Consequently, there was an increase in undesired pregnancies. Men confirmed these incidents, along with other facts stated by women and young girls. Additionally, they highlighted the financial burden of hiring drainage trucks to remove sewage and water from homes and roads, exacerbating the challenges faced during a period of unemployment.

However, amidst this collective misery, the community came together to address the situation. Individuals took it upon themselves to repair and pave the streets in front of their homes, enabling unrestricted movement and access to essential service areas. Furthermore, different areas collaborated with one another to create a more habitable town for all residents.

4.5.2 Heat Waves and Extreme Temperatures

The impacts of climate change-induced high temperatures have wide-ranging effects on livelihoods, particularly in terms of economic, emotional, and health aspects, with a specific focus on reproductive health. In the Red Sea Governorate, significant temperature variations between summer and winter were observed, with extremely high summer temperatures and very low winter temperatures. These temperature extremes can cause short circuits, damaging electrical equipment.

Reproductive health services in Ras Ghareb address the challenges posed by high temperatures by providing transportation for women seeking medical treatment, including blood pressure monitoring, chest examinations, contraception installations, and pregnancy follow-ups. Young girls in Focus Group Discussions (FGDs) highlighted the negative impact of severe heat on work attendance, leading to income declines.

In Menya, heatwaves result in symptoms like shortness of breath and fever for many individuals. Pregnant women experience nervousness, exhaustion, and mood swings. Similar study conducted in

Cairo's informal settlements reported the impact of heat waves on pregnant women who said they feel more sensitive to heat during their pregnancy⁴³.

Unemployment negatively affects the psychological well-being and financial conditions of men. Women in Menya mentioned that many men refrain from working during heatwaves, leading to illness among women and children. The extreme heat also forces the closure of projects, including poultry farms, causing livelihood losses.

In Sohag, high temperatures lead to crop losses and a decline in family income due to limited work opportunities. Accessing reproductive health services becomes challenging during heatwaves, with some women avoiding healthcare facilities. Girls express concerns about heat strokes and difficulties working during mid-day hours. Family tensions increase, and girls report that high temperatures can affect menstrual cycles, causing heavy bleeding and severe stomach pain.

Accessing reproductive health services during heatwaves becomes more challenging, with difficulties finding doctors in public institutions or private clinics. When available, doctors are often agitated. Strategies mentioned by girls include seeking services early in the morning or at night, reducing unnecessary visits, or seeking care only when experiencing pain. Married women share experiences of verbal and physical abuse from their husbands, highlighting additional difficulties during extreme heat periods.

4.5.3 Droughts

No droughts were reported during the past five years in any of the target governorates.

4.5.4 Drinking and Irrigation Water Shortage and Its Impact on Livelihoods

Like the previous sections, this section addresses the views of FGD members of the frequency of drinking and irrigation shortages and their impact on the livelihood of individuals and how does affect eking a living economically, emotionally, health wise and especially, on reproductive health. In the Red Sea governorate, the three FGDs of women, men and young girls were unanimously on agreement that they never witnessed or noted any shortage in drinking water during the past five years. Irrigation water is irrelevant in the governorate since there is no agricultural activities to write home about it.

In Menya, the three groups of women, men and young girls showed little interest in addressing drinking water suggesting that there was no problem of concern about this item. However, there was a split in opinions about irrigation water. The majority of women indicated there was no shortage neither in drinking nor in irrigation water. Nonetheless, one young girl stated that they witnessed severe irrigation water shortage during a heat wave where there was no water to irrigate the wheat crop. As a result, the yield declined, and people ceased to send their children to schools because of the lack of resources to support their education and lots of children dropped out. They further were unable to go to hospitals in case of sickness or spend on medical treatment and resorted to folk medicine as an alternative. They further resorted to baking bread at hot rather buying it from the market. On their part, men stressed witnessing irrigation water shortage forcing farmers to resort to saline artesian or well irrigation thus, reducing crop yield and reducing income and bad mood: "*No good crop, no money, no good psychological state*".

⁴³ ⁴³ Katzan, J. (2017). Protecting health from heat stress in informal settlements of the Greater Cairo Region.

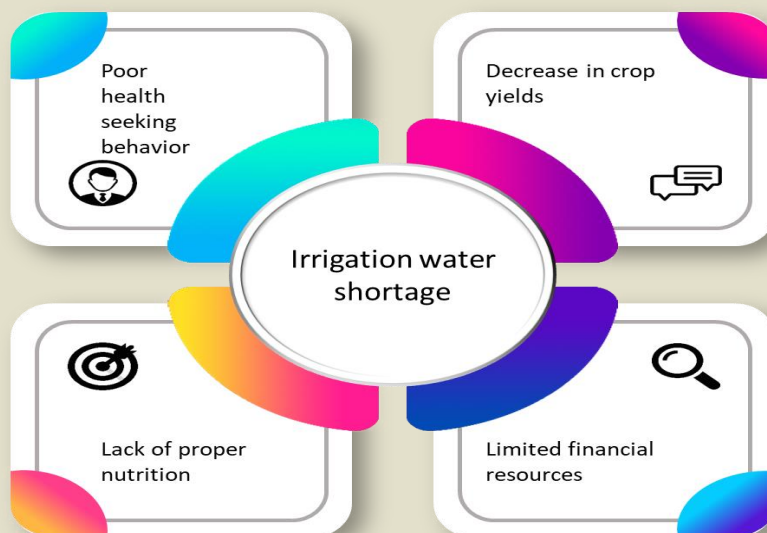


Figure 4-5: Irrigation water shortage impacts

In Sohag, both men and women are in agreement that there has been irrigation water shortage for the past two years resulting in crop yield reduction. *“A feddan of maize used to yield 16 Ardeb and now it yields only 8. People with means now dig wells as an alternative to surface irrigation water. They further refrained from growing crops that are thirst for water like cucumber, eggplant and fragrance plants such as “Al Fuel” as water enters the canal once every 15 days”*. Women also indicated that irrigation used to be directly from the canal using gravity and now we have to lift water by pumping machines which increases the cost of production. They also confirmed what men stated about crop reduction.

4.5.5 Food Shortage

FGDs were probed about the effects of climate change on their ability to feed their families and its impact on health and reproductive health. They were further asked about the ways in which they addressed this problem whenever it arises. Women and girls in the Red Sea governorate stated that they were faced with food shortage during periods of torrential and heavy rains. The intervention of the army, The Food Bank, the Ministry of Health and Resala Society⁴⁴ helped easing the situation by making available dry and ready meals, medicine. Youth Volunteers and rural leaders helped in distributing meals and in dewatering of homes.

In Menya, women and girls indicated that irrigation water shortage was accompanied by crop shortage resulting in insufficient food stock at homes as the residents are dependent in their livelihood on crops such as rice, lentil and wheat. Furthermore, men unemployment led to cash shortage and thus buying commercial products like meat and poultry which are full of protein especially needed for children from the market was not also possible. Needless to say, that this affected women as well and especially pregnant women who need to be well fed. During this period, some women resorted to instilling a loop to avoid getting pregnant while other entered the labor market to help their husbands make ends

⁴⁴ An Egyptian NGO.

meet. A third group resorted to borrowing. Some men also borrowed money venturing into writing dishonored checks -without money cover in the bank- thus ran the risk of imprisonment.

In Sohag, men stated that they had to give up on buying meat and chicken and other high-priced goods which affected their health. In other cases, women went out to work as daily laborer while others sold their products in local markets to cover for family expenses. Women and girls' responses were similar in their orientations to that of men. However, and as for health services, they indicated that they witnessed no change but because of the absence of doctors they resorted to folk medicine and consulting with the pharmacists rather than going to the clinics.

4.6 Implications of Impacts on Reproductive Health and Maternal Health

Given the fact that the impact of climate change on individuals' livelihoods varies across gender lines, this section will outline the reported impacts disaggregated by governorate. Below are the key impacts related to SRHR in the target governorates.

4.6.1 Impacts on lives of women and girls

Sexual and reproductive health and rights is one of the risks related to climate change. The disproportionate impact of climate change on the lives of girls and women, larger health, social and economic well-being is well documented. While many countries do not collect comprehensive climate information data disaggregated by sex.

As previously mentioned, climate change might cause diarrhea and poor nutrition. Accordingly, both the lives of women and their fetus might be endangered⁴⁵. Adverse birth outcomes, including low birthweight (LBW), small for gestational age (SGA), and preterm birth, contribute to 60%–80% of infant mortality worldwide. The impact of diarrheal diseases on children and infants is well established. Globally, diarrheal illness is responsible for 6% of overall adult mortality and is a major cause of morbidity. Studies of diarrhea during pregnancy (1) have examined only women who were hospitalized for diarrheal illness or (2) have focused on specific etiologies such as listeria or typhoid, which are known to cause severe disease in pregnant. Community-based studies that have included women who were not hospitalized have generally examined infant neurocognitive outcomes and growth. Data from hospitalized women with diarrhea indicate that multiple different pathogen types can cause severe adverse birth outcomes, including premature rupture of membranes, miscarriage, and neonatal infection. However, these studies fail to capture the denominator of women who experience acute diarrheal illness but do not seek care or are less critically ill. In the absence of recent data regarding the incidence of diarrhea during pregnancy, it is difficult even to estimate the potential magnitude of any adverse birth outcome that diarrhea might cause. This is particularly important in low-income countries where adverse birth outcomes have significant implications for neonatal morbidity and mortality and where the incidence of diarrhea is high.

In the Red Sea governorate, women reported different impacts of torrential rains in Ras Ghareb, resulting in loss of lives due to excessive water.

⁴⁵ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6368846/>

In Aswan officials reported that the insects and reptiles invaded the villages after torrential rains causing significant numbers of affected women and young girls. There was no sufficient data about the mortality of women and girls.

Young girls in Ras Ghareb faced food shortages caused by heavy rains. In Menya, both heavy rains and high temperatures led to diseases, with women being more vulnerable. They also mentioned the burden of housework, childcare, and tending to their husbands, causing stress and psychological strain.

4.6.2 Impacts Related to Fatigue and Dermatitis

Both young girls and women experienced health issues like dermatitis and fatigue due to weather variations. Staying in small kitchens increased their feeling of heat. They also mentioned using the washroom frequently, exposing them to cold and flu.

During torrential rains, women and girls in the Red Sea governorate received support from nurses and rural pioneers. In Menya, accessing reproductive health services was difficult, so they relied on home solutions. Men in Sohag and Menya mentioned public domain problems like muddy roads, lack of transportation, and inadequate sewage systems. Women in Sohag preferred consulting pharmacists or using traditional medicine during such periods.

The targeted governorates reported that heat has a major impact on female domestic labor. Heat obliges women to work for significantly longer times to perform the same volume of work. These losses mean more time and effort spent completing domestic tasks such as cooking, cleaning, and obtaining food and water for the family plus diminished income from paid work. On the other hand, women might be obliged to support their spouses during the irrigation of their lands (during nighttime).

Overall, climate change has a gendered impact on livelihoods, affecting women's economic, emotional, and reproductive health, as well as their ability to earn a living.

4.6.3 Impacts Related to RH and Access to Services

Health officials have warned that the increasing levels of Carbon Dioxide and rising temperatures will significantly impact the overall health and psychological well-being of the population, particularly vulnerable groups like the elderly and pregnant women. Insufficient access to proper nutrition for pregnant women can have adverse effects on both mother and baby, while elevated temperatures can negatively affect the mental health of pregnant women and subsequently impact their children's well-being.

Furthermore, heavy rainfall can create obstacles for women in attending necessary medical follow-up visits, putting their health and pregnancies at risk. Additionally, high temperatures have been linked to hormonal disruptions in women, leading to changes in menopause timing, increased tension, and marital conflicts.

In addition, officials from the Social Solidarity sector have highlighted the impact of climate change on food supply and availability, resulting in higher food prices. This can compel families to reduce their food consumption, which may contribute to the food shortage and have detrimental effects on reproductive health. The interconnectedness of climate change, food security, and health underscores the pressing need for comprehensive measures to address these challenges and safeguard the well-being of the population.

FGDs with participants revealed that during the climate crisis there is a limited access to reproductive health services since it limited the mobility of individuals from the citizens and health staff to reach primary health center. health professionals through support of Ministry of health preparedness or through community organizations such as Red Crescent or through community members from youth reach out to women especially pregnant ones to provide care whenever possible. Moreover, follow-up by phone calls from health workers support women to receive their family planning supplies.

Gender Discrimination in Rendering Medical Services

FGDs were asked about the presence of gender discrimination in providing medical services. The consensus among Women, young girls and men is that there is no gender discrimination in providing any medical services.

Are Women/Pregnant Women Given Priority During Climate Change Related Incidents

All three women and young girls FGDs agree that women at risk and/or pregnant women receive full medical care during incidents related to climate change. They attributed that to their low immunity and the potential risks to the fetus. Men in Menya and Sohag confirmed the above stated while men in the Red Sea expressed no opinion on this subject.

4.6.4 Impacts Linking GBV and Climate Change

Gender based violence is rooted in the Egyptian communities, the phenomena might be escalated as a result of climate change. The literature review revealed that significant evidence outlined how climate change, and particularly climate-related disasters, can be linked to increased vulnerability to GBV, including sexual violence, transactional sex, and sex trafficking. In turn, these are linked to increased risk of STIs and unintended pregnancies⁴⁶. Vulnerability to GBV, including sexual violence, is exacerbated for girls and women living in socially or geographically isolated places and those who are migrants, refugees, asylum seekers, internally displaced persons, girls and women with disabilities, and girls and women living in poverty. Similarly, there is a significant of research demonstrating that in humanitarian and emergency settings, women and children are at higher risk of experiencing GBV and encounter additional barriers to accessing SRHR services. Research shows that when natural resources become scarce due to climate change, girls and women travel farther distances to secure food and water, which can increase their risk of exposure to sexual abuse, physical abuse, and harm.

Men in Sohag discussed the economic impact of climate change, including reduced work opportunities and income. This led to suffocation and psychological distress. Scarcity of food and poor health services worsened the situation.

The collected data revealed that climate change in Egypt might result in the following aspects related to gender-based violence:

1. Women and girls were obliged to substitute the shortage of income. Accordingly, they might be forced to work resulting in forced labor and child labor.
2. Young girls might reach their puberty. The studies and analysis presented in various literatures shed light on the multifaceted impact that climate change could have on timing of menarche

⁴⁶ <https://womendeliver.org/wp-content/uploads/2021/02/Climate-Change-Report.pdf>

as an important marker of pubertal maturity in a woman's reproductive lifespan. This literature review focused on 112 relevant studies on timing of menarche. The review found that climate change events, including increases in extreme weather events could disturb the natural timing of menarche either through increased release of toxins and pollutants buried in soil and water or by impacting food availability via crop failure. Overall, these perturbations in timing of menarche are likely to increase the disease burden for women in four key areas: mental health, fertility-related conditions, cardiovascular disease, and bone health, as revealed in our review. In summary, the climate does have the potential to impact women's health through perturbation in timing of menarche and this, in turn, will affect women's future risk of disease⁴⁷.

3. There was significant linkage between female genital mutilation and climate change. Based on the collected data and the literatures, intersecting axes of climate change on gender norms and FGM. The study portends that broader socio-ecological factors pose as barriers to social norms change among the communities. Therefore, there is need to adopt a multilevel intersectional approach when designing programmes to end FGM. The contextual social, economic and environmental factors should not be overlooked when tailoring FGM intervention programs⁴⁸.
4. Young girls after reaching the puberty, whether early or late, they might be obliged to get married. Accordingly, they might get across an early marriage practice.

Gender-based violence (GBV) during climate change is not directly related to the climate change incident or event. It is more linked to the poor economic conditions resulted due to heavy rains and droughts.

In Sohag, women highlighted the impact of men giving up smoking due to the loss of income on their temperament. One concerning incident involved a man beating his pregnant wife in an attempt to induce an abortion, attributing it to the heat and the man's hot temperament. However, focus group discussions in the Red Sea governorate denied the occurrence of GBV during climate change-related incidents.

In post-climatic incidents, women and young girls in the Red Sea governorate stated that violence against women is practiced not only by husbands but also by fathers and mothers-in-law. They attributed this violence to bad economic conditions and life pressures. In Menya, young girls argued that women are not exposed to violence after climatic incidents, while women subscribed to the notion that economic conditions and life pressures are the main causes of GBV. In Sohag, women and young girls attributed GBV to attempts to force young girls into early marriage, female genital mutilation (FGM), and going out to work to help with household expenses.

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<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7084472/#:~:text=Climate%20change%20could%20impact%20weather,and%20perturb%20timing%20of%20menarche.>

⁴⁸ <https://jogh.org/documents/2021/jogh-11-04033.pdf>

Women's reactions to GBV varied. Some put up with it for the sake of family continuity, while others sought intervention from their fathers to mend the situation or pursued divorce through a court case. However, the majority of women tended to be submissive in the face of GBV.

The participants in the study generally agreed that women often remain silent and submissive in response to domestic violence, only seeking help from their families or resorting to legal action in extreme cases. In terms of gender-based violence (GBV) services, there were varying levels of awareness and availability across different regions. In the Red Sea governorate, despite denial of such incidents, rural pioneers and marriage officials were mentioned as sources of advice and guidance. In Menya, the absence of GBV services was reported. In Sohag, while services were not available, a notable female lawyer was mentioned for her support in filing lawsuits on behalf of battered women. The lack of awareness about organizations supporting women facing GBV was prevalent in the three governorates, except for the mention of a web page called "Qawem" encouraging women not to give up. The study emphasizes the need for increased efforts to address domestic violence, provide comprehensive support services, and raise awareness in order to protect women facing GBV.

The majority of FGDs in the three governorates do not know of any organizations that support battered and GBV exposed women. None of the three groups in Menya (men, women and young girls) showed any indication of knowing about such organizations. As well as the women FGD in the Red Sea. Young girls there, however, stated that there is a web page called "Qawem" literary meaning "Resist" that encourages women and girls not to give up. In Sohag, the three groups argue that courts are the authorized to handle such issue.

4.6.5 Linkage Between Climate Change and HIV/AIDS

The premarital counseling is not accompanied by screening for sexually transmitted infections, hepatitis B viral infection and HIV/AIDS. The premarital counseling lacks information and education about the prevention of diseases transmitted by sexual route. HBV infection is not recognized as a sexually transmitted disease and there is hardly awareness campaigns to prevent its spread through the sexual route

There is a national AIDS program, a multi-sectoral AIDS strategy, and commitment to achieve the Three Zeros by 2030, however, there are many culture and legal barriers to optimizing HIV prevention and treatment.

The antiretroviral therapy is provided free of charge but is insufficient to cover all HIV/AIDS cases. People living with HIV, notably women, are reluctant to access HIV/AIDS and ST is services due to shame or embarrassment of disclosure of sexual activity.

With regards to the linkage between climate change and HIV/AIDS, a few studies have highlighted the relationship between climate change and HIV morbidity and mortality. A 2019 study showed that drought conditions were significantly associated with riskier sex behaviors and higher HIV prevalence rates among rural females 15–19 years old living in Lesotho. Another study of 19 countries in SSA in 2014 showed that HIV infection rates in HIV-endemic areas increased by approximately 11% for every recent drought. However, there is limited literature to date identifying links between climate

change and HIV health outcomes. Here, we present a conceptual model to better understand the potential pathways linking climate change with HIV incidence and health outcomes.⁴⁹

4.6.6 Impacts of Air Pollution on Women Gynecological Cancer

Some of the officials reported that air pollution might affect the health of women in general causing gynecological cancer. As a matter of fact, such result is relatively alarming and needed to be justified by international references.

Based on a study carried out by the National Center for Biotechnology Information,⁵⁰ it was determined that there was a risk of gynecological cancer in different exposure phases of air pollution and which phase had the greatest risk of gynecological cancer, they considered six time windows of exposure (Phase 1–Phase 6), and the risks of PM_{2.5}, CO, O₃, and SO₂ on gynecological cancer were quantified in each phase. Additionally, the association between the risk of gynecological cancer and PM_{2.5}, CO, O₃, and SO₂ exposures was statistically significant in each phase. Compared with other phases, the risk of PM_{2.5} exposures in Phase 4 (i.e., the period from 240 days to the participants with diagnosis of gynecological cancer) reaches the peak, and the risks of CO, O₃, and SO₂ exposures in Phase 4 were higher than the other phases. Thus, the average exposure concentration of each air pollutant in Phase 4 was used for further analysis in the following study.

4.7 Adaptation Differences due to Age and Gender: How they can be measured

In Sohag, both adult and young women face challenges in accessing primary care units during heavy rains. To overcome this, they often rely on taxis or Tuktuk to reach the necessary facilities. In terms of their response to gender-based violence, women express a sense of powerlessness in dealing with domestic or sexual violence perpetrated by their husbands. Conversely, men in the community suggest that women adapt to various forms of violence to maintain family stability. Additionally, women in Sohag view early marriage for girls as a way to transfer responsibilities and financial burdens to a new individual. They also consider female genital mutilation (FGM) as a customary practice for their daughters. Unfortunately, one woman shared a distressing experience where an OB & GYN physician performed FGM on a woman during childbirth, expressing frustration towards the family for not having performed the circumcision earlier.

In Menia, women and girls echo the sentiments of women in Sohag. They have found that when they are aware of an impending flood, they choose to stay near health units, ensuring easy access, especially during expected deliveries. Additionally, health facilities collaborate with local community organizations to provide mobile health teams, reaching out to different families. When it comes to gender-based violence, women in the Red Sea Region assert that they make efforts to resist such forms of violence, but their ability to do so largely depends on the support they receive from their immediate and extended families (parents and cousins).

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<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7810285/#:~:text=A%20few%20studies%20have%20highlighted,living%20in%20Lesotho%20%5B15%5D.>

⁵⁰ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8157305/>

4.7.1 Present successful adaptation solutions to reduce climate risk related to health

Egypt's National Strategy for Adaptation to Climate Change and Disaster Risk Reduction (2011- 2030)

⁵¹ considered health aspects with the following objectives and activities:

- Determining health risks expected to occur because of climate change. This is done through providing information for effective planning and implementation. This includes data on current prevalence of diseases, risk factors, and the availability of preventive measures.
- Supporting the efforts by the Ministry of Health and population to improve the social and economic status and population characteristic.
- Green hospitals intervention that was adopted by the Ministry of Health and population created a better environment.

Additionally, Egypt's Second Nationally Updated Determined National Contribution 2030 recognizes the health needs for Egyptians and the special needs of women and proposed that health pillar should be included in the adaptation plans.

In terms of adaptation to health risks associated with the climate crisis, both officials and local residents have reported that emergency health services are typically provided through mobile health teams. These teams collaborate with community-based organizations affiliated with churches, mosques, Red Crescents, and other civic organizations. Additionally, health workers play a crucial role in providing follow-up care to women through phone communication, offering health advice, and at times delivering family planning supplies.

Furthermore, health authorities have established contingency plans to address emergency situations like heat stroke during severe hot weather. They have also implemented mobile health units to reach remote areas. Various authorities, including health and the National Council of Women, are actively involved in awareness initiatives on environmental and climate risk issues. Despite these efforts, awareness-raising initiatives pertaining to environmental and climate change risks are not uniformly coordinated across different governorates.

It is important to note that, as reported by the participants, primary health services are available to all citizens without discrimination. However, the decision regarding who in the family receives medical services, particularly if they are paid services, typically lies with the head of the household. The priorities are often given to children first, followed by men, and lastly, women, unless there is an emergency.

4.7.2 Present successful adaptation solutions to reduce climate risk related to poverty reduction and social equity

The World Bank highlights the importance of adaptive measures to alleviate poverty as part of adaptation to climate change. The adaptive plans should aim to improve governance and include active civil society. Moreover, increasing the resilience of livelihoods and infrastructure, building upon existing livelihoods and take into account existing knowledge and coping strategies of the poor are

⁵¹ IDSC (2011). Egypt's National Strategy for Adaptation to Climate Change And Disaster Risk Reduction

essential. Traditional risk sharing mechanisms like asset pooling and kinship, can be complemented by microinsurance and investment by both private and public entities⁵².

Egypt's Second Updated Nationally Determined Contributions (NDC) stated that a participatory approach was taken to develop the adaptation plan and measures including civil society organization, private sector, concerned stakeholders and academia. However, it was not clear how women and youth were included. Additionally, the NDC targets to promote research and demographic studies to identify population groups that are most vulnerable to the impacts of climate change and examine effective means for support. In addition, it will assess the impact of climate change on biodiversity in vulnerable and protected areas. The NDC includes adaptation measures for country's most vulnerable population to climate change, particularly those living in coastal areas. The coastal city planning and architectural will be designed towards green architecture and construction, and climate resilience including adaptations to risks from climate change impacts (i.e. heat stress, floods) in addition to the replacement and reconstruction of old houses in urban and rural areas including informal housing. It also encourages the participation and consultation of women in climate change initiatives and integrating women-specific aspects in national policies and action plans.

Currently, the adaptation projects in Egypt include⁵³:

- Sustainable Agriculture Investments and Livelihoods Project (SAIL) (2014-2023). This project enables vulnerable smallholder farmers to increase their incomes and diversify their livelihoods. This project is funded by the GEF and IFAD and is implemented by the Ministry of Agriculture and Land Reclamation
- Building Resilient Food Security Systems for Southern Egypt Region (2013-2018). This project introduced adaptation measures such as irrigation improvements and agroforestry techniques to improve the adaptive capacity of local communities in the southern part of the country. The project was funded by the Adaptation Fund and implemented by WFP with the Ministries of Agriculture and Land Reclamation and Environment.

While there are no specific strategies in place for reducing climate-induced poverty, national social support programs such as Takaful, Karama, and Hayat Karima have played a role in mitigating the impacts of the climate crisis, according to officials. These programs have helped alleviate the stress experienced by affected individuals. It is estimated that 70% of Takaful and Karama beneficiaries reside in rural Egypt where climate change impacts are most evident. Additionally, scattered efforts by non-governmental organizations to provide food and shelter to those impacted by the crisis have offered a form of support that enables residents to adapt to the changes they face.

⁵² World Bank (2003). Poverty and Climate Change Reducing the Vulnerability of the Poor through Adaptation.

⁵³ UNDP (2020). Formulation and Advancement of the National Adaptation Plans Process of Egypt

4.8 Policies and Programs addressing climate change on women and girls RH.

4.8.1 Existing adaptation policies, systems and programs related to RH, gender and climate change

The 2011 review of climate change and gender in Egypt led to the development of the National Strategy for Mainstreaming Gender in Climate Change. The strategy informed Egypt's Third National Communication in 2016, the submission of INDCs in 2017. However, these documents did not explicitly address the disproportionate impact of climate change on women or include specific gender-sensitive actions.

Egypt's Second Nationally Updated Determined National Contribution 2030 aims to raise the efficiency of the health care sector to deal with climate change and increase awareness on pro-active health measures to face disasters. However, RH was not specifically addressed.

Additionally, there is Gender Unit in EAA that aims to educate women on environmental problems and health-related topics, enable women to perform their functions while preserving the environment and empower women to take their responsibility in the community development towards sustainable development.

In 2021, the Egypt NCCC requested the development of the first comprehensive National Climate Change Strategy (NCCS) until 2050. It is crucial to consider the disproportionate impacts on women, girls, and vulnerable populations in current climate change adaptation efforts. Integrating gender and reproductive health is essential in various sectors. Recognizing the connections between climate change, reproductive health, and gender equality is critical for effective responses and improving opportunities, well-being, and protection for women. Intersectional factors like class, race, and citizenship status should also be considered.

The failure to achieve sexual and reproductive health and rights (SRHR) can hinder the participation of women and girls in climate action and policymaking. Gaps in SRHR can limit opportunities for education and livelihood development, leading to exclusion from decision-making at household and community levels. Early marriages can further restrict access to climate information and alerts. Empowering individuals through the realization of SRHR can promote inclusivity and equality, especially for marginalized groups.

Egypt is fully committed to achieving the Sustainable Development Goals, with a particular focus on gender equality and empowerment for women and girls. The country has set specific targets to address issues such as discrimination, violence, child marriage, and female genital mutilation. Egypt aims to create an enabling environment for women and girls by promoting shared responsibilities, decision-making, and access to sexual and reproductive health services. The National Strategy for the Empowerment of Egyptian Women 2030 outlines interventions to enhance reproductive health services, raise awareness about risks, and improve healthcare capacities. The strategy also incorporates climate change and emphasizes the importance of raising women's awareness about coping mechanisms and implementing protective procedures using environmentally friendly approaches. Egypt's efforts align with the Sustainable Development Goals and reflect the country's commitment to creating a more inclusive and equitable society.

Alexandria officials stated that “they know about how Egypt has prepared for the COP27 and about the projects of solar energy, agricultural greenhouses, fish farms.

Egypt's National Climate Change strategy aims to consolidate all aspects of climate change into a comprehensive document that serves as a fundamental reference for integrating climate change considerations into the country's overall planning across sectors. The strategy encompasses five key goals, each providing directions to achieve specific objectives:

- Goal 1: Achieving sustainable economic growth and promoting low-emission development in various sectors.
- Goal 2: Enhancing adaptive capacity, resilience to climate change, and mitigating associated negative impacts.
- Goal 3: Strengthening climate change action governance.
- Goal 4: Enhancing climate financing infrastructure.
- Goal 5: Promoting scientific research, technology transfer, knowledge management, and awareness to combat climate change.

Specifically, objective (2.a): “Protect citizens from the negative health and nutrition impacts of climate change”. It gives special attention to citizens with special risk factors, such as women, especially pregnant and lactating women and children. In addition, it aims to raise awareness about climate change health risks with a focus on the most vulnerable groups, such as women and children. Moreover, it emphasizes on providing alternative livelihoods, especially for women in the poorest areas and those least.

Officials in the governorates of Behera, Sohag, and Menya stated that no support was given by their organizations for the development or implementation of climate change strategies. However, officials in Alexandria mentioned offering technical and strategic support focusing on outreach and economic empowerment, while the Red Sea governorate highlighted the role of the National Council of Women and the Governorate Public Office for covering expenses related to societal issues. In Aswan, the Environmental Union mentioned their lack of financial means but contribute through generating ideas and conducting outreach activities.

Focus group discussions revealed a lack of understanding of strategy, with participants focusing on immediate problem-solving actions. Women in different governorates discussed issues such as alternative transportation during heavy rains, access to service locations at night, availability of contraceptives, and the roles of rural leaders, NGOs, and political parties in assisting the community. The Ministry of Health in Menya provided support through equipped ambulance vehicles, medications, and contraceptives.

Women and young girls in the Red Sea spoke of the availability of contraceptives, the role of rural leaders and NGOs (Resala, The Youth probably Muslim or Christian, and Al Ferdaws) as well as political parties in helping people. The also indicated the role of the city council in instilling light posts in the streets.

4.8.2 Policies addressing women and girls' vulnerability

The Government of Egypt a signatory to, and member of, a number of key international agreements that commit the country to address women equality. These include chapter 24 of Agenda 21 (United Nations Conference on Environment and Development, 1992); the Johannesburg Plan of Implementation (World Summit on Sustainable Development, 2002); paragraph K of the Beijing Platform for Action (Fourth World Conference on Women, 1995); the World Conference on Human Rights (1993); the International Conference on Population and Development (1994); the World Summit for Social Development (1995); and the requirements and agreements set out in the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) and the SDG 20230.

The following is the policies and strategies address women and girls in the context of climate change:

- National Strategy for Mainstreaming Gender in Climate Change in Egypt (NSGMCC):
 - This strategy recognizes the disproportion impact of climate change in addition to the need of measures. Additionally, women with most vulnerabilities are also addressed like women living in informal settlements.
- Egypt National Climate Change Strategy (NCCS) 2050:
 - In regard to objective (2.G): “Strengthening womens response considerations to help them adapt to climate change.” It considers women in combating climate change and recognize their role of women in the Egyptian. Additionally, it takes into account the gender difference in mitigation and adaptation and aims to consider gender equality in the programs and projects related to climate change mitigation and adaptation

Climate change significantly impacts vulnerable communities, especially women, who face increased dangers and vulnerabilities. They bear responsibility for managing household affairs and resources but experience gender disparities in reproductive rights, education, and legal recourse, exacerbated during environmental disasters. Sociocultural traditions and familial obligations hinder their relocation to safer areas. Women are disproportionately affected by gender-based violence and more likely to perish in disasters. Limited socio-economic influence hampers recovery efforts, including infrastructure, employment, and housing.

Geographically, regional differences in climate change impacts were reported across different governorates. Coastal areas like Alexandria and the Red Sea are vulnerable to rising sea levels, erosion, and high-impact gales, increasing flood and infrastructure risks. Rural areas face challenges in agriculture and reduced crop productivity, affecting working-class populations. Upper Egypt experiences desertification and extreme heatwaves, exacerbating vulnerability. Officials reported that social protection is crucial in managing climate risks by addressing chronic poverty, providing temporary support, and building resilience. Sustainable development and climate change adaptation aim to reduce vulnerability to hazards like floods and droughts.

Officials in Alexandria emphasized the importance of creating partnerships with other executive entities and stakeholders to effectively manage crises and disasters. They highlighted the need for cooperation between directorates of education, health, social solidarity, civil protection, water, sewage, and electricity. In the Red Sea governorate, officials mentioned existing linkages and partnerships

between the National Council of Women and other governmental administrations in health and social solidarity. They emphasized the support for the state strategy and collaborative work plans. Similar linkages were mentioned in Behera, Sohag, Menya, and Aswan, where various administrative branches work together to ensure comprehensive development and implement social protection measures.

Additionally, the Ministry of Health officials alluded that the Ministry collaborates with the Ministry of Social Solidarity in several projects such as Social Security and (Takaful we Karama) literary (solidarity and dignity) and contributes to the treatment of needy and retired persons within the context of health conditionality aiming at supporting families benefitting from Takaful project. Finally, the Director of Information Center at the Ministry of Health indicated that family planning services are provided by 281 centers spread all over the country's 27 governorates.

Alexandria officials emphasized the measures taken to tackle informal settlements and shed light on the state's "Hayat Karima" initiatives, which are aimed at ensuring access to public services in areas characterized by pronounced poverty and economic deprivation. These initiatives encompass the construction of new public facilities and the refurbishment of existing infrastructure, with a particular focus on critical sectors such as education and primary healthcare services. In addition, the initiatives prioritize the provision of safe water sources and the establishment of proper sewage removal systems. The involvement of National Council of Women members in actively promoting awareness regarding environmental and societal issues among women further underscores the commitment to address these challenges.

The Officials indicated Efforts are being made to transform 560 mobile clinic cars from gasoline to natural gas in the Family Planning Sector, along with a focus on reducing plastic usage. Newly built buildings adhere to green codes and incorporate noise and heat insulation. Efforts in Alexandria include encouraging residents to live in high grounds to avoid high waves and torrential rains, as well as raising awareness about the importance of addressing informal settlements. Other governorates, such as the Red Sea, Behera, Sohag, Menya, and Aswan, also prioritize reaching out to raise awareness, monitoring and following up on health units during crises, and networking with climate change specialized agencies.

Overall, these policies and initiatives reflect a comprehensive approach to address the vulnerability of women and communities which could mitigate the impacts of climate change. Through collaboration, and awareness-raising, and sustainable practices, such efforts could promote resilience among vulnerable populations.

4.8.3 Emergency responses and crises management during climate change incidents

In 2011 Egypt issued the Egypt's National Strategy for Adaptation to Climate Change and Disaster Risk Reduction (2011). It draws a framework to deal with the risks and disasters caused by climate change and to manage its impact on different sectors and activities. It also aims to strengthen different sectors' capacity to reduce the risks caused by such changes. The strategy lays out the risks, disasters, and crises caused by climate change in each sector, mainly the impact on the coastal areas, water resources, agriculture, health and tourism.

This topic of disaster reduction was also addressed in Egypt's Second Nationally Determined Contribution (NDC) for 2030. A key focus, particularly under Objective 2.e, is the implementation of

disaster risk reduction principles. This includes establishing reliable forecasting and warning systems, followed by proactive measures to address anticipated risks. The strategy emphasizes that preparedness for potential risks is a critical component.

Different governorates and Ministries in Egypt are making efforts to respond to climate change emergencies and crises as reported by different key officials and residents.

Ministry of Health officials assure that the central Administration of Urgent and Critical Care has a comprehensive plan for pandemics, hurricanes, and disasters. They have land, river, and air ambulance crews for swift response, and mobile clinics have protocols for worst-case scenarios.

In Alexandria, the General Directorate of Crises and Disaster manages large-scale crises like floods, collaborating with the Ministry of Social Solidarity to establish emergency camps. The Health Directorate focuses on managing annual disasters, particularly torrential rains.

In the Red Sea governorate, the Ministries of Social Solidarity and Health collaborate to provide timely compensation and support. Social workers assess cases for appropriate compensation, and the Center for Management of Crisis and Disasters forms a higher committee for crisis management.

In Beheira, the Protection Sector operates a training center with relief equipment for prompt evacuation during disasters. The National Council of Women coordinates disaster preparedness efforts.

In Sohag, primary care health centers play a consistent role, while Menya coordinates through phone communication for efficient mobile health teams. In Aswan, rapid response teams and a stocked blood bank ensure quick evacuation.

Rural and remote areas continue to encounter difficulties in delivering services, especially in times of crisis or disaster. Most roads, particularly those interconnecting villages, lack paving and turn muddy under heavy rainfall, severely hindering access to these locations with well-equipped vehicles. As a result, officials in regions like Menya often resort to using tuk-tuks or tricycles to access these areas. This reliance on less suitable forms of transportation inevitably compromises the quality of service delivery.

Residents across various governorates reported that reproductive services are accessible in primary care units, and there are efforts to maintain support during crises. However, these services are often hindered by the typical challenges of supply shortages and limited staffing. In the Red Sea governorate, women and young girls participating in focus group discussions (FGDs) noted the availability of free emergency services with accessible doctors. Community health workers have been instrumental in providing information on contraception and offering follow-up support. In Menya, the availability of blood for pregnant women experiencing bleeding was highlighted, while in Sohag, health workers focused on educating women and girls about contraception and childcare. However, participants in Sohag's FGDs pointed out a deficiency in reproductive health services during climate crises, attributing this to the difficulty health staff face in reaching their workplaces and the ongoing issue of inadequate supplies or personnel.

Young girls in Menya mentioned the absence of mother and childcare services, contradicting other groups. Participants who confirmed services provided detailed information on breastfeeding awareness, emergency care, and assessments. The Ministry of Health in the Red Sea governorate provides equipped vehicles for delivering contraceptives.

In the Red Sea governorate, participants of the Focus Group Discussions (FGD) highlighted the assistance provided by the Egyptian Environmental Affairs Agency in dewatering streets. Women and young girls acknowledged receiving support from NGOs, religious institutions, and political parties. Conversely, in Menya, there was a notable absence of community support. However, in Sohag, participants reported receiving aid from NGOs, mosques, and churches. Sufficiency or quality of this support were not evaluated, and no further institutions were identified as offering assistance during climate crises.

4.8.4 Institutional capacity assessment to withstand crisis related to climate change

The UNDP's assessment of Egypt's National Adaptation Plan Process has highlighted ongoing development in the country's institutional coordination and capability for advanced adaptation planning. The evaluation, which included a UNITAR-led skills assessment with participation from over 100 individuals across the ministries of finance, planning, and environment, indicated that while officials in these departments have a basic understanding of climate change, largely derived from mainstream media and general education, there is room for enhancement in professional training on this subject. Strengthening the fundamental knowledge of climate change and its implications is crucial, given the pivotal role of these ministries in embedding climate change considerations into the government's policies and programs.

In Egypt, Primary Care units tasked with providing reproductive and family planning services are facing considerable challenges in addressing climate change-related crises. While there have been some training initiatives focusing on climate change issues, there are observable opportunities for improvement in preparedness and resource allocation across various governorates. Additionally, the implementation of consistent capacity assessments in the pertinent sectors remains an area for further development.

4.8.4.1 Training on Dealing with Climate Change

During the conducted interviews, feedback from officials at the Ministry of Health regarding their training in climate change-related scenarios showed variation. A number of officials noted their participation in meetings addressing climate issues, which suggests a degree of awareness within the ministry. However, there is a recognized need for more comprehensive and specific training on climate change for many officials. In Alexandria, the training encompassed a variety of subjects including climate change concepts, crisis scenario planning, adaptation strategies, environmental training, and management of natural disasters and plastic pollution. Training in the Red Sea region was oriented towards crisis and disaster management, preparing for climate changes, and crew safety. Similarly, Health directorate officials in Aswan were trained in crisis and disaster management, climate change adaptation, and environmental considerations. In contrast, officials from Behera, Sohag, and Menya reported an absence of specialized training on climate change.

4.8.4.2 Capacity of the Institutions

Key officials, particularly from health institutions, concurred that primary care units, serving both central and remote regions, offer family planning and reproductive health services via both stationary and mobile facilities. However, challenges such as a shortage of medical staff and high staff turnover impede both the training and retention of skilled personnel. These issues constitute a major barrier to effectively addressing climate change-related crises.

4.8.5 Proposed mechanism to enhance cross-sectoral coordination

Egypt National Climate Change Strategy (NCCS) 2050 encourages cross sectoral cooperation. One of the targets is to promote awareness through the collaboration of Ministry of Environment with the Ministry of Social Solidarity to prepare awareness materials for all ages about climate change and disseminate information reaches all citizens. Additionally, the Egypt's National Strategy for Adaptation to Climate Change and Disaster Risk Reduction (2011- 2030) also plans for coordination amongst all ministries and bodies concerned with the implementation the strategy for adaptation to climate change and its associated disaster risk reduction. However, the strategies do not go on details on the mechanisms of cross-sectoral cooperation and collaboration.

In Alexandria and The Red Sea governorates, networking was stressed either as potential (Alexandria) or as something that already exists (The Red Sea). This was the case in the Red Sea since the events of 2016 when the governorate was exposed to torrential rains. Also, the official of the National Council of Women stressed the presence of the council in all sectors. In Sohag, it was said that there is an integrated workplan that brings together all stakeholders responsible for dealing with climate change. In Menya the importance of such cooperation was also stressed. Finally, the Environment Union in Aswan mentioned that cooperation protocols is one such means, in addition to joint training with other institutions to raise the level of awareness among medical crews. This is also achieved through the annual emergency plan and the choice of specific targets to be achieved by each institution.

4.8.6 Proposed measures to be adopted to activate the connections between climate change policies and social protection policies related to education, health and other services

Various governorates have launched initiatives to address climate change. Alexandria is undertaking tree-planting efforts, promoting the use of clean energy, and encouraging the replacement of plastic with environmentally friendly materials like cardboard. Additional measures include trash separation, the use of LED lamps to conserve electricity, and regular testing of drinking water for safety. In the Red Sea region, efforts are focused on expanding green spaces.

Behera's approach includes recycling plastic, reducing unemployment, and tackling illegal migration. Menya's strategy involves expanding agricultural land, improving canal and drainage systems, insulating light posts to prevent lightning strikes and fires, and substituting natural gas for gasoline.

In Sohag, initiatives are primarily centered on greening projects. Aswan is managing hazardous medical waste to safeguard the environment and has introduced the Nile Protection Initiative. They emphasize the need for legislation to criminalize the construction of drains in residential areas and have also initiated a program for recycling agricultural waste.

The Ministry of Health has detailed its initiative to convert 560 mobile clinic vehicles from gasoline to natural gas, aiming to reduce pollution significantly. This effort is part of a broader plan that includes minimizing plastic usage. Moreover, new constructions are now adhering to environmentally friendly standards (green code⁵⁴) and are properly insulated. In Alexandria, there are policy recommendations urging residents to relocate to higher ground to safeguard against high waves and heavy rainfall, with efforts to increase awareness about the risks of living in informal settlements. Menya focuses on monitoring and supporting primary care units during crises. Additionally, the Environment Union maintains records of all women utilizing their services, enabling efficient outreach during emergencies. Aswan is actively engaged in outreach programs, raising awareness, and fostering collaboration with other organizations concentrating on climate change initiatives.

4.8.7 Implemented innovation related to climate change and social protection

The presidential initiative National Initiative for Smart Green Projects in Egypt's Governorates (NISGP)⁵⁵ aims to compliment Egypt's Vision 2030' and the National Climate Change Strategy 2050 through encouraging and endorsing smart green projects with innovative ideas to mitigate the impacts of climate change. In the first round 18 projects were selected addressing early warning systems, recycling, and green buildings in addition to three projects aims to economically empower women through green innovative project e.g. recyclable material to produce household products.

There was mixed opinion on the use of technology and social media, there is a consensus on the importance of these mediums in managing phenomena associated with climate change. Using technology facilitate communication and sharing of information, especially to remote areas, saves time and effort. It is also an effective method to disseminate information to the public especially early warning about weather. They also raise awareness about several topics including climate change. One central official sees social media as only a younger generation platform. while more traditional means of mass communication such as radio and TV are more appropriate for older generations. Several governorates reported the barriers to use internet and/or mobile phones due to heavy rain or floods which impact the networks. Power cuts also mean inability to charge mobile phones. Due to these factors many officials reach each other using landlines.

4.8.8 Planned innovation related to climate change and social protection

Egypt National Climate Change Strategy (NCCS) 2050 emphasizes the innovation and the use of technology. It aims to enabling smart applications and systems in all relevant through supporting, financing and incubating emerging companies to provide smart solutions in those sectors that would rationalize the use of electricity, increase its efficiency and increase its productivity.

⁵⁴ Green building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction. <https://archive.epa.gov/greenbuilding/web/html/about.html#:~:text=Green%20building%20is%20the%20practice,%2C%20maintenance%2C%20renovation%20and%20deconstruction> away with.

⁵⁵ MPED (2023). The National Initiative for Smart Green Projects in Egypt's Governorates Institutionalizing the initiative Round 2

4.8.9 Available warning system supporting social protection programs and manage risks to RH service

The national frameworks that address warning systems are Egypt's National Strategy for Adaptation to Climate Change and Disaster Risk Reduction (2011-2030) that Egypt's National Strategy for Adaptation to Climate Change and Disaster Risk Reduction (2011) proposes developing weather and seasonal forecast and early warning systems. This is to provide citizens with weather forecasting information through to give them the opportunity to take appropriate and timely measures, hence reduce injury, sickness and deaths. Moreover, the objectives of Egypt National Climate Change Strategy 2050 include establishing early warning systems for all sectors and developing a unified database to ensure appropriate actions.

- The National Council of Women conducts workshops, like "Smart Green," to increase awareness and has launched a waste management initiative. They actively monitor weather and climate change, issuing alerts to the public, conducting educational workshops in schools, and disseminating information to women through their website. Additionally, the Council collaborates with Primary Healthcare Units (PCUs) and local government bodies to enhance public awareness and educate citizens on handling emergencies and crisis situations.
- The Health Directorates and Preventive Medicine Directorates secure moving people to safe areas and assist burial of deceased persons and dead animals to prevent the spread of diseases as well as providing vaccines.
- The Ministries of Agriculture and Water Resources and Irrigation conduct scientific research in the field of climate change and propose recommendations and solutions for problems related to climate.
- The Social Solidarity Administration is keen on addressing the impacts of climate change through urgent assistance and relief. It also provides compensation in cases of fires or collapse of houses.
- The Environmental Union provides advice to farmers about changes in agricultural practices related to climate change and support early warning system.
- The Sustainable Agricultural Investment and Livelihood Project financed by IFAD provide guidance to the farmers to replace fossil fuel with solar units in irrigation. They provide information about early warning systems.

5 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Local hotspots which are particularly vulnerable to the impacts of climate change have been identified within the governorates. Specific regions and areas near the coast were identified as vulnerable due to deteriorating infrastructure, proximity to the sea, coastal erosion, and susceptibility to flooding. Other hotspot regions susceptible to extreme temperatures, heavy rains, and desertification were also identified.

The alterations witnessed in various climate change-related phenomena over the past five years varied across different governorates. The data indicated that elevated temperatures have been the most prevalent phenomenon across all governorates, followed by heavy rains/flooding that caused infrastructure damage. Other phenomena such as droughts, drinking water shortage, and irrigation water shortage received limited mentions. Notably, Cairo seems to experience relatively less severe impacts compared to other governorates.

The impacts of weather changes, specifically torrential rains and high temperatures have had severe consequences on the livelihoods of communities in different governorates in Egypt. These impacts include economic impacts, impacts on emotional wellbeing, and health-related implications, in addition to infrastructure damage, loss of income, and food shortages. Lack of employment opportunities exacerbate these hardships. However, communities have demonstrated resilience by coming together to repair infrastructure and support each other.

I. Climate Change Impacts

Climate change impacts, such as increased water stress and scarcity of natural resources, limited access to skilled care due to health systems, migration, and increased pressure and stress within families and communities, are significantly impacting gender equality. Simultaneously, women and youth's vulnerability can obscure the fact that they are also potential beneficiaries in the efforts to cope with climate change impacts, who would be essential actors in efforts to cope with climate change impacts.

a) Gaps in disaster risk reduction

Recent reviews of gender and RH inclusivity in the Nationally Determined Contributions (NDCs), including the review commissioned by UNFPA, have identified significant gaps in critical sectors, including disaster risk reduction, adequate systems to ensure women's and girls' agency, agriculture, and climate finance. Even in reviews and reports where gender dimensions are incorporated, they are often not prioritized as essential and lack the required capacities, resources, and monitoring mechanisms to ensure successful implementation.

b) Impacts on Lives of Women, Girls and Infants

Climate change may be associated with diarrhea and poor nutrition. Accordingly, both the lives of women and their fetus might be endangered⁵⁶. Adverse birth outcomes, including low birthweight

⁵⁶ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC636884/>

(LBW), small gestational age (SGA), and preterm birth, contribute to 60%–80% of infant mortality worldwide. The impact of diarrheal diseases on children and infants is well established.

c) Threats to Human Sustainable Development

Climate change poses major threats to the vision of human-centered sustainable development, which is outlined in the International Conference on Population and Development (ICPD) Programme of Action and reinforced by the 2030 Agenda for Sustainable Development. Such threats include significant negative impacts on gender equality, including women's and girls' reproductive health across the development, humanitarian, and peace nexus.

d) Impacts Related to Fatigue and Dermatitis

Based on both primary data collection and the literature review, both young girls and women experienced health issues like dermatitis and fatigue due to weather variations. Women being obliged to do the cooking in small kitchens increased their feeling of heat. They also mentioned using the washroom frequently, exposing them to cold and flu.

The targeted governorates reported that heat has a major impact on female domestic labor. Heat obliges women to work for significantly longer times to perform the same volume of work. These losses mean more time and effort spent completing domestic tasks such as cooking, cleaning, and obtaining food and water for the family plus diminished income from paid work. On the other hand, women might be obliged to support their spouses during the irrigation of their lands (during nighttime).

e) Impacts Related to RH and Access to Services

Focus Group Discussions (FGD) with participants revealed that during floods and heavy rains there is a limited access to reproductive health services despite the availability of services, since it limits the mobility of individuals, both citizens and health staff, to reach the primary health center. Health professionals, with support from the Ministry of Health, community organizations such as Red Crescent, and community members, reach out to women (especially pregnant women) to provide care whenever possible. Moreover, follow-up by phone calls from health workers support women to receive their family planning supplies.

f) Socioeconomic Implications

The socioeconomic implications of climate change in Egypt have been emphasized by different stakeholders, especially for the vulnerable communities, such as those living in informal settlements, border and rural areas. These communities often lack access to basic services, have limited resources to adapt to changing conditions, and face increased risks of displacement.

The impact of climate change on individuals' livelihoods is not uniform across gender lines. The experiences of women, young girls, and men in different governorates of Egypt highlight the dissimilar effects of climate change on different aspects of their lives. Some women are becoming more vulnerable to diseases and the burden of household responsibilities. In addition, they experienced the loss of lives of their relatives due to floods. On the other hand, men suffer more from economic hardships and psychological distress.

g) Gender Based Violence

The study highlights the occurrence of gender-based violence (GBV) during climate change-related incidents in Egypt. Participants identified various factors contributing to GBV, including unemployment, tensions, and psychological distress among men. The occurrence of GBV during climate change-related incidents was reported in upper Egypt (e.g. abusive attitudes, ...etc).

Women's reactions to GBV varied, with some tolerating it for the sake of the family unity, while others sought intervention from their extended families or pursued legal action. However, the majority of women exposed to GBV tended to be submissive. The availability of GBV services and the awareness of their existence varied across regions. There is a clear lack of awareness about the supporting services and organizations among all governorates.

h) Impacts on Pregnant Women and Newborns

Pregnant women and their newborns have been suffering from adverse effects associated with rising temperatures and insufficient access to proper nutrition. Additionally, heavy rainfall created obstacles for access to the necessary medical follow-up visits. Moreover, the impacts of climate change on the availability and distribution of food supply exacerbates reproductive health issues.

i) Impacts Related to Women Vulnerability

High temperatures were recognized as a causal factor for marital conflicts among women. Women are disproportionately affected by the impacts of climate change due to a combination of factors such as economic resources, gender roles, and biological differences in heat sensitivity.

Economic constraints limit women's ability to afford expensive adaptive measures. Cultural norms, such as traditional clothing and their position in the family hierarchy, may hinder their survival during climate-related events. Furthermore, biological factors, such as pregnancy, can also increase women's vulnerability during disasters.

Various barriers to adaptation to climate changes have been identified in different regions of Egypt. These include limited educational levels, and adherence to gendered roles. Hence, adaptation solutions should address these specific challenges faced by women and girls in different regions.

II. Knowledge and awareness

The findings provide valuable insights into the participants' understanding and awareness of climate change. While there were variations in the level of knowledge, overall, the responses demonstrated a general awareness of the key features associated with climate change.

Local participants and officials recognized phenomena like desertification, drought, hurricanes, rising sea levels, and deviations in weather patterns, however few acknowledged the long-term shifts in temperature or weather patterns.

III. Resilience of Climate Change Policies and Interventions in Egypt

In Egypt, efforts are being made to integrate women-specific aspects into national policies and strategies, emphasizing the importance of women's participation and consultation. However, the action plans and relevant monitoring indicators are not yet in place.

Egypt's National Strategy for Adaptation to Climate Change and Disaster Risk Reduction includes objectives to mitigate health risks, improve the efficiency of health facilities, and support the social and economic resilience. On a community level, mobile health teams and community-based organizations play a vital role in providing emergency health services and follow-up measures on women's health, specifically pregnant women.

The existing policies and programs addressing climate change impacts on women and girls' reproductive health (RH) in Egypt show both progress and areas for improvement. While efforts are being made to address the health-related risks associated with climate change, it is essential to continue prioritizing gender-responsive adaptation measures, involving women in decision-making processes, and ensuring equal access to healthcare services for all citizens.

Egypt's Second Nationally Updated Determined Contribution 2030 aims to enhance the healthcare sector's efficiency in dealing with climate change and increase awareness of proactive health measures, although reproductive health (RH) was not specifically addressed in this context. The first comprehensive National Climate Change Strategy (NCCS) 2050 is highlighting the importance of considering the disproportionate impacts on women, girls, and vulnerable populations. Integrating gender and reproductive health into adaptation efforts is essential.

Despite these initiatives, there is still efforts to be exerted in order to increase the familiarity among government officials regarding Egypt's national climate change strategy and gender mainstreaming efforts. This knowledge gap might pose challenges to effective coordination and implementation at the governorate and directorate levels.

On the governorate level, initiatives were taken to address climate change, including awareness raising, tree planting, increasing green spaces, recycling, and substitution to clean energy.

Efforts have been made to establish early warning systems and raise awareness about climate change. The National Council of Women, Health Directorates, and Ministries of Agriculture and Water Resources and Irrigation are actively involved in these initiatives. Ensuring collaboration between these different entities and the dissemination of information through workshops, web pages, and local administrations will improve the social protection programs and risk management.

IV. Challenges and Obstacles

In Egypt, there are challenges that need to be addressed. Rural and remote areas face difficulties in service delivery due to the lack of infrastructure and well-equipped vehicles. Therefore, more challenges are faced when providing adequate quality service during crises and disasters. Additionally, there are shortages in supplies, equipment and medical staff, particularly in reproductive health services. While limited support was reported by some governorates, others highlighted the role of organizations, community leaders, NGOs, and political parties in assisting the communities. The role

of community organizations was emphasized as they provide immediate interventions during the time of crises in supporting the community.

To address the current challenges and gaps, it is crucial to enhance the knowledge among various stakeholders including but not limited to government officials, strengthen coordination, and ensure effective implementation of strategies at all levels. Furthermore, improving awareness, and promoting gender equality and women's empowerment are vital for a more resilient and inclusive response to climate change in Egypt.

To activate connections between climate change and social protection policies, promoting awareness, implementing joint training programs, and establishing cooperation protocols are essential. There is also a need to improve infrastructure and provide supplies and medical staff.

5.2 Recommendations

5.2.1 Enhancement of awareness programs within the Ministry of Health

It was recommended that the MoH should tackle the responsibility of raising awareness in full cooperation with EEAA and the National Council for Women. The main proposed awareness messages are summarized as follows:

- Disclose the national strategy for integrating gender into climate change to various stakeholders;
- The linkage between climate change and women should be disclosed to target stakeholders;
- Raise the awareness and education about using alternative resources in handicrafts;
- Raise the knowledge of women and support them to gain skills in order to raise their readiness to work in the event of displacement as a result of climate change incidents;
- Empowering women and paying attention to their education so that they can be aware of warnings about climate change and deal with them to reduce the damage resulting from them;
- Including the effects of climate change in nursing school curricula;
- Including the climate change component and its impact on reproductive health in educational seminars in primary care units;
- Capacitate the primary care sector to be able to meet climate change aspects.
- Including the gender-based violence component in educational seminars in primary care units;
- Awareness campaigns through social media sites about climate change and its impact on reproductive health at the level of health departments;
- Awareness campaigns through social media sites about gender-based violence at the level of health departments;
- Direct awareness campaigns on gender-based violence and its impact on women mental and physical health;
- Enhance the culture of safe disposal of waste, the harms of using plastic, and the culture of waste recycling;
- Preparing training programs for the health team and leaders on climate change and its impact on reproductive health;

- Training Ministry of Health and Population teams on climate change and its impact on reproductive health;
- Preparing training programs for the health team and leaders on gender-based violence;
- Training Ministry of Health and Population teams on gender-based violence;
- Expanding projects in the health care sector financed by green packages;
- Direct awareness campaigns about climate change and its impact on reproductive health; and
- Including the gender-based violence component in educational seminars in primary care units.

5.2.2 Strengthen gender mainstreaming in the current Egypt National Climate Change Strategy

It is clear that climate change has a gendered impact on health, reproductive health, GBV and livelihoods, with women facing significant challenges and burden. It is essential to address these gender disparities and ensure equity of access to resources and adaptation during climate change-related incidents. It should be noted that there is also a national strategy for mainstreaming gender in climate change the following is proposed:

- Emphasize the leading and coordination role of the Ministry of State for Environment Affairs (MSEA), the Egyptian Environmental Affairs Agency (EEAA) and National Council for Climate Change (NCCC) for implementing and coordinating the work in national level for the gender mainstreaming climate change.

As the initiator for the strategy the MSEA and the EEAA have an essential role in the leading implementation of the strategy and coordination among all national actors in areas stated in the strategy. This included integrated coastal management, agriculture, water, tourism health, energy and transport urbanization and waste management. Additionally, it is necessary to involve other actors of interest including UN agencies, NGOs, academia, and private sector.

5.2.2.1 Coordination and implementation on subordinate levels with gender lens

As there is massive need for coordination among multiple actors. As already mentioned in the NCCC 2050, a national committee is needed to facilitate communication, unify action and set prioritized. It is suggested the committee include representatives from relevant national organizations and institutions in addition to civil society organizations both international e.g. UNFPA, UNFCCC, WHO and national organizations. In addition, it is also recommended to have equitable female representation in the committee is needed to ensure the voices and views of women are included. Also, similar committees can be established on governorate levels. Additionally, gender focal points need to be assigned in concerned ministries to ensure that programs, plans and policies are developed with gender criteria.

5.2.2.2 Realization of the strategic goals and setting action plans and targets

Strategies are ineffective when they are not followed by measurable targets and action plans. Therefore, an action plan in conjunction with relevant ministries and relevant stakeholders is needed. The goals and activities should be measurable, with a set timeframe and active leading agents should be highlighted. The design of the action plans should have a participatory approach that involves women from several afflicted areas and regions to ensure comprehensive and equitable plans.

5.2.2.3 Allocation of financial resources and efficient resources mobilization

The study identifies a need for enhanced resource allocation in various sectors, notably in health services including RH services, while acknowledging the sufficiency of resources in areas like Energy and Transport. It emphasizes the importance of strategically directing resources to bolster livelihoods and ensure food accessibility in high-risk regions. Collaborative efforts with international agencies for continuous fundraising can further support these goals. Additionally, a thoughtful mapping and integration of existing resources, funds, and projects can facilitate more efficient use and optimization of available resources.

5.2.2.4 Documentation of activities, data collection and lessons learned

Adequate and on-going documentation and sharing of knowledge is crucial aspect of implementation. Documentation and collection of data will ensure proper implementation and data driven management of projects and programs. In addition, it is important to inform future plans and strategies as it will ensure reproducing of success and avoidance of repeating failures. Moreover, collaboration of academia and research bodies e.g. Central Agency for Public Mobilization and Statistics (CAPMS) to obtain data and evidence to inform planning and implementation including gender segregated data and gender focused studies.

5.2.3 Adaptation program to be included in the green bond framework as per Goal 4 in Egypt National Strategy

As mentioned, efforts and measures for adaptation are in place. However, there is a need to capitalize on the efforts in addition to the implementation of more adaptation programs and plans in accordance with the NCCS 2050 and international guidelines and recommendations. Specifically Goal 4 which aims for “Enhancing Climate Financing Infrastructure”. The green bonds can be implemented with gender and socially equitable way:

5.2.3.1 Make use of green bonds to cover sectors that have not yet been covered.

Green bonds aim to reduce greenhouse gas emissions from buildings, finance solar and wind farms, clean water, and recycling facilities⁵⁷. Hence, the health sector and social institutions can benefit through financing projects to upgrade and expand their infrastructure to be green which has already been initiated in the Green Hospital Initiative. In addition, institutions can transform to use green and clean energy. In addition, remote and impacted areas can adopt green project that will support their infrastructure and provide employment opportunities.

5.2.3.2 Encourage the adoption of innovative financing mechanisms such as results-based financing.

The Result-Based Financing (RBF) has been the focus of many international organizations and funding bodies⁵⁸. This requires programs to deliver predefined outputs or outcomes and rewards the achievement of these results upon verification in return for financial or other incentives for an agent. One example, in Egypt was provided through conditional cash transfer in “Takaful w Karama” program where women receive cash condition to compliance to visits to Primary Healthcare services.

⁵⁷ IFC (2023). Green and Social Bond Impact Report Financial Year 2022

⁵⁸ Amanda Melina Grintter (2013) Results-based Financing Amanda Melina Grittner Evidence from performance-based financing in the health sector

It is also adapted in the UK and performance conditioned payment schemes for health workers. This to ensure good performance and equity of service. This approach is widely used in social and health projects and programs with multiple evidence of effectiveness. Hence, adoption of this approach in by health and social plans in Egypt will ensure effectiveness, social equity to the most overlooked population and attraction of funds from international bodies,

5.2.3.3 Provision of green financing opportunities to micro, small and medium enterprises.

Green financing opportunities ensure environmentally friendly activities and support for the livelihood of vulnerable communities. However, these financing opportunities should consider social and gender equity. Hence, women should be encouraged and informed women about these financing opportunities. In addition, remote and vulnerable communities should be outreached to benefit from these opportunities. This was emphasized in the strategy through building on Law No. 152 of 2020 regarding the development of MSMEs, especially for the most vulnerable such as women in the poorest areas.

5.2.4 Suggested gender responsive climate actions

This study has revealed several impacts of climate change on women and existence of gender inequalities aspects adaption. In addition, there are many gaps in the exiting polices, strategies, and services.

5.2.4.1 Increase awareness of the climate change impacts and existing strategies.

Although the communities and officials had a level of knowledge of climate change, its phenomena, and impacts. However, the level of knowledge of the issue and its implication should be improved. Additionally, there are awareness on the NCCS 2050 or other relevant strategies. Hence, the proposed activities are:

- Increase the knowledge and improve the awareness of climate change among communities and officials.
- Increase knowledge and awareness among officials on NCCS 2025 and the National Strategy of mainstreaming Gender in Climate Change 2011.
- Set action plans on governate and directorate level in accordance with NCCS strategic goals.

5.2.4.2 Improve the healthcare services including RH and maternal health to adapt to the emerging needs of climate change in addition to withstanding the impact of adverse weather events.

The main challenges faced by communities were related to the quality of services provided and the capacity to serve increasing numbers of beneficiaries. Additionally, RH services face challenges to respond to demands and provide service especially during emergency related to adverse events. Therefore, actions should address the healthcare services as follows:

- Improve the capacity of health facilities including supplies and equipment.
- Improve RH services including maternal health services.
- Improve the health facilities infrastructure to withstand adverse events.
- Improve the capacity of health facilities and build new facility in accordance with the Green Hospitals' criteria.

- Improve the capacity health services for preparedness and emergency
- Improve the capacity the health team in health services suffering from shortages
- Finance health facilities through Green Bonds
- Financing through and application of Result-Based Financing (RBF)

5.2.4.3 Prevent and mitigate the impacts of Gender based Violence (GBV)

As discussed, many women suffer from GBV specially in Upper Egypt this is worsened due to climate change impact and being locked down at home due to weather events. Therefore, special considerations should be taken to face GBV through the following activities:

- Improve the awareness of GBV in the community and service providers
- Map the services provided for women facing GBV in governorates level
- Capacity building of governorates lacking adequate GBV services
- Improve the knowledge of existing services among women in the community and service providers
- Develop collaboration with local entities and health facilities to arrange activities and referrals of GBV survivors.

5.2.4.4 Adopt innovations and technologies in services and adaption measures

In the study, officials and the community members highlight the importance of technology and use of social media and internet to raise awareness on the climate change impacts, disseminate early warnings and communicate with each other. Hence, the following is suggested:

- Use social media platforms to raise awareness on climate change and impacts related RH and gender
- Provide sustainable internet to health facilities and other institutions
- Launch an innovation hub in local governorates to encourage and incorporate innovative initiatives and projects
- Train officials and staff members on new technologies

5.2.4.5 Enhance social protection and improve livelihood.

Issues of lack of financial means, lack of livelihood and inability of buy necessary food were raised in all studied governorates. The financial constraints and household's food insecurity worsen the negative impact of climate change on health and GBV and undermine the position of women in the family and community. Thus, it essential to take the following actions:

- Collaborate between health facilities and social protection institutions.
- Enhance livelihood and economic opportunities
- Provide employment opportunities to women in vulnerable communities
- Encourage and improve microfinance projects through green bonds

5.2.5 Suggested M&E indicators and source of data to monitor progress and impact

The consultations conducted with various officials and stakeholders did not yield specific measures or indicators to effectively track the impacts of climate change on reproductive health.

In the governorate of Aswan, officials provided general recommendations suggesting the use of existing indicators that measure various health issues at hospitals or primary care units. Officials in Alexandria mentioned that current indicators, such as the percentage of abortions among pregnant women and the utilization rate of primary care units, could serve as a starting point. Conversely, officials in the Red Sea highlighted the potential use of indicators that measure the percentage of pregnancies among females using contraceptives after a crisis as a means to detect the impact of climate change on reproductive health. Menya and Sohag officials reported similar generic indicators relating to the utilization of services provided for children and women in primary care units. In Behira, officials confirmed the absence of specific indicators to measure the impact of climate change on reproductive health.

It is worth noting that non-healthcare affiliated officials expressed limited awareness or knowledge regarding such indicators, as the responsibility for developing and monitoring them lies with healthcare authorities.

The National Strategy for Mainstreaming Gender in Climate Change in Egypt encompasses a comprehensive chapter devoted to assessing the impact of climate change on women's health. This chapter further outlines selected actions aimed at mitigating such impacts, along with indicators designed to measure the effectiveness of these interventions. Notably, the strategy places significant emphasis on the climate's influence on the nutrition of women and children⁵⁹.

Within the health sector, the strategy sets a range of objectives. These include enhancing the technical and scientific capabilities of national and professional institutions in the realm of climate change and health, fostering a broader understanding and awareness of the gender-related aspects of both climate change and health, devising policies to diminish the risk of vector-borne and greenhouse gas emission-related diseases while adopting a gender perspective, promoting awareness of the interconnectedness between health and climate change, and fostering collaboration with non-governmental organizations and civil society entities actively engaged in the field of health⁶⁰.

Each objective within the strategy is accompanied by detailed actions and specific indicators to facilitate measurement and monitoring. These indicators can serve as a starting point for the Ministry of Health in developing monitoring indicators specific to the adaptation strategy, with a heightened focus on reproductive health⁶¹.

The Ministry of Health and Population could effectively incorporate these indicators alongside its existing metrics that assess reproductive health aspects within primary care units. This integration would aid in the development of a comprehensive monitoring and evaluation framework. This framework would specifically focus on assessing the effects of climate change on reproductive health and the strategies for adaptation. To ensure the effectiveness of this framework, it is essential to

⁵⁹ The National Strategy for Mainstreaming Gender in Climate Change in Egypt

⁶⁰ Ibid1

⁶¹ Ibid2

establish a robust foundation for enhancing the capabilities of the Ministry of Health and Population staff. This enhancement should be in areas of Monitoring and Evaluation, understanding the impact of climate change on reproductive health, and strategies for adaptation (please see Appendix VII that proposed monitoring indicators).

5.2.6 Enhance warning system to be supportive to social protection programs and manage risks to RH services

Early warning system is essential to provide timely actions and mitigate risk. Therefore, it is recommended to provide the following:

- Disseminate weather forecasts and protective measures to the public through several outlets including social media.
- Include climate change impacts in the regular planning for health and social services
- Organize a multisectoral preparedness committees on local level to coordinate mitigation actions including protection of livelihoods and health emergency
- Provision of RH specially in remote areas should be included the emergency measures
- Family Planning sector to update and enhance plans to cope with climate change.
- Adapt and improve readiness of family planning mobile clinics to reach the disaster impacted areas.
- Coordinate all reproductive health services to be provided by any mobile clinics as part of the emergency preparedness.
- Conduct capacity building courses to relevant service providers on preparedness and response including crises management to provide RH/FP services

5.2.7 Role of Citizens to mitigate the impact of Climate Change

- Raise the awareness of ordinary people on the threat of Climate change and sustainable consumption.
- Spread the culture of safe disposal of waste, the harms of using plastic and

6 Annexes

6.1 Annex I: References

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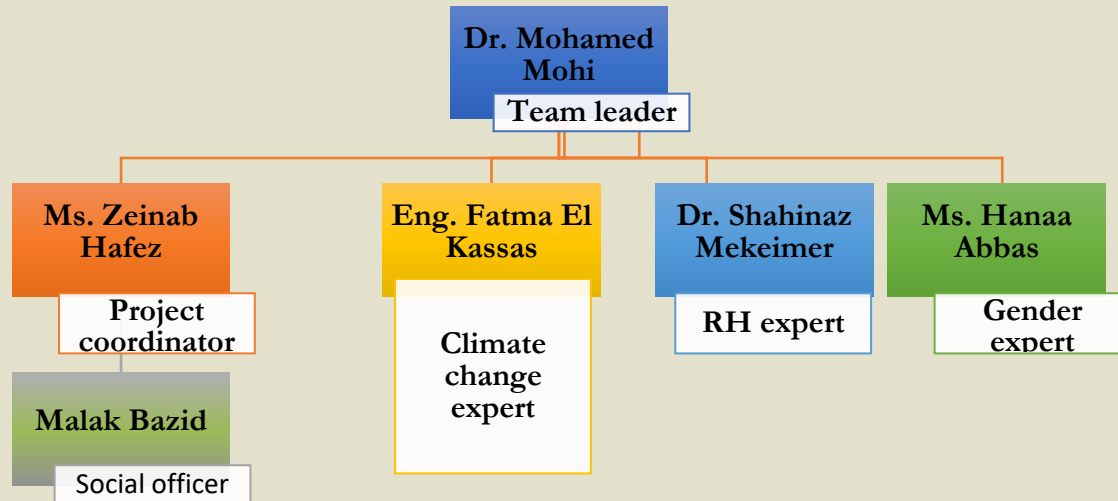
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6.2 Annex II: Study Team

The following figure presents the project's team of experts:



- 6.3 Annex III: Policy Brief
- 6.4 Annex IV: Current Climate in Egypt
Selection Criteria of Hotspots
Data Collection Methods and Sample Distribution
- 6.5 Annex V: Surveying Tools: IDIs, FGDs
- 6.6 Annex VI: M&E Indicators Climate Change and Reproductive Health
- 6.7 Annex VII: Case Study
- 6.8 Annex VIII: Literature Review and Scoping Review

6.8 Annex IX: Sample Distribution

Target Group	Method and Tool	Central Level	Alexandria	Aswan	Red Sea	Sohag	Menya	Behera	Total
Egyptian Environmental Affairs Agency (EEAA)	In-depth Interview	1							1
MOHP	In-depth Interview that can be attended by more than one	6					1		7
Health Directorates	In-depth Interview that can be attended by more than one		1	1	2		1	1 (FGD)	5 in-depth 1 FGD
Healthcare Units	In-depth Interviews					1			1
Ministry of Agriculture and Land Reclamation (MoALR)	In-depth Interview							1	1
Ministry of Social Solidarity (MOSS)	In-depth Interview		1				1	1	3
National Council for Women (NCW)	In-depth Interview		1		2		1	1 (FGD)	4 in-depth 1 FGD
NGOs working with women and environment	In-depth Interview			1					1
American university in Cairo Social Research Center (SRC)	In-depth Interview	1							1
Ministry of Planning	In-depth Interview						1		1
IDSC - Crises management central department (CM)	In-depth Interview		1		1			1	3
National Research Centre	In-depth Interview	1							1
General Secretary of the governorate			1						1

Target Group	Method and Tool	Central Level	Alexandria	Aswan	Red Sea	Sohag	Menya	Behera	Total
Women (educated) 20-49 years	FGDs				1FGD with 9 participants		1 FGD with 8 participants		2 FGDs
Women (uneducated) 20-49 years	FGDs					1FGD with 8 participants			1 FGD
Young Women (educated) 15-19 years	FGDs				1FGD with 10 participants	1FGD with 8 participants			2 FGDs
Young Women (low education) 15-19 years	FGDs					1FGD with 8 participants			1 FGD
Men (educated) 20-40	FGDs						1FGD with 8 participants		1 FGD
Men (uneducated) 41-60	FGDs					1FGD with 8 participants			1 FGD

