

WEATHERING RISK

Integrating Climate Security into Policies: Roadmap for Yemen

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Executive Summary

Climate and security risks are compounding in Yemen, impacting its population clearly and directly, but also through less visible, indirect effects. While violent conflict, at both the national and local levels, is likely to continue in the near future, the effects of climate change are projected to grow more pronounced over time. Problems including rising temperatures, rainfall variability, desertification, and vanishing water reserves are all set to intensify, exacerbating both the drivers and the effects of the conflict on the population. At the same time, this volatile security situation is decimating the natural environment, leading to a vicious, expanding cycle of insecurity. Such outcomes are complex, and likely to present themselves in a variety of ways. The following dynamics are currently at play and are predicted to become more pronounced over time:

- **Rising water insecurity will threaten livelihoods and contribute to further conflict.**
- **Climate change and conflict will drive displacement, worsening the human security of the most vulnerable.**
- **Climate change will further erode social cohesion.**
- **Extreme weather events will cost lives, damage infrastructure, and threaten intercommunity conflict.**
- **Urgent security risks will damage ecosystems in a negative feedback loop.**

To manage these issues and mitigate their effects on the population, authorities must ensure that policies, particularly around sectors critical to climate change, peace, and security, consider the relationship between climate change and security dynamics. Currently, climate security is not adequately integrated into policies, with several key challenges inhibiting mainstreaming and implementation. These challenges are largely rooted in financial constraints and the ongoing war, which has halted functioning statehood with disastrous effects on the provision of basic services, let alone the realisation of policy ambitions regarding climate change and sustainable peace.

However, many mitigatable challenges are also preventing climate security mainstreaming in policy. These include a lack of institutional awareness, both around climate change and climate security links, technical capacity limitations, and critically - financial constraints. Due to these factors, in combination with the active conflict situation, neither climate security nor other climate change policies have been effectively implemented, with concerningly sparse action taken on the combined effects of environmental and security dynamics. While these very real constraints explain inaction, the necessity of managing and mitigating insecurity is only increasing. National, regional, and international actors are required to undertake efforts to support the climate security integration into policy and ensure implementation to all feasible extents. This roadmap proposes a recommended course of action for mainstreaming climate security into policy-making. Such efforts could include:

SHORT-TERM

Improving climate security knowledge, capacities, communication, and programming.

MEDIUM-TERM

Incorporating climate security considerations in policymaking.

LONG-TERM

Streamlining climate security across policies, frameworks, and planning.

The recommendations were informed by extensive research and analysis carried out during the two-year-long project. Stakeholders were engaged during a workshop held in September 2022 in Amman and in Cairo in March 2023. In addition, interviews were conducted with key interlocutors to ensure applicability at the national level, inclusive of constraints. However, due to challenging conditions, in-depth verification of recommendations by stakeholders has not yet been possible. Recommendations are subject to the resource constraints and information available at the time of writing. Policymakers are advised to exercise best judgement and invoke the expertise of local communities to guide implementation.

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The project is a multi-partner platform focusing on the impacts of climate change on human security in the Arab region, especially in the context of countries in crisis. It brings together the League of Arab States (LAS), Arab Water Council (AWC), United Nations Development Programme (UNDP), United Nations Environment Programme - Finance Initiative (UNEP FI), World Food Programme (WFP), United Nations Office for Disaster Reduction (UNDRR), and United Nations Human Settlements Programme (UN-Habitat), to deliver climate-oriented solutions that address climate challenges and bring co-benefits across the SDGs. In doing so, it aims to scale up access to and delivery of climate finance, including through innovative partnerships with the private sector.

The development of this study was enabled by Weathering Risk, the multilateral initiative that offers tailored analysis and tools to understand climate-related risks to human security and build sustainable peace.

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Disclaimer

This roadmap aims to guide Yemeni policymakers in streamlining climate security consideration into policy and to highlight priorities for support to donors. The roadmap considers the nation of Yemen as a whole, targeting institutions within the internationally-recognised Government of Yemen. Recommendations should be implemented with regard to the changing conflict situation, adjusted according to new conflict and climatic developments.

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Key Climate Risks

Yemen is one of the most vulnerable countries to climate change globally. Increased temperatures, rainfall variation, and extreme weather events are impacting Yemen now and are expected to worsen. Related environmental challenges, including water scarcity and desertification, will be exacerbated as the effects of climate change become more pronounced.

Increased temperatures

Between 1971 and 2020, Yemen's mean annual temperature increased by 0.42°C per decade.¹ This is more than double the global average rate of increase (approximately 0.15°C-0.2°C per decade since 1975).² Yemen's temperatures are projected to increase with large regional and seasonal differences within the country. In a scenario of continued high emissions, mean annual temperature will increase by 2.42°C to 28.00°C for the period 2040–2059.³

Increasing number of hot days

The number of “extremely hot days” per year, defined as days surpassing 35°C, is expected to significantly rise in Yemen. Higher anomalies are expected along the coasts and in the highlands. The largest increase of 51.40 days annually above the reference period (1995–2014) is expected in Hajjah for the period of 2040–2059, primarily during spring and fall months.⁴

Coastal regions will experience the greatest projected increase in number of high Heat Index days annually by the mid-century, with temperatures in the hottest days expected to rise between 4 and 7 degrees.⁵ Current temperature rises and an increased number of hot days are expected to worsen evaporation of Yemen's very limited ground water, exacerbating water scarcity.

Less predictable precipitation patterns

From 1971–2020, Yemen experienced a decrease in annual precipitation of 6.25 mm per decade. All regions are expected to experience an annual increase in precipitation by 2040–2059, with heavy flooding punctuating long drought periods. However, the outlined precipitation projections vary regionally and inter-annually, with significant uncertainty. Some predictions expect rainfall to decrease in Yemen overall.⁶ While northern highlands are projected to experience the largest seasonal percent increases above the reference period, central and southern parts are expected to show median annual increases in rainfall intensity. It is important to note that any future increase in precipitation will not eliminate Yemen's high drought risk.⁷

Increased extreme weather events

Extreme weather events, including droughts, flooding, and storms are on the rise in Yemen.⁸ Dry spells have become longer, leading to severe droughts that are set to increase in intensity and frequency. Long spells without rain are likely to increase, leading to issues with food supply.⁹ At the same time, typhoon periods, torrential rain, and flash flooding are intensifying and expected to worsen, further reducing soil quality, threatening critical infrastructure, water quality, economic activities, and endangering the population. Occurrences are also expected to become more erratic, with variability in rainfall and extreme weather events becoming increasingly difficult to predict and therefore, to plan for.¹⁰

Climate Related Security Risks

Climate-related security risks refer to the physical, economic, or societal impacts of climate change that significantly alter political stability, human security, or national security infrastructure, as well as the impacts of security and conflict on the environment and climate.^{11, a} Combined with the effects of conflict, the climate security situation in Yemen ranks among the worst globally. The war has resulted in enormous casualties as a direct consequence of the conflict, with huge numbers of deaths also occurring from indirect effects, including a lack of water, food, and medicine. Already facing acute natural resource issues prior to the war, Yemen has seen increased resource scarcity and competition as a result of conflict. At the same time, the effects of climate change have been found to exacerbate insecurity and instability, further engendering competition over dwindling resources. Climate-related security risks have been presented individually below, however, policymakers should note that these threats are interdependent and overlapping.

Climate change threatens Yemen's already scarce water resources, compromising livelihoods, water security and driving violent conflict. As of 2022, 18 million, or 56%, of Yemen's population lacked access to safe drinking water and sanitation.¹² Densely populated urban areas are experiencing the worst effects, with Sana'a among the most water-stressed cities on the planet.¹³ With more than half the population unable to access sufficient sanitation, water-borne diseases have become widespread, with at least 200,000 cholera cases reported in 2020.¹⁴



Inefficient water management practices will worsen the effects of climate change over time. The agricultural sector has extracted Yemen's groundwater aquifers at an unsustainable rate for decades, with government-subsidised irrigation schemes depleting dwindling resources to extract water to grow profitable crops such as qat, a water-intensive, domestically consumed, mild narcotic that is the basis of more than half a million jobs in Yemen.¹⁵ Every year, approximately 3.5 billion cubic metres are extracted, with just 2.1 billion cubic metres replaced.¹⁶

Climate change is and will continue to reduce water availability, increasing the likelihood of conflict at the local level. Yemen has a long history of local water conflicts, with approximately 4,000 people being killed per year over water disputes before the civil war, accounting for 70-80% of rural conflict deaths.¹⁷ Since, the state vacuum that has emerged from conflict has meant that the government has been unable to enforce water regulations, with landowners arbitrarily digging wells, depleting aquifers and blocking communities from access. Competition has risen as a result, often escalating into violent conflict. Conflicts may occur between individuals, or families, when one community member builds a well too close to another, but can also involve entire villages or tribes and heavy armament. Thousands of casualties are seen every year. As time goes on, individuals in rural areas will have to take longer journeys for water. Women, who are traditionally responsible for water collection, will face differentiated dangers including gender-based violence on these routes, particularly in the midst of conflict.¹⁸

a Security risks in this paper are framed within the concept of human security, i.e. the "survival, livelihood and dignity" of people. United Nations Trust Fund for Human Security: What is Human Security. New York, NY. Retrieved from: <https://www.un.org/humansecurity/what-is-human-security/>, 16.1.2023.



Ruins of “Crow Fortress”, Thula, Yemen (asamw, unsplash)

Climate change impacts are displacing more Yemenis and leading to increased migration, straining urban resources and humanitarian relief funds. As of 2023, there were 4.5 million Internally Displaced Persons (IDPs) in Yemen.¹⁹ Climate change-induced resource scarcity and environmental disasters are becoming increasingly prominent drivers of displacement alongside those directly related to the conflict.²⁰ Many homes and livelihood sources are being washed away by flash flooding, while long periods of drought and water scarcity undermine the viability of rural livelihoods, rendering life too difficult to maintain in rural areas. Such and similar environmental pressures increasingly contribute to rural-urban migration dynamics, which are in turn feeding into escalating competition over humanitarian aid and access to health services in urban areas. In cities and rural areas, tensions are arising between IDPs and the local community over natural resources.²¹ As climate change progresses, longer droughts and other environmental disasters will make livelihoods more precarious, causing further displacement and acting as a push factor for rural-urban migration.

The effects of climate change threaten vital livelihoods, straining social cohesion. Due to the conflict, weak state institutions, low levels of educational attainment, and environmental conditions, livelihoods are highly difficult to maintain in Yemen. Labour force participation for ages 15-24 is among the lowest globally, at 26.5% in 2023.²² Of those participating in the workforce, almost half are employed in the shrinking agricultural sector.²³ Increased temperatures due to climate change, inefficient natural resource management, and unsustainable cultivation practices will see heightened challenges for agriculture over time, leading to fewer income opportunities. Agricultural activities directly and indirectly provide 73.5% of total employment in Yemen, with livelihood loss expected to be rampant as Yemen’s water reserves become unable to sustain the pre-war status quo.²⁴ Women are likely to be particularly affected, as agriculture counts 66% of women’s employment, in comparison to 45% of total direct employment.²⁵

Livelihood insecurity is worsening economic conditions for Yemenis, impacting social cohesion. Previously, “people were flexible, people were supporting each other. Now, as climatic and other pressures are rising and with the absence of the state, people are fighting, even within families” over livelihood issues.²⁶ Droughts, water scarcity, desertification, and other interlinked threats are adding pressure to livelihoods in Yemen.

Climate change will exacerbate food insecurity. Yemen is currently suffering from one of the world's worst food crises, with 17.4 million people in need of food assistance.²⁷ The country's food systems are expected to face additional strain due to climate change, risking human security in and of itself, and exacerbating the potential for conflict.

Food insecurity is a longstanding phenomenon in Yemen, with the conflict exacerbating underlying issues, vulnerabilities, and exposure. Prior to the war, just 25% of Yemen's food was produced domestically, with this figure substantially decreasing in the years following the outbreak of war.²⁸ Such issues are exacerbated by poor agricultural governance, particularly with regard to qat production, where myopic benefits to elites are prioritised over the population's food provision. The depletion of water reserves, in combination with desertification, will give way to lower agricultural outputs in the medium to long-term, meaning that the cultivation of essential crops will be even less viable. At the same time, climate change-induced temperature increases will mean that more water is needed to produce the same crop yield, creating a vicious cycle of resource depletion.²⁹

The agricultural sector has been severely damaged by the conflict, both from a labour perspective due to displacements, and from an infrastructural one. Between January 2018 and September 2020, Yemen's farms were struck by shells and airstrikes at least 918 times, almost one incident per day.³⁰ Many fields are now inaccessible due to the prevalence of explosive devices in Yemen's croplands (particularly in the west). Meanwhile, rural-urban migration has shrunk the workforce in rural Yemen, meaning that there are often labour shortfalls in crop production.

Climate change induced extreme weather incidents threaten livelihoods and property, causing loss of life. Between 1971-2013, 1637 natural disasters were recorded in Yemen, causing 4,126 deaths, and the destruction of 22,392 homes.³¹ The changing climate is predicted to see an uptake in the number of extreme weather events, which are likely to become more impactful due to the conflict. The capacity of Yemeni communities to cope with such events – through, for example, building up cash reserves or the selling off of certain assets – has been steadily eroded due to insecurity and dysfunctional internal markets. Post-disaster recovery efforts are expected to become much more difficult as hostile conditions persist. This problem is exacerbated by the fact that there are very few early warning systems in place to predict extreme weather events and Disaster Risk and Recovery (DRR) Plans are missing. Yemen already has very high mortality rates from extreme-weather related disasters, accounting for approximately 60 percent of all disaster mortality in the MENA region (as of 2017).³²

An increase is expected both in terms of drought periods, leading to desertification and water scarcity, and torrential rain, which intensified the strength of cyclones and flash floods. Vulnerable infrastructure is likely to see further damage. Disasters are also likely to impact social cohesion over time. In recent years, flash floods and cyclones have disrupted wadi courses, leading to conflict over property boundaries between landowners.³³

Security and climate threats ricochet off one another in a spiral effect, risking lives. As climate change increases conflict risks, Yemen's ongoing civil war has decimated much of the country's rich natural environment, exacerbating insecurity over time. The critical danger the Floating Storage Unit Safer (FSO) posed to millions of Yemenis before it was cleared in 2023 serves as a reminder of the spiralling effects of conflict and environmental neglect.³⁴ Now, nine years of conflict have damaged huge swathes of Yemen's natural landscape, as well as the infrastructure that could abate some of the effects of climate change e.g. water infrastructure. Moreover, millions of landmines are strewn across Yemen's countryside, damaging biodiversity but also straining livelihoods, combining with the effects of climate change to exacerbate climate-related security challenges e.g. displacement, resource competition etc.³⁵

Institutional Framework

Institutional Context

Effectively, Yemen is governed by two primary authorities, across two broad territories, who vie for power through political and military means. Sana'a, Yemen's capital, and its surrounding areas in the north and west, are under the control of Houthi armed forces. The internationally-recognised Government of Yemen rules over Aden, controlling or strongly influencing most of the remainder of the country. Many of the ministries established prior to the war have survived or been duplicated by the Houthi-led interim authority across its territories. These include key ministries related to climate change, climate security, and peace and conflict. A secessionist-aspiring authority in the south, the Southern Transitional Council also wields a high degree of local legitimacy and power in the south, while large powerful tribes command significant authority in some regions. As stated, this paper only provides recommendations to the internationally-recognised government.

A key institutional body to address climate security issues is **the Ministry of Water and Environment (MWE)**. Within the MWE exist many sub-units and committees responsible for managing various issues related to climate change, including the Climate Change Unit, National Water Resources Authority (NWRA), the Rural Authority for Water Projects, and the local water and sanitation corporation. Also under the MWE is the Environmental Protection Authority, which is the national focal point for the UNFCCC and international funding bodies, such as the Green Climate Fund. **The Ministry of Agriculture and Irrigation and Fish Wealth (MAI)** is an important climate change actor too. The MAI is powerful, with the vast majority of the country's water consumption prior to the war being used for agriculture, primarily *qat*. Cross-ministerial coordination between the MAI and MWE has historically been fraught, however, a coordination mechanism was set up between the ministries to address these challenges.³⁶ Challenges have reportedly included an overlap in mandate, however, many of these challenges have been overcome at the policy level. The MWE is responsible for the development of policies and allocation of water resources whereas the MAI is tasked with implementing policies and overseeing construction, particularly with regard to irrigation infrastructure.³⁷ **The Ministry of Planning and International Cooperation** is responsible for coordination between government plans and for ensuring that processes are uniform and inclusive of needs from across the country.

Since the outbreak of the war, *policy development and implementation have effectively come to a standstill*. However, prior to the conflict, the government had developed policies and strategies related to climate change that are pertinent to climate security. These include national strategies for biodiversity, agriculture, water management, sustainable development and poverty reduction. Additionally, and supported by the international community following the outset of the war, Yemen has also drafted mitigation and adaptation plans, including National Adaptation Programme of Action (NAPA), the updated National Adaptation Plan, Initial, Second and Third National Communications, Intended National Determined Contribution (INDCs), Renewable Energy and a Technology Needs Assessment (TNA), the National Strategy for Renewable Energy and Energy Efficiency (NSREEE) and the National Biodiversity and Action plan (NBSAP) of 2016, which is among the few policies that had been proposed after the onset of the war.³⁸

Several actors relevant to security are present, with the security situation demanding the bulk of institutional attention. A notable ministry in this regard is the Ministry of the Interior (MoI), which is responsible for internal defence and law enforcement, as well as weapons import. The Supreme Council for Civil Defence falls under the authority of MoI, which is responsible for disaster management and response.³⁹ Less formalised, but crucial to conflict resolution are local conflict management systems, especially concerning resource management. Local systems historically played a very important role in resource governance and conflict resolution. In the event of a dispute over water resources, the first response has always been at community level. Pre-war, should no resolution be found to a local resource conflict, the NWRA would step in, and only after that, the formal courts.⁴⁰ For a variety of reasons, Yemenis are often reticent to take their complaints to court, usually opting for local resolution mechanisms.⁴¹ In parts of southern Yemen, the Al-Khayyel system, whereby a local, highly respected expert would manage water extraction and allocation, traditionally governed local resources. This system has been in place for decades and has been particularly prevalent in the governorate of Hadhramaut, although its effectiveness has declined since the outbreak of conflict.⁴² While other regions in Yemen do not use the specific Al-Khayyel system, water resources are traditionally managed by a locally respected figure.⁴³



Map of Yemen (adelphi)

Climate Security Integration

Degree of integration

Generally, climate security is not adequately integrated into policies, including security, or even environmental policies. For example, the National Water Sector Strategy and Investment Programme (NWSSIP) does not outline adaptation strategies, nor does it make clear references to the potential impacts of climate change on water management.⁴⁴ The policies pertaining to climate change that do exist, such as the National Adaptation Programme of Action (NAPA), were by and large written prior to the outbreak of war and do not reflect the current national security situation, nor are they based on the latest – or even most reliable – climate science available at the time of composition.⁴⁵ Due to the country's massively struggling economy prior to the conflict, policy documents produced by the Yemeni government have been transparent about the considerable limitations that inhibit their research and subsequent policies.

Since the onset of conflict, institutions have generally been unable to develop sufficient climate change policies.⁴⁶ For example, ahead of the Paris Agreement negotiations, Yemen submitted its Intended Nationally Determined Contributions, indicating its commitment to participating in climate action. However, following the escalation of conflict, Yemen did not take further action and is now one of four remaining countries not to have ratified the Paris Agreement.⁴⁷ With the support of the UN, Yemen is currently working on submitting its first NDC. The development of up to date policies is further hampered by the fact that very little data on climate change and climate security was collected in Yemen even prior to the war which policymakers can draw from.

An even greater challenge facing the nation is that, since the outbreak of conflict, there has been no effective implementation of even the policies that do exist.⁴⁸ In recent years, the MWE has held “no supervisory role” whatsoever in terms of licensing, meaning that who gets to dig wells (thus, dominate the water supply) is determined by their perceived power within the area, regardless of state regulation.⁴⁹ Correspondingly, the MAI has been severely limited in carrying out the MWE's policies, with little to no new water infrastructure constructed since the conflict began.⁵⁰

Even if the political situation stabilised sufficiently to allow for the implementation of existing policies, institutional barriers would prevent effective implementation. Limited statehood has meant that there is often overlap between bodies, reducing productivity. For example, implementation of relevant policy often overlaps between the MWE and MAI, leading to challenges.⁵¹

At the local level, previously defined systems to secure environmental management, such as the Al-Khayyel system, have changed. Communities have partially filled the state gap on climate security in some cases, for example in terms of disaster response.⁵² In many cases, communities themselves rebuild roads, bridges, and houses following an event, as they do not expect the government to intervene.⁵³

In recent years, there has been an uptake in the integration of climate change and security in policymaking, led by the EPA. The 2017 National Biodiversity Strategy and Action Plan II, for example, illustrates the risk of water conflicts, should natural resources not be effectively managed.⁵⁴ The recently published Technology Needs Assessment demonstrates significant and detailed integration of these dynamics, frequently mentioning the effects of the conflict on climate change policymaking and provides insight into, and projections on, climate security dynamics in the future. Examples of this include expected demographic and mobility trends, the composition and evolution of water and food systems, and livelihoods. It also considers potential externalities of climate change adaptation strategies, noting that upstream rainwater harvesting could result in serious community conflict, should populations downstream not receive their fair share of water reserves.⁵⁵



Queen Arwa Mosque, Jibla, Yemen (asamw, unsplash)

Challenges to integration

THE LACK OF A FUNCTIONING STATE IS INHIBITING CLIMATE SECURITY MAINSTREAMING

Since the start of the civil war, there has been no effective management system in any institution in Yemen, including in the areas of security and environment – both considered together and separately.⁵⁶ Institutions in Yemen have been methodically eroded by the war. As long as it continues, governmental infrastructure will further weaken, reducing the capacity for climate change mitigation and adaptation.⁵⁷

In many situations, communities have stepped in, providing services typically provided by the state. These communities are highly constrained by capacities and resources, and responses have not been uniform.⁵⁸ While weather-induced disasters have caused communities to step in and help one another in many cases, other trends, such as increased IDP figures, livelihood disruption, and the blurring of land property delineations, are straining social cohesion.⁵⁹

Amidst ongoing conflict and a humanitarian crisis, climate change prevention, mitigation, and adaptation are not high on government agendas.⁶⁰ Current priorities are limited to the conflict and respond to the pressing humanitarian crisis.⁶¹ While these threats are severe and immediate, a lack of action on long-term issues amid a looming climate crisis will exacerbate these problems over time.

JOINT INSTITUTIONAL MECHANISMS TO ADDRESS CLIMATE SECURITY TOPICS ARE INSUFFICIENT

Environmental and climate change topics appear sporadically in Yemeni policy.⁶² Where related issues, including water management and other crucial concerns do appear, they are rarely connected to peace-building or security policy. While some cross-sectoral, institutional mechanisms to address environmental topics, such as the Water Sector Coordination Committee, are being developed, none exist yet that tackle conflict and environmental dynamics together.

Coordination is also lacking within climate change governing bodies. For example, officials within the EPA are frequently assigned different projects but do not sufficiently coordinate, potentially due to staffing

shortfalls. Furthermore, while the EPA technically reports to the MWE, coordination is lacking between the two bodies, particularly with regard to projects commissioned by donors.⁶³

There is also an established climate change committee which involves all the relevant institutions and entities but it is not operationalized due to some technical and institutional challenges. These include limited technical and institutional capacity, low knowledge and awareness of the necessary steps, no operational manual nor terms of reference for the committee and unarticulated delineation of roles and tasks.⁶⁴

CONFLICTS OVER WATER RESOURCES HAVE A LONG HISTORY, FROM THE MINISTERIAL TO THE LOCAL LEVEL

Water management is a longstanding problem in Yemen that long precedes the civil war.⁶⁵ Violent conflict over water resources is also a historic issue that cannot be exclusively attributed to the effects of anthropogenic climate change. However, the existence of these issues prior to the impacts of climate change-induced temperature change, desertification, and weather variability expected under the most likely climate projections, amplifies the challenges they will pose in the future, with the conflict preventing advance preparation.

Even if the conflict was not preventing policy implementation, a clash of priorities between the MAI and MWE could pose a significant barrier to sustainable water management. Historically, the MAI has controlled resources to the benefits of wealthy elite landowners and does not take the environmental concerns of the MWE sufficiently into account in policymaking.⁶⁶ While MWE attempts to sustainably manage water reserves, the significantly more powerful MAI is not committed to implementing the NWSSIP.⁶⁷ However, the MAI is taking part in the Committee on Climate Change, currently being developed by the EPA.⁶⁸ Details on the scope and mandate of the new committee were not available at the time of writing. At times, there is no clear delineation between the responsibility of national government bodies and local authorities in planning for, and responding to, climate-related security challenges, leading to inefficient management and vertical incoherence.

POLICIES RELATED TO NATURAL RESOURCE MANAGEMENT DO NOT SUFFICIENTLY CONSIDER CLIMATE CHANGE

Key policies written to govern natural resources in Yemen before the outbreak of the civil war did not sufficiently account for climate change projections. Now, Yemen's policy arena is beginning to consider climate change more frequently, however, the conflict has prevented thorough policy devising and implementation.⁶⁹ One exception to this is the National Biodiversity Strategy, however, the authors were unable to verify the extent to which the strategy is being implemented.

A LACK OF WOMEN'S PARTICIPATION PREVENTS EQUITABLE AND EFFECTIVE POLICYMAKING

Within many social structures in Yemen, it is believed that women are not involved in conflict, and should not partake in peace and reconciliation processes as a result.⁷⁰ Yemen ranks the second lowest in the world in terms of gender parity, with traditional tribal structures sustaining patriarchal paradigms, particularly in rural areas. INGOs are concerting efforts to engage women in local water management, a key point of local conflict in rural areas.⁷¹ The absence of marginalised groups including women in decision-making processes further limits the efficacy and applicability of environmental policy and local management practices. Efforts are being undertaken currently to improve gender equity in policymaking. Climate financing is sometimes contingent on women's participation and Yemen is developing its gender policy to fulfil the requirement of the Green Climate Fund.⁷² This policy will be applied to all climate change governance.

However, while efforts such as this are being undertaken, effectiveness is as of yet unclear. This is solidified by the fact that mainstreaming women's participation is not a top priority of national climate security governance.⁷³ Areas perceived to have more impact such as adaptation are seen as more important, highlighting that climate security governance and gender are viewed somewhat as trade-offs, rather than mutually-supportive objectives.



Alsonainah, Sana'a, Yemen (asamw, unsplash)

THERE IS A SIGNIFICANT INFORMATION GAP WITHIN INSTITUTIONS ON BOTH CLIMATE CHANGE AND ITS LINKS TO CONFLICT

Climate change discussions remain low-level in Yemen.⁷⁴ While it is clear that climate change will affect Yemen's security situation, the precise nature of this impact is difficult to assess, particularly regarding the impact of conflict on climate change vulnerability.⁷⁵ Policymakers have been transparent about the knowledge gap in this regard, with Yemen's only Initial National Communication (INC) to COP noting that the government simply does not have the know-how or finances to sufficiently research climate change.⁷⁶ Capacity is also lacking at the ministerial level, reducing the potential to receive climate finance.⁷⁷ Without possessing sufficient knowledge and understanding of the Yemeni environmental context to access international funding for climate change, climate security governance suffers in turn. Critical data required for the design and formulation of climate security-sensitive policies – such as place- and community-specific vulnerability mapping and accurate climatic projections – is frequently lacking.

RESOURCE CONSTRAINTS PREVENT ACTION ON CLIMATE ADAPTATION AND LONG-TERM CLIMATE SECURITY PREPARATION

Yemen is the least wealthy country in the Arabian Peninsula and has one of the lowest socioeconomic standards globally.⁷⁸ The conflict has plummeted the nation into an exaggerated state of poverty, with basic needs provided for in large part by aid from international organisations. The provision of international financial support – particularly for the purposes of managing climate change – is also unstable, due in large part to the conflict. One of the countries most vulnerable to climate change on the planet, Yemen has received critically low levels of international climate finance.⁷⁹

Authorities that are undertaking significant efforts to respond to the climate crisis are suffering because of resource constraints. The EPA, for example, is significantly understaffed. As a result, projects hire consultants to implement projects on a short-term basis, who then leave, inhibiting sustained action. The EPA frequently highlights that it needs new staff to improve its impact, but no meaningful change has happened.⁸⁰

POLICIES AND INITIATIVES DO NOT SUFFICIENTLY CONSIDER LOCAL EXPERTISE AND NEEDS

Initiatives, particularly regarding reconstruction and recovery, tend not to consult local communities and councils before implementing plans. This has led to a host of issues, including the wasting of resources on plans that are not viable or useful for communities. For example, in Hajjah, a dam was built in an area deemed not useful by locals, who expressed that the resources could have been put to much more efficient use had they been consulted.⁸¹ While local councils are well placed to work on such issues and offer an intermediary role between communities and high-ranking officials, they lack the resources and expertise to play productive and positive roles.⁸²

POLICIES AND INTERVENTIONS ARE NOT RESILIENT OVER TIME

Policies and action plans operate on short-term bases that do not last over time. For example, reconstruction efforts following conflict damage or extreme weather events are not built to last long periods, or even, beyond the next incident, leading to avoidable waste and compromising the sustainability of interventions. Flimsy material is often used that is destroyed in the storm. This has been seen in particular with regard to the rebuilding of household pipes.⁸³ The authors were unable to verify at the time of writing if such material is used because of resource constraints or because reconstruction is seen as a temporary solution, given the fragility of the political and environmental situation. This problem is likely to become worse over time, given the increasing frequency of flooding, for example. Currently, such climate change projections are not adequately integrated into reconstruction policies. Meanwhile, efforts to mitigate the effects of climate change, the conflict, and other dynamics are inhibited by political short-sightedness and a lack of follow-up. While capacity-building workshops for stakeholders are frequently held, they are offered on a one-off bases, without the continued training, coordination, and funding needed to make such efforts worthwhile over time.

Recommendations

Yemen is facing a climate security crisis that must urgently be addressed. The ongoing conflict, shrinking natural and monetary resources, and growing humanitarian demand is reducing the capability of Yemen's authorities to build resilience to climate change impacts. Government actors need to undertake efforts to minimise these growing threats to every feasible extent. International donors must support Yemen's government in developing the institutional architecture to tackle these challenges. *Climate finance for Yemen must be significantly stepped up* by donors. The recommendations and entry points presented below intend to provide donors and policy makers at the national, regional and international levels with suggested steps to engage with these policy challenges over the short, medium, and long-term.

Immediate



Donors embed the recommendations outlined in this roadmap within country plans and strategies, providing the necessary implementation funding.

Climate security is threatening a broad range of aspects of Yemeni life, and is likely to undermine already strained resilience. The challenges are wide-spread, but interconnected, with many areas needing to be addressed simultaneously and coherently. A comprehensive framework to coordinate climate security action is needed at the national level, that enables Yemeni policymakers, civil society, and other national actors to identify their needs and priorities regarding climate security. Doing so will help guide domestic and international policy and programming to address the complex relationship between climate change, conflict, and peace in Yemen. This roadmap is a first step but should be developed by national actors, with the financial and technical support of the international community, to ensure policy is relevant, efficient, and effective in combatting Yemen's many challenges. International donors are well positioned to support national actors in advancing this initial report. Further, their own Yemen country plans and strategies should reflect the priority areas presented in the Yemen Climate Security roadmap so as to align donor action and resources with country needs and priorities.

SUGGESTED ACTIONS:

- Provide support to country team offices to develop national consultation processes in collaboration with key government stakeholders to review findings and recommendations of this roadmap towards finalisation.
- Review country strategies and plans, as well as ongoing programming, and embed roadmap recommendations accordingly.

Short-term



Improve climate security knowledge, capacities, communication and programming.

Countries, particularly those most vulnerable to the impacts of climate change, need to be prepared to identify key concerns and embed them within strategies and plans at all levels. As well as crucial to the mitigation of impacts, these steps will help unlock critical climate finance. At the institutional level, climate change knowledge and its links to security are at the initial stages of development in Yemen.

Many key stakeholders do not see climate change as a security issue, and those who do lack technical research and knowledge on how to move forward. A capacity shortfall is preventing motivated Ministries from accessing climate finance, leading to inaction on climate security.

SUGGESTED ACTIONS:

- **Build climate security capacities among government actors.** Capacity-building could include a conceptual introduction to climate and climate security risks with a Yemeni focus, as well as technical tools to improve climate security governance from an institutional perspective. One priority area for capacity-building is the access of climate finance. The lack of climate finance Yemen has received in the past five years has cost the country crucial adaptation time. International stakeholders and government actors should prioritise building technical know-how in applying for climate finance. Capacity-building training must not take place on a one-off, ad hoc basis, but ensure follow-ups are sufficient as to be effective. Another priority area is to increase local authorities' conflict management capacities in the face of water conflicts. Capacity-building will require not only enhancing technical know-how among governing actors but also a significant expansion of personnel. Authorities such as the EPA should be prioritised as a body in need of more and trained staff to carry out its ambitious agenda.
- **Conduct thorough climate change, conflict, and climate security assessments at different levels and within various sectors.** One possible priority area for research is the durability of existing and planned infrastructure, given the increasing frequency of extreme weather events and the quality of reconstruction following disasters or conflict damage. Another potential topic is a cross-sectoral assessment of water reserves that incorporates climate change projections, current resource management practises, and that provides real insight on future availability to frame policies. Such assessments should integrate dynamics at the local level, including water conflicts and gaps between policymaking and implementation. As well as contributing to climate change adaptation, such research could work as a gateway to environmental peacebuilding, particularly with regard to local water conflicts. Given resource constraints and the fragile security situation, all assessments will face considerable limitations. However, such challenges should not deter action, and research should nonetheless be conducted to the extent that is possible. Policymakers are recommended to enlist the financial and technical support of the UN and IGOs. Assessments are recommended to undertake efforts to include women researchers. Rural women, in particular, can be integrated into processes by being employed to conduct surveys and research in their areas.⁸⁴
- **Support comprehensive communication strategies** around climate security into plans and processes to ensure all stakeholders, from high-ranking policymaking to local authorities and community members, are aware and participating in current plans. Communication strategies must consider local dynamics such as very low levels of educational attainment, high illiteracy rates, and the exclusion of women from certain social spheres.
- **Promote information sharing at the international level and support alignment with regional initiatives and development partners.** This could include ongoing meetings between international climate finance donors and national actors. As with capacity-building, knowledge-sharing initiatives must not occur sporadically but aim to build relationships with longevity. One means of achieving this is to develop a *Climate Security Working Group* that meets on a consistent basis to discuss relevant, changing security dynamics, ongoing institutional needs, lessons learned from one another, funding opportunities, and more. Such a group should include high-ranking officials, international organisation representatives, local authorities, and civil society. As a starting point, opportunities for climate security financing should be shared whenever possible.

- **Develop climate security capacities at the local level.** Given the bridge between policymaking and implementation, action should ensure that local communities are not forgotten in the mainstreaming process. Capacity-building at this level should be targeted towards the needs of communities, for example, in improving management of shared water reserves or demarcating property lines following a natural disaster. Local stakeholders should be consulted regarding their priorities prior to engagement.
- **Develop a coordination mechanism among all the climate change-related entities.** A climate change committee has been established to act as the coordination body of climate change issues and the climate change Unit as the UNFCCC Focal Point will serve as the executive secretariat of the committee. Therefore, an effective and detailed manual is needed to operate the committee and achieve its mandates. Moreover, capacity-building for committee members is recommended to efficiently enhance climate coordination between all the relevant stakeholders from all the different sectors.
- **Develop a database and information management system for climate change.** The lack of climate data is one of the biggest challenges that hinder most activities attempting to resolve key climatic challenges. A gap in climate data is one of the major obstacles preventing the climate change unit from developing high quality funding proposals for climate finance. A database pooling Yemen's climate change and climate security knowledge would help bridge this gap. Further, the database could include guidelines for data collection to facilitate more climate change assessments.

Medium-term



Incorporating climate security considerations in policymaking.

Given that climate policy remains at the initial stages of development in Yemen, an opportunity exists to mainstream climate security considerations from the beginning of the policy process. Due to the extreme resource constraints the government is grappling with, action should be consolidated into areas in which efforts can achieve maximum impact.

SUGGESTED ACTIONS:

- **Include climate security considerations in policies currently in the process of being developed.** Current activities should be prioritised from a climate security perspective. For example, the update of NWSSIP is a crucial opportunity to include such considerations. The incumbent Climate Resilience Recovery plans and Renewable Energy Investment Planning and Design could also be targeted as an instrument of climate security action.
- **Policy design should ensure sensitivity to previously omitted dynamics, such as conflict, climate, and gender.** This process should be holistic, not siloed, considering the intersectional and interdependent pathways of such issues. For example, gender sensitivity should be mainstreamed into climate and conflict strategies, and not confined to women's empowerment policies. While mainstreaming women's participation in policy is a challenge in Yemen, targeted, locally-sensitive action plans can narrow this challenge. One potential area policy actors could explore is more inclusion of civil society, particularly from urban areas, where women are at the forefront of environmental activism.⁸⁵ To achieve an intersectional climate security policy, a broad range of stakeholders from multiple ministries should be included in the process, particularly at the early stages.



Socotra, Yemen (Andrew Svk, unsplash)

- **Coordinate between relevant sectors to ensure holistic climate security implementation, including, but not limited to, water and food systems' management.** As the Climate Change Committee is in the process of being launched, efforts should be undertaken to ensure it considers climate security as a fused threat, and conceptualises links to conflict and human security more broadly. Coordination of this kind should not be limited to once-off meetings but be streamlined.
- **Identify specific communities and geographies where climate security risks are most impactful to design climate and conflict sensitive approaches and action plans.** As climate security is better integrated into policy should specific communities and geographical areas be identified, it is recommended to incorporate this practise into national policymaking as much as is possible. This will require allocated funding to identify and consult local communities.
- **Work closely with community level actors to ensure needs are reflected in policies and processes,** and that strategies account for possible synergies and capacity to work with those or build off of their knowledge to address concerns on the ground. Local actors should be involved in as much of the policy process as is feasible, from data collection, policy advising, and implementation. Government actors and INGOs, however, should also be aware of structures within communities that might operate as barriers to inclusive, comprehensive action, for example, gender dynamics.
- **Government actors are recommended to undertake an assessment of climate finance architecture,** identifying gaps between funding opportunities and actual grants, devising strategies to bridge these discrepancies. A thorough climate financing strategy should be developed to budget for medium and longer-term actions. Further, budgetary alignment needs to be better considered between planning and concerned ministries, with specific action plans included in policies and strategies.
- **Enhance technical and institutional capacity in climate change and climate security.** Intensive training and capacity building workshops are needed to raise the knowledge of climate change and climate security among policymakers at the technical level.

Long-term



Streamline climate security across policies, frameworks and planning.

While international actors must remain aware that existing security, environmental, and resource policies are not being implemented due to the conflict, stakeholders should also remember the importance of preparing robust, long-term plans, not least because effective climate governance could contribute to peace.

SUGGESTED ACTIONS:

- **Develop and sustain ministerial coordination of climate and security.** Emerging initiatives such as the Water Sector Coordination group and the climate committee are potential areas to consider in terms of long-term support. With the appropriate funding and technical support, such groups can ultimately take on the responsibility of administering climate security action over time. Coordination can be improved by specifying detailed roles and scope of work within coordination committees, with guidelines developed on climate security policymaking to align activities and support relevant actors. Some possible activities for coordination groups could include the development of district-level climate security risk profiles, as national actors are in a better position than international counterparts for local-level analysis. In time, these groups could take over capacity-building efforts, overseeing trainings at the local level. Donors are recommended to support the continuation of these groups in the long run as much as possible through financial support and exerting efforts to minimise institutional barriers to their creation, including overly lengthy bureaucratic processes in international organisations.
- **Review key national policies, frameworks, strategies and embed climate security considerations where relevant.** Incorporate climate security considerations into future policies, accounting for the limitations of current assessments in Yemen and taking a dynamic, flexible, and consistent approach to climate security research and integration over time. Yemen is recommended to engage more with the international environmental governance systems, by disclosing NDCs, submitting a fourth National Communication to the Conference of Parties, and other initiatives. Such efforts should include climate security considerations, such as the effects of climate change on livelihoods, food, water, migration, and conflict. Such efforts will only be possible with support and funding from the international community. Donors are recommended to prioritise climate finance for Yemen.
- **Reconstruction and long-term planning should incorporate climate change projections** including temperature change, desertification, and subsequent climate security results such as increased migration. One critical consideration will be the increasing rate of extreme weather incidents, requiring reflection in terms of where and how to rebuild. Yemen's most likely climate scenario should frame reconstruction plans.
- **Develop plans, strategies, and policies to engage the private sector in climate investment.** The engagement of the private sector is one of the key issues that can enhance the implementation of climate actions in the country in all levels including climate security issues. For instance, there is a significant weakness in terms of climate investment, such as investment in renewable energy, innovative agriculture technologies, clean transportation, etc.
- **Ensure programmes and initiatives are cross-sectoral, referencing the interlinkages of climate and conflict, and link climate risk, adaptation, conflict prevention and peacebuilding.** The development of robust climate security policy for the future is contingent on the acknowledgement of systemic issues that interact with one another in complex, changing ways. Climate security mainstreaming involves collaboration between actors to a much greater extent than siloed activities. As well as a challenge, these efforts have collective benefits that reach far beyond their immediate scope, potentially facilitating peace in Yemen that is sustainable over time. Groups from across the political spectrum in Yemen have already convened to discuss shared environmental challenges as part of a wider peace-building initiative. These efforts should be continued, with the understanding that environmental security and peace go hand in hand.

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