International Water Management Institute

Policy Brief

Building resilience in fragile and conflict-affected agrifood systems through a water-energy-food nexus approach

Fragility has become a prevailing reality in an increasing number of countries in various areas, including Central and West Asia and North Africa (CWANA) [1]. The concept of fragility encompasses a range of dimensions, including armed conflict, migration, economic and political instability, erosion of the social fabric, and scarcity, depletion, and contamination of natural resources [2]. The World Economic Forum's recent survey data highlights the significant risks the region is least prepared to face, with water crises ranking among the top risks, followed by profound social instability, state collapse, and interstate conflict [3]. These risks are all interconnected with situations of fragility posing existential threats to the prosperity and well-being of millions of people living in the region.

The CWANA region, which spans a vast area across Central and West Asia and North Africa including all countries covered by the United Nations Economic and Social Commission for

Drying water pond in Jordan, July 2020 (*photo:* Seersa Abaza / IWMI).

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INITIATIVE ON
Fragility to Resilience in Central and West Asia and North Africa

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Solar panels at a farm in Chorbane, Mahdia, Tunisia, October 2021 (*photo:* Khaled Bedoui).

Western Asia (UN ESCWA), features a wide array of human cultures and agroecological systems. What unifies this area are its relative semi-arid and arid conditions, which are anticipated to amplify due to ongoing climate change [4]. The region is expected to experience an increase in the severity and frequency of high temperatures, droughts, rainfall extremes, floods, climate variability, and compound events, which will have significant consequences for society and the environment [5-7]. These challenges are further exacerbated by a rapidly growing population and varying levels of economic growth [8], conflict and instability, environmental vulnerabilities, as well as the pressing issues of migration, displacement, and refugees [9]. All of these factors collectively impact the region's interconnected resource systems. The region's age-old resource scarcity challenges are being intensified by the growing demand for water, land, food, and energy, coupled with the effects of climate change, inter-sectoral competition, and urbanization [10]. The consequences of these pressures are far-reaching and deeply intertwined, impacting not only the availability of resources, but also the socio-economic fabric and political stability of the region.

Amidst economic disparities between countries and inequalities within them, there is a tendency to prioritize short-term reactive strategies that often fail to address underlying causes and vulnerabilities, thereby contradicting efforts to promote long-term sustainability. Unfortunately, these strategies can often perpetuate a vicious cycle, further exacerbating pressures on natural resource systems, amplifying the risk of social and political instability, geopolitical conflict, irreparable environmental damage, and reducing food security [11]. It is evident that a new approach is required to address these complex challenges holistically and to build resilience in fragile and conflict-affected agrifood systems.

Fragility highlights the compelling need for countries to prioritize inclusive investments in resilience building, given its profound social and economic ramifications [12]. Addressing fragility requires directing resources towards pre-emptive measures that mitigate and prevent fragility and promote long-term, sustainable development and adaptation. This contrasts with the considerable cost incurred through the recurrence of crises and reactive responses and recovery strategies in the past.

Despite the tight interconnectedness of resource systems, current resource management and allocation practices in CWANA are predominantly conducted using a sector-based siloed approach, further exacerbating the challenges faced [13]. This fragmented approach to managing water, energy, and food security compromises the region's ability to meet its development targets and exacerbates vulnerabilities. Moreover, it leads to inequitable access to resources and undermines gender equality and the sustainability of development initiatives [14]. A systems approach is a prerequisite to addressing these complex challenges sustainably.

The interconnectivity of water, energy, and food underscores the importance of minimizing negative trade-offs, exploring synergies, and promoting integration in the planning, management, and utilization of scarce and depleted resources [15-17].

Adopting a nexus approach offers a comprehensive framework for addressing the multifaceted challenges encountered by local communities and ecosystems. This integrated approach, engaging stakeholders at various scales, empowers vulnerable segments of society with distinct needs and resources, fostering a more inclusive and effective response.

To effectively implement a nexus approach, it is essential to develop enabling environments and effective institutional arrangements and mechanisms that allow for cross-sectoral coordination and planning [18]. This approach fosters the integration of policies and practices across different sectors, such as water, energy, agriculture, and environment, and ensures that decisions are based on robust evidence and synergies. By embracing a systems approach and investing in enabling environments, the CWANA region can enhance its overall resilience, improve its ability to rapidly respond to and recover from future shocks and disturbances, and create a sustainable and prosperous future for its people.

This policy brief presents a conceptual framework including seven strategic action areas which constitute key elements of the enabling environment needed to improve the resilience of agrifood systems in fragile or conflict-affected contexts. The policy brief explores key barriers and proposed actions under each of these strategic action areas in the context of CWANA countries facing natural resource and conflict-induced fragility.

Conceptual framework: seven strategic action areas for creating an enabling environment for improved resilience of agrifood systems in fragile contexts using a Water-Energy-Food (WEF) nexus approach

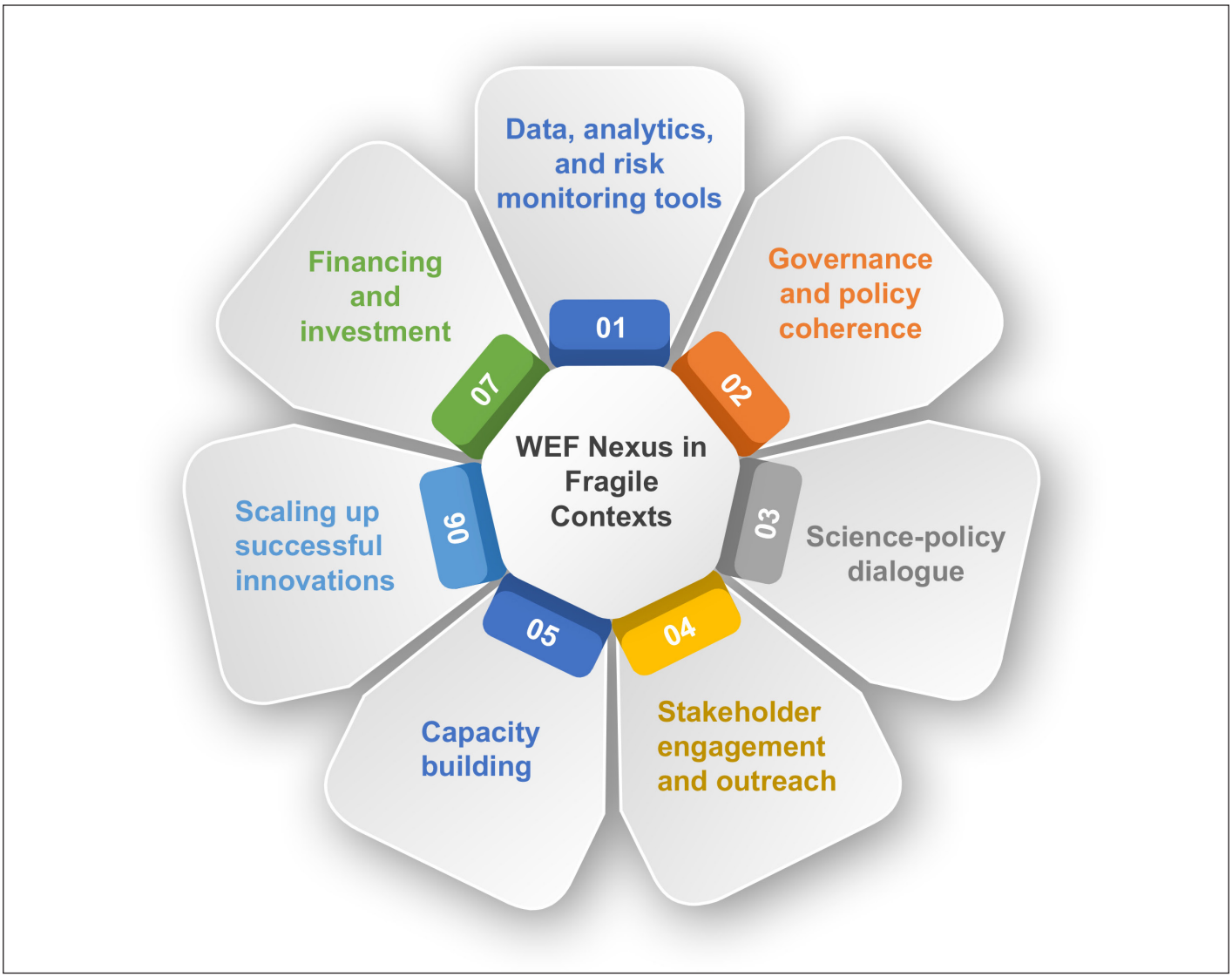
The Middle East and North Africa (MENA) office of the International Water Management Institute (IWMI) in partnership with UN ESCWA organized a 2-day regional dialogue on "Water-Energy-Food Nexus: Building Resilience in Fragile and Conflict-affected Agrifood Systems". This regional dialogue was an activity of the CGIAR Initiative on Fragility to Resilience in Central and West Asia and North Africa *(F2R-CWANA)* and of ESCWA's National Agenda for the Future of Syria programme. It brought together experts from Syria, Lebanon, Uzbekistan, Morocco, Egypt, and Jordan, which represent countries facing natural resource and/or conflict-induced fragility. This regional dialogue focused on identifying key challenges and opportunities for improving the resilience of agrifood systems through the adoption of a WEF nexus approach under seven action areas including: 1) data, analytics, and evaluation tools, 2) governance and policy coherence, 3) science-policy dialogue, 4) stakeholder engagement, 5) capacity building, 6) scaling up successful innovations, and 7) financing and investment. We posit that these seven action areas constitute key components for

building an enabling environment for improved resilience, catalyzing a paradigm shift from reaction to anticipation, as well as enhancing preparedness and reducing risks. This policy brief highlights key barriers and proposes actions to address them, identified through discussions that took place as part of the regional dialogue event.

Barriers and challenges

This section provides a summary of key barriers and challenges facing the implementation of a WEF nexus approach in the CWANA region as associated with each of the seven identified strategic action areas.

1. **Data, Analytics, and Risk Monitoring of WEF in Fragile Contexts:** Countries facing natural resource fragility, such as Morocco and Uzbekistan, encounter challenges related to the availability and analysis of data. Outdated and insufficiently analyzed data, particularly concerning water availability and agriculture, hinder effective planning and management. These countries also face difficulties in updating data to account for the impacts of climate change. Fragile and conflict-affected countries like Lebanon and Syria face data availability challenges and struggle with insufficient technological capacity for data generation. Trust issues, lack of permissions, and brain drain impede the sharing and utilization of specific types of data, hindering evidence-based decision making.
2. **Governance and Policy Coherence/Institutional Cross-sectoral Coordination Mechanisms:** Countries facing either natural resource and/or conflict-induced fragility, can encounter challenges in governance and policy coherence. Conflict-affected countries often experience fragmented governance structures due to political instability, making it difficult to establish effective coordination mechanisms. This is even more complex in countries where governance and authority are constrained by movement and access limitations due to insecurity or fragmentation, as in Syria. In these contexts, coordination among institutions can be challenging, as different actors may have conflicting mandates and objectives. On the other hand, countries often face issues related to incoherence between top-down and bottom-up governance. Additionally, duplication of roles and responsibilities between different sectors can lead to inefficient resource management and policy implementation, high level of centralization in decision making, and low accountability and transparency.
3. **Science-Policy Dialogue/Evidence-based Policy Making:** Conflict-affected countries may confront significant



Seven strategic action areas for improved WEF nexus resilience in fragile and conflict-affected contexts (*source:* authors).

challenges in science-policy dialogue. Lack of political will to take unpopular decisions poses a major obstacle as government officials tend to prioritize predetermined policies over scientific evidence. Limited financial resources for scientific research further hinder progress in evidence-based policy making. Moreover, within the context of fragile environments, a pronounced lack of available literature addressing proper nexus management compounds these challenges. Researchers in these countries often face barriers in accessing crucial databases and information, impeding the generation of reliable scientific evidence. A primary challenge faced by the countries facing natural resource fragility relates to limited collaboration between scientific and governance institutions, which can lead to uncoordinated priorities and investments. Enhancing the sharing of data, promoting joint research endeavors, and ensuring policy decisions align with scientific findings are seen as important steps toward evidence-based policy making.

4. **Stakeholder Engagement and Outreach:** CWANA countries encounter challenges in stakeholder engagement and outreach, albeit with some variations. Conflict-affected countries often struggle with engaging stakeholders due to political instability and disruption of local networks. These challenges can hinder the participation of stakeholders in decision-making processes and limit their contribution to resilience-building efforts. On the other hand, countries facing natural resource fragility, like Morocco and Egypt, highlight challenges at the local level, for example in maintaining water user organizations, which are one of the essential mechanisms for ensuring effective decision making that considers the perspectives of different social groups.

5. **Capacity Building:** Countries facing natural resource fragility, such as Morocco and Uzbekistan, identify challenges related to financing capacity building initiatives. Limited financial resources hinder the prioritization of adaptation measures and the implementation of necessary policies in response to resource challenges. Capacity-building efforts should focus on enhancing technical expertise in sustainable resource management, strengthening data collection and analysis capabilities, and fostering collaboration among diverse stakeholders to address water, energy, and food nexus challenges effectively in fragile and conflict-affected regions. Empowering local stakeholders is also crucial for effective capacity building, as their active involvement and engagement are essential for truly inclusive sustainable development and adaptation strategies. Conflict-affected countries like Syria face additional barriers; they grapple with brain drain and limited human capacity to gather data, which restricts their ability to build and utilize knowledge for informed decision making. Furthermore, lack of will to share information poses challenges in capacity-building efforts.

6. **Innovation:** CWANA countries recognize the importance of scaling up successful innovations to overcome resource challenges. For countries grappling with natural resource fragility, the imperative lies in finding innovative solutions, such as advanced water desalination technologies and the adoption of sustainable agricultural practices. These countries emphasize the need for investing in research and development, particularly for the development of new crop varieties that are more water efficient. They also assert the need for enabling environments to facilitate and support innovation. In the context of conflict-affected countries, the path to scaling innovation is fraught with constraints, encompassing issues like limited access to credit and financial resources, security concerns, and volatile markets. This complexity underscores the challenges they face in both adopting and sustaining innovative solutions. Furthermore, it's noteworthy that, paradoxically, the more fragile a region becomes, the less climate finance it tends to receive [19]. In this context, promoting innovation through mechanisms such as public-private partnerships (PPPs) and collaborative endeavors becomes even more vital.

7. **Financing and investment:** Conflict-affected countries stress the importance of PPPs due to the limited capacity of governments to address resource challenges independently. Collaborations with private entities can bring additional resources and expertise to tackle these issues effectively. It's worth noting that private sector engagement can be constrained by perceived high-risk factors, even in countries not affected by conflict. Consequently, it is reasonable to assume that the appetite of private sector investment in conflict-affected countries may be even more restrained. These countries also highlight the need to raise awareness among farmers about water pricing and encourage responsible water usage through appropriate mechanisms. Countries facing natural resource fragility, such as Morocco and Egypt, also recognize the role of PPPs but emphasize the need for better financing mechanisms overall. Ensuring adequate financial resources to prioritize adaptation measures and tailoring policies to the regional context are essential for successful implementation and sustainable management of resources.

Proposed actions

1. **Data, Analytics, and Risk Monitoring Tools:** To enhance data coordination, the proposed actions include adopting new systems and mechanisms for improved data generation, access, exchange and coordination. A solution to overcome data availability challenges is the utilization of open-source earth observation tools and satellite imagery for resource use, depletion, and associated risks. Capacity-building efforts to enable the effective use of these tools should be a priority in CWANA countries. Encouraging open-source and crowdsourced data collection could also contribute significantly to addressing data availability issues. Moreover, investments in infrastructure and data platforms, alongside the implementation of data sharing regulations, are seen as crucial steps to ensure the availability of consistent and accessible data for informed decision-making. In addition to these measures, the critical need for risk monitoring tools

to alert decision-makers to future potential risks cannot be overstated. The integration of these tools, coupled with strategic foresight and anticipatory action, aligns with the imperative to identify sources of fragility and potential resource hotspots at both national and local levels – which can then be used to inform triggers for coordinated action and response. The utilization of technology for such monitoring, driven by risk factors, social parameters, and resource availability, offers a systematic approach to proactive risk management. Employing these tools goes beyond mere reaction; it entails the creation of scenario analyses and the evaluation of trade-offs. Decision-makers are thereby equipped with the means to assess the potential impact of interventions, their associated costs, benefits, and synergies across diverse sectors. This analytical depth can empower them to make choices that not only address immediate concerns but also bolster stability, security, and resilience over the longer term.

2. **Governance and Policy Coherence:** This action area aims to foster coordination and coherence between sectors by promoting bottom-up approaches in policy formulation and implementation. Empowering stakeholders and promoting digitalization and consistency in governance processes are suggested to enhance policy coherence. Strengthening accountability, problem-solving approaches, and monitoring mechanisms are also considered essential for effective governance and policy coherence. A central aspect of these proposals involves refining the alignment of strategies across different sectors. This not only enhances transparency and harmonization of a vision for collective outcomes and goals, but also fosters synergy among sectors. This approach aligns closely with the imperative to build resilience in contexts where fragility demands a concerted and cohesive response.

3. **Science-Policy Dialogue:** This action area focuses on promoting applied research to inform policymakers, encouraging targeted research for evidence-based decision-making, and prioritizing nature-based solutions. Given the discussed challenges, it is vital to emphasize the necessity for research that is tailored to address the intricacies of resource management within fragile contexts at local scales. Moreover, science plays a pivotal role in innovative solutions, underlining the importance of strengthening its role as a bridge between government and end-users. Facilitating dialogue and collaboration among universities, research institutes, and civil society further enhances the science-policy interface, collectively aimed at bridging the gap between research and policy implementation for a more informed, evidence-based decision-making process.

4. **Stakeholder Engagement and Outreach:** To ensure effective stakeholder engagement and outreach, the proposed actions include institutionalization of indigenous knowledge and promoting participatory management of natural resources, with special attention to marginalized groups, such as women and youth. Building comprehensive databases, making data available and accessible to stakeholders, facilitating data sharing among stakeholders, and fostering engagement between communities and governmental entities are seen as crucial steps to foster collaboration and inclusivity, ensuring that the voices and perspectives of women and youth are actively integrated into these processes.

5. **Capacity Building:** Actions in this area involve implementing targeted training programs, providing technical assistance, and promoting sustainable financing for capacity-building initiatives. The focus is on empowering local stakeholders, facilitating knowledge exchange, and skill development to strengthen capacity at national and regional levels. Capacity-building efforts need to be based on thorough capacity needs assessment.

6. **Scaling Up Successful Innovations:** To address resource challenges effectively, proposed actions include not only scaling up successful innovations but also emphasizing the importance of establishing conducive policies to transition from pilot projects to impactful, large-scale initiatives. This transition requires investments in infrastructure and technology while carefully considering both capital and operational costs. Moreover, it involves the development of policies that are rooted in the success factors identified during pilot projects. Furthermore, tailoring scaling-up plans to account for local variations and specificities remains a crucial aspect of successful implementation.

7. **Financing and Investment:** Proposed actions in this area revolve around fostering PPPs and introducing innovative financing mechanisms to mobilize financial resources and expertise, particularly in fragile and conflict-affected contexts. While the primary source of development finance remains public and is constrained by macro-economic factors, there is a pressing need for innovation in financing mechanisms to attract resources for WEF nexus projects. To address this challenge, it is crucial to explore alternative financing avenues. These include tapping into green bonds, climate finance, biodiversity finance, and other global financial mechanisms that have yet to be fully explored and leveraged in the CWANA countries. Notably, there is a critical need to enhance access to climate finance in Fragile and Conflict-Affected Situations (FCM), which encompass refugee and internally displaced person (IDP) hosting countries. To ensure that financing and investment efforts are truly effective, they must be inclusive and reach all segments of society.

It is essential to recognize that the challenges addressed and the interventions proposed vary in magnitude both within and between countries. Prioritizing these actions is inherently context-specific, and the scale of implementation is a crucial consideration. For example, initiatives focused on specific watersheds or localized contexts may encounter different challenges and exhibit greater feasibility compared to comprehensive national-level efforts.

Concluding remarks and next steps

This policy brief posits a holistic nexus approach to address the intricate challenges of fragility in the CWANA region. By delineating the seven strategic action areas, this conceptual framework not only identifies critical barriers

but also provides actionable strategies for enhancing resilience within fragile contexts through a WEF nexus approach, thereby catalyzing a paradigm shift from reaction to anticipation while concurrently improving preparedness and risk reduction.

The imperative of foresight and modeling emerges as a cornerstone for informed decision-making. The integration of risk monitoring tools, coupled with proactive strategies driven by technology, presents a precise and systematic approach to mitigating fragility. This paradigm shift, from reaction to anticipation, holds potential for identifying vulnerabilities, mitigating risks, and optimizing resource allocation. Moreover, the integration of a nexus approach into development programs serves as an essential component to foster enhanced collaboration among stakeholders spanning diverse sectors. This can contribute to the breaking down of conventional silos, and the fostering of collective action that addresses the multifaceted challenges inherent to fragility. Simultaneously, the recognition of literature gaps demands robust research efforts to bolster the foundation of informed decision-making within fragile contexts. This endeavor is critical to ensuring that strategies are not only contextually relevant but also grounded in empirical evidence, guiding the region towards a resilient and sustainable future. Furthermore, the role of building capacity into systems approaches and the need for integrated planning and cross-sectoral coordination cannot be overstated. This goes hand in hand with creating the necessary mechanisms to ensure this coordination.

Building on this conceptual framework, the CGIAR Initiative on Fragility to Resilience in Central and West Asia and North Africa has other sister CGIAR initiatives such as "Fragility, Conflict and Migration", "National Policies and Strategies", and "NEXUS Gains" that can further advance WEF nexus dialogues, research and experience beyond the CWANA region.

Moving forward, the operationalization of the conceptual framework demands the development of a suite of diverse tools and instruments that are not only tailored to each of the seven strategic action areas, but which are also adaptable to the different contexts and specific challenges faced by these countries. These practical resources will play a pivotal role in catalyzing the envisioned future of resilience, through evidence-based decision-making capable of navigating the complexities of fragility.

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About the CGIAR Initiative on Fragility to Resilience in Central and West Asia and North Africa (F2R-CWANA)

The CGIAR Initiative on Fragility to Resilience in Central and West Asia and North Africa (F2R-CWANA) is building resilient agrifood systems that can withstand the impact of climate change, generate economic opportunities, and deliver better incomes and livelihoods for rural communities in the region. This Initiative will work in Egypt, Lebanon, Morocco, Sudan and Uzbekistan, from which lessons with regional and global relevance will be shared. For more details about F2R-CWANA, visit: https://www.cgiar.org/initiative/fragility-to-resilience-in-cwana

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