

# Lessons learned from the implementation of the Wadi El Ku Catchment Management Project (Phase 2)

Avenues for climate security and environmental peacebuilding programming





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**Cover photos:** Water in Wadi El Ku only flows during the rainy season, which starts in June and ends in October, remaining dry for the rest of the year. This photo was taken in autumn 2022 near Kafod. Photo credit ©UNEP

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# Abbreviations

<b>ACLED</b>	Armed Conflict Location and Event Data Project
<b>ARC</b>	Agricultural Research Centre
<b>CBOs</b>	Community-based organisations
<b>CEAP</b>	Community environmental action planning
<b>CMA</b>	Wadi El Ku Catchment Management Coordination Agency
<b>EU</b>	European Union
<b>FNC</b>	Forest National Cooperation
<b>GIS</b>	Geographical information systems
<b>GWWD</b>	Groundwater and Wadis Directorate
<b>IDPs</b>	Internally displaced persons
<b>ITC</b>	Faculty of Geo-Information Science and Earth Observation
<b>MoiWR</b>	Ministry of Irrigation and Water Resources
<b>NGO</b>	Non-Governmental Organisation
<b>PAPD</b>	Participatory Action Plan Development
<b>PBF</b>	UN's Peacebuilding Fund
<b>RSF</b>	Rapid Support Forces
<b>SAF</b>	Sudanese Armed Forces
<b>SMOAR</b>	The State Ministry of Agriculture and Animal Resources of North Darfur
<b>TC</b>	Technical Committee
<b>UNCT</b>	UN country team
<b>UNDP</b>	United Nations Development Programme
<b>UNEP</b>	UN Environment Programme
<b>UNHCR</b>	UN High Commissioner for Refugees
<b>UN Women</b>	United Nations Entity for Gender Equality and the Empowerment of Women
<b>VSLAs</b>	Village Savings and Loan Associations
<b>WEK</b>	Wadi El Ku Catchment Management Project
<b>WFP</b>	World Food Programme



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# 01 Introduction

In response to Sudan's challenges stemming from climate change, conflict and fragility, the UN Environment Programme (UNEP) and the European Union launched phase two of the Wadi El Ku Catchment Management Project (WEK 2). The first phase of the project (WEK 1) aimed not only to enhance agricultural production and mitigate the impacts of drought in North Darfur, but also to resolve natural resource conflicts, bolster stability, and provide valuable lessons for sustainable environmental management, conflict resolution and community resilience.

Building on the successes of WEK 1, this second phase of the project (WEK 2) stands as a testament to collaborative efforts to address the far-reaching consequences of climate change and conflicts over natural resources. WEK 2 linked climate change adaptation, natural resource management, peacebuilding and livelihood approaches. By leveraging water as a tool for peace and increasing agricultural productivity, WEK 2 exemplifies a strategic response to the development of and security challenges posed by a changing climate.

In a region where WEK 1 witnessed remarkable successes, including the tripling of agricultural productivity in millet and sorghum, WEK 2 further enhanced the governance structures created in WEK 1, consolidated community relationships and broadened the scope of participation for greater impact. Expanding the project to encompass most communities in the Wadi El Ku catchment area was a proactive measure to mitigate the displacement of communities, and promote peace and stability in North Darfur.

Furthermore, WEK 2 expanded the project's focus beyond immediate agricultural gains, aspiring to enhance natural resource management and foster community-level cooperation. The project aimed to improve resilience and foster development for communities in the Wadi El Ku catchment area, including farmers, pastoralists and internally displaced persons (IDPs) grappling with declining rainfall. In addition, the project sought to provide insights to inform decision-making on water and natural resource management across the wider catchment area.

This report offers an extensive exploration of the pivotal outcomes, insights and lessons learned from WEK 2. The report encapsulates a detailed account of the methodologies adopted, the tools deployed, and a synthesis of the key success factors, lessons, best practices, challenges encountered and innovative strategies that have been instrumental in steering the project towards its achievements and enduring impact.



## **Box 1: Methodological Note**

The documentation process, which aimed to capture the project's nuanced dynamics and multifaceted impacts, was comprehensive and meticulous. A wide range of sources were utilised to ensure a holistic and detailed understanding of the project's implementation, challenges encountered, successes achieved, and innovative approaches adopted.

### **1. Document review**

The methodological approach involved thoroughly examining and reviewing around 45 documents. This corpus included internal bi-monthly and annual reports, communication materials, mid-term reviews, presentations, technical documents, and tools. The materials were analysed to identify critical results and impacts, lessons learned, challenges, and ways forward. The document review also served to track the evolution of the project, offering insights into its strategic objectives, operational frameworks and critical milestones.

### **2. Online interviews**

The methodology involved engaging with key stakeholders from Sudan through online interviews, which were conducted instead of a fact-finding mission due to the security situation in Sudan. Fourteen interviews were conducted, each lasting approximately one hour. These interactions provided qualitative data, and insights from many different perspectives, including governmental authorities, project implementers and community representatives. The semi-structured interviews were designed to elicit nuanced insights into the challenges faced, lessons learned and the project's overall impact. The annex to this report includes the questionnaire utilised during the interviews, providing a detailed outline of the topics covered and the structure of the discussions. Furthermore, a list of interviewees is included to acknowledge the diversity of perspectives that contributed to this documentation.

### **3. Video documentation review**

Ten video documentations were reviewed to provide first-hand accounts of experiences from the perspective of participants and beneficiaries. These visual narratives showcased the tangible impacts of the project on communities, with a specific focus on women's groups and farmers' associations. The videos also featured testimonies from governmental authorities and implementing partners, adding depth to our understanding of the project's broader societal impacts.

# 02 Context and background

## North Darfur and the conflict

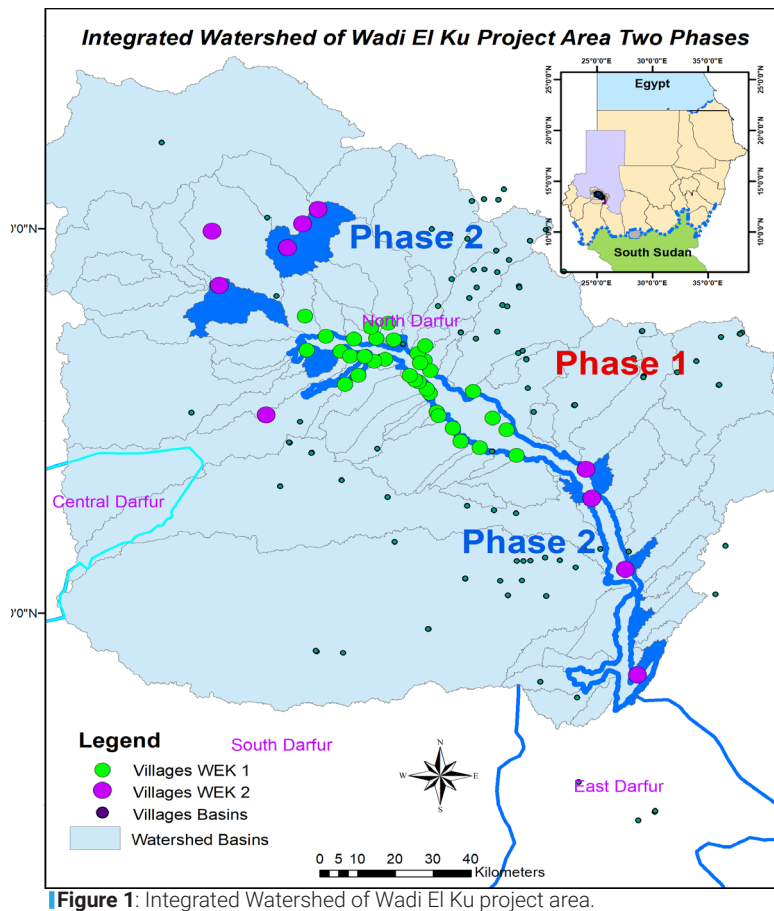


Figure 1: Integrated Watershed of Wadi El Ku project area.

North Darfur, a region in western Sudan, has been grappling with a protracted and complex conflict since 2003, which has severely affected its population. The ongoing conflict has resulted in widespread destruction and displacement, as well as a change in social norms and increased mistrust between communities, particularly among young people. Likewise, the conflict has weakened customary mechanisms of natural resource management, and the government's ability to provide basic services and enforce control measures that aim to protect the environment and livelihoods. This has disrupted livelihoods and exacerbated the unsustainable use of natural resources. More broadly, trust and peaceful relationships over resources have been shattered, polarising livelihood groups and undermining faith in the government.

Furthermore, in recent decades, North Darfur has witnessed a significant shift in climate patterns, as characterised by increased temperatures and erratic rainfall. The region has suffered from frequent and prolonged droughts, which have devastated its fragile ecosystem and led to crop failures. These environmental changes have far-reaching consequences for the local population, particularly in rural areas where livelihoods depend on rain-fed agriculture and pastoralism. The impacts of climate change and weak natural resource governance have depleted crucial resources, especially water, arable land and livestock pastures. Scarce resources have intensified competition among ethnic and tribal groups, particularly pastoralists and farmers, leading to violent clashes and the displacement of vulnerable populations. The combination of environmental stressors and socioeconomic challenges has created a volatile situation in the region.

It is worth noting that climate change and conflict in North Darfur have differing impacts on men and women, exacerbating existing vulnerabilities. Women face increased workloads, reduced access to essential resources, and heightened exposure to violence, particularly during resource collection. Meanwhile, men endure substantial losses in land, livestock, and economic opportunities. These pressures contribute to shifts in traditional gender roles, with both men and women confronting unique challenges as they adapt to the changing dynamics in a conflict-affected environment.

The security situation in North Darfur has been precarious since the outbreak of conflict in 2003. During WEK 1, the northern part of the project area experienced occasional insecurity due to militias intruding from neighbouring localities to the north. The security situation in El Fasher, the capital city of North Darfur, has also been volatile. In 2013/14, the region experienced high levels of insecurity, although security conditions significantly improved after 2015. However, following the outbreak of conflict between the Sudanese Armed Forces (SAF) and the Rapid Support Forces (RSF) in mid-April 2023, the security situation deteriorated rapidly with approximately 8.8 million people forced to leave their homes by June 2024. Consequently, Sudan has the largest number of IDPs globally.

The Armed Conflict Location & Event Data Project (ACLED) estimates that more than 15,550 people have been killed since renewed fighting broke out (UNOCHA 2023). The situation for people living in conflict-affected areas is extremely dire. There is a severe shortage of food, water and fuel, and the prices of essential items have skyrocketed. In 2024, 25 million people require food assistance. It is anticipated that during the dry season (November to May), farmers relying on rain-fed irrigation face a “hunger gap” and financial challenges. Herding communities are already struggling with water scarcity, diminishing pastures and compromised livestock health. The conflict has impacted the availability of livestock vaccines, compounding the situation. distributed rainfall in the south and southeast, linked to El Niño, impacts negatively access and food security response (UNOCHA 2023). Access to communication and electricity is limited, and health care has been critically impacted by direct attacks on health care facilities, as well as a severe shortage of medicines and vital supplies. Additionally, humanitarian assets have been looted in affected areas, exacerbating the situation for people in need (UNHCR 2023a). Violence against women and girls remains a widespread and persistent violation of human rights in Sudan. By May 2024, women’s organisations in Sudan had documented 423 cases of rape since 15 April 2023, with the actual number likely to be much higher, possibly extending into the thousands (Together Against Rape and Sexual Violence 2024)

## **The Wadi El Ku Catchment Management Project**

Wadi El Ku, a substantial seasonal river in North Darfur, covers a vast catchment area of 28,000 km<sup>2</sup>. It extends from the Jabal Marrah mountains in the west to the Kutum uplands in the north and into South Darfur, culminating in an inland delta. Like other wadis, Wadi El Ku typically flows during part of the rainy season. The wadi features heavy clay and alluvial soils, while the surrounding region has lighter, sandy soils known as qoz. This area falls within a semi-arid zone, characterised by highly variable and unreliable annual rainfall ranging from 100 mm to 350 mm per year. El Fasher is the largest population centre along the wadi, with 400,000 permanent residents and an additional 190,000 IDPs living in camps.

The project total stretch is 180 km length which is more than 90% of total Wadi El Ku stretch. Most of the flood plain is covered by WEK 1 and WEK 2. The covered irrigable areas by the interventions in the two phases is about 50% of total area. WEK 1 focused on a 50 km stretch of the wadi, which included areas upstream and downstream of El Fasher, as well as adjacent farmland on both sides of the wadi.



This area comprised 34 village councils, primarily farming households and pastoralist settlement area (damaras) of mixed agro-pastoral households. These villages are generally situated on the sandy soils flanking the wadi. WEK 2 extended the project's focus to an additional 100,000 beneficiaries, encompassing upstream and downstream areas. In total, WEK 2 reached 22 village councils (mostly farmers) and seven damara (mostly pastoralists).

The project employed inclusive natural resource management strategies, drawing on UNEP's experience of integrated water resource management and community-based natural resource management in Sudan. These strategies aimed to improve relationships over natural resources to promote peace in the conflict-affected region of Sudan. The goal was to enhance the comprehensive and efficient catchment management model established during WEK 1.

Additionally, WEK2 aimed to bolster community-based decision-making and peacebuilding concerning natural resource management. The project sought to enhance community involvement in an improved integrated catchment management system. Emphasis was placed on data-driven decision-making by generating essential water resource data for improved decision-making. Furthermore, the project continued to promote state government involvement, building upon WEK 1's capacity-building activities to support, expand and replicate comprehensive catchment management at technical and policy levels.



Involving communities in all stages of weir construction fosters a sense of ownership and ensures the sustainability of the project's interventions. Photo credit ©Practical Action

# 03

## Project description and results Approach, objectives and theory of change.

### Objectives

The intervention strategy involved empowering communities and enhancing livelihoods in the Wadi El Ku project area through the adoption of a cooperative, inclusive and sustainable approach to managing natural resources, particularly water resources. This approach aimed to improve social relations within the region. The expected outcomes included:

1. Improved stability and climate resilience of ecosystems in the Wadi El Ku catchment area, transforming the area into a reliable lifeline for El Fasher and for rural livelihoods in North Darfur.
2. Decreased vulnerability and increased agricultural productivity, offering project beneficiaries alternatives to forced migration and displacement driven by the loss of assets and destitution.
3. Reduced tensions and fewer conflicts arising from competition for natural resources, utilising water and natural resources to promote stability, prosperity and economic growth. This, in turn, allowed social and human capital within the project area to serve as sources of resilience rather than vulnerability.
4. Mainstreamed gender and women's empowerment by ensuring equal participation of women in decision-making processes related to natural resource management, enhancing their access to resources, and promoting women's leadership in climate resilience and economic development initiatives within the state.

### Theory of change

*"Effective and inclusive natural resource management, based on the UN Environment Programme's experience in Sudan of integrated water resource management, community environmental action planning and community-based natural resource management, can sustain increases in agriculture and related value chain productivity over the long-term, while safeguarding ecosystem integrity. Through this project, the overall objective is to demonstrate how the integrated management of natural resources – in particular, of water – can establish sustainable and climate resilient livelihoods, reduce natural resource conflicts in North Darfur, and reduce displacement."*<sup>4</sup>

**Project outcome one:** Improve natural resource use and management in Wadi El Ku.

**Project outcome two:** Improve community natural resource management and agricultural techniques.

**Output one:** Support and train a participatory, community-based Catchment Management Agency.

**Output two:** Demonstrate and promote improved agricultural and natural resource management approaches, extension packages and cooperation mechanisms (facilitating dialogue between pastoralists and farmers regarding water and natural resources) for adoption at community level in WEK 2 project areas.

**Output three:** Expand and promote scientific and technical information for improved water and natural resource management and early warning systems.

**Output four:** Knowledge sharing to support government and non-government actors to adopt and apply integrated water resource management approaches to achieve sustainable economic growth and stability in Darfur and elsewhere in Sudan.

### Focus on participatory methods and governance

The project put a specific focus on participation and strengthening inclusive governance. The project diverged from more traditional expert-driven approaches, where experts formulate optimal natural resource management plans based on available information and then implement those plans. Instead, the emphasis was placed on empowering and supporting different stakeholders in actively participating and making informed decisions regarding natural resource management. This shift not only involved the local communities directly in shaping strategies and interventions for sustainable resource management, but also contributed to solving tensions among conflicting parties (e.g. pastoralists and farmers), fostered a sense of ownership, and enabled the integration of local knowledge and perspectives into decision-making processes. Originally, the project focused on regeneration of small degraded ecotopes. During WEK 1, that approach was deemed infeasible and quickly adjusted to prioritise win-win interventions, where improved livelihoods yield positive environmental effects. This successful approach was maintained in WEK 2.

As underlined by a member of the project team, “It is not what we do, but how we do it.” That motto became a key guiding principle of the project. The focus was on solidifying a participatory process, and actively involving an array of stakeholders and institutions during the inception phase with the support of local experts, who worked extensively to build relationships with the various authorities and communities along the wadi. At the same time, concepts such as the do-no-harm approach, which prioritises sensitivity to conflict, were employed throughout the project cycle.

Several compelling reasons underscore the importance of this approach. First, empowering communities in decision-making cultivated a sense of ownership, ensuring the sustainability of implemented strategies. This was crucial as the local population became actively invested in the success and longevity of the initiatives. Additionally, involving communities was the most effective means of fully utilising local knowledge and incorporating valuable community insights into decision-making, ultimately leading to better outcomes.

The project’s approach to supporting this participatory model involved ensuring the representation of all stakeholders, including pastoralists and farmers leaders and government officials from relevant departments. The project employed inclusive tools such as participatory mapping and integrated water resource management, and fostered scientific support to educate and guide stakeholders on nuanced issues, such as groundwater recharge (see also “main project components”). This comprehensive engagement fostered strong government action, and forged bonds between beneficiaries and government staff, streamlining communication channels. By facilitating the constructive participation of technical staff across government, and developing specific committees for natural resource management and conflict resolution, the project also increased social cohesion. The project enhanced collaboration and coordination to promote sustainable and effective natural resource management (UNEP 2022a).



## Project stakeholders



Consultation with pastoralists and farmers community leaders in Um Sayalla during the Guardian reporter<sup>6</sup> visit in the project's inception phase in 2019. Photo credit ©UNEP

## Beneficiaries

Three sub-groups comprising sedentary farmers and agro-pastoralists within the Wadi El Ku project area participated in and benefited from WEK 2 activities. The first group consisted of people living in the main project area, while the second group consisted of people living in communities outside the project area. During WEK 2, the population living in the project area was about 100,000. The second group – people living in communities along the Wadi El Ku in North Darfur, outside the main project area – were considered indirect participants. Communities involved in WEK 1 were regarded as champions and mentors. A key group of stakeholders included IDPs living in or adjacent to the project area.

The third group consisted of private sector actors involved in agricultural value chains along the Wadi El Ku and in surrounding areas. This group included wholesalers of tobacco, peanuts, fruit and other cash crops grown in the area, as well as brick makers, charcoal manufacturers and to a lesser degree livestock traders. This third group benefited commercially from increased levels of economic activity and productivity resulting from project activities.

## Main partners

- **Practical Action** was the project's primary implementation partner. Practical Action is a UK-based international non-government organisation (NGO). The local chapter of Practical Action is primarily managed by Sudanese nationals and has been working in North Darfur since 1994.
- **Community-based organisations (CBOs), pastoralist representative groups and IDP representative committees.** These community-level groups included CBO network members such as Voluntary Network for Rural Helping and Development, El Fasher Rural Development Network, and the Women's Development Association Network.

- These civil society stakeholders played a leading role in promoting techniques and technologies for sustainable livelihoods and facilitated active engagement among participating communities. In addition, civil society stakeholders benefited in terms of strengthened capacities and resourcing from the project's development and implementation.
- **Governmental partner institutions:** The State Ministry of Agriculture and Animal Resources of North Darfur (SMOAR), and the Forest National Corporation were the government partners most closely involved with the implementation of activities.
- **Groundwater and Wadis Directorate (GWWD):** played a leading role in establishing hydrological data measurement in the project area and providing hydrological analysis to the proposed catchment management. The GWWD was also responsible for monitoring and supervising groundwater abstraction in the area.
- **Technical Committee:** The government ministries engaged in the project collaborated to form the Technical Committee, which served as the project's primary platform for coordination, monitoring and technical advice. The Technical Committee was chaired by the SMOAR, and facilitated communication between government and other project stakeholders, and between government stakeholders themselves. In addition, the Technical Committee served as the de facto government counterpart to UNEP and supported the implementation of activities.
- **Catchment Management Agency:** Wadi El Ku Catchment Management Coordination Agency's (CMA) role involved coordination, advisory services and advocacy around integrated management of common water resources. The Catchment Management Agency played a crucial role as the organisation responsible for water and natural resources governance structures at the political level. Institutional members of the Catchment Management Agency included:
  1. The minister of agriculture, forestry, and pasture and forage
  2. The minister of finance, economy and civil services
  3. The minister of animal resources
  4. The minister of environment, antiquities and wildlife
  5. The minister of social affairs
  6. A representative of the Ministry of Urban Planning and Physical Utilities
  7. A representative of the EL Fasher locality
  8. The director general of the Engineering Unit Directorate
  9. The director general of agriculture, forestry, and pasture and forage
  10. Representatives of North Darfur media
  11. A representative of the Ministry of Environment, Antiquities and Wildlife
  12. A representative of the legislative council

Community members of the CMA included:

  - Representatives of farmers' and pastoralists' unions
  - Representatives of CBOs and CBO network representatives
  - Representatives of native administrations (landowners)
  - Community representatives from upstream, middle and downstream of the project area





The Wadi Al Ku Catchment Management Coordination Agency (CMA) comprises 30 members from state government institutions, academia, community leaders, pastoralists, farmers, women, youth, civil society organizations, and the media. Photo credit ©UNEP

## United Nations

The UN country team (UNCT) was recognised as a project stakeholder. Implementation of the project enhanced UNEP's role as the environmental lead of the UNCT and facilitated UNCT action on catchment management and ecosystem-based disaster risk reduction. This served as a model for area-based recovery and development interventions in Darfur.

## Other implementing partners

- Water Resources Commission (South Africa)
- Faculty of Geo-Information Science and Earth Observation (ITC)
- Ground Water and Wadis Department
- University of Kwa-Zulu Natal
- University of Al Fasher
- University of Khartoum
- UNESCO chair for water resources

## Donor - European Union

By supporting the implementation of the project, the European Union aimed to demonstrate the feasibility and migration reduction effects of long-term development beyond humanitarian support, such as climate smart agricultural production and food security, and the building of peaceful relationships in Darfur.





Donor flexibility and support are key factors contributing to the project's success. Photo illustrating an EU staff visit to one of the Women Village Saving and Loan Association in 2022. Photo credit @UNEP

# 04

## Main project components

The following chapter highlights key project components, and presents critical results, success stories and lessons learned.



### Participatory planning and mapping

#### Participatory planning implementation

Ensuring inclusivity and the participation of all key stakeholders, particularly local communities including women and youth, was a key success factor for WEK 2. Building on the experiences of WEK 1, WEK 2 employed two participatory planning approaches, namely the participatory action plan development (PAPD) approach developed by Practical Action and the community environmental action planning (CEAP) approach developed by UNEP. Both approaches were merged to ensure community-driven, gender-responsive planning and a strong environmental focus. The primary objective was to ensure that the project involved local communities from the outset, involving communities at every stage of planning, design and implementation. This aimed to foster community ownership and promote sustainability by leveraging local priorities and knowledge. The PAPD and CEAP approaches comprise a structured and repeatable set of activities that enabled local communities to collaboratively identify key problems, constraints and opportunities. This process facilitated the development of a prioritised list of community development needs.

To prioritise local development, the project utilised PAPD/CEAP methods to identify challenges and potential solutions through a series of local workshops. In addition to organising and facilitating the process, the project team – which included technical experts from Practical Action, UNEP and various government entities – helped local communities to understand technical issues, such as groundwater recharge, the nutrient-pumping effect of trees and the efficiency of windbreaks. This ensured that the proposed solutions were appropriate and feasible. Central to the process was the involvement of women and representatives from all community groups, even in villages where women had never previously participated in decision-making processes. Additionally, the mapping exercise facilitated the inter-generational transfer of knowledge from elders to younger people.

#### Results and impacts

Twenty-nine community plans were co-produced and documented, providing the basis for WEK 2 activities. The plans were used by the communities to raise funds for their priorities that fell outside the scope of WEK 2. For example, the project team helped link communities with relevant actors and UN agencies, such as the World Food Programme (WFP), that could provide food support during dry and cultivation periods. This support enabled communities to focus on seasonal cultivation. One community successfully partnered with El Fasher Rural Development to build a health care centre and allocate donor funds to children.

## Participatory mapping process

A key element of the planning phase was the participatory mapping process. The participatory mapping activities involved local communities collaboratively engaging in and contributing knowledge to the development of maps of the Wadi El Ku catchment area. These maps visually represented places as perceived by the local communities, and highlighted critical features and historical processes within the mapped areas. The mapping process involved printing large satellite images of the project area and asking community members to depict significant physical elements in their territory. The communities used various materials, including paper and cardboard, or ground markings. By visually representing the territory plotted from digital maps, communities developed a shared understanding of their most valuable resources, distinctive landscapes and places of interest. As a result, six maps were developed, showing land use types, basic infrastructure (e.g. schools, health care centres, police stations and community centres) and natural resources. After completing the maps, the maps were photographed and digitised, and printed copies were provided to communities and authorities. Experts from UNEP, Practical Action, government and on geographical information systems GIS provided facilitation support and ensured consistency in the mapping process.



Local community members, including youth, women, and elders, participated in a 2D-mapping activity, harnessing their wealth of indigenous knowledge in natural resource management. Under WEK 2 project, six maps were developed, depicting land use type, basic infrastructures, and natural resources. Photo credit ©UNEP

The process helped the project team to gain a deeper understanding of the local context, including relationships, resource usage, challenges and opportunities. A critical factor in enabling the mapping process to realise its full potential was the integration of local knowledge, and the deep cultural and contextual understanding possessed by facilitators. This included recognising the cultural significance of natural resources for local communities. Similarly, the geolocation process, where various actors explained the importance of particular places or natural features for their daily activities, provided a profound understanding of the intricate dynamics within the wadi ecosystem.

The mapping process served to identify the various users of these natural resources and their different livelihood strategies. Afterwards, representatives from across the whole project area, including the upper and lower wadi, convened to develop a shared vision and produce detailed land use plans. This process brought communities in conflict together in the same space, providing a platform to build relationships and address outstanding land use conflicts. The final land use plans and list of activities resulted from a complex six-day negotiation process that balanced the competing objectives of different stakeholders. It was a poignant moment of reconciliation for communities in conflict.



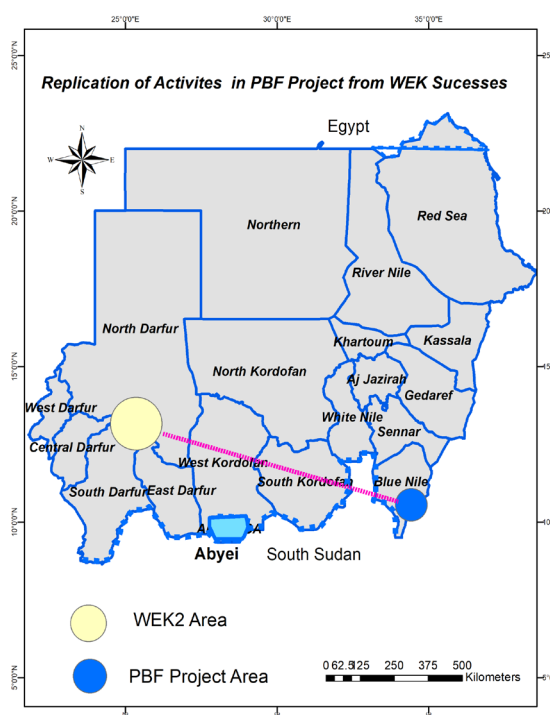
The mapping activities also contributed to developing environmental awareness and responses, for example, by helping to identify the impacts of unsustainable resource use. The versatility of the mapping activities was evident in their applicability across various demographic groups, including officials, farmers, pastoralists, women and young people. The intuitive nature of the activities made them accessible to everyone, including those with limited literacy skills, allowing them to contribute meaningfully.

This process instilled a sense of ownership, consolidated relationships and delineated roles within the community, underscoring the peacebuilding power of this tool. Subsequently, the maps could also be easily used to explain the results of the process to community members, including those who did not attend the mapping sessions.

The CEAP methodologies encouraged collective brainstorming and facilitated discussion on priorities, meaningfully involving vulnerable populations, women and young people. For example, the tool’s methodological design permitted the involvement of women from all community groups, even in areas where women had not previously engaged in such decision-making processes.

Hamraa Moussa, a 27-year-old mother of five from Ramallah Damra, Um Sayala, explained that in the past, only elders would participate in decision-making, while young women were left with nothing to do but household chores. The project’s local experts earned the trust of traditional authorities, ensuring permission for the participation of various demographic groups, including women and young people. Elders from pastoralist communities agreed that women could visit the meetings, demonstrating an understanding that communities need to adapt to survive. During the planning process, the mapping tools and other methodologies enabled the identification of differences in how men and women use natural resources.

The approach has proven highly successful and has subsequently been replicated in other UNEP projects in Sudan. For instance, the two-dimensional mapping exercise was conducted in December 2022 as part of the activities of the Supporting Sustainable Peace Project in the Blue Nile Region, implemented jointly with UNDP and UN Women and funded by the UN’s Peacebuilding Fund (PBF) Sudan.



**Figure 2:** Replication of the two-dimensional mapping exercise from North Darfur’s WEK 1 and WEK 2 projects, applied in the Blue Nile Region under the Supporting Sustainable Peace Project.



The WEK 2 team supported the Blue Nile team in bringing together community members in Geissan, Baw, and Al Kurmuk localities to visually map existing natural resources and identify community priorities to align with government development projects. These community-generated six maps serve as strategic planning tools and way of marketing of community concerns to all donors. The collaborative mapping process fosters a shared understanding between the community and government, promoting effective coordination with community-based peacebuilding committees co-led with women. This demonstrates that the participatory approaches utilized in WEK 1 and WEK 2 have effectively influenced work in other regions facing similar challenges.

### Lessons learned

The PAPD/CEAP approaches and participatory mapping activities significantly increased community engagement by implementing inclusive planning and in-depth consultations. The following lessons learned highlight the benefits of implementing these approaches:

- **Achieving deep participation and ensuring inclusiveness requires time and resources:** Participatory planning and mapping proved an important tool for facilitating dialogue, and the inclusion of elders, women and young people. Implementing deep participatory methodologies required significant logistical resources, including time, transport and local personnel, particularly to reach marginalised communities in remote areas far from the capital. Establishing a solid project foundation across various rural communities was only possible due to an extensive inception phase (lasting around one year). This inception phase promoted trust and the development of strong relationships between local practitioners and communities. The extensive inception phase proved to be a pivotal success factor, which laid the foundation for nurturing relationships, resolving tensions and formulating locally informed solutions to address community priorities for managing resources along the wadi.
- **Adaptability is crucial in project planning to ensure the acceptance, ownership and success of activities:** The planning process required the involvement of community representatives along the wadi to create a detailed land use plan that reconciled previously hostile communities. This involved complex negotiations to balance competing stakeholder objectives in selecting activities that the project would support. As a result, the final list of activities differed slightly from the initial list in the project document presented to the donor. Nevertheless, the acceptance of the donor allowed for a better tailoring of the activities to sustain the agreements reached between conflicting parties, showing that flexibility in project management and budgeting contributed to sustainability indicators such as community acceptance and ownership of activities.
- **PAPD/CEAP approaches and participatory mapping are useful tools for strengthening inter- community relations and conflict resolution:** The PAPD/CEAP approaches and participatory mapping activities brought different community groups together to plan and manage resources. The project used these tools to improve relations between various communities (upstream and downstream) and to address conflicting land use claims. Enabling a trusting and safe environment, and facilitating problem-solving were key to rebuilding relationships, and addressing environment, livelihood and security challenges. According to Abdelhamid Adam Mahmud, head of North Darfur's Mogan Development Association "People's direct participation in natural resource management has increased the level of trust and has contributed to the transparency in how natural resources are used within the community." Furthermore, the hands-on mapping activities proved instrumental

The mapping exercises highlighted shared responsibility for resource management, emphasising peaceful coexistence and coordinated efforts. The mapping activities provided a visual framework for targeted interventions, conflict mitigation and deepening understanding of the catchment area.

- **Integrating local knowledge with technical expertise and data created important synergies and improved decision-making:** Establishing community-level structures across various sectors, such as forest and water management, raised awareness of the importance of natural resources and effective management practices. A key aspect was the combination of local best practices and knowledge with technical expertise and quality data, which created a synergy that led to improved implementation and more informed decision-making.

For example, during the participatory mapping activities, community members provided detailed information about the location of various resources, such as water sources, fertile soils, grazing areas and biodiversity hotspots. In addition, local communities shared knowledge about seasonal variations that affect their environment, including the timing of rainfall, temperature fluctuations and shifts in vegetation patterns. This input was further enhanced with information provided by the meteorological authority and groundwater studies undertaken by the University of Al Fasher. The exercise also recorded local knowledge of historical land use patterns, which provided valuable context for current land management decisions. Finally, guided by facilitators, the communities meticulously charted geographic features, migratory routes, farming areas and areas in need of regeneration.

Using this knowledge integration exercises not only empowered communities to propose targeted interventions, such as planned regeneration and tree transplantation, but also vividly illustrated existing challenges and potential solutions including adapted indigenous practices for managing resources and agricultural activities, such as soil conservation, water harvesting and agro-forestry.

- **Building trust with communities through specialist local staff enhanced relationships, and ensured more efficient and long-standing interventions:** Prioritising trust building during the inception phase and as part of a participatory process was fundamental to successful relationship building between the communities and implementing partners. Local experts from the implementing partners had extensive experience working on the ground and prior contextual knowledge, providing a comprehensive overview of the community. This included identifying stakeholders and interest groups to participate in the various participatory planning and mapping activities, ensuring broad representation across relevant local demographic and political groups. Similarly, the closeness of experts to the various communities ensured the active engagement of community members throughout the process, which was critical for the relevance and sustainability of interventions. This proved pivotal during the inception phase in guiding participatory assessment activities. Furthermore, the active involvement and deeper understanding of local experts allowed for a more targeted and tailored approach, ensuring that interventions were precisely aligned with the specific needs and priorities of communities. In this way, local staff were able to translate community needs and align project activities. This approach not only established a solid foundation for collaboration, but also contributed to the overall efficiency of interventions.

## Box 2: Inclusion of pastoralist groups

According to several project staff and Catchment Management Coordination Agency members, conflicts continue to be a major challenge for migratory pastoralists, who find it difficult to engage with the project. Compared to settled pastoralists who have established relationships with farmers and other pastoralists, migratory pastoralists do not have such bonds and have yet to participate in arrangements that have improved natural resource management, including managing livestock routes. As a result, migratory pastoralists tend to persist with their usual behaviour patterns, which often lead to conflicts with other groups. The project recognised the importance of including pastoralists in decision-making processes. Variations in representation exist across project areas due to differences in settlement patterns. In upstream areas, settled pastoralists were present, while downstream and midstream areas primarily consisted of farmers and migratory pastoralists. Mapping exercises were conducted to address the specific concerns of migratory pastoralists as they pass through project areas. Women and youth, as key players in the peace-building process, played a significant role in the mapping exercise. An effective strategy involved offering vaccination and veterinary services to incentivise their participation and integrate them into agreements regarding migratory routes.



## Conflict resolution and peacebuilding

### Implementation

The most common natural resource conflicts along the Wadi El Ku involve disputes between farmers and pastoralists over cultivated land and livestock corridors. Tensions often arise due to animals encroaching on farmland and destroying crops, or farmers encroaching on pastureland. Although the process was challenging, the project began engaging with these communities to build relationships and communication channels, and ensure their representation in governance structures in WEK 1. During the participatory planning of WEK 2, it became evident that most pastoralists involved in conflicts with farmers did not have settlements in the target area, but were rather passing through the area. Common issues found in the inception phase included poor communication between the farming and pastoralist leaders, and a lack of knowledge of local agreements on livestock routes, grazing areas and harvesting times, which created tensions that escalated with time along the wadi.

The reduction in violent conflicts in the Wadi El Ku project area can be attributed to a range of well-designed and implemented resolution and peacebuilding strategies. These strategies focused on:

- **Conflict sensitivity**

Conflict sensitivity was a fundamental principle of the project, highlighting the importance of understanding and navigating the intricate dynamics of conflict within the context of the interventions. A conflict-sensitive approach was applied from the project's inception. This involved extensive local consultations to ensure stakeholders comprehended and endorsed proposed activities.

- **Inclusive planning**

Inclusive planning was a key factor contributing to conflict transformation, emphasising the participatory nature of decision-making processes. PAPD/CEAP approaches were developed with communities, aligning project activities with community-determined priorities. By integrating inclusive community-based catchment planning, the initiative fostered agreement on land use between pastoralists and farmers, and acknowledged the diversity of interests and needs within communities. The project prioritised building trust and inclusive practices by engaging in dialogue with various stakeholder groups. For example, pastoralists were provided para-veterinary services and camel production to ensure their participation and goodwill. Inclusive planning also addressed water access conflicts between pastoralists and villagers, involving local experts and communities in co-designing physical infrastructure to separate water sources for animals and humans.

- **Peacebuilding and dialogue activities**

The project involved specific peacebuilding and dialogue activities, which proved essential to the project's success. Dialogue processes were facilitated on critical issues such as re-drawing pastoral migratory routes, raising awareness of the ecological significance of forests, and enhancing coordination between pastoralists and farmers to diffuse tensions. In addition to dialogue, the initiative supported peacebuilding actions within natural resource management committees, involving community representation in the Catchment Management Coordination Agency from local leaders recognised as mediators. The project also organised social activities and field visits between villages. During these festivities, relationships between pastoralist and farmer groups were rebuilt, and direct communication channels were created. Furthermore, the project fostered peaceful reconciliation, supporting community leaders and sheikhs in conducting reconciliation sessions between community members. There was an emphasis on supporting early warning systems involving local authorities that activated communication channels established after the social activities. Finally, the committees established other actions for resolving disputes, such as referring cases of theft and major damage to the police. The project's implementation also profited from a collaboration with the UNEP climate and security project (see also "key lessons learned") which established peacebuilding committees in some of the project communities, which could be relied on for dialogue and conflict resolution.

- **Demarcating migratory routes**

By convening an orientation workshop attended by government stakeholders, partners and community leaders from diverse backgrounds, the project facilitated dialogue and consensus building on specific activities that WEK 2 could implement. These activities included improving services along migratory routes, capacity building and advocacy.

First, representatives from various entities participated in this demarcation, including native administrations, farmers, pastoralists, the SMOAR and the El Fasher locality executive manager. With support from the project, farmers and pastoralists agreed to establish a 200 km migratory route for cattle from the Jebel Marfaen area in rural El Fasher to Khazan Kukkul-Dar-Rezaight in the Dar El Salam locality. This route was demarcated by concrete posts, with different colour codes indicating the proximity to farmlands. In addition, an animal resting area of five square kilometres, known as sineyya, was also demarcated.

The demarcation process was conducted with the support of representatives from both settled farming and pastoralist communities. Practical Action, and the Voluntary Network for Rural Helping and Development (a CBO network) facilitated the process of demarking migratory routes, as well as the procurement and transportation of materials. State government ministries provided technical support, high-level political endorsement and the concrete poles used for demarcation. The state government authorities, and villagers in Jebel Marfaen and surrounding areas fully endorsed the demarcated route.



Under the WEK 2 project, over 200 km of animal routes were successfully demarcated, fostering significant social peace between pastoralists and farmers. Photo credit ©UNEP

WEK 2 implemented water infrastructure improvements, such as the rehabilitation of haffir and water yards for pastoralist communities along migratory routes and near settlements. This initiative represents a clear continuation of efforts to address climate change impacts and resource scarcity through collective action. Initiatives such as rehabilitating water storage facilities and demarcating conflict-prone areas have not only mitigated tensions between farmers and pastoralists, but also highlighted innovative solutions. By leveraging the expertise and resources of diverse stakeholders, the project has promoted trust and peaceful co-existence among communities.

Second, WEK 2 continued organising the conferences initiated by the EU-funded climate and security project, focusing on coexistence and land tenure use with the participation of farmers and pastoralists. The project implemented recommendations stemming from these conferences. The WEK 2 conferences were attended by a wide range of stakeholders, including native administrations, government officials and community representatives. The project facilitated dialogue on critical issues such as land tenure and animal release policies. The outcomes included the endorsement of revised grazing calendars and recommendations for supporting essential services, underscoring the collective impact of collaborative efforts in driving positive change at local and state levels.



### Box 3: Building peace through festivities and exchange visits

Social events were introduced as another approach to reduce tensions and build relationships between groups. At a community gathering celebration organised downstream of the wadi and attended by 2,500 people, community leaders from upstream visited downstream villages, and openly discussed their common needs and interests. The festivities provided a trusting environment for recognising the need to establish harmonious relations and stable communication channels to peacefully manage resources. In the words of the monitoring and evaluation officer, “We gathered community leaders from upstream and downstream of the wadi and held a two-day celebration to establish relationships and build a communication line. It created a learning opportunity for pastoralists upstream to learn about how pastoralists downstream protected nature by forbidding the cutting of trees, which offer shade for animals. It was also a learning opportunity for the community of farmers, who are usually against maintaining dense trees. During the festivities, the communities exchanged contacts and agreed to coordinate if any problems arose when pastoralists went downstream and possibly met farmers’ lands. Even the current conflict that erupted in April 2023 did not affect the system. Although the roads are insecure, the communities continue to coordinate among themselves.” (Monitoring and Evaluation Officer 2023).

### Impacts

The project activities have contributed to overall stability in the project area, in particular, by improving relationships and establishing communication channels between communities and groups. Notably, the project successfully addressed contentious issues that historically fuelled regional conflicts, such as the demarcation of migratory routes and the use of water sources. The project’s interventions – facilitated by participatory processes, the co-designed governance structures, and the emerging environmental and natural resource management plans – have improved the effectiveness of natural resource management. Furthermore, comprehensive conflict resolution training programmes have contributed to a notable reduction in conflicts over natural resources, fostering positive change, heightened awareness and skill development within project communities. The impact of these interventions was substantiated by community respondents, with more than 70 per cent of respondents noting a reduction in violent conflicts since the project launched (UNEP 2022b).

A notable example of this impact involved the demarcation of pastoral migratory routes. CBO representatives discussed the importance of demarcating migratory routes during the PAPD/CEAP process. Peacebuilding delegates, such as traditional leaders recognised by communities as mediators within local-level committees, participated in this process. Community leaders and authority figures came together to listen to each other’s concerns, problems and interests, and co-design new migratory routes with government partners, providing a pathway for livestock to migrate between seasons. The new routes were positioned at least one kilometre away from the farms. During a follow-up visit, the project team confirmed that the migratory routes were still being used, with 90 per cent of the routes remaining in place, according to the monitoring and evaluation officer. Additionally, the process led to the implementation of formal bylaws by local authorities. The new regulations on pastoral routes solidified commitments to peacefully resolve conflicts, ensuring the livelihood security of all involved parties.

A community-based representative from the Catchment Management Coordination Agency stated that stability in the area increased due to the project. For example, many IDPs, who had fled North Darfur due to conflict, returned to their villages after the completion of the weirs and water catchment activities. The construction of these facilities provided local people with improved access to water and opportunities to harvest crops, motivating IDPs to return. Nevertheless, as a result of the latest outbreak of conflict, these communities have once again been displaced.

The project's inclusive and participatory structures empowered communities to address conflicts peacefully, reducing violence. The project prevented conflicts from escalating by improving communication channels, including phone networks, and enabling early warning mechanisms and interventions. As a result, Catchment Management Coordination Agency members stated that the project facilitated a stronger culture of conflict resolution, with younger people engaging more in natural resource management and conflict resolution. According to the mid-term review, most respondents highlighted the project's impact in reducing violent conflicts.

A recent example of the strong relationships fostered was evident following the latest outbreak of violence in Darfur in 2023, when farmers and pastoralists actively collaborated through native administrations to secure and protect the weirs.

#### **Box 4: Success stories - conflict resolution and peacebuilding**

An example shared by civil society representatives, which occurred in a village near Wadi El Ku in 2022, illustrates the impact of the project on conflict management. A pastoralist was extremely angry after losing a family member and wanted to take revenge by attacking a village. The pastoralists' Catchment Management Coordination Agency representatives activated an early warning prevention mechanism and convened a meeting with other members outside the village to communicate with the pastoralist leaders, who were about to use force. They facilitated dialogue between the pastoralists and the village administrator to address the issue. Connecting with the pastoralists, they explained that the villagers were not responsible, and urged the pastoralists to investigate what had happened instead of resorting to violence and escalating the conflict. Eventually, the pastoralists agreed to investigate the incident with the support of the villagers, thereby avoiding violence. Such actions demonstrate how communication channels, which were established between pastoralists and villagers by the project, are able to prevent conflicts from escalating by building trust and facilitating peaceful dialogue.

### **Lessons learned**

- **Inclusive planning processes and engagement are key for conflict transformation**

Building a progressive stakeholder engagement process via participatory mapping, planning and strategic prioritisation led by local teams laid a strong foundation for continued cooperation. The fair and equitable distribution of water resources, combined with the co-design of activities by communities, government authorities and project members during the planning process, have contributed to a more balanced distribution of power. This was achieved, for instance, by actively involving pastoralists in decision-making processes. Additionally, these arrangements have created new economic opportunities for communities located upstream and downstream of the wadi. An extended planning phase and inclusive methods effectively engaged a diverse stakeholder group, ensuring long-term success even after the outbreak of the national-level conflict between the SAF and RSF, which affected operations in the area.

- **Cultural celebrations can create a trusted environment, contributing to conflict transformation**

Cultural celebrations and educational sessions with traditional singers and conflict transformation experts bridged social divides between community groups and garnered support from government stakeholders. Additionally, the organised exchange visits, which included upstream communities visiting traditional celebrations in downstream areas, significantly improved mutual understanding, communication and trust between pastoralists and farmers, contributing to effective conflict resolution.

- **Re-establishing communication channels to enable early warning mechanisms before conflicts escalate**

Effective communication channels and the active support for dialogue between farming and pastoralist leaders played a significant role in preventing conflicts from escalating. By utilising mobile phone networks and radio, leaders established early warning mechanisms to request facilitation and dialogue support within local CBO networks, and ensure dialogue between community leaders, reaffirming their commitment to resolving tensions peacefully. It is crucial to support inclusive local networks and to address conflicts peacefully to reduce reliance on violence.

- **Addressing drivers of conflict may involve technical solutions, but always requires specific peacebuilding approaches**

The process of co-designing technical solutions is critical in building consensus and resolving conflicts, emphasising the value of inclusive decision-making in issues of common interest. For instance, tensions around water access and use, which are shared by pastoralists (for their livestock) and villagers (for household uses), can be alleviated by introducing physical infrastructure to separate water sources. A practical approach involved separating water use for animals and humans. This initiative not only addressed a practical concern, but also highlighted the importance of co-designing potential solutions with the local actors directly involved in the conflict.

However, some Catchment Management Coordination Agency members stated that government officials need conflict resolution skills concerning natural resources, "As most of these conflicts are about natural resources, there is a need to have more government officials join conflict resolution trainings along with people from the community and local administrators." (UNEP 2022b).

In response, the university of Al Fasher developed a capacity-building programme for peacebuilding, which included planning community-level workshops to integrate technical local considerations, along with specific peacebuilding modules addressing community participation, negotiation and advocacy.



Community members from downstream sub-catchment gathered to map their natural resources in North Darfur. Photo credit ©UNEP





### Implementation

A central achievement of WEK 1 was the establishment of the Wadi El Ku Catchment Management Forum. This forum brought together 24 primary and alternate members, ensuring balanced gender representation among participants from various institutions. These included government ministries, the legislative council, media, farmers' and pastoralists' unions, CBOs and CBO networks, native administrations, landowners, and community representatives from within and downstream of the project area. The forum coordinated water resource management and connected users with the government. It was actively sought to include women's voices in decision-making processes, recognizing their critical role in water use, agriculture, and community leadership.

During WEK 2, the project strengthened the forum's role and partnership with local natural resource management committees. The Wadi El Ku Catchment Management Forum was renamed as the Wadi El Ku Catchment Management Coordination Agency in 2019 and, at the time of writing, includes 30 members. The agency is a voluntary institution that brings together the main users and managers of natural resources. Its main tasks are:

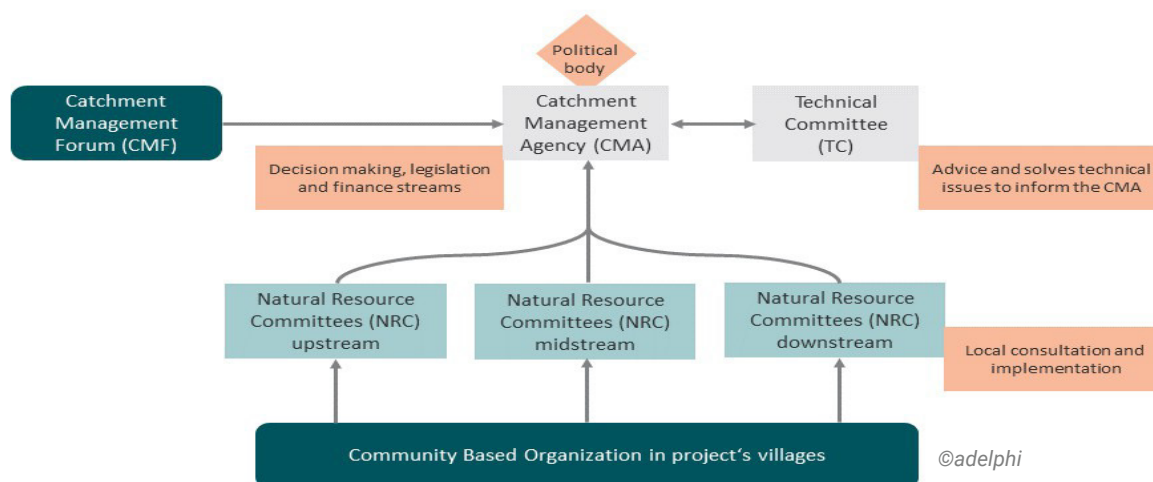
1. Coordination between natural resource management stakeholders to address community needs by building consensus, raising awareness, and discussing local laws, policies and norms.
2. Consultation with stakeholders and partners to collaboratively collect, arrange and share information with decision-makers to improve natural resource management, especially water, and protect the wider environment.
3. Advocacy and knowledge management to increase awareness, transparency and collaboration, contributing to conflict resolution and broadening the scope of integrated water resource management approaches.

The **Technical Committee** (TC) included stakeholders from various sectors, and coordinated environmental and natural resource management activities. The committee improved the capacities of public servants and relevant ministries, such as the SMOAR, and the Agricultural Research Centre (ARC), as well as others involved in agricultural production. For example, the meteorological authority increased its capacity to monitor rainfall, measure the quantity of rainfall and provide weather forecasts. At the community level, **natural resource management committees** and CBOs were supported to oversee local project implementation.

The involvement of local natural resource management committees and CBO representatives was a key factor in the success of the project. The most significant change in WEK 2 was the establishment of a middle layer of natural resource management committees (see Figure 1). These committees were primarily composed of representatives from existing CBOs. This deliberate decision utilises established structures trusted and supported within the community. Members of the natural resource management committees were selected in collaboration with the communities, prioritising representatives of CBOs that represent all community groups, were not influenced by special interests, and had a proven track record of impact and efficiency.

Members were chosen from community-level committees, which were inclusive of various segments of society, including women and young people. The committee members were selected through a general meeting, and there was ongoing cooperation between community members and the project team through brainstorming meetings and consultations.

Additionally, the agency's inclusive formation ensured that government offices were engaged. The project provided technical assistance and capacity-building support to the agency, natural resource management committees and CBOs on the local level, promoting the equal participation of women in decision-making processes.



**Figure 3 Natural resource management governance structures**

Source: Own elaboration based on UNEP/WEK 2 project presentation for the Training and Capacity Building Directorate, MoIWR, Khartoum

### Impact and success stories

The governance structures developed into an effective and trusted institutional platform, facilitating dialogue between government and communities, and sustainable natural resource management along the Wadi El Ku. During WEK 2, the project successfully transformed the initial Catchment Management Forum into the government-owned Catchment Management Coordination Agency. As a result, the Catchment Management Coordination Agency now employs a selection process to appoint members from community-level committees, including women and young people. This inclusive approach has led to the establishment of bylaws governing all issues related to forestry, agriculture and other areas of natural resource management. Moreover, the engagement of government offices in the agency's formation has ensured that the laws are being followed.

Another critical impact was the approval of the water harvesting protocol, which made it mandatory to obtain prior approval for the construction of water structures in Wadi El Ku to mitigate the negative social and environmental impacts of unplanned constructions. Moreover, the project ensured that communities had a say in decision-making regarding project activities. Overall, 70–90 per cent of the interviewees in the mid-term review agreed that community participation was crucial for the project's work in their communities. The local natural resource management committees were the foundation for sustaining project activities between the project's two phases (WEK 1 and WEK 2), even after conflict erupted across the country in April 2023 (see also "continuity and sustainability of the project"). Establishing technical and political committees and forums for managing resources, which included various stakeholders and technical bodies, contributed to intersectoral coordination and stakeholder engagement. For example, the project's structure sustained the interactions between decision-makers and key technical bodies, such as the University of Al Fasher. The project also attracted external partners, such as the WFP, which provided valuable support through food-for-assets programmes.

Catchment Management Coordination Agency and Technical Committee members reported that natural resource management mechanisms in North Darfur have become more sustainable due to the awareness raised among community members about the importance of weirs and the environmental impact of natural resource management.

They also emphasised that the establishment of governance structures was the project's most important impact and anticipate that the governance structures will be sustained long after the project's conclusion. In August 2022, the project team conducted a field visit to three areas along the designated migratory routes for livestock to ensure that livestock herders followed the demarcated routes and to gather information about any violations that may have occurred. Farmers near these routes were also interviewed to determine the extent to which the herders were committed to using the demarcated routes. All the farmers interviewed confirmed that the herders' commitment to keeping to the corridors was higher than in previous years.

## Lessons learned

- **Bringing together actors across governance levels and sectors was key**

The co-design of local governance structures has positively impacted sectoral coordination, boosting resilience. The combination of capacity building and inclusive governance structures within the Catchment Management Coordination Agency contributed to creating a trusted, inclusive body responsible for water management decisions. This facilitated exchange between local communities, technical bodies, international agencies and local universities to address issues related to water access and distribution.

The integration of the Catchment Management Agency and the Technical Committee was instrumental in breaking down silos and fostering a cohesive approach to natural resource management. By incorporating water management data, meteorology and agricultural extension, this holistic strategy significantly enhanced people's livelihoods. Moreover, it facilitated a collaborative environment between pastoralist and farming communities, promoting open communication, and the constructive resolution of water access and use related issues.

- **Water management as an entry point to transform conflict**

Water management served as a strategic entry point for conflict resolution within the project, acting as a catalyst for dialogue and collaboration between diverse communities. The project recognised water as a vital resource crucial for all communities' livelihood strategies and economic interests. Unlike other politically sensitive issues such as land access, water had not been politicised in the context of North Darfur, making it a more neutral and unifying subject for discussion. The project's focus on water as a unifying element acknowledged that improving water management practices became a common goal that transcended community divisions. The initiative demonstrated that tensions could be mitigated by starting with water and enhancing its efficient use, fostering mutual benefits.

The project underscored the importance of managing water resources peacefully and collaboratively, and demonstrated the clear advantages for all parties involved. The project also highlighted that violent conflicts could jeopardise access to water, making livelihood strategies more challenging for everyone. By proactively addressing water management issues, the project aimed to prevent potential conflicts and create a shared understanding of the benefits of collaborative resource management.

During the inception phase, the need to consider the unintended long-term impacts of water harvesting structures and associated land use processes was recognised. The project highlighted the importance of careful consideration in water planning to avoid creating tensions downstream, especially in areas where water is scarce. Storing water upstream

Therefore, the project emphasised the necessity of addressing long-term regulatory issues, establishing options for compensation.

UNEP's role as a political advisor was instrumental in mobilising regulatory initiatives. This led to the development of three comprehensive plans for sub-catchment areas (upstream, mid-stream and downstream), reflecting a strategic approach to natural resource management within the Wadi El Ku catchment area. The plans addressed challenges such as managing invasive weeds and trees, controlling random water harvesting terraces, addressing gully erosion, and implementing environmental rehabilitation measures. The collaborative relationships fostered among agency members from upstream, mid-stream and downstream areas, involving both farmers and pastoralists, played a pivotal role in reducing tensions and conflicts in the Wadi El Ku project areas.

- **The inclusion of individuals from diverse backgrounds in the Technical Committee and local natural resource management committees was a success factor**

Bringing together experts with diverse technical backgrounds was a key success factor, providing a platform for addressing multifaceted water management and land use challenges. For instance, collaborative efforts among specialists identified key issues related to water management, prompting the development of effective solutions for data gathering. The diverse perspectives of these experts also facilitated a nuanced understanding of various land uses and strategies to address associated complexities.

The collective expertise of local experts extended beyond technical discussions, influencing positive outcomes at the grassroots level. Trained farmers, as knowledge ambassadors, shared valuable insights through observation and skill-sharing, fostering learning within communities, and bringing community perspectives to the local natural resource management committees. These groups, equipped with land and comprehensive agro-ecological training, focused on sustainable farming practices, such as crop rotation, inter-cropping and agro-forestry. The success of these initiatives highlights the transformative impact of collaborative, interdisciplinary efforts in addressing complex challenges at both technical and community levels.



Under the WEK 2 project, over 30,000 seedlings of native varieties have been transplanted in different villages in North Darfur State as community forests and shelter belts. Photo credit ©UNEP





## Integrated water resource management and water harvesting

In the arid climate of Darfur, the seasonal watercourse of Wadi El Ku – which originates in the Jebel Mara highlands, runs southeast through North Darfur, before moving south into East Darfur and ultimately ending in an outflow delta – is a crucial resource for the region’s rapidly growing population. Unfortunately, the pressures exerted by rapid population growth and conflict have devastated the region’s already fragile natural environment. Consequently, many people have concentrated in urban centres and large camps, which has led to accelerated deforestation, overuse of groundwater resources, overcultivation of available arable land and overgrazing of available rangeland. These conditions are evident in and around Wadi El Ku, and particularly in the environs of El Fasher. The livelihoods of around 87,000 members of farming and agro-pastoral communities, 440,000 residents of El Fasher, and 220,000 IDPs living in nearby camps all depend on the effective management of natural resources within a 50 km reach of the wadi (UNEP, UKAid 2020) .

### Implementation

At the heart of the project is the effective management of water resources following the model of integrated water resource management and the establishment of water harvesting infrastructure. Water harvesting infrastructure – such as weirs,<sup>1</sup> haffir (artificially constructed water catchment basins with circular earthen walls), diversion channels and water yards generally – formed an important part of the PAPD/CEAP approaches. This included six water harvesting structures in Wadi El Ku. One dam was rehabilitated, and two weirs were constructed in WEK 2 project areas (namely Wada’a, Eid Al Beida, Kosa and Sarafaya), while the other three structures were constructed during WEK 1.

Following WEK 1, integrated water resource management structures remained effective during the two-year gap to WEK 2, underlining the sustainability of the approach. An exception was the Korga weir, which was intentionally breached by members of a community that felt that they did not profit from the water infrastructure. This served as a case study to identify governance strengths and weaknesses. The incident highlighted the need to involve not only communities that are directly affected by the constructions, but also communities that are indirectly impacted. It also underlined the importance of developing robust water governance structures when implementing integrated water resource management in North Darfur. The project recognised that the success of integrated water resource management extended beyond mere infrastructure development. For example, it also required enhancing community adoption of integrated water resource management principles and capacities to effectively manage conflicts related to water resources.

The project introduced a comprehensive governance framework encompassing various entities to achieve this. A pivotal component of this governance structure was the establishment of the Catchment Management Coordination Agency. The CMA was crucial in coordinating and overseeing water management activities at the catchment level, ensuring a holistic approach to integrated water resource management. This centralised agency facilitated the implementation of capacity-building activities, the dissemination of knowledge and stakeholder collaboration, including local natural resource management committees, CBOs and the Technical Committee. These entities collectively contributed to the effective implementation of integrated water resource management principles.

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<sup>1</sup>A weir, also known as a low-head dam, is a barrier built across a river that changes the water flow and can cause the river level to rise or fall. Weirs control the water flow from lakes, ponds and reservoirs. There are many different types of weirs, but they all allow water to flow freely over the top of the weir before it cascades to a lower level. Along with watering fields, weirs can provide drinking water, recharge groundwater levels, counter erosion by slowing a river’s flow and reduce the impact of disasters, such as drought.

Capacity building and training – targeting government representatives, civil society members, farmers, pastoralists and other relevant actors – were integral to developing these governance institutions. By providing comprehensive training, the project aimed to empower these stakeholders with the knowledge and skills to actively participate in integrated water resource management processes. This inclusive capacity-building approach fostered a sense of ownership and responsibility among community members, enhancing the sustainability of integrated water resource management practices.

Within this governance framework, the TC focused on the technical aspects of water management, conducting assessments and monitoring water resources. Local natural resource management committees and CBOs were vital for encouraging stakeholder involvement, raising community awareness and creating transparent participative environments. For example, these entities monitored and analysed wadi surface water and land use hydrology, organised local stakeholders, collected funds from beneficiary land users, and allocated those funds. This participatory approach ensured that diverse community perspectives and needs were considered in decision-making.

### Impact and success stories

Implementing integrated water resource management principles with targeted infrastructure development proved transformative for livelihoods and conflict reduction in North Darfur. Given the arid desert climate and the pivotal role of water in rain-fed crop production, implementing water infrastructure, guided by integrated water resource management factors as part of climate change adaptation initiatives, yielded substantial benefits for farmers and pastoralists, and reduced tensions. Central to this success was the construction of water-spreading weirs, which significantly increased cultivated land and productivity.

In addition to these tangible outcomes, the weirs also served as catalysts for generating employment opportunities for IDPs and communities living along the wadi, ensuring food security and fostering a positive impact on the economic landscape. By improving water management practices, the project contributed to enhanced agricultural yields and greater drought resilience, addressing key challenges faced by communities in the region.

Furthermore, WEK 2 focused on capacity-building initiatives that extended beyond infrastructure development and supported the Catchment Management Agency. The initiatives facilitated the exchange of experiences and integrated water resource management methods among communities and project areas (upstream and downstream), creating a collaborative learning and knowledge-sharing platform. This approach enriched the local knowledge base and empowered stakeholders with the skills needed for effective decision-making at the community level. In addition, government employees received targeted training, enhancing their capabilities to support water resource management.

The project's achievements were recognised as a promising model for catchment-based integrated water resource management in Sudan. The increased visibility attracted regional and sub-regional stakeholders that sought to collaborate with and learn from UNEP regarding integrated water resource management approaches. The success of the project played a pivotal role in piquing the national government's interest in implementing similar models across Sudan.



Wada'a dam underwent rehabilitation despite Sudan's conflict in mid-April 2023. It was fully operational during the rainy season and brought positive impacts on drinking water, farming, and the environment. Photo credit ©UNEP

## Lessons learned

- **Integrated water resource management provided an entry point for conflict resolution in a fragile context**

The integrated water resource management model established a promising approach for catchment-based integrated water resource management, even within humanitarian and conflict contexts. Notably, discussions that focused on shared interests concerning water access proved to be less political for reducing tensions. Cooperation around water management transcended the boundaries typically expected in conflict-affected contexts. The entry points and opportunities offered by integrated water resource management for cooperation contributed to the development of social cohesion and governance structures that continue to be sustained following the project's implementation, as evidenced by the Catchment Management Agency.

- **While integrated water resource management served as a local approach to water management, coordination with state-level governance systems is necessary**

Although seasonally there's enough surface water, water infrastructure such as weirs, dams and diversion channels affect flow rates, spatial distribution and regimes downstream. Both positive (e.g. reduced peak discharge rate) and negative (e.g. delayed arrival of water flows) effects can occur and should be carefully considered in any intervention. The effect of cascading water structures was carefully studied through the integrated water resource management approach along with delineation of vulnerable and high-risk areas in collaboration with the University of Khartoum and University of Al Fasher, among other organisations. However, to prevent conflicts from arising, a well-functioning governance system at the state level, supported by law enforcement, is essential to transparently coordinate upstream water use and gain the full trust of all stakeholders.



- **Start the construction of water infrastructure as soon as possible**

Previous years witnessed significant delays in the construction of large water infrastructure projects, especially weirs. These delays stemmed from various factors, including the COVID-19 pandemic, the security situation, the political landscape, high inflation, funding negotiations and bureaucratic processes within UNEP. As a result of these delays, construction began much later than planned, which led to frustration among local communities. Responding to these challenges, all respondents recommended starting construction of water infrastructure in the first year of the project.



Water access point example from Ramallah and Seh- tall (Damrat) Photo credit ©UNEP





## Climate-resilient agriculture and livestock

The project implemented a wide range of activities to improve community livelihoods. These activities played a pivotal role in gaining community support and addressing specific community needs. Overall, the diversity of livelihood activities reinforced the benefits of improved water access and enhanced soil quality facilitated by the water harvesting infrastructure, creating a comprehensive and sustainable approach to community development in North Darfur.

First, the project designed a set of extension packages with active community involvement at every step, including elders, women, young people and technical institutions. These packages were applied to farmer field schools to train and support community members in effectively preparing and communicating technical packages. Designated as demonstration farmers, these trained community members became key contributors to the project's success.

The project also gradually engaged women from local communities, laying the foundation for deeper engagement. During and after the planning phase, and prior to implementation, the project conducted a gender analysis. The analysis revealed that women's priorities included ensuring their food and livelihood security by supporting agricultural production, rehabilitating women's centres, addressing the lack of knowledge and skills in technology transfer, and tackling unemployment among women and young people.



Under the project, five small women farmers' groups, each consisting of 10 women, were formed to boost food security and livelihoods through climate-resilient agriculture. Photo credit ©UNEP

### Implementation

In response, the project facilitated the formation of five women farmers' cooperative groups. Furthermore, the project provided the groups with agricultural inputs, technical knowledge, and support in farming, management and marketing. Each group was carefully formed, with 10 women selected based on specific criteria to ensure fair and inclusive representation. The women were also linked with government extension departments. Capacity building was also provided to equip women with the skills to start and manage small businesses. Moreover, the women visited farming communities in North Kordofan to foster collaboration between women from pastoralist and farming backgrounds (see also "climate-resilient agriculture and livestock").

Representatives of women farmers' cooperative groups petitioned the regional governor to improve regional communication networks to enable the continuation of extension work via radio broadcasts and SMS messaging. As a result, the governor collaborated with a communication company to construct five rural communication towers powered by solar systems linking five villages: Eid Al Beida, Tambel, Wad Kota, Bahar Um Durman and Um Baitain. Today, the entire area enjoys coverage and the targeted beneficiaries have significantly improved access to communications. The project's impact was evident in the community's collaborative efforts to enhance access to project information, showcasing the project's influence on community development.

In 2023, five further women farmers' cooperative groups were independently established without project support, demonstrating the project's influence on self-replication and community scaling. Notably, women farmers successfully advocated for and secured additional land, marking a positive step towards gender-inclusive land access.

#### **Box 5: Success stories - climate resilient agriculture and livestock**

WEK 2 ignited transformative change in the heart of Ramallah Damra, Um Sayala. The success stories of Hamraa, Nejad and Khadija encapsulate the multifaceted and positive results. A 27-year-old mother of five, Hamraa participated in handicrafts training as part of the project, alongside 45 other women. The training equipped her with valuable skills, and paved the way for her to get involved in the village savings and loan group within her community. Hamraa's success resonates with the experiences of Nejad and Khadija, who also reaped the benefits of the project's economic empowerment initiatives. Nejad, seizing the opportunity afforded by a loan of 15,000 Sudanese pounds, ventured into the poultry trade and now earns a monthly income of 12,000 Sudanese pounds. This marked a transformative shift from being a farmer solely focused on self-sufficiency to actively participating in trade, illustrating the project's impact in providing capital for diversified economic engagement.

Similarly, Khadija's journey began with a one-month loan of 10,000 Sudanese pounds. Through trade, Khadija was able to make a profit of 4,000 Sudanese pounds, after successfully repaying the loan. In Khadija's own words, "I took 10,000 pounds for a month and through trade profited 4,000 and returned the loan, then after that I took a loan three more times. Now I want to buy a sewing machine with my savings." Khadija's story demonstrates the project's sustained positive impact in empowering community members economically. Moreover, it highlights the project's role in fostering financial independence, and opening avenues for skill diversification and entrepreneurship within communities.

#### **Lessons learned**

- **Locally adapted and diverse approaches for agricultural extension**

Tailoring agricultural extension strategies to the unique characteristics and needs of local communities ensured sustainable and impactful outcomes across diverse contexts. The project employed a wide range of strategies, including farmer field schools, demonstration farms and extension packages throughout the value chain. These strategies were reinforced by communication channels, including radio broadcasts and SMS messaging, as well as climate resilience and livelihood adaptation training. For example, tailored communication through rural radio broadcasts facilitated informed decision-making at the household level. Farmers, with easy access to radio broadcasts, closely followed programme instructions, exemplifying the effectiveness of context-specific communication.

Visits to demonstration farms in North Kordofan were also a successful approach. The project strategically engaged women from pastoralist communities and organised educational trips for them, fostering the creation of a community of practice. Additionally, capacity-building initiatives, such as equipping women with skills to initiate and manage small businesses, complemented this approach. The result was a collaborative effort between women from pastoralist and farming backgrounds. In conjunction with these initiatives, community members received comprehensive training in cultivating both cash crops and subsistence crops, introducing essential concepts such as the value chain to optimise earnings and benefits.

- **Gender-based analysis in project planning is an important tool for ensuring success**

A crucial lesson learned from this project is the significance of conducting a gender-based analysis, and prioritising project activities that respond to women's identified needs and preferences. The project team conducted a thorough gender analysis during the planning phase and prior to implementation. This analysis revealed that women's priorities focused on ensuring their food and livelihood security, and identified that better results could be achieved by fostering women-only groups. By prioritising activities based on these findings, projects can effectively support women's empowerment, ownership and livelihoods that contribute to overall community development.

- **The economic empowerment of women is a powerful catalyst for increased participation and positive change within communities**

During the project, it became evident that, as women gained financial independence, women also gained a stronger sense of purpose and influence within their communities. Women's newfound economic agency enabled them to actively engage in public spaces and discussions, particularly concerning natural resource governance. Furthermore, the project's impact on social dynamics was far reaching. The newfound role women acquired in pastoralist communities also enabled them to travel to other states, and share their knowledge and skills with other groups, including farmers. Additionally, the project increased social cohesion between pastoralist and farming communities, which were previously isolated and often competed for natural resources.



### Implementation

As part of WEK 2, support was provided to communities to encourage the development and implementation of natural tree regeneration management strategies. The goal was to empower farming households to strategically plant trees to stabilise soil, improve overall productivity, and promote the establishment of community-driven agro-forestry and natural regeneration forests.

The project supported the establishment of eight community forests in different communities, specifically focusing on Acacias and *Grewia tenax*. The process involved comprehensive discussions about the pivotal role of trees within ecosystems, determining optimal sites and layouts for community forests, and disseminating tree planting and management best practices. WEK 2 supported over 150 families to start their own household nurseries for seedling production by providing training and seedlings. Communities received 126,000 tree seedlings from the Forest National Corporation (FNC) central nursery in El Fasher. Two trainers from the FNC conducted valuable training sessions, focusing on pruning techniques and water collection procedures, including using small crescent-shaped terraces around trees. The communities were equipped with shovels, secateurs, hoes, handsaws and pruning scissors to facilitate effective management practices.

Simultaneously, the implementation process included the establishment of four forestry demonstration farms through a farmer field school approach. This innovative method allowed for the practical application of extension packages, providing a hands-on learning experience for community members involved in forestry activities.

A parallel effort was dedicated to supporting six communities to develop and implement management plans for the natural regeneration of trees. The formulation of the plans was completed, with ongoing monitoring to ensure their effective implementation. Furthermore, community forest management training workshops were conducted, which contributed to enhanced knowledge and skills among community members. The successful completion of these workshops further reinforced the capacity of communities to manage and benefit sustainably from their forest resources.

These actions were informed by lessons from WEK 1. Three of the community forests deployed near the wadi in WEK 1 were successful due to favourable geographic conditions and the fast growth of seedlings. However, in more northern areas, manual watering for the first two years made it difficult to mobilise community resources. In some cases, natural regeneration occurred in the north, but due to conflict there were no people to maintain it. Several factors hindering sustainable community forest management were identified in WEK 1, including the lack of economic incentives linked to established forests, the unclear distribution of benefits from community forests, the lack of law enforcement and forest management plans to protect established forests, and insufficient community participation in decision-making, management and monitoring (UNEP 2022b).

Based on these experiences, WEK 2 emphasised the need for community commitment to nurture, protect and manage community forests for several years, at least until the trees are mature enough to survive on their own. The project introduced economic incentives linked to community forests, formulated benefit-sharing mechanisms, encouraged natural regeneration, developed specific production and marketing strategies for various products extracted from community forests, adopted appropriate silvicultural techniques to enhance and increase productivity, and developed the capacity of communities, associations and local agents. Training was also implemented to accelerate the process, which included pruning and removing unwanted species.



## Impacts

Implementing community forest initiatives has led to notable impacts in the short term. Households within the project area, particularly downstream, have significantly increased the planting of valuable trees, such as Acacia and Ziziphus. This surge in tree planting signifies a proactive approach towards environmental stewardship and sustainable land management.

Moreover, adopting agro-forestry technologies has become increasingly accessible to small-holder farmers, catalysing further engagement in sustainable practices. Concurrently, there has been a noticeable rise in the establishment of family tree nurseries, with many households actively involved in seedling production for personal and commercial purposes.

The length of time required for a community forest to mature makes it difficult to determine the long-term impact of the WEK 2 community forests. As of 2022, farming households had planted 126,000 trees as part of forestry practices aimed at stabilising soils and improving soil productivity. Women actively participated in these forest management activities, engaging in tasks such as planting, monitoring, and protecting the forests. Their involvement was pivotal in fostering community collaboration and sustainability. However, the assessment conducted by the monitoring and evaluation officer and the mid-term review found that the overall quality of community forest activity was modest. Approximately 40–50 percent of these activities were successful, while the remaining percentage faced challenges, particularly with protection and regular watering.

In response to this situation, the implementation team decided to shift their focus to individual family nursery activities instead of community forests. This decision was made to ensure that effective management measures for community forests were established before proceeding. An encouraging sign of impact is the enthusiasm among young people for planting and nurturing trees, coupled with their training in setting up small nurseries.

Despite these positive advancements, challenges persist. In the 2023 season, the FNC encountered difficulties in seedling production for farmers due to the outbreak of conflict, underscoring the vulnerability of such initiatives during periods of conflict. Nonetheless, these short-term impacts signify a promising trajectory towards environmental rehabilitation and enhanced economic resilience within communities.



In North Darfur, the community forest in Shagra (B) village, established under WEK 1, thrives, providing benefits to communities as trees continue to grow. Photo credit ©UNEP

## Lessons learned

- **Recognising the time horizon for impact assessment**

One important lesson learned from the forest restoration project is the need to acknowledge and plan for the extended timeframe required to assess the actual economic impacts of reforestation activities, which motivate communities to plant and protect trees. During numerous community consultations, participants expressed their appreciation for the forest interventions, particularly the fodder and shade forests provide for livestock, and the strengthening of social cohesion through the communal work in establishing the forests. In addition, participants acknowledged the forest interventions' clear contribution to environmental improvement. However, the slow growth rate of trees and the gradual restoration of forest ecosystems mean that more significant results may take decades to become visible.

- **Prioritising community engagement and capacity building**

It became evident that the sustained protection and management of restored forests by local communities is essential for long-term success. However, this was challenging due to the overuse of natural resources by communities, with beneficiaries living in Wadi El Ku completely dependent on the natural environment. From a cost-benefit standpoint, resources could have been allocated to other activities, although communities expressed a strong desire to incorporate tree planting as part of WEK 2 activities. This request was accepted because of growing environmental awareness within these communities. However, it is essential to understand that the sustainability of this initiative depends on communities taking collective responsibility for the care and protection of the trees. This is a gradual process that will likely continue long after the project's completion. Providing resources, education and ongoing support is vital to empowering communities to effectively care for the newly established forests.

- **Addressing structural barriers, such as poverty and food insecurity, is mandatory for sustainable community forest management**

It became evident that the desired behavioural change, which involved motivating communities to care for seedlings and new trees, could not be sustained without incentives. During the initial phase of the project, an incentive was introduced where the WFP provided food in return for communities caring for the seedlings and forests. While this approach initially yielded positive results, it became apparent that once the incentive was introduced, other communities that wanted to participate in caring for the forests also expected an incentive and lost motivation.

The crucial lesson learned from this experience is that, for new activities requiring sustained action and behavioural change by communities, it is imperative to first overcome structural barriers, such as poverty and food insecurity. Efforts must address these underlying issues before communities can fully commit to maintaining a forest. If the desired action is to be sustained, the project should allocate funding to ensure food security and stable incomes for communities until the initial stage of behaviour change, namely conserving forests, is achieved.



## Awareness raising, science and information services

### Implementation

A number of WEK 2 activities focused on awareness raising, scientific knowledge and information services to support integrated water resource management livelihood improvement and environmental protection. The project collaborated with research institutes and local communities to use both scientific and traditional knowledge. This included the establishment of meteorological stations, supporting hydrological modelling, strengthening scientific institutions, fostering scientific collaborations, implementing citizen science initiatives, using services from scientific institutions, and fostering information exchange between scientists and communities.

Importantly, the awareness-raising content was gender-sensitive, ensuring inclusivity and addressing the distinct needs, roles, and perspectives of both men and women. This approach aimed to enhance the equitable participation of all community members in water resource management and environmental protection efforts.

A significant step involved improving and updating hydrological and hydrogeological models, and weather monitoring for the wadi in collaboration with the University of Khartoum. These collaborations created valuable knowledge and allowed communities to manage water resources more sustainably. In addition, these collaborations led to numerous studies and assessments highlighting water-related challenges and opportunities within the catchment area. As part of the model development, several studies were conducted on the impacts of climate change on groundwater recharge zones, as well as the amount of groundwater recharge, the effect of water harvesting structures on the water resources of the wadi and the water balance of the wadi catchment area.

The project also carried out wide-ranging awareness raising activities through regular community meetings, workshops and trainings on a wide range of topics from water management to agriculture and livestock. In response to the challenges posed by the COVID-19 pandemic, the project adopted an innovative approach to carry out agricultural extension activities via radio broadcasts, reaching 6,000 farmers. This creative response not only addressed the limitations imposed by the COVID-19 pandemic, but also extended knowledge and awareness of sustainable agricultural practices to remote areas where in-person gatherings were restricted.

Additionally, mobilisation meetings served as platforms to disseminate knowledge among local communities, and foster collaboration between farmers and pastoralists. This proactive approach prevented further malpractices, such as farmers burning rangeland grass after harvesting due to fear of pastoralists encroaching on their fields, and reduced conflicts stemming from competition over shared resources.

One noteworthy initiative was the establishment of forestry demonstration farms through a farmer field school approach. In 2020, the project established a demonstration forest, via a partnership between the University of Al Fasher, the Agricultural Research Centre and the National Forest Corporation, in the village of Eid Al Beida. Functioning as a vibrant platform for learning and experimentation, the participatory scientific research approach employed in establishing the demonstration forest with the farmer field school method brought researchers closer to community challenges by integrating various stakeholders in developing extension packages. This approach ensured practical results by leveraging local resources, making it more economically efficient compared to traditional research methods.





A monthly Technical Committee (TC) meeting is held at the Catchment Management Coordination Agency (CMA) premises to discuss and resolve shared natural resource issues in the WEK area. Photo credit ©UNEP

## Impacts

The mid-term review highlighted the profound impact on community capacities through awareness-raising initiatives. Community members reported increased awareness of sustainable farming and grazing operations, resulting in improved production. The integration of knowledge concerning resilient seeds and techniques played a pivotal role in improving livelihoods and adapting to changing seasons. Practical tools such as water measurement and rain gauges empowered community members to predict water quantity, enabling informed crop planning with an emphasis on planting water-efficient varieties, such as beans, during periods of low rainfall.

A unique feature of the project was the development and delivery of extension packages, and awareness raising with active community involvement, including elders, women, young people and technical institutions, at every stage of implementation. The participatory approach played a crucial role in identifying the challenges and opportunities specific to each community. Elders shared traditional knowledge, young people offered innovative perspectives, women provided insights into household dynamics and the technical institutions contributed scientific expertise. This diversity of input helped the project to create extension packages, for example, within the farmer field schools, which were both culturally sensitive and technically sound, addressing the unique needs of the community. The project established 146 local community agricultural extension agents, who trained 10,200 farmers on improved agricultural packages as part of ongoing mobilisation and capacity-building efforts.

The project's scientific commitment led to the development of a hydrological model for the wadi, which addressed future water supply and demand scenarios. Collaborative efforts between various stations, including the Agricultural Planning Unit and the Water Authority, allowed for the collection and analysis of comprehensive rainfall data. In turn, the Sudanese Meteorological Authority utilised this data to provide valuable weather forecasts for communities. Additionally, linking communities, scientists and government institutions improved decision-making and the sense of ownership among communities.

Collaboration with the University of Al Fasher was pivotal. The university's involvement in the Technical Committee and at the community level facilitated the dissemination of important scientific information. In addition, this collaboration resulted in academic advancements, including the completion of two doctoral research studies and one master's thesis by members of the Technical Committee.



Project activities raised community awareness of various aspects of water and natural resource management. The trainings and awareness campaigns helped communities better understand their water and natural resources, and strengthen linkages to upstream and downstream dynamics. For instance, farmers and pastoralists improved their water harvesting techniques and corrected malpractices such as excessive bush clearing. Through community engagement initiatives, the project facilitated the integration of local knowledge, such as local approaches for predicting rainfall patterns with improved water harvesting techniques. Additionally, the migratory route committees defined agreements to monitor the proper use of resources to prevent disputes. By improving water sources and enhancing understanding of ecosystem dynamics, stakeholders recognised the collective benefits of integrating sustainable practices into their daily routines, fostering a culture of environmental stewardship.



The agricultural extension program broadcasted on El Fasher radio during the COVID-19 pandemic benefited 6,000 farmers. Photo credit ©UNEP

## Lessons learned

- **Effective behaviour change through integrating scientific knowledge into livelihood activities**

The project played a crucial role in knowledge creation and dissemination, which was key for integrating water resource management approaches into the daily lives of community members. For example, farmers had previously developed unplanned water harvesting techniques that destroyed the soil. Through the project activities, farmers learned that excessive bush clearing increases the vulnerabilities of ecosystems, exacerbating droughts and desertification, and reducing the water absorption of soil. Similarly, pastoralists realised that excessive grazing near water sources pollutes water and undermines relations with farmers, affecting the commercialisation of livestock products. By improving water sources and better understanding the unique characteristics of the ecosystem, stakeholders recognised the mutual benefits of integrating sustainable practices into their daily routines.

- **The inclusion of local knowledge and participation strengthens adoption of agricultural practices**

The participatory approach improved the dissemination and adoption of the extension packages. Active community involvement in the development process fostered greater trust and acceptance.

The tailored packages, aligned with local practices and preferences, resonated more effectively with the target audience, which improved awareness-raising outcomes. Likewise, including local scientists in the collation and application of hydrological data also reinforced community ownership by highlighting the role of local universities within the Catchment Management Coordination Agency.

- **Integrating scientific knowledge and community collaboration for sustainability**

Integrating scientific knowledge into the community's daily practices to promote sustainability proved to be an effective approach to raise environmental awareness. Farmers and pastoralists learned about the negative impacts of unplanned water harvesting and excessive bush clearing through education. Mobilisation meetings facilitated collaboration, leading to ownership of monitoring committees and joint dispute resolution. This experience underscored the value of interdisciplinary approaches and local engagement in fostering sustainable practices.

- **Empowering communities through unity and effective communication**

The project's success stemmed not only from its initiatives, but also from its emphasis on unity, understanding and effective communication among stakeholders. The mobilisation workshops and collaborative efforts at local and state levels cultivated a shared understanding of project objectives, streamlined implementation processes and built trust. Culturally sensitive communication, including the development and dissemination of key messages in Arabic, resonated with diverse communities, promoting cooperation and inclusivity. Furthermore, the inclusive weir construction initiatives provided communities a space for collective participation and contribution, strengthening inter-village relationships and fostering a sense of community cohesion.

# 05

## Key lessons learned

This chapter discusses lessons learned from the implementation of WEK 2. The project's success can be attributed to its solid commitment to community ownership and participation, which are fundamental principles of sustainable development. This chapter highlights the key drivers of success, including securing government buy-in, building enduring relationships and establishing strong partnerships with implementation agencies. The chapter also emphasises the importance of creating permanent governance structures to ensure sustained positive outcomes beyond the project's lifespan. The chapter recognises the transformative role of women in building resilient communities and highlights women's empowerment initiatives. Additionally, the chapter explores the importance of coordinating natural resource management with dialogue and peacebuilding activities in humanitarian contexts. The project's adaptive flexibility and long-term engagement strategy exemplify a harmonious relationship between donor support and project resilience.

### Drivers of success



#### Community ownership and participation

The project's success in promoting community participation and ownership stemmed from its extended planning phase and the application of inclusive methods, such as participatory action planning and mapping activities, which effectively engaged a diverse range of stakeholders. This inclusive approach laid a solid foundation for sustained cooperation among actors actively involved in the project's implementation. Identifying and addressing issues related to natural resources became a compelling entry point for addressing inter-group tensions.

In the pursuit of enhancing natural resource management, productivity and livelihoods, as well as addressing disputes, the project's adherence to its guiding principles proved critical to its success. The approach prioritised the active involvement of all stakeholders in decision-making, moving beyond mere consultation to ensure genuine participation. Recognising the significance of time, the project acknowledged that participation should not be rushed. This emphasised the need for an extended inception phase to build relationships with CBOs and foster inclusive decision-making.

The project's guiding principles underscored inclusivity, adaptability and representation, promoting a devolved approach where decisions were made at the local level. Moreover, establishing a coordinated two-way flow of information, and decisions between political partners at the state and national levels was essential. This was facilitated by the advisory work of UNEP, which ensured transparency and engagement. The flow of information from the grassroots, facilitated by Practical Action and its CBO networks, played a crucial role in vertical integration.

A key contributor to the sustained success of the project lies in the thorough application of these guiding principles during the project's inception phase. Recognising the need for a comprehensive understanding, the project team conducted two baseline studies, collecting quantitative and qualitative data.

These studies emphasised the significance of focus group discussions in extracting valuable additional information. This approach enriched the data and facilitated the prolonged involvement of staff with the project, fostering a deeper connection and understanding. The lesson of long-term engagement also manifested in the meticulous combination of science and participation during the inception phase. Comprehensive studies, including hydrological and forestry assessments and baseline studies, were complemented by extensive participatory planning. The merging of the PAPD and CEAP approaches ensured a harmonious blend of scientific rigour and community-driven planning.



### Government buy-in, focus on relationship building

A pivotal lesson learned from WEK 2 was the importance of securing government buy-in and fostering solid relationships from the very beginning for successful project implementation. Building strong relationships and securing government buy-in are not only prerequisites for effective project implementation, but also for sustainability and the long-term success of water management initiatives within the Wadi El Ku catchment area.

The project strategically and clearly defined government contributions during the inception phase of WEK 2. These contributions included providing office facilities for the Catchment Management Coordination Agency (CMA), and actively participating in the Technical Committee and all fieldwork. Notably, the government assumed responsibility for any repair and maintenance beyond the capacity of the beneficiaries, something that was not delineated at the beginning of the partnership, demonstrating a collaborative and supportive attitude.

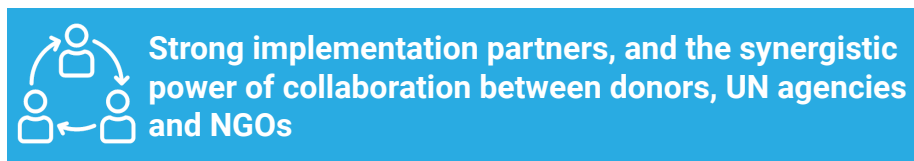
The significance of government engagement was evident from the inception phase. Government staff played a crucial role in almost all fieldwork activities, providing them with opportunities to build relationships, legitimacy and trust with farmers and pastoralists. The broad spectrum of government institutions involved, including the Ground Water and Wadis Directorate, the Department of Extension, the Department of Range and Pasture, the Department of Animal Resources, the Environmental Department within the SMOAR, as well as the Forests National Corporation, demonstrated a comprehensive and inclusive approach.

Throughout the project's evolution, a strong emphasis was placed on working closely with the state government. The government's ownership of institutions, such as the CMA, and active involvement through the Technical Committee built a shared commitment to project objectives. This strong commitment was evident when the state minister of agriculture, who chaired the Technical Committee, provided fuel to the weir contractors. This ensured that construction work could be completed on time, despite fuel shortages due to the outbreak of conflict in Sudan in 2023. The fuel was provided from the ministry's quota for internal operations (see also "project continuity and sustainability"). This demonstrated the state government's recognition of the project's strategic importance and value. Furthermore, the state government continued to undertake follow-up and monitoring activities of ongoing weir construction, even amidst the high-risk and unpredictable security situation in North Darfur. The Advisory Committee within the Catchment Management Agency further ensured political backing and ownership at the highest level, contributing to a conducive environment for sustained project success.

In addition to government involvement, collaboration extended to educational and research institutions, with students from the University of Al Fasher actively participating in fieldwork and the Agriculture Research Centre leading the Farmer Field School (FFS) facilitations.



During the inception phase, the project's inclusive approach also involved consulting with international NGOs, including Catholic Relief Services, ZOA International, Coope, Welt Hunger Hilfe and Oxfam, as well as domestic NGOs, including the Darfur Development and Reconstruction Agency, and SOS Sahil Sudan.



The positive relationship established between the European Union and UNEP underscored the importance of strong partnerships between donors and implementing agencies. The European Union's support for and receptiveness to new ideas not only facilitated smooth project execution, but also created an environment conducive to problem-solving. Furthermore, the successful collaboration between UNEP and Practical Action in this project highlights the valuable synergy that arises from combining the expertise and resources of both entities on the ground. This partnership proved instrumental in leveraging their respective knowledge and capabilities to effectively address the challenges and goals of conflict-affected contexts and remote areas such as North Darfur.

Another important collaboration was with the EU-funded UNEP climate and security project. This project implemented pilot activities focusing on integrated climate change adaptation and peacebuilding activities through Practical Action in the same area as WEK 2. This allowed for the realisation of synergies between the projects and strengthened the peacebuilding components of WEK 2. For example, the peacebuilding committees established by the UNEP climate and security project were leveraged by WEK 2 to resolve disputes and conflicts, and implement migratory action plans. Moreover, the UNEP climate and security project reinforced the collaborative approach to managing migratory routes.

One of the critical factors that contributed to the project's success was the complementary roles played by UNEP and Practical Action. UNEP served as an advisory agency to the national government, and helped create political space for the project by gaining the buy-in of the state and national governments. UNEP also actively engaged with government ministries and enabled dialogue with donors. Meanwhile, Practical Action worked closely with local communities and governments at the technical level to solve issues on the ground.

UNEP's legislative and advocacy work at the national level facilitated the communication of project needs and actions at the political level, which complemented Practical Action's grassroots efforts. Moreover, UNEP opened doors to global spaces, such as World Water Week, enabling community champions to share lessons and best practices with a global audience, and gain knowledge and experience to bring back to their communities.

Finally, the implementation partner's extensive capacities at the local level were critical for the proper functioning of the project. For example, when additional assistance was required during periods of conflict, the project relied on what local communities referred to as "the networks." These networks centred on three highly effective CBOs, originally established by Practical Action. These networks played a crucial role in delivering aid to populations in areas affected by conflict, when it was deemed too dangerous for external partners to operate. Over time, these networks gained significant support, and were an important source of information regarding security conditions and ongoing project activities.



## Establishing permanent governance structures

WEK is a prime example of how to foster sustainable development in a fragile and conflict-affected context. Beyond constructing infrastructure, a critical lesson was the importance of investing time and effort in establishing robust governance structures, and promoting inclusiveness, collaboration and transparency.

WEK's inclusiveness was demonstrated by an extensive assessment of CBOs across targeted communities. A key success factor was the integration of pre-existing local structures to establish sustainable governance bodies tasked with managing various issues around water harvesting infrastructure, livelihood strategies and disputes over natural resources. The project's governance model included the creation of political spaces at state and national levels, where governmental policies were formulated, and the Technical Committee to provide scientific advice. This ensured that the project was aligned with broader government objectives and benefited from specialist knowledge. Governance structures created during WEK 1 exhibited resilience and continuity during the transition to WEK 2. The governance structures were able to operate independently without external support, a testament to their inherent strength and the project's transformative impact in empowering local entities.

The governance structures were improved during WEK 2, especially at the grassroots level. A key takeaway was the need for dedicated technical and human resource expertise focused exclusively on addressing governance issues. This included accounting for the solutions and priorities of CBO leaders within local natural resource management committees. Additionally, supporting operational issues such as communication and advisory for organisational processes was relevant.



## Empowering women

Despite cultural challenges, the integration of women at all levels of WEK proved a key success factor for achieving sustainable results. Project results demonstrated that, as well as being an imperative for gender equality, empowering women substantially contributes to sustainable natural resource management, conflict resolution and community stability.

The success of various project activities, such as village savings and loan associations, and women farmers' cooperative groups, was intrinsically tied to the extensive consultation that identified activities women preferred to undertake. This ensured the commitment and hard work of women engaged with these funds. Their dedication to sustaining project activities and ensuring the good governance of funds introduced a noteworthy concept of sustainability at the community level. As a result, women experienced tangible improvements in their daily lives, such as greater income and diversified economic activities.

The village savings and loan associations were central to economic empowerment, and provided women opportunities to start small businesses, sell agricultural products in larger markets and create artisanal products. The village savings and loan associations not only enabled collaborative management of household cash flows, but also fostered social cohesion between pastoralist and farmer communities. This inter-group collaboration, rare before the project, contributed significantly to peace and stability in the area. Furthermore, women's active participation in committees, including leadership roles in village savings and loan associations, and community forest initiatives, demonstrated their business and social entrepreneurship capacity.

Economic empowerment resulting from the project positively influenced household dynamics and elevated women's status within communities. Women's participation in events, public spaces and natural resource governance discussions improved. Significantly, women's involvement in decision-making related to natural resource management increased, improving the equitability of outcomes for both women and men. The newfound roles of women in pastoralist communities enabled them to travel to other states, sharing their knowledge and skills with diverse groups, including farmers.

The project's recognition of the relatively high level of educational attainment among some pastoralist women, particularly in Um Sayala, needs to be considered in the continuation of activities. Recognising and engaging educated women within pastoralist communities can bring additional dimensions to the project, leveraging their knowledge and skills to strengthen implementation.



Participation of women in Village Savings and Loan Associations (VSLAs) fosters greater self-reliance and enhances livelihoods, notably benefiting women pastoralists communities. Photo credit ©UNEP



## Conflict sensitivity and peacebuilding

WEK 2 is a compelling case study, offering profound insights into the transformative power of cooperation in natural resource management. Beyond its primary goal of enhancing water management and agricultural production, the project served as a catalyst for transforming localised conflicts, and broader peacebuilding and stabilisation impacts. The cooperation and relationship building cultivated within the wadi catchment area extended into reshaping the dynamics between pastoralist and farming communities that had historically clashed over access to natural resources.

Ensuring investments in time and resources during the extensive inception phase, including the participatory mapping exercises, proved instrumental in building relationships, highlighting shared responsibilities for resource management and fostering a common vision of the natural resource management among conflicting parties.



In turn, this promoted peaceful coexistence and coordinated efforts. During the inception phase, most focus groups involving farming communities identified development as key to achieving peace. Specifically, participants across all 12 focus groups emphasised the importance for development of properly managing water, agricultural, pasture, educational and health care resources. The participatory mapping exercise used conflict-sensitivity and guided targeted interventions deepening the understanding of water management and conflict mitigation in the catchment area. Tangible interventions that emerged from the mapping activities, such as establishing clear routes for pastoralists and farmers, provided practical solutions to longstanding conflicts.

Cultural celebrations and educational sessions featuring traditional singers and conflict transformation experts also played a pivotal role in bridging social divides between pastoralists and farmers. Festivities facilitated the rebuilding of relationships and the opening of direct channels of communication to address emerging issues around grazing routes and natural resource management. This cooperative approach, together with strategic interventions promoting cultural exchange, laid a robust foundation for continued stakeholder collaboration, including sustained support from government stakeholders. Additionally, organised exchange visits significantly improved mutual understanding between farmers and pastoralists, fostering better communication and rebuilding trust for the effective and peaceful resolution of conflicts.

The groundwork undertaken during the inception phase for WEK 2 to bolster water management governance structures ensured long-term cooperation in resolving conflicts related to natural resources. The project empowered stakeholders to actively seek solutions to water and land conflicts, demonstrating a strong determination to resolve issues and maintain open communication channels at the local and state levels for peaceful conflict resolution.

Even amidst the outbreak of conflict between the SAF and RSF in April 2023, which disrupted operations in the area, an exemplary instance of this cooperative spirit emerged when pastoralist and farming communities united to advocate for the project's continuation. This shared responsibility extended beyond project activities, encompassing the protection of project members and water storage infrastructure.

### Long-term engagement, and constant learning and innovation (building on past experiences)

A crucial lesson from WEK lies in the unwavering commitment to constant learning and innovation, building on past experiences to ensure sustained success. The continuity between WEK 1 and WEK 2 exemplifies this dedication, with ongoing activities bridging the two phases and capitalising on valuable insights from prior implementations. The deliberate and extended inception phase for WEK 2, shaped by the lessons and knowledge gained during WEK 1, underscored the project's commitment to continuous improvement. For example, it was recognised that including a broader representation of pastoralist communities from the outset was critical to ensuring success in demarcating migratory routes and overall natural resource management activities. Another example of learning and innovation concerned sustaining the community tree nurseries established in WEK 1, which had been abandoned by the communities due to the lack of associated livelihoods. To address this issue, adaptations were made, such as introducing economic incentives, including planting trees that could be more easily commercialised, promoting natural regeneration, and developing specific production and marketing strategies. Training was also implemented to accelerate the process.



The sustained success of WEK 2 is intrinsically tied to the substantial time and effort invested in building robust relationships with implementing partners and project stakeholders. Establishing trust was a meticulous process that involved fostering connections with critical actors. The foundation of long-term partnerships with Practical Action and established CBO networks proved instrumental in ensuring the project's continuity and success. The Rural Development Network, Women's Development Association Network, and Voluntary Network for Rural Development and Helping Development, which were established and registered by Practical Action, played a pivotal role in providing stability and expertise to the project. These strategic partnerships, which enabled implementation to continue even as the situation became more fragile and insecure, contributed to the project's resilience and adaptability. The deliberate cultivation of trust, and enduring relationships with implementing partners and stakeholders ensured the project's sustained impact and fostered a sense of community ownership.

Restricted access due to the COVID-19 pandemic-related restrictions and security concerns added a layer of complexity to project implementation. There were also critical limitations in communication such as the lack of a mobile network between the Khartoum and El Fasher offices of UNEP. The reduction in site visits and overall interaction created a sense of distance and undermined the flow of information to project staff in El Fasher. However, the project demonstrated resilience and innovation by effectively leveraging established CBO networks in collaboration with UNEP staff in El Fasher. The local partners strategically adapted their communication methods. They employed alternative channels, such as rural radio broadcasts, and increased reliance on local partners and community representatives, to bridge the gap. This approach ensured that information continued to flow, and local staff remained informed and engaged. The flow of information from local CBO networks also facilitated the monitoring of the security situation on the ground.



### Donor flexibility increases success

The flexibility demonstrated by the European Union played a critical role in the project's success. The European Union's willingness to adapt and accommodate evolving circumstances and needs during both WEK 1 and WEK 2 proved a significant asset. The European Union's flexibility during the COVID-19 pandemic and the outbreak of conflict in 2023 allowed for timely adjustments and innovations, ultimately improving the project's outcomes. For instance, extending the inception phase, tailoring activities based on new findings and broadening expected outcomes when designing the project were crucial for providing flexibility and enabling adaptability to contingencies during project implementation. Furthermore, an extension following a mid-term review established a framework that enabled the continuation of water harvesting infrastructure construction, despite operational delays caused by the outbreak of conflict in 2023.



In 2020, amidst the hurdles of the COVID-19 pandemic, the WEK 2 team trained communities on seedling transplantation, prioritising safety measures. Photo credit ©UNEP

# 06

## The way forward

### Project continuity and sustainability

Given the current security situation in Sudan and the project timeframe, it was not possible to comprehensively assess the project's sustainability at this stage. However, several positive outcomes are observable, which suggest the project has a strong foundation for long-term sustainability. These outcomes include the establishment of multi-level water and natural resource management governance structures, improved relationships between stakeholders, and community ownership. This is demonstrated by the support for maintaining and continuing the water harvesting constructions. These outcomes are expected to have significant continuity and sustainability.

First, the project established strong, locally owned governance structures, which have been sustained. The governance structures created during WEK 1 provided a strong base for deepening ownership, and created political will among local and state decision-makers. The successful decision to enhance support for the governance structures created during WEK 1, such as the Catchment Management Forum, with the aim of institutionalising them, produced the Catchment Management Coordination Agency (CMA). Similarly, at the community level, local farmers and pastoralists are represented by CBO representatives in the natural resource management committees that cover several communities. An emphasis on bottom-up decision-making ensured community buy-in.

Interviewees underlined the importance of community and government ownership of governance structures for improving relationships and decision-making. There are clear indications that these governance structures are robust and hold significant potential for the project's long-term sustainability. Notably, the general director of the SMOAR provided support for the Catchment Management Agency from the ministry's budget, including fuel for field monitoring, as well as office space and basic services. Furthermore, the CMA shared its activities and budget plan with the ministry, advocating for its incorporation and approval in the ministries' annual budget. These advances demonstrated the ministry's commitment to the project's long-term success. However, the outbreak of the current conflict and its implications for the state government's funding of these governance structures poses a significant challenge to sustainability.

Another tangible indication of institutional sustainability involved the drafting of two state-level decrees on natural resource management in response to the processes undertaken by WEK 2. Following the dialogue process and design of migratory routes, it was necessary for the government to create and enforce regulations for long-term sustainability. These decrees focused on protecting water harvesting structures and prohibiting random, unauthorised water harvesting terraces.

A further indication of the project's sustainability was the continuation of relationships among agency members from upstream, mid-stream and downstream areas, involving farmers and pastoralists. These relationships helped reduce tensions and conflicts between farmers and pastoralists in the Wadi El Ku project area by improving communication between community leaders. As shown in this report, several examples illustrate how early warning mechanisms were activated through the communication channels that emerged following social events supported by the project between leaders of both communities, preventing conflicts from escalating. This provides encouraging evidence of the stability of these relationships.

Third, the project achieved notable success in creating sustainable support structures for the infrastructure constructed. The communities demonstrated commitment to maintaining the water harvesting infrastructure, facilitated by the structures' ease of repair and the ready availability of repair materials. Ownership of all physical structures by both communities and the government has further enhanced the project's sustainability. The resilience of the infrastructure, characterised by simplicity and independence from external resources, has contributed to the project's long-term success.

The sustainability of the project was also demonstrated during the transition period between WEK 1 and WEK 2, and again following the most recent outbreak of conflict. In both instances, the implementation partners, communities and government continued to cooperate in the management of the infrastructure. The weirs constructed during WEK 1 continued to be managed effectively by local communities and the government in the period between WEK 1 and WEK 2. During the transition between phases, the state government also provided permanent office space and meeting venues for the CMA, reinforcing its institutional presence, and ensuring its continued engagement in water conflicts and regulatory issues.

Following the outbreak of the current conflict, Practical Action was one of the only agencies to continue operating on the ground. Consequently, Practical Action undertook project activities without external support. Both communities and the government, together with Practical Action, showed substantial resilience and endeavoured to ensure the project's continued implementation. Notably, when conflict broke out in April 2023, the construction company involved in the project stopped operations and ceased construction of the last weir, with armed groups subsequently appropriating fuel from construction machinery. However, Practical Action quickly engaged communities, and local actors collaborated to prevent the further theft of fuel, and safeguard the construction sites and equipment as the rainy season approached.

Fuel shortages posed another obstacle. However, following a request from Practical Action to the director general of the SMOAR, the government agreed to provide fuel. Given the remote location, Practical Action negotiated with armed groups, highlighting the vital humanitarian importance of ensuring water access for communities to secure safe passage for fuel transportation from El Fasher to the weir. This hands-on approach instilled confidence in the contractors and made it possible for construction to continue.

### What still needs to be done



**Ensuring financing for governance structures (the Catchment Management Coordination Agency and natural resource management committees) is critical for sustainability**

Ensuring the financial sustainability of water governance structures is a significant challenge for many projects, especially following the completion of project activities in fragile and conflict-afflicted contexts. Local government structures and budgets are often so strained that providing even limited support to maintain existing facilities and management structures may be a challenge. Given the wider context, it was vital to sustain support for the local government's budget allocation to the CMA and natural resource management committees. In turn, this ensured the long-term viability of water harvesting structures by providing steady funding for repairs and maintenance, despite the wider conflict and humanitarian situation. Innovative financing options, such as public-private and multilateral partnerships, may offer a way to sustain operations.





## Supporting local water governance and maintaining water harvesting structures are critical components for ensuring stability in Sudan, particularly in the aftermath of conflict

WEK 2 was created as a development project in a humanitarian context. Following the outbreak of the current conflict, the project became a crucial tool, serving as a protective barrier for communities. The project's design and governance structures allowed for the efficient deployment of resources and self-management, in spite of the very fragile and conflict-afflicted national context. The success of WEK 2 lies in its capacity to generate livelihood opportunities for communities alongside a robust set of governance structures that facilitate conflict resolution, and the independent prioritisation and maintenance of ongoing activities. This unique combination indicates that WEK 2 and a potential third project phase could support a transitional process for the whole of Sudan. The project serves as a bridge between essential humanitarian interventions and post-conflict development focusing on ensuring water availability for agricultural production. WEK has demonstrated its ability to sustain project activities amid conflict, fostering self-reliance among the communities it serves.

Once the wider situation has stabilised sufficiently to allow implementing partners to resume operations in Darfur, a potential third project phase should focus on linking humanitarian action, recovery from the crisis, sustainable livelihoods, conflict prevention, natural resource management and ecosystem projection. This will entail:

- Continuing WEK activities, strengthening the emphasis on self-reliance, and collaborating with humanitarian organisations, civil society and governance structures at local, regional and national levels. The project could facilitate transformative change and ensure inclusivity for all Sudanese citizens. Moreover, the project should continue to focus on gender, young people and the inclusion of marginalised groups, ensuring that communities remain integrated around the newly created structures and supporting community development.
- Strengthening strategic partnerships with agencies such as the UN High Commissioner for Refugees (UNHCR). For example, the CBO networks participating in the natural resource management committees can integrate the community-based protection networks that UNHCR supports, and has trained for mobile response and community outreach (UNHCR 2023b). These networks are involved in protection monitoring, awareness raising, early warning, identification of people with specific needs, referrals, social cohesion activities and dispute resolution.
- Collaborations with diverse stakeholders will be crucial during the transition period, where lessons learned, and considerations from the WEK forums and governance structures should be integrated into peace negotiation processes. WEK structures can provide a platform for peace dividends and implementations. For instance, this could include integrating returning communities into areas along the wadi that remain productive or creating new water harvesting structures. Including populations in agricultural activities can increase self-reliance and food security, which is critical for humanitarian assistance and crisis recovery. Moreover, agricultural goods produced along the wadi can provide local initiatives in Al Fasher such as the community kitchen initiatives supported by ICRC that provide food assistance to thousands of new displaced people living in several schools in the city (ICRC 2023).

- Supporting infrastructure development for more sustainable natural resource management could become a focus of reconstruction and early wins. As WEK 1 and WEK 2 demonstrate, water management infrastructure can contribute to long-term ecological health, and offer tangible and immediate benefits for local communities that rely on agriculture. By steadfastly supporting local governance structures and strategically planning a third project phase, WEK can empower Sudanese communities, rebuild lives and contribute to the enduring transformation of the country.
- Once the situation stabilises, it will be imperative to allocate funding promptly to facilitate the implementation of a third project phase. The current conflict threatens the sustainability of what has been achieved by WEK 1 and WEK 2. Abandoning governance mechanisms in the water sector would create a void that could exacerbate existing challenges.

In the short term, it is crucial to find ways, possibly through UN agencies, to support the Catchment Management Coordination Agency and natural resource management committees. Key potential partners include the International Organization for Migration, UNHCR and WFP.



In 2018, farmer communities gathered for the launch event of the WEK 2 project. Photo credit ©UNEP

### Scaling up the WEK 2 model

WEK 2 has provided many lessons that are relevant and can serve as a robust model for sustainable development, natural resource management, climate change adaptation and peacebuilding across Sudan. The emphasis on collaboration, knowledge exchange, local community participation and effective communication can contribute to successfully replicating and adapting the project's approach in diverse contexts. The following activities can foster the application of WEK 2 lessons across Sudan:



#### Engaging with key state and national actors

Scaling up WEK 2 could entail conducting workshops at both the state and national levels, inviting key stakeholders such as government officials, local community representatives (including pastoralists, women farmers and IDPs), NGOs and academic institutions. These workshops would create a collaborative platform for participants to discuss the applicability of WEK 2 strategies in their specific contexts, and learn from each other's experiences and insights.



## Knowledge dissemination and exchange

The WEK 2 model and best practices could be disseminated through academic forums, governmental panels and international conferences. These spaces could showcase the project's impact and potential for replication, highlighting successful strategies and outcomes, challenges faced, and innovative solutions. It will be important to translate success stories into clear and understandable language, focusing on Arabic for broader accessibility. Moreover, it will be crucial to collaborate with media outlets, both traditional and digital, to reach a diverse audience, and raise awareness about the project's replicability and potential benefits.

Additionally, depending on the security situation, facilitating exchange trips between champions of WEK 2 and other states, and bringing practitioners from other localities to North Darfur to learn about project activities will be key for disseminating lessons learned and good practices. These trips can be structured within a programme for knowledge transfer, allowing for in-depth discussions, site visits and hands-on learning experiences.



## Fostering replication

At a later stage, in preparation for conducting fieldwork in potential targeted states for replication, it will be crucial to implement scoping missions with the involvement of local stakeholders from various sectors. During these missions, it will be crucial to engage community leaders, environmental and peacebuilding experts, and other relevant stakeholders to gain a comprehensive understanding of each state's specific challenges and opportunities. Additionally, integrating new partner organisations with a strong local presence into the approach would be beneficial for ensuring effective adaptation to the unique and dynamic conditions in each state.

## Annex

### Project timeline

Item	2018	2019	2020	2021	2022	2023	2024
<b>OUTPUT ONE</b>							
<b>Transformation of the old forum into the new Catchment Management Agency</b>							
Endorsement of legal documents (e.g. law, policy and decree) by forum and natural resource management committees				■	■		
Inauguration of new agency				■	■		
Capacity development plan for Catchment Management Agency	■	■	■	■	■	■	■
Develop agency communication plan		■			■		
<b>Make forum de facto lead institution for Wadi El Ku catchment area</b>							
Develop vision/plan for the long-term development of Wadi El Ku			■				
Advocate for the vision/plan for the long-term development of Wadi El Ku			■	■	■	■	■
Encourage and facilitate relationship building with other actors in the catchment area	■	■	■	■	■	■	■
Monitoring all WEK activities and environmental issues in coordination with partners		■	■	■	■	■	■



Engaging in participatory monitoring of water sources							
<b>Forum capital items and operations</b>							
Recruit secretary and guard for forum office							
Purchase of office capital items (e.g. furniture, computers and printers)							
Maintain forum office services							
Trimester natural resource management committee meetings							
Coordinate integrated water resource management meeting at Darfur level							
Forum executive committee meetings							
<b>MapX "real time" visualisation of monitoring data (contract)</b>							
Graphic on-line presentation of monitoring and evaluation data by MapX							
<b>GIS maps for monitoring and evaluation, and PR (contract)</b>							
Multiple small contracts for GIS services							
Analysis of morphological changes in Wadi El Ku, using satellite images and historical aerial photos							
<b>Natural resource management committee capacity building</b>							
Environmental analysis and impact workshop							
Natural resource conflict analysis and resolution workshop (including local leaders)							
General natural resource management laws and policies, and customs							
Exchange visits between natural resource management committees							
<b>Catchment Management Agency capacity building</b>							
Data collection analysis and reporting (various related to other outputs)							
General natural resource management laws and policy workshop, traditional and customary law							
Lobby and advocacy training and workshop							

<b>Courses for Catchment Management Agency</b>							
Course on integrated water resource management concept and approach							
Planning and management courses							
Participatory monitoring and evaluation courses							
Climate change and early warning system course							
<b>International training</b>							
Water management course, Netherlands							
<b>Special Catchment Management Agency events</b>							
Special Catchment Management Agency events							
<b>OUTPUT TWO</b>							
<b>Support provision and distribution of farming inputs</b>							
Establish community managed cost recovery seed system for crops and vegetables seeds (provide 14 metric tons of drought tolerant seeds and vegetables, targeting 1,500 farmers)							
Provide 1,000 ploughs to farmers on revolving fund basis							
Support six women's farmer groups							
Conduct multi-stakeholder meetings to review, improve, finalise and distribute WEK 1 extension packages (agriculture, livestock and natural resource management)							
Train 146 agricultural extension agents in the delivery of improved extension packages – six sessions of 24 participants each							

Train 10,220 farmers in improved agricultural practices, including sessions in agro-ecological practices (e.g. seed multiplication, agro-forestry, organic fertilisers, post-harvest losses, crop diversification, multi seasonal production), crop protection (e.g. diseases and parasitic plants) and soil reclamation							
Establish 10 demonstration farms applying the farmer field school approach for application of extension package							
Conduct value chain analysis of main agricultural crops and, based on the results, provide possible and short-term solutions							
Plant trees for shelterbelts around farms to protect trees from sand dunes							
Promote planting vetiver grass for stabilising gullies							
<b>Support value addition by providing training for small-scale family-based industries (in relation to livestock and agriculture to improve the skills of women and young people)</b>							
Training and support for handicraft and agricultural processing, targeting 325 women and young people							
Training and support for animal product processing, targeting 225 women and young people							
Conduct three exchange visits within the project area as part of training							
Train 225 women and young people in small-scale businesses, and village savings and loan associations							
Establish 10 small-scale businesses, and village savings and loan associations							

Organise farmers into marketing groups to improve price negotiations, collaboration regarding market space, storage, and links between farmers' organisations and other private sector actors								
Establish a mobile SMS system for information sharing and link it with a system to reach 10,000 people								
<b>Forestry and environmental interventions</b>								
Train 90 natural resource management extension agents in the delivery of improved extension packages								
Organise four workshops to raise awareness about environmental conservation issues, targeting women and young people (40 participants per workshop)								
Encourage and promote household nurseries for seedlings for agro-forestry and household use; provide training and inputs for Practical Action and Forest National Corporation, targeting 74 households								
Natural regeneration, support six communities to develop and implement management plans for the natural regeneration of trees								
Conduct six training workshops on community forest management								
Establish/support eight community forests, focusing on Acacias and Grewia tenax								
Establish four forestry demonstration farms using the farmer field school approach for application of extension packages								



Demonstrate and promote the use of small water harvesting techniques (crescent-shaped terraces) for trees				■	■			
<b>Livestock and range land improvement and rehabilitation</b>	■	■	■	■	■	■	■	■
Conduct six training sessions on range management and extension, green fodder cultivation and processing (30 participants per training session)			■	■				
Rehabilitate pastureland through reseeding and exchange of pasture seeds covering 3,000 Fadden				■	■			
Establish 450 km firebreaks to control dry season grass fires				■	■			
Select and train 26 livestock production extension agents in improved extension techniques and packages			■	■				
Establish seven community-based revolving funds for veterinary medicine				■	■			
Demonstration of improved livestock breeds (six camels and 60 goats)								
Vaccinate 100,000 animals					■			
Organise six animal health and husbandry awareness raising sessions				■				
<b>Improve social relations between farmers and pastoralists via consensus building around natural resources</b>	■	■	■	■	■	■	■	■
Advocacy and awareness raising on the existing law and regulation regarding early release of animals in farms (two sessions targeting both farmers and pastoralists)			■	■	■			

Organise farmer-pastoralist coordination meetings, social events and exchange visits to promote dialogue between farmers and pastoralists								
Mapping with engagement from pastoralists that use the target area; include pastoralist representatives in natural resource management committees to build relationships with targeted communities								
Facilitate land tenure solutions through coordination meetings between natural resource management committees, the Catchment Management Agency, the Technical Committee and the government								
Facilitate and support implementation of the action plan on joint management of migratory routes recommended by the Climate Change and Fragility Project								
<b>CBOs to enable effective community participation in Catchment Management Agency</b>								
Establish new CBOs to represent village clusters in the project area and nomadic pastoralist groups where no suitable CBOs currently exist								
Capacity building for established CBOs (organise training in management, finance and natural resource management)								
Experience sharing by WEK 1 Dam Committee with new committees								
Establish and train water structure management committees, including an exchange visit								
<b>Water harvesting structures</b>								
Rehabilitate two water spreading weirs at Kusa and Wada'a								

Establish new downstream water spreading weirs								
<b>Improve water sources for livestock to reduce tensions between farmers and pastoralists</b>								
Establish two water yards complete with solar system along the demarcated migratory routes								
Rehabilitate one haffir at Bahar Omdorman								
<b>Water infrastructure for human consumption</b>								
Establish two water yards complete with solar system in Damra								
Establish four hand pumps (two in Damra and two in Wada'a)								
Establish two water yards in Kusa and Sarafaya								
Establish three wells in upstream and downstream villages								
<b>Construct/rehabilitate community centres</b>								
Construct/rehabilitate development and general-purpose community centres that provide training in natural resource management (three rehabilitated and five newly constructed)								
<b>OUTPUT THREE</b>								
<b>South-south capacity support and university agreement</b>								
Regional scientific visit								
Two internal scientific visits to similar projects								
Student study tour								
Small scale funding agreement with Agricultural Research Centre (held due to donor policy)								
<b>Community training</b>								
Community training in data collection and analysis, community involvement in data collection								
<b>Small scale funding agreement with the University of Khartoum</b>								

Sign agreement on the following outputs: revised model for catchment area, revised detailed recharge zone and recharge estimates, impact of water harvesting structures, vulnerability maps, pumping test analysis for Shagra well field								
Co-supervise of four MSc and two PhD								
Demonstrate catchment monitoring programme								
Support informatics for advocacy purposes								
State Development Plan Water Information designed report, model/platform and first production								
Climate downscaling report and all metadata for reproduction by responsible entity, establishing drought and flood early warning systems to improve response capacity for food security risks. Purpose, pastoralist movement advisory based on rainfall prediction								
<b>Small scale funding agreement with the University of Al Fashir</b>								
Sign agreement on the following outputs: supervision of student projects in collaboration with the University of Khartoum and Agricultural Research Centre, leading fieldwork programmes								
Sign secondary agreement with the University of Khartoum								
<b>Training workshops</b>								
Three training workshops								
<b>Scholarship (tuition fee, stipend and other allowances)</b>								
M.Sc. students (removed from small scale funding agreement due to UNEP regulation)								
Ph.D. students (removed from small scale funding agreement due to UNEP regulation)								
<b>Women training of trainers in monitoring, managing and maintaining groundwater</b>								
Train 20 local women in monitoring, managing and maintaining groundwater sources								



<b>Training courses</b>								
Three training courses								
<b>Technical and consultation meetings</b>								
Misc. technical consultations								
<b>OUTPUT FOUR</b>								
<b>Sub-contracts (MOUs/LOAs for supporting organisations)</b>								
Study tour to rehabilitated catchment in Ethiopia								
Knowledge sharing visits within project area								
<b>Media capacity building</b>								
Select target audience and assess their knowledge needs								
Develop plan for learning visits, publications/guidelines, and knowledge sharing events								
Learning visit								
<b>Lesson-sharing workshops</b>								
Three lesson-sharing workshops								
<b>Exchange fairs</b>								
Exchange fairs								
<b>Training courses</b>								
Media training courses								
<b>Training courses (international)</b>								
International training course for selected collaborators								

<b>Khartoum conference</b>								
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