

Resilience Programme in the Irrigation and Agricultural Sector

Final Narrative Progress Report



Reporting Period
August 2021 – March 2024

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Acronym List

CBFEWS	Community Based Flood Early Warning System
CMIs	Community Mediation Initiatives
CSOs	Civil Society Organizations
CS	Consultative Session
BCHR	Benevolence Coalition for Humanitarian Relief
DRR	Disaster Risk Reduction
EPA	Environmental Protection Authority
FGDs	Focus Group Discussions
IGPs	Income Generating Projects
KIIs	Key Informant Interviews
LAs	Local Authorities
LMMPO	Life Makers Meeting Place Organization
MoAIF	Ministry of Agriculture, Irrigation and Fisheries
MoWE	Ministry of Water and Environment
NWRA	National Water Resources Authority
MoSAL	Ministry of Social Affairs and Labour
RP	Responsible Party
RRD	Responsiveness for Relief and Development Foundation
SCMCHA	Supreme Council for Management and Coordination of Humanitarian Affairs
SWRM	Sustainable Water Resource Management Project
ToR	Terms of Reference
TYF	Tamdeen Youth Foundation
UNDP	United Nations Development Programme
WUAs	Water user Associations
WWUGs	Women's Water Users Groups
WH	Wadi Hadhramout
WRM	Water Resources Management
WSCG	Water Sector Coordination Group

1. PROJECT PROFILE

Country	Yemen
Project Symbol	GCP /YEM/046/GER
Project Number (Grant Number and BMZ Number):	2020.4104.4
Project Title	Resilience Programme in the Irrigation and Agricultural Sector
Resource Partner	The German Ministry of Economic Cooperation and Development (BMZ) through KfW Development Bank
Reporting Period	18 August 2021 – 31 March 2024
Actual EOD (Entry of Duty)	18 August 2021
Actual NTE (Not to Exceed date)	31 March 2024
Budget Holder	Hussein Gadain, FAO Representative in Yemen
Lead Technical Officer	Mohamed AlHamdi, Senior Land and Water Officer, FAO Regional Office for Near East and North Africa (RNE)
Project Manager	Fazal Mahmood Khan Khakwani, International Water Resources and Irrigation Specialist, FAO Yemen
Participating Organizations	Local Authorities, Ministry of Agriculture Irrigation and Fisheries (MAIF), Ministry of Water and Environment, the National Water Resources Authority (NWRA), Water User Associations and Agricultural Research & Extension Authority - Dhamar (AREA)

Contribution to Programmatic Frameworks <i>Indicate the title of each higher-level result to which the project contributes</i>	
FAO Organizational Outcome(s)	BL1: Gender equality and rural women's empowerment BL4: Agriculture and food emergencies
FAO Regional Priorities / Regional Initiative(s)	Regional Initiative on Building Resilience for Food Security and Nutrition
United Nations Sustainable Development Cooperation Framework for Yemen (2022-2024)	Outcome 1. By 2024, people in Yemen, especially women, adolescents and girls and those in the most vulnerable and marginalized communities benefit from better, equal and inclusive access to nutritious food, sustainable and resilient livelihoods and environmental stability.

2. Executive Summary

The project “Resilience Programme in the Irrigation and Agricultural Sector” was designed to strengthen the nexus between water governance, food security, and reconciliation to reinforce livelihood resilience, economic recovery, and sustainable peace of conflict-affected communities. The project aimed to i) improve agricultural production and resilience to water scarcity, ii) enhance livelihood opportunities, iii) reduce water-related conflict, and improve water management through awareness raising and disaster preparedness at the local level. Through UN-to-UN agreement, UNDP supported FAO with the implementation of activities under objective 3 contributing to achieving two main outputs, including:

Output 3.1: Increased awareness of disaster risk reduction and community-based flood early warning system in fragile communities

Output 3.2: Water-related conflict sensitivity increased; players implementing the project have adapted conflict-sensitive principles.

UNDP implemented the activities under objective 3 from 18 August 2021 to 31 March 2024. Implemented activities were tailored to reduce water-related conflicts in target locations transforming them into a reconciliatory process that increases awareness in disaster risk mitigation and reconciles the demands for water. The aim was to contribute towards turning water from a cause of conflict to a driver for peace.

Within output 3.1, UNDP implemented three main studies. The [Water Availability in Yemen study](#) aiming to map out current and future water resources in Yemen was carried out in partnership with the Netherlands Enterprise Agency (RVO) and ACACIA WATER. The [Water-related Conflict Assessment](#) aimed to identify the local level dynamics and actors involved in water-related conflicts and was carried out by a team of international and national consultants. The studies implemented paved the way and informed the field level implementation of activities. The Gender and Water Resource Management Study was carried out at later stages of the project to address the limited participation of women during the implementation of project activities. The study aimed to identify barriers and drivers for women involvement in WRM and in agriculture with particular focus on the project target areas.

A package of four training manuals were developed, aiming to enhance the capacity of local level structures and Water User Associations (WUAs) in water-related conflict management and resolution. The manuals included: a.) Managing and Resolving Water-Related Conflicts, b.) Technical Aspects of Water Resources and Irrigation Management, c.) WUAs Management and Institutional Aspects, and d.) Disaster Risk Reduction (DRR) and Community-Based Flood Early-Warning System in Fragile Communities. The manuals were developed in a participatory process in which feedback and reviews were obtained from key stakeholders, including FAO and KfW. The final versions of the manuals were designed, printed out and used in the capacity development of WUAs and local level structures. Copies of the package were distributed to all stakeholders in the target districts, governorates and at the central level, including the Ministry of Water and Environment (MoWE), Ministry of Agriculture, Irrigation and Fisheries (MoAIF), National Water Resource Authority (NWRA), Environment Protection Authority (EPA), Universities Research Centres, Responsible Parties (RPs) and WUAs in each district.

UNDP established partnerships with three Responsible Parties (RPs), one per each target governorate, to facilitate implementation of field activities. The RPs implemented rapid assessments to map out existing and deactivated WUAs; community validation workshops to validate the findings of the Water-related Conflict Assessment Report; conducted 23 capacity building workshops for governorate and district level authorities as well as WUAs on disaster risk reduction and establishment of community-based flood early warning system; and conducted workshops and round table talks on local level dynamics. Further capacity building was

provided to WUAs based on their needs and this included the implementation of 15 trainings to enhance their accountability, technical, administrative, financial and communication practices.

The capacity building of WUAs included enhancing their skills in conflict analysis and mediation which resulted in the identification of priority small water-related conflicts in their respective communities. The WUAs engaged in a consultation process with their respective communities and developed the Community Mediation Initiatives (CMIs) aiming to mediate and resolve those conflicts. The project provided seed funding to WUAs to implement the CMIs and resolve the conflicts. 27 CMIs were implemented in the three target governorates of Hadhramout, Abyan, and Dhamar. This process has enhanced the skills of WUAs in the mediation, community engagement, and peaceful resolution of water conflicts.

To enhance the sustainability of WUAs, the project supported the establishment of five federations in the three target districts. The federations served as a platform to represent WUAs concerns and needs before the local authorities. Forming federations for the WUAs also encouraged horizontal networking among WUAs and linking them to agriculture cooperatives and other stakeholders. Furthermore, the project supported WUAs with 27 micro-grants to establish their own income-generating projects to support their sustainability.

3. Results Matrix

Results chain	Indicators	Baseline	End target	Actual Achievements	Percentage achieved against end target	Comments
Impact	The overall objective of the project is to enhance livelihood resilience and sustainable peace in Yemen through sustainable water management. Specifically, the project aims to i) improve agricultural production and resilience to water scarcity, ii) enhance livelihood opportunities, iii) reduce water related conflict and improve water management through awareness raising and disaster preparedness at local level.					
Outcome 3 Reduced water related conflicts in target locations	Percentage of increased capacity of trained persons in conflict sensitive water management		90%	81%	90%	Based on the pre and post-tests for the training sessions carried out throughout the project
Output 3.1 Increased awareness on disaster risk reduction and community-based flood early-warning system in fragile communities	Number of people trained on DRR and community-based flood early warning systems	0	480 people trained	1,219 people trained	254%	Over achievement reflects interest of the community in DRR and community-based flood early warning system training
Activities for Output 3.1	Assessments on major disputes concerning water resources	0	1 Report (Covering 5 districts)	1 Report (Covering 5 districts completed)	100%	Completed
	Assessments on current water management practices of hazard-prone communities	0	1 Report (Covering 5 districts)	1 report (Covering 5 districts completed)	100%	Completed
	Production of training materials and guidelines on community collaboration with regards to water	0	4 training manuals (including 30 modules)	4 training manuals (including 30 modules completed)	100%	Completed
	Training of governorate and district authorities, as well as Water User Associations on disaster risk reduction and establishment of community-based flood early warning system	0	24 training workshops	23 training workshops	96%	This activity is completed since the two training workshops for local authorities in Jabal Al-Sharq district, Dhamar, are combined into one training while increasing the number of participants to 27. This is due to the tight schedule of local authority officials.

Results chain	Indicators	Baseline	End target	Actual Achievements	Percentage achieved against end target	Comments
	Conducting a study on mainstreaming gender in Water Resource Management in Yemen	0	1 Report (Covering 5 districts)	1 Report (Covering 5 districts completed)	100%	Completed
	Implementation of Community Mediation Initiatives to address water-related conflicts.	0	15 CMIs Community Mediation Initiative	27 CMIs Community Mediation Initiative	180%	Completed
	Formation and supporting WUAs' Federations	0	5 federations established and supported.	5 federations established and supported.	100%	Completed
	Building capacity of established WUAs to enhance accountability, technical, administrative, financial and communication practices	0	6 trainings conducted to WUAs.	15 trainings conducted to WUAs.	250%	completed
	Supporting established WUAs with micro-grants to establish income-generating projects to ensure their sustainability	0	15 IGPs income-generating projects are established by WUAs.	27 IGPs income-generating projects are established by WUAs.	180%	Completed
Output 3.2 Water-related conflict sensitivity increased; players implementing the project have adapted conflict-sensitive principles	The number of people taking part in the roundtable talks and workshops on local conflict dynamics	0	360	389	108%	Completed.
Activities for Output 3.2	Conducting workshops and round table talks on local conflict dynamics	0	24 workshops	25 workshops	104%	Completed

4. Activities under output 3.1: Increased awareness on DRR and Community Based Flood Early Warning System (CBFEWS)

Activity 3.1.1 Assessments on major disputes concerning water resources.

The water-related conflict analysis assessment aimed to a) carry out a context and conflict analysis of water-related conflicts at the target governorate and district level, detailing existing water governance mechanisms at both national and sub-national level, b) conduct a stakeholder analysis identifying main actors involved, connectors and dividers in water-related conflicts, c) carry out trends analysis for water intensive industries to identify early indications of change that could lead to more water-related conflicts or opportunities to stability around water, and d) provide recommendations based on the results for potential activity adaptations. The assessment was conducted over two phases due to some mobility restrictions imposed by the de facto authorities in Sana'a during the first phase. The first phase took place from January to February 2022 and covered Al-Qatn and Shibam districts, Hadhramout, and Khanfar and Zingibar districts, Abyan. The second phase tailored to Jabal Al-Sharq district, Dhamar, was accomplished in 2023. The assessment was carried out by a team of consultants composed of one international consultant and two national consultants. The implementation of this assessment was coordinated with both FAO and KfW to collect feedback and update the inception report and final draft report.

A workshop titled "Water as a Source of Conflict and Peace" was held on 27 July 2022 with the participation of a wide range of actors and donors working on the water sector in Yemen. The level of interaction and interest shown by participants in the workshop was impressive. Furthermore, UNDP and FAO worked on an action plan to address the report recommendations, including:

- Adopting a watershed approach.
- Assessing the risks arising from the interventions taking note of upstream and downstream competition.
- Working on the sustainability of WUAs, including creating a source of income for WUAs and building their capacities to provide services to local communities.
- Promoting awareness of local communities on the rationalized use of water.
- Furthering engagement with national institutions, including NWRA and the Agricultural Research and Extension Authority.
- Engaging local institutions in the training workshops around water-related conflict resolution.
- Carrying out extra trainings exclusively for women and girls as well as promote local communities' awareness on the importance of women's participation in water-related conflict resolution.

The [Water-related Conflict Assessment report](#), published in April 2022, was updated with a second version published in September 2023 reflecting the field work findings from the Jabal Al-Sharq district, Dhamar. To maintain the same research quality while updating the report, UNDP contracted the same international consultant who drafted the phase 1 report.

Activity 3.1.2 Assessments of current water management practices of hazard-prone communities

In partnership with the Netherlands Enterprise Agency (RVO) and ACACIA WATER, UNDP conducted the "[Water Availability in Yemen](#)" study aiming to map out current and future water resources in Yemen, based on existing and available information and datasets with a particular focus on the three wadis targeted by the resilience programme, namely Wadi Hadhramut, Wadi Bana, and Dhamar Wadi catchment. The study was conducted during October and November 2021. The Water Availability study served a three-fold objective, firstly mapping existing knowledge on water resources, secondly identifying the gaps in knowledge, and thirdly drafting recommendations for programming. The existing knowledge on water resources in Yemen was derived from an extensive inventory of available reports and studies on

water sources, water availability, source development, and production volumes. The study provided a set of recommendations to enhance water resources management and sustainability in Yemen. The following programming actions were highly recommended by the study:

- Include “water allocation planning” in the trainings planned by the project.
- Integrate informal and traditional regulations in training scheme.
- Include the importance of water users’ engagement in the WUAs’ training and support actual engagement with water users to sustain available water resources.
- Collect and assess most suited techniques for rainwater harvesting through WUAs and engage local level authorities to validate and approve them.
- Include sustainable agricultural practices and impact of water intensive cultivation in the WUAs trainings.
- Engage WUAs and local authorities in the establishment of community based early warning system.

The study has been widely disseminated among the donor community and the various actors working on the water sector in Yemen. A workshop was organized on 20 October 2021 to present the study findings to FAO and KfW. The study findings were also presented in the Water Sector Coordination Group (WSCG) meeting held in November 2021.

Activity 3.1.3: Production of training materials and guidelines on community collaboration with regards to water

The development and production of training materials and guidelines on community collaboration with regards to water was another key activity carried out by UNDP. Prior to manuals development, consultations were made with FAO and KfW on the content of these manuals. The final ToR was developed, advertised, and MADA Effect Consultancy firm was subsequently contracted to carry out this task. The inception report developed by MADA Effect included details about the modules of each manual to be developed, how main stakeholders will be engaged and consulted, and how content development will be validated. KfW and FAO were engaged in the development process. Four training manuals were produced to equip WUAs, WUGs and other water-related institutions with required Water Resource Management (WRM) skills. The four training manuals included a.) Managing and Resolving Water-Related Conflicts, b.) Technical Aspects of Water Resources and Irrigation Management, c.) WUAs Management and Institutional Aspects, and d.) Disaster Risk Reduction (DRR) and Community-Based Flood Early-Warning System in Fragile Communities. The first drafts of the manuals were delivered in December 2022, reviewed by stakeholders, and comments and feedback provided were considered during the final update of the manuals. The final updated versions of the manuals were shared with FAO and KfW in March 2023. 1200 training packages were printed out where each training package included the four training manuals. The training packages were distributed to project key stakeholders at national, governorate and district level.

Activity 3.1.4: Training of Governorate, District Authorities and Water User Associations on disaster risk reduction and establishment of community-based flood early warning system

In November 2021, UNDP developed a ToR and announced a Call for Proposals to identify potential responsible parties to facilitate field level implementation of project activities in Hadramout, Abyan and Dhamar governorates. Three Responsible Parties (RPs) were contracted by UNDP, one per target governorate. The RPs included the following:

- Tamdeen Youth Foundation (TYF) for Khanfar and Zingibar districts in Abyan.

- Responsiveness for Relief and Development Foundation (RRD) for Al-Qatn and Shibam districts in Hadhramaut.
- Life Makers Meeting Place (LMMPO) for Jabal Al-Sharq district in Dhamar.

Contracted RPs started their activities by building relations with the governorate and district level authorities. Sensitization workshops were carried out to promote awareness on the project objectives and activities, and to garner support for the project. The RPs in Hadhramout and Abyan carried out a rapid assessment to map out existing and/or deactivated WUAs, to identify reasons that have led to the deactivation or unsustainability of WUAs, and to validate information provided in the conflict analysis assessment report developed by UNDP. In Dhamar, LMMPO experienced some delays in implementing the capacity building workshops as the establishment of WUAs took some time. The capacity building measures provided by RPs targeted 835 people representing WUAs and authorities in the targeted districts and governorates. The trainings were tailored around the manuals developed and produced by UNDP covering the following five areas.

	Training Area	Target group	Number of participants
1.	Administrative and financial training	WUAs	142
2.	Conflict management training for Local Authorities (LAs)	LAs	117
3.	Informant sessions on the importance of engaging women in WUAs and WRM	LAs & Communities	288
4.	Conflict management training for WUAs	WUAs	144
5.	Water Resource Management Training	WUAs	144
Total			835

Activity 3.1.4.1 Administrative and Financial Management training workshops

Five administrative and financial management trainings were carried out in the five target districts targeting a total of 142 participants. The trainings introduced participants to various administrative and financial aspects of managing WUAs, including water law, water use, water allocation, water rights, water conservation and protection from pollution, and control procedures and penalties. The training covered the following topics:

- WUAs' formation, roles and responsibilities as per the Guidelines Manual for the Formation of WUAs at Water Basins.
- WUAs and the Water Law.
- WUAs' Governance, including leadership skills, roles and responsibilities, effective decision-making, meeting management, and effective communication.
- Community self-financing, self-reliance and sustainability.
- Development of semi-annual action plans.
- Developing and maintaining a financial system and financial records.



Admin and Finance Workshop in Shibam | Photo Credit: UNDP

Sustainability of WUAs was among the topics that participants discussed at length, focusing on diversifying the sources of income, including carrying out donation campaigns, revolving funds, and other funding sources. The participants number, gender, and target district are provided in tables 1, 2, and 3 below.

Activity 3.1.4.2 Water Resource Management training workshops

Five Water Resources Management trainings were carried out in the five target districts targeting a total of 144 participants. The water resource management training targeted WUAs' board members. It introduced them to various technical aspects of managing water resources, including key irrigation concepts, principles, methods, and adaption of best practices to the Yemeni context. The workshops familiarized participants with effective water management, good agricultural practices in challenging environments, and how strong infrastructure contributes to the agricultural sector, with relevant examples from target districts. The trainings also covered other topics related to improving productivity and irrigation practices, adaptability to climate change, modern approaches to water harvesting, operation, and maintenance of water structures. The participants number, gender, and target district are provided in tables 1, 2, and 3 below.

Activity 3.1.4.3 Conflict Resolution and Enhancing Social Cohesion training workshops



Conflict Resolution Workshop for Jabal Al-Sharq WUAs, Dhamar Gov. |
Photo Credit: UNDP

Ten Conflict Resolution and Enhancing Social Cohesion trainings were carried out in the five target districts reaching a total of 231 participants. The trainings targeted both local authorities and WUAs board members in targeted districts and governorates. The trainings introduced participants to various community-based participatory approaches of managing water-related conflicts. The trainings familiarized participants with key concepts of mapping water-related conflict context, causes, dynamics, actors, and different analytical tools of conflict analysis. Moreover, the trainings covered some conflict resolution mechanisms for water-

related conflicts, including formal, informal, and traditional water resources management rules and regulations. The trainings also covered the roles WUAs could play to prevent water-related conflicts. The participants number, gender, and target district are provided in tables 1, 2, and 3 below.

Activity 3.1.4.4 Engagement of Women in WUAs and WRM Workshops

These are informative and consultative sessions on the importance of engaging women in WUAs and WRM in response to the challenge of weak community awareness regarding the importance of women's participation in associations and water-related conflict resolution. The workshops formed proactive steps to promote gender inclusivity. These workshops aimed to promote community members' awareness about the benefits of women's participation in decision-making processes and conflict resolution, challenging existing societal norms and promoting gender equality. Four informant meetings and workshops were held in Abyan with the participation of 85 persons out of whom 51 were women. Participants in those meetings included community leaders, community members, and district level officials. In Hadhramout, eight meetings and workshops were held with the participation of 146 women. Meetings in Hadhramaut has also included meetings with officials, including the Agricultural Office

Director in Al-Qatn district, Social and Affairs Office Director in Shibam district, and Director of Water Authority in Al-Qatn. In Dhamar, four community wide workshops were held with the participation of 105 persons, out of whom 36 were women.

Table (1) Trainings provided in Abyan Governorate

	Zinjibar			Khanfar			Total
	M	F	Total	M	F	Total	
Administrative and financial training for WUAs	18	6	24	19	5	24	48
Conflict management training for WUAs	18	6	24	18	8	26	50
Informant workshops on the importance of engaging women in WUAs and WRM	9	15	24	21	40	61	85
Conflict management training for Local Authorities	20	5	25	18	7	25	50
Water Resource Management Training	17	7	24	20	6	26	50
Total							283

Table (2) Trainings provided in Hadramout Governorate

	Shibam			Al-Qaten			Total
	M	F	Total	M	F	Total	
Administrative and financial training for WUAs	11	4	15	17	8	25	40
Conflict management training WUAs	16	4	20	16	4	20	40
Informant workshops on the importance of engaging women in WUAs and WRM	15	77	92	14	77	91	183
Conflict management training for Local Authorities	15	5	20	14	6	20	40
Water Resource Management Training	17	3	20	13	7	20	40
Total							343

Table (3) Trainings provided in Dhamar Governorate

	Jabal Al-Sharq		
	M	F	Total
Administrative and financial training for WUAs	44	10	54
Conflict management training WUAs	45	9	54
Informant workshops on the importance of engaging women in WUAs and WRM	20	0	20
Conflict management training Local Authorities	27	0	27
Water Resource Management Training	45	9	54
Total			209

Activity 3.1.5: Community Mediation Initiatives (CMIs) to resolve small-scale water-related conflicts

Following the Water-related Conflict Assessment, UNDP RPs conducted five validation workshops between July and December 2022 bringing together representatives from local authorities, local communities, and WUAs to engage on discussions to review and validate the conflicts included in the Water-related Conflict Assessment report, the interventions to be carried out by FAO, as well as identifying priorities of small-scale water-related conflicts that WUAs could mediate to resolve. Five validation workshops were conducted in the five targeted districts. The participants also had the opportunity to discuss and validate other priority conflicts as viewed by participants. Participants were able to prioritize small-scale water-related conflicts and suggested resolution mechanisms through

Community Mediation Initiatives (CMIs). UNDP developed a selection mechanism for these CMIs which were as follows:

- Each CMI should address a small-scale water-related conflict within the WUA geographic context.
- Each CMI's cost should not exceed the total cost of US\$5000.
- RPs should contract an engineer to support WUAs in drafting the Bill of Quantities (BoQs) and other specifications.
- Proposed CMIs should be fully reviewed and approved by local authorities and other water-related bodies at each district.
- The daily labour work stipend for community members working under the CMIs should not exceed the amount as per the Cash for Work (CfW) policy implemented by FAO to avoid any conflicts.

In Hadhramout, participants unanimously recommended the establishment of a committee for all of the *Al-Khayyils*, community experts responsible for the water rights in the valleys in Shibam and Al-Qatn who know all the landowners in the valley for which they are responsible. Customs dictate that after floods and damages, these *Al-Khayyils* go to the field, inspect the damages, and oblige the landowners to repair them. Another similar customary system recommended by participants in Abyan was called “*Alradaa*”, meaning irrigation inspector. Participants recommended to activate the role of the irrigation inspector in each region. Irrigation inspectors are knowledgeable persons on water allocation and lands and know all the landowners in Wadi Hassan and Wadi Bana. During the arrival of flash floods, these inspectors organize the distribution of water according to the established norms in Abyan.

Identified small-scale water-related conflicts at community level enabled the WUAs to develop CMIs to address such conflicts. Developing CMIs was a good opportunity for the board members of WUAs to translate the learning they had received to practice. Community initiatives played a crucial role to ensure sustainability of WUAs, gaining community trust and provide solutions to community conflicts around water resources. WUAs in Hadhramout and Abyan conducted several field visits and community consultations over the course of February and March 2023 to come up with a list of proposed CMIs. Whereas in Dhamar, the water-related conflict validation workshops and CMIs consultations were carried out from July to August 2023.

For smooth implementation and to avoid any duplication of interventions, UNDP shared the list of interventions carried out by FAO with UNDP's RPs and ensured close coordination with FAO's field engineers.

Hadhramout CMIs:

A list of eight proposed CMIs were developed by targeted WUAs in Shibam and Al-Qatn including BoQs and other required specifications. The proposed CMIs in Hadhramout were shared with FAO and KfW and required approvals obtained to proceed with implementation that took place over November and December 2023. Table 4 provides the CMIs implemented in Hadhramout.



Before implementation

Masqa Al-Gharabeen CMI, Shibam district | Photo Credit: UNDP



After implementation

Masqa Al-Gharabeen CMI, Shibam | Photo Credit: UNDP

Table 4: CMIs to address water-related conflicts in Shibam and Al-Qatn districts, Hadramout

#	Districts	Name of WUA	CMI
1	Shibam	Al-Ribbah	Cleaning the waterway from Saysaban in the main canal of Shibam called Al-Muzaa.
2	Shibam	Social Shibam	Changing the Landmark of Sagyat Al-Hijil
3	Shibam	Talahum	Masqa "Al-Gharabeen" of the watering channel.
4	Shibam	Wadi Bin Ali	Water dividers in Sakiyat Al-Atoum and Al-Qayzan, and exit (Manki) bin Talib
5	Al-Qatn	Qamaran	The erosion of Ma'atan Al-Madar due to the torrential floods
6	Al-Qatn	Al-Hujail	Construction of an asphalt line passing through As Sakia at a level higher than the normal level of the As Sakia and demolishing the earthen barriers.
7	Al-Qatn	Al-Wadi Al-Sharqi	Palm Valley conflict - the collapse of the sandbars in the valley due to floods
8	Al-Qatn	Al-Wadi Al-Qiblii	The conflict over the inequity in the division and distribution of water in Al-wadi Al-Qibly

Abyan CMIs:

A list of 10 CMIs were developed and implemented in Abyan aiming to enhance community cohesion, reduce water conflicts, and improve the livelihoods and food security of farmers. The CMIs were implemented from August to November 2023. Table 5 provides the CMIs implemented in Abyan.



Before implementation | Photo Credit: UNDP
Cleaning channels of trees and sediments, Imjila Al-Rahwi Batis



After Implementation | Photo Credit: UNDP
Cleaning channels of trees and sediments, Imjila Al-Rahwi

Table 5: CMIs to address water-related conflicts in Zinjibar and Khanfar districts, Abyan

#	Districts	Name of WUA	CMI
1	Zinjibar	Al-Qurayyat	Rehabilitation of Salem Nassib Irrigation Ditch No. 2
2	Zinjibar	Al-Tariya	Ramla bridge maintenance, cleaning, and sediment removal
3	Zinjibar	Aslan Al-Mahawasa	Cleaning of the Sisban trees and the cleaning of the Al-Mahwassa branch canal.
4	Khanfar	Michelan	Rehabilitation, lifting and construction of gates for Bridge No. 24+26
5	Khanfar	Albrot Barmada	Maintenance of bridge No. 2, Arshan, and the gates + bridge 3 and 5
6	Khanfar	Albrot Barmada	Cleaning the canals from the trees
7	Khanfar	Jabal Lhabboush	Maintenance of kilo 5 gates and the bridge
8	Khanfar	Al-Lakidah	Maintenance two main gates in Al-Lakidah canal
9	Khanfar	Al-Derjajj	Maintenance and restoration of the AL-Mizan bridge and the restoration of soil erosion
10	Khanfar	Jablet Al-Rahwi	Cleaning 4 channels from trees and sediment

“Before implementing this project, we encountered numerous challenges, including conflicts between farmers amid rising floods. However, with the project's completion, organizational improvements have alleviated our water loss burden. Farmers now fully enjoy the benefits of this initiative, and we express gratitude to UNDP for its support.”
Aqeel Mahdi, Farmer in Batees village, Khanfar District, Abyan governorate

Dhamar CMIs:

A list of nine CMIs were developed by the WUAs in Jabal Al-Sharq district aiming to address water-related sources of tension. CMIs were also supported by community contribution to enhance ownership and sustainability. The CMIs were mainly focused on the construction of water collection tanks which serve as a reservoir to the water flowing out of springs and are utilised for both domestic and irrigation purposes. Water collection tanks are provided with outlets at the top to allow water flow to the main irrigation canal.

This would allow farmers to use collection tanks for both domestic and irrigation purposes during rainy sessions. The collection tanks primarily served agricultural purposes with a secondary purpose of domestic purposes and livestock which is a major component of agriculture practice in rural areas of Jabal Al-Sharq.

Table 6: CMIs to address water-related conflicts in Jabal Al-Sharq, Dhamar

#	Name of WUA	CMI
1	Al-Qably and Maghrabat Al-Inab	Supply and install a drinking water network for the villages of Al-Ar
2	Mekhlaf Al-Hidaa and Bani Raiyah	Supply and install the water network of the Hamel Mikhlaif Al-Hada
3	Mausitat Jabal Al-Sharq and Qiran	Construction of a collection tank for Ghile Aleian Albadia village
4	Rub Al-Had, Al-Qarah, and Qarf	Supply and install the water network for Ghile Attom Almabroqa
5	Bani Salem, Qamd, and Rub Al-Mekhlaf	Construction of a collection tank for Ghile Maqrad
6	Dammam and Al-Humeetah	Construction of a Water tank for Alragea village
7	Wadi Ramaa Almaazabh Bani horish	Construction of a collection tank for Ghile Alhoswa
8	Al-Sharqi and Al-Adani	Construction of a collection tank for Ghile Alhasab
9	Al-Dhahr and Mausitat Bani Qushaib	Supply and install a drinking water network for Gomat Alameri

Activity 3.1.6: Gender and Water Resource Management

The need for conducting a study on Gender and WRM stemmed from the limited participation of women during the implementation of project activities in Hadhramaut, Abyan, and Dhamar. The integration of women in the WUAs was very challenging with limited participation in the administrative boards of WUAs, training workshops and almost no participation in the decision-making processes in WUAs. The aim of the study was to identify barriers and drivers for women involvement in WRM and in agriculture with particular focus on the project target areas. An international and a national gender specialist were contracted by UNDP to carry out this study. The inception report provided an in-depth desk review of relevant studies and materials from the government, donors, NGOs, and research institutions. It provided insights into gender relations and practices of women and men in Yemen related to WRM, legal and customary rights related to gender and WRM, sociocultural norms, roles, resource access, and labour divisions related to gender and WRM. The study adopted a qualitative research methodology through an in-depth literature review and Focus Group Discussions (FGDs) and individual and group Key Informant Interviews (KIIs) with 234 stakeholders (92 men, 142 women) in the target districts. The research team administered 20 FGDs, 20 group KIIs and 9 individual KIIs in the five targeted districts in Dhamar, Abyan and Hadhramaut targeting various stakeholder groups, including women leaders, farmers, members of the WUAs, and authorities on district, governorate, and central levels. The study findings showed that despite women's significant roles in agricultural work and irrigation, women farmers face barriers to leading WRM in agricultural irrigation. These barriers included a lack of capacity and technical knowledge in water management, restrictions based on traditional domestic and household roles, a lack of programs designed to address the unpaid labour of women in water collection, and a lack of legislation to support women's leadership in WRM. The study revealed that while WUAs provide an avenue for women to

engage in WRM, they often fail in empowering women meaningfully in WRM decision-making. Women's roles in WUAs tend to be limited to non-irrigation aspects, such as in communication, awareness raising, and rural development, and they rarely reach leadership positions. Men and women in associations shared that social and cultural norms restrict women's involvement in decision-making spaces and many tasks in WUAs are not seen as culturally appropriate or suitable for women. The study revealed that the lack of education significantly limits women's opportunities and capacity in decision making, and women with formal education are considered more capable in WRM decision-making.

Sustainability of Established WUAs

Further to discussions between KfW, FAO, and UNDP on the sustainability of WUAs, UNDP proposed three main activities for the sustainability of WUAs: (1) establishing and supporting 5 federations for WUAs in target districts; (2) capacity building of WUAs to enhance accountability, technical, administrative, financial and communication practices; and (3) supporting WUAs with small grants to establish income-generating projects. UNDP submitted a 3-month no-cost extension to FAO to complete the extra activities by the end of March 2024.

Activity 3.1.7: Forming and supporting WUAs' Federations

The establishment of the federation aimed to ensure the local water governance and the community-based water resources management were well-linked to the district level. A federation is an umbrella for WUAs to have a unified voice to raise and address concerns about irrigation and agriculture to authorities at district and governorate levels. Besides vertical networking with authorities at the district level, forming federations of WUAs would encourage horizontal networking among WUAs and linking them to agriculture cooperatives and other stakeholders at sub-district and village levels.

Using the "Formation of Water Users' Associations and Federations" guideline document developed by FAO in 2018, UNDP initiated the process of establishing federations for targeted WUAs in the five targeted districts in Hadramout, Abyan, and Dharmar. The formation of federations went through several procedures, including community motivation, forming a Preparatory Committee, federation establishment, registration, election of the Executive Council and Monitoring and Inspection Committee in coordination with relevant authorities, encompassing NWRA and Ministry of Social Affairs and Labour (MoSAL) offices in target districts. One federation was established per target district.



Shibam WUAs Federation Formation Workshop, Sayoon, Hadramout |
Photo Credit: UNDP

The process started with meetings at community and district levels to familiarize people with the purpose of the WUAs federations. The project team held several meetings with the Directors of NWRA, MoSAL and MoAIF in targeted districts to introduce them to the idea of WUAs federations and request their technical support for accomplishing the required procedures. Five workshops for formation of the federations were held with WUAs' board members at the four target districts in Abyan and Hadramout in August 2023.

whereas in Dhamar it took place in October 2023. The workshops introduced WUAs' board members to the procedures and objectives of forming such federations. Preparatory Committees were formed from members of WUAs to lead the process of the Executive Council election.

The electoral meeting for the Executive Councils took place in Shibam and Al-Qatn on 25 and 26 September 2023. Nine members were elected to the Shibam Federation Executive Council, of which one was a female. Five other members were elected to the Oversight and Inspection Committee including a female. Whereas, in Al-Qatn, eleven members were elected to the Federation Executive Council with one female as a member. Five other members including a female were elected to the Oversight and Inspection Committee. The Federation formation preparatory committees in Abyan received 27 request letters from other WUAs in the target districts to be included in the federation. The committees reviewed these requests in collaboration with MoSAL and Agriculture office. MoSAL Abyan Office suggested forming a central federation at the governorate level with a federation at district level for WUAs in Khanfer. In Dhamar, the election of members for the Executive Council and Committee of Monitoring and Inspection of the federation took place in October 2023 with representatives from the Supreme Council for Management and Coordination of Humanitarian Affairs (SCMCHA), local authority, NWRA, MoSAL, and members of WUAs.

The federations were hosted in the Local Councils' Offices at each targeted district. The federations offices were provided with office equipment, including computers, printers, chairs, tables, desks, shelves, solar system and office stationaries to support their functionality.

Activity 3.1.8: Building Capacity of WUAs to enhance accountability, technical, administrative, financial and communication practices.

To enhance long-term institutional and financial sustainability, WUAs were introduced to further trainings to leverage their technical, administrative, financial, accountability and communication practices. Furthermore, trainings on developing income-generating projects were also provided to WUAs. The following table summarizes the number of WUAs' participants in each training in the five target districts.

	Training Area	No. of Participants
1.	Enhancing WUAs' internal policies	114
2.	Maintenance of Modern Irrigation Systems	147
3.	Drafting Feasibility Studies for income-generating projects IGPs	123
Total		384

3.1.8.1 Enhancing WUAs' internal policies

The activity aimed to contract specialized consultants to work with targeted WUAs to review their internal policies, administrative and financial systems to enhance their policies and financial procedures and build up their profile so that they can qualify and be eligible to apply for funding opportunities. The main objectives of the activity were to:

- Review and analyze the current bylaws and internal policies of WUAs and identify areas that need improvement.
- Identify the goals that WUAs should aim to achieve by improving internal policies.
- Develop internal policies, manuals, and forms for WUAs that fit with their needs and objectives.

Six consultants were hired to conduct this activity with two consultants deployed in each target governorate. They kicked the activity off by desk review and analysis of the current internal policies

identifying areas that need improvements. After obtaining a clear picture on the needs, the consultants initiated coaching field visits to selected WUAs in targeted districts during the last quarter of 2023. The aim was to review WUAs' archives and regulations, identify strengths and weaknesses, and areas for improvement. The most prominent topics discussed with the WUAs during the coaching exercise were as follows:

- WUA's statute and its suitability to the context.
- The regulations available to WUA and the extent of their application.
- WUA's annual plans.
- Periodic reports.
- General Assembly statements, regularity of its meetings and minutes.
- Administrative Board meetings and their minutes.
- Filing and archiving.
- The financial system, the documentary cycle, its integrity, and documentation.

"The work was disorganized and chaotic, lacking any clear system, with some individuals unsure of their roles and responsibilities. However, the technical support we got restructured the work into an organized administrative system that fostered collaboration and ensured that each person understood their roles and responsibilities. By implementing these improvements, we were able to increase awareness and productivity within the community."

- Anwar Abdullah Khadr, finance officer, Al-Horoor WUA, in Abyan Gov.

3.1.8.2 Building WUAs' capacity on maintaining modern irrigation systems

Five workshops on building WUAs' capacity on maintaining modern irrigation systems were administered in Abyan, Hadramout, and Dhamar. Using the manual "Technical Aspects of Water Resources and Irrigation Management" produced by UNDP, the trainers drafted the training agenda with focus on installation, operation, and maintenance of modern irrigation systems. The trainings introduced participants to:

- Types of irrigation networks, the advantages and disadvantages of each type, and the challenges facing the installation and maintenance process.
- Identifying the components of the irrigation network by bringing models and components to the training hall and conducting practical applications before going out to the field on the last day.
- How to properly install and maintain irrigation networks, starting with digging trenches and extending pipes, connecting valves, installing sprinklers and main points, and testing the system. Participants learned how to analyze the water needs of crops and design the appropriate system, including choosing the types of pipes, separators, valves, and sprinklers.
- How to fix system problems such as leakage, blockage, or valve malfunction, as well as regular maintenance and how to maintain the system's performance sustainably. Participants learned about the network's operation, what real-life difficulties they face, and how periodic maintenance is carried out.

In Abyan, the training targeted 60 participants with 5 participants from each WUA, from 12 WUAs. Participants were divided into 4 groups and received a 3-day training for each group. The 3-day trainings were held between 26 September and 12 October 2023. All participants were provided with toolkit bags to support them cascading obtained practical knowledge to their local community farmers.

The same training package was introduced to the 8 WUAs in Hadhramout with additional focus on manufacturing natural fertilizers. Two workshops were held from 31 October to 2 November 2023 targeting 40 participants (5 members from each WUA).

In Dhamar, two training workshops were held between 21 November and 7 December 2023 for 47 participants (9 women and 38 men) representing 9 targeted WUAs in Dhamar.



Building WUAs Capacity in Drafting Feasibility Studies for IGPs, Al-Qatn district, Hadhramout | Photo Credit: UNDP



Building WUAs Capacity in Maintaining Modern Irrigation System, Shibam district, Hadhramout | Photo Credit: UNDP

3.1.8.3: Building WUAs capacity on drafting feasibility studies for income-generating projects

Five training workshops on drafting feasibility studies for income-generating projects were administered to targeted WUAs in Abyan, Hadramout and Dhamar. The main objective of the training workshops was to introduce participants to:

- The concept of feasibility study and the basic elements it includes, including market analysis and financial estimates, and the importance of these elements in evaluating the feasibility of projects.
- Acquire the necessary skills to analyze the market and understand demand, supply, potential competition, and how to determine the target audience.
- Analyze competitors and the probability of the project's success in the market.
- Develop participants' abilities to estimate the composition of costs related to establishing and operating a project.
- Understand the expected financial returns and how to calculate important profitability indicators.
- Analyze the legal and financial aspects of the project and the social aspects, including project's impact on the local community, the jobs expected to be created, and other social benefits.

The training introduced participants to feasible local resources that can support WUA's financial sustainability and enable its members to develop required skills and capabilities to implement independent Income-Generating Projects (IGPs). In Abyan, the feasibility training workshop took place from 12 to 18 September 2023 targeting 36 participants from targeted WUAs (29 men and 7 women). The training was followed by a mentoring exercise lasting for nine days to support WUAs in developing their own feasibility regarding income-generating proposals. Two other training workshops on drafting feasibility studies for income-generating projects took place in Hadhramout from 14 to 19 October 2023 targeting 41 participants (24 men and 17 women). The workshop on drafting feasibility studies for income-generating projects took place in Dhamar from 7-11 December 2023 involving 46 participants (9 women and 37 men).

“Our capabilities were built in several areas, especially studying the economic feasibility of income-generating projects. This capacity development strengthened the administrative and financial level of our association. We thank UNDP, and we highly recommend cascading this experience to other districts in Hadramout.”

- Bushra Bin Wabar, Women's Coordination Council, Al-Wadi Ash Sharqi WUA, Al-Qatn, Hadramout

Activity 3.1.9: Micro-grants to establish income-generating projects IGPs

Following the completion of the training on drafting feasibility studies for income-generating projects, WUAs developed their plans using the models introduced during the training. The plans were evaluated against a set of prerequisite criteria shared with WUAs during the workshops, including the description of the idea, environmental measures, sustainability, marketing strategies, competition analysis, profitability, capital, cash flow, sales strategies, and community benefits. Following the selection of successful IGPs to be implemented, each WUA had to sign a financial agreement setting the foundation for the collaboration and implementation phases. It detailed the financial commitments including the grant amount and the contributions from each WUA. The agreements also stipulated clear timelines for the execution of each project and specified the locations where the projects were to be implemented. To maintain a high standard of quality in the implementation of the selected IGPs, UNDP engaged three consultants in the three targeted governorates. These consultants were tasked with overseeing the project implementation, ensuring that each project adhered to the planned objectives, timelines, and quality standards. They played a pivotal role in guiding the WUAs through the technical and governance aspects of project implementation. Their involvement was designed to mitigate risks, ensure technical and operational efficiency, and guarantee that the projects were executed within the agreed parameters. A total of 27 IGPs were implemented over January, February, and March 2024 in the five targeted districts. The following table provides a summary of implemented IGPs by targeted WUAs.

Table 7: IGPs implemented by WUAs in Hadramout

	WUA	District	IGP Title	IGP Summary
1.	Al-Ribbah	Shibam	Agricultural supplies sales centre	Selling agricultural supplies, such as seeds, fertilizers, pesticides, spraying machines, agricultural nurseries, making them accessible and affordable to community farmers.
2.	Social Shibam	Shibam	Hydroponics	A modern agricultural system that did not require soil and could be installed in small spaces. It saves 70% to 90% of water compared to traditional agriculture.
3.	Talahum	Shibam	Solar energy system	This was a partnership between the WUA and the community farmers where solar system is used to irrigate crops and the profit was shared between the farmers and the WUA.
4.	Wadi Bin Ali	Shibam		
5.	Al-Hujail	Al-Qatn	Breeding sheep	Investing on breeding sheep is a promising business in Al-Qatn countryside. The WUA distributed sheep to selected low-income families to raise them while the profit was to be shared between the two parties.
6.	Qamaram	Al-Qatn		
7.	Al-Wadi Al-	Al-Qatn	Henna grinding	The idea was set around investment on Henna

	Sharqi		and packaging	through extracting it from the trees, filtering, grinding, packaging and distributing it to wholesale stores using modern machinery different from existing traditional practices.
8.	Al-Wadi Qiblii -	Al-Qatn	Green Project for producing leafy plants	Cultivating leafy plants, such as arugula, molokhia, radishes, leeks, and others, in a plot of 10 acres land. Aromatic plants, such as rosemary, thyme, mint, basil, parsley, were grown in a greenhouse. Products were to be utilized in various forms, as fresh, dried, grinded and packed for different uses.



The solar-powered irrigation system for agricultural purposes project, Shibam district, Hadhramout | Photo Credit: UNDP

Table 8: IGPs implemented by WUAs in Abyan

	WUA	District	IGP Title	IGP Summary
1.	Al Qurayyat	Zongobar	Green Plant Store sells organic seeds, fertilizers, and pesticides	Establishing a store specialized in selling seeds, fertilizers, and organic pesticides to farmers within the association and neighbouring villages.
2.	Aslan Al-Mihwasa	Zongobar	Al-Khair farm for raising and fattening calves	Enhancing animal production through purchasing calves and required food for fattening them, and subsequently selling them, contributing to sustainable financial returns of the WUA and expanding the project in the future.
3.	Jabel Lahboush	Khanfar	Jabal Lahboush Farm for Raising and Fattening Calves	
4.	Micklan	Khanfar	Micklan Mills for Grinding Henna and	The Micklan Mills Project entails the establishment of mills for grinding henna and Sesbania pods, which are then sold to livestock breeders within the association

			Sesban seed pods	and neighbouring villages.
5.	Albrut Barmada	Khanfar	Batis Seedlings	Batis greenhouse project for cultivation of improved seedlings to be sold to farmers. It meets the growing demand for high-quality grafted seedlings and to introduce new agricultural practices through the expertise of technicians and agricultural advisors within the association. It was established over 20-meter-long integrated greenhouse containing all the tools necessary for the greenhouse, as well as improved vegetable seeds to start the seedling production process.
6.	Al lakida	Khanfar	Al Lakida Stores for Buying and Selling Sesame	The primary focus of the project was to buy sesame during harvesting seasons from farmers within the association's community, store it, and sell it throughout the year, ensuring a steady and reliable supply of sesame seeds to the market. This supported local farmers by providing fair prices and reliable purchasing options, helping farmers who often face financial constraints during the planting seasons.
7.	Al Mayouh	Khanfar	Al-Rahma Farm for Raising and Fattening Livestock	The project aimed to purchase lambs and goats aged between 3 to 4 months. It was based on a livestock loan model for association members, where members fatten the livestock and increase their production, with the offspring divided between the member and the association, benefiting both the members and the association itself.
8.	Al-Darjaj	Khanfar	Al-Hashemi Sesame Oil Press Machine	Al-Hashemi Sesame Oil Press Project was aimed at purchasing sesame from farmers within the association, thereby benefiting farmers. The sesame seeds are then pressed to extract sesame oil, which is subsequently sold.
9.	Al Horor	Khanfar	Al-Falah Store for Buying and Selling Seeds	Al-Falah Seed Project was a venture comprising a store aimed at purchasing seeds from farmers and selling them in markets. Additionally, agricultural seeds were sold to farmers on credit, with a commitment to repurchase from them at harvest.
10.	Al Sharqiya	Khanfar	Nabd Al-Hayat for Water Provision	The project aimed to serve the association's community farmers through the provision of reliable water to farmers in the eastern region through the use of a solar-powered irrigation system contributing to environmental sustainability by reducing reliance on diesel-powered systems and reducing carbon emissions.



Al-Hashemi Sesame Oil Press Machine | Photo Credit: UNDP



Micklan Mills for Grinding Henna and Sesban seed pods | Photo Credit: UNDP

Table 9: IGPs implemented by WUAs in Dhamar

	WUA	District	IGP Title	IGP Summary
1.	Bani Gushaib & Al-Maghrabah	Jabal Al-Sharq	Agricultural Supplies Sales Centre	The project offered community farmers access to reliable agricultural supplies including seeds, fertilizers, pesticides, spraying machines and even agriculture nurseries at an affordable cost.
2.	Mekhlaf Al-Hada'a and Bani Roiyah		Goat and Sheep Breeding and Fattening	The project was based on a livestock loan model for association members, where members fatten the livestock and increase their production, with the offspring divided between the members and the association, benefiting both the members and the association itself.
3.	Al-Dhahr and Mawsatat Bani Qushaib		Greenhouses for Fruits and Vegetables Production	The project aimed to establish a greenhouse for the production of fruits and vegetables. It is located on a fertile land marked by availability of water and closeness to the main market.
4.	Rub Al-Had, Al-Qarah, and Qarf		6 IGPs targeted Beekeeping and Honey Production	Jabal Al-Sharq district is a fertile area for beekeeping and honey production business. It is rich with Sidr trees that grow high in mountains feeding bees to produce the finest honey in the world. This attracts 6 WUAs to develop their IGP plans around honey production. The WUAs received some training on best methods of investment on honey production.
5.	Bani Salem, Qamd, and Rub Al-Mekhlaf			
6.	Dammam and Al-Humeetah			
7.	Wadi Ramaa Al-Maazaba Bani			

	Hureysh			
8.	Al-Sharqi and Al-Adani			
9.	Rub Al-Had, Al-Qarah, and Qarf			



Beekeeping and Honey Production IGP, Dammam and Al-Humeetah WUA, Jabal Al-Sharq, Dhamar | Photo Credit: UNDP



Greenhouses implemented by Al-Dhahr and Mawsatani Bani Qushaib, Jabal Al-Sharq, Dhamar, | Photo Credit: UNDP

5. Activities under Output 3.2: Water-related conflict sensitivity increased; players implementing the project have adapted conflict-sensitive principles.

Activity 3.2.1: Round-table talks on local water-related conflict dynamics

The main activities under output 3.2 included organizing workshops and roundtable talks on local conflict dynamics. 25 round table workshops were administered in the targeted districts. The focus of this activity was on the adaption of community-based early warning system mechanisms, including Disaster Risk Reduction (DDR) as a means to manage local water-related conflict dynamics. The workshops had also aimed to foster a proactive culture of preparedness within the community, ultimately supporting sustainable development and resilience across the targeted districts.

Table 10: Roundtable talks

Gov.	# of roundtable workshops held	# of participants		Total
		Men	Women	
Hadramout	8	108	20	128
Abyan	8	126	44	170
Dhamar	9	77	14	91
Total	25	311	78	389

In Hadhramout, eight roundtable workshops were held to discuss how water-related conflicts could be mitigated through the *Al-Khayyil* Irrigation System, DRR and Community-Based Flood Early Warning Systems. The first four workshops were devoted to *Al-khayyil* irrigation system as a traditional mechanism to regulate water distribution in a non-violent and conflict-sensitive manner. The workshops targeted

representatives from local authorities, WUAs, and community leaders and introduced participants to:

- *Al-khayyil* system which has been in place for hundreds of years (from the days of Sultanates) to regulate flood water use and solve related conflicts.
- How the system is aligned with the applicable laws. *Al-Khayyil* is the person chairing a semi-voluntary committee called *Saqiya*, meaning irrigation.
- The status of the system now, challenges facing the system and recommendations to maintain the system taking into consideration the official institutions and local-based entities (WUAs).

The following were some of the recommendations obtained from the workshops:

- Promoting the *Al-khayyil* system, collecting relevant literature, documenting its best practices and lessons learned.
- Facilitation of exchange visits by members of the WUAs in Al-Qatn and Shibam to some *khayyils*, (individuals who practise the role of *Al-khayyil*).
- Building capacity of WUAs' members on the Early Warning System and introducing modern technologies.

Four other workshops on DRR and community-based flood early warning system were conducted for the 61 board members of WUAs (17 women and 44 men) in Shibam and Al-Qaten. The workshops aimed to equip participants with required skills to identify flood risks and measures to mitigate them appropriately in a participatory process. Participants were introduced to main concepts and principles of DRR types of disasters, hazards, and risks with focus on floods, capacity assessment and development, resilience, disaster risk management, and community-based approaches to manage disaster risks. Other topics covered frameworks for using DRR in agriculture sectors, disaster risk planning and monitoring, early warning tools and approaches, how to involve communities, and early warning messages.

In Abyan, eight round table workshops were organized for local authorities and members of the WUAs in Zongbar and Khanfar districts. The focus of the workshops was on managing local water-related conflicts, reducing disaster risks, and establishing a community-level early flood warning system. The workshops took place from 17-27 July 2023 targeting 170 participants in total, 50 participants from the governorate and district authorities (6 women and 44 men) and 120 WUAs' board members (46 women and 74 men). The round table workshops covered the following key areas:

- Introduction to the basic concepts and principles of DRR and the mechanisms of a community-based early warning system, including discussions on the nature, types, and magnitude of disasters.
- Application of disaster risk reduction strategies within the agricultural and irrigation sectors, integrating these practices into WUAs' plans.
- Promotion of an integrated approach to disaster risk management that aligns with sustainable development goals.
- Analysis of the interconnections between climate change and disaster risk management, particularly in the context of flood risk.
- Comprehensive overview of the early warning system, including its essential components, tools, and methodologies.
- Active community participation in the early warning process, ensuring community members understand and disseminate early warning data and messages.
- Enhancement and refinement of existing community early warning systems managed by WUAs.
- Capacity building for WUAs, farmers, and local government representatives in both districts, focusing on disaster risk reduction and early warning systems.

In Dhamar, a series of nine round table workshops were organized from 23 to 29 August 2023 on DRR, local conflict dynamics, and establishment of early warning community-based systems targeting 60 participants (47 men and 13 women) representing governorate, Jabal Al-Sharq district, and WUAs. The main objective of the activity was to provide basic knowledge, tools and practical skills for effective disaster management and community-based flood early warning systems. The following topics were covered in the workshops:

- Managing local conflict dynamics through DRR approaches and establishment of community-based early warning system for floods.
- Traditional vs. modern methods, techniques, and tools of DRR and community-based early warning systems.
- The early warning systems used by local communities before, during and after the disaster occurs, and alternative modern mechanisms available nowadays.

6. Communication and Visibility:

The project, from the outset, adopted a low-profile approach since the communication and visibility activities fall under FAO's budget. However, the project has a dedicated web landing page [HERE](#) that is used to provide updates such as a project summary, objectives and achievements and donors' contributions. In addition, the project has published three main studies related to water in Yemen. The first study is Water Availability in Yemen [HERE](#). It aims to map out current and future water resources in Yemen with focus on three wadi catchments (Abyan Delta, Hadhramaut, and Rima/Siham). The second study is the Water-related Conflict Assessment Report in both English [HERE](#) and Arabic [HERE](#). The report provides an account about the local level dynamics and actors involved in water-related conflicts with focus on actors' trends analysis and potential indications for change. The third study is the Gender and Water Resource Management Study is carried out at later stages of the project and yet to publish on UNDP website. The study aims to identify gender barriers and drivers for women involvement in water resource management.

Project updates are posted on social media both via *twitter* and *Facebook*. Project RPs were keen to circulate project activities update on various means of national media including newspapers, radio, TV and news site. For example, the establishment of Federations for WUAs in Shibam and Al-Qatn activity was cover by Yemen TV [HERE](#), Hadramout TV [HERE](#), Sayoon Radio [HERE](#), Aden Gad News [HERE](#). Towards the end of the project, a multimedia service provider was contracted to produce a comprehensive package documenting the impact of the project on farmers lives in the targeted governorates including:

- Three short videos showing the impact of the community mediation initiatives and the WUAs income-generating projects in each governorate, emphasizing the positive changes and benefits to the communities.
- Album of high-quality photos featuring project's interventions in the five target districts in Hadramout, Abyan and Dhamar.
- One comprehensive video compiling success stories from all three governorates, providing an overview of the project's impact and contributions across the target areas.
- One exposure story depicting the achievements with testimonials from beneficiaries and stakeholders.

7. Challenges

- **Political Instability:** Yemen has been facing political instability and conflicts for many years. These unstable conditions hindered the effective implementation of water management policies and strategies. Limited government capacity, disrupted infrastructure, and the displacement of populations have made it challenging to establish and enforce regulations for water resource management. The establishment of WUAs and enhancing their capacity were of the mitigation measures adopted to address the challenges in water management.
- **Impact of Climate Change:** Heavy rains and floods disrupted initiative implementation, causing delays. Some initiatives in Abyan and Hadramout were delayed due to heavy floods. The project had requested a NCE to finish the implementation of these CMIIs.
- **Women's Participation:** Weak community awareness regarding the importance of women's participation in associations and conflict resolution, exacerbated by societal customs in the targeted districts. To promote gender inclusivity, awareness raising workshops and sessions were organized in all target districts to highlight the significance of involving women in WUAs, decision-making processes, and conflict resolution.
- **Income Generation Projects' Operation Cost:** The mechanism of the wages for the people in charge of running the projects was not well-articulated in the proposals submitted by WUAs. WUAs were directed to specify such wages in a way similar to wages laborers receive in other relevant professions.
- **Establishment of Bank Accounts:** Al-Kuraimi bank required some official documents from WUAs to establish a separate bank account for the IGPs which was a time-consuming process.
- **In Dhamar,** the project has experienced some delays affecting smooth implementation due to some restrictions and interventions caused by de facto authorities. UNDP's responsible party had to utilize its connections with governorate level authorities to resume activity implementation in the target district.

8. Lessons Learned

- Coordinating the establishment of WUAs with authorities is key to ensure buy-in and support to WUAs by respective communities and authorities. Without such coordination and engagement, WUAs would face many challenges by relevant authorities and community leaders.
- Effective cooperation and coordination among local authorities, Agriculture and Irrigation offices, NWRA, and WUAs are vital for successful implementation of activities, achievement of results, and ensuring long-term sustainability. Appointing a committee of focal persons from these entities is highly recommended.
- Empowering WUAs to own income-generating projects is key to ensure their sustainability and functionality. Since WUAs are community-based structures, they totally depend on communities' contributions for their sustainability. The conflict has negatively impacted communities' ability to support WUAs. Therefore, the IGPs constituted an innovative idea to sustain WUAs existence and operability.
- Understanding and implementing best practices in conflict analysis, management, and sensitivity are instrumental in enhancing the community's resilience and capacity to sustain the work after the project end date. It is important to build the capacities of community-based NGOs in conducting conflict analysis, collecting, analyzing data, and report writing so that the quality of implementing activities can be ensured. These NGOs are part of these communities and have community acceptance and trust which enable them to address any challenges that might arise locally.

- Implementation of IGPs for WUAs has been an innovative idea that has contributed to the sustainability of WUAs, particularly if such projects fit in well with their context. For example, IGPs with the idea of mills provision serves multiple benefits, including uprooting mesquite trees, providing food for animals, generating income for communities and WUAs, and contributing to mitigating the effects of climate change. Such initiatives highlight the importance of creativity and adaptability in addressing complex challenges.

9. Conclusion and way forward:

One of the main achievements in this project is establishment/activation of WUAs in the five targeted districts in Hadramout, Abyan and Dhamar and building their capacity. Conducting three water-related research studies on water availability, water related conflict assessment and gender and WRM has been another achievement that contribute to setting up project activities on solid research-based foundation. In addition, drafting four training manuals on managing water-related conflicts, WUAs, water resources and irrigation and CBFWS is another achievement. The four manuals have been adapted and used as source for developing training units around required technical and soft skills. To enhance sustainability of WUAs, the project adapted three additional activities including establishment of district-based federations for WUAs, in the target governorates, provision of further capacity building activities to WUAs and equipping them with micro-grants to establish income generation project. The federation is an effective mechanism to ensure the local water governance and the community-based water resources management are well-linked to the district level. A federation is an umbrella for WUAs to have a unified voice raise and address concerns about irrigation and agriculture to water management authorities at. Beside vertical networking, the IGPs provided to WUAs encourage horizontal networking with local communities. The main objective of IGPs is to provide services to local communities. Future WRM projects in Yemen should focus on empowering community structures such as WUAs to lead the change.

Women participation in WUAs and water resources management activities is one of the most challenging areas tackled out by the project. The project adapted some mechanisms to address this issue including researching gender and WRM and implementing activities that promote for women participation in WRM. The RPs conducted district-based informant sessions on importance of women engagement in WUAs and WRM at the beginning of the project. The purpose of the sessions was to raise women's awareness about their vital role in managing water resources in Yemen as well as to gain support from influential actors in project locations to advocate for women's participation in WUAs and conflict resolution. Future projects can adapt a gender sensitive approach to support women engagement in managing water resources. This involves provision of economic opportunities for women farmers along with capacity building activities. Future interventions should focus on enhancing value add options women can contribute to agriculture products. Gender sensitive interventions should match women's aspirations and ideas for enhancing the value of their products.