INNOVATION PACKAGE AND SCALING READINESS REPORT



ATMOSPHERIC WATER HARVESTING FOR REFUGEE HOST COMMUNITIES IN JORDAN

August 2024
1st Edition

Mega-WaHa is a state-of-the-art device that will, on average, produce 500 liters of pure water every day directly from the air regardless of the region, climate, or environmental conditions. This device is deployed to support water security in refugee-host communities in Jordan.

Scaling Ambition

By the end of 2024, **AquaPoro** and partners will work together with a **local farmer** to deploy a **Mega-WaHa**. **The Mega-WaHa** will **supply at least 182,500 liters (182 m³) of fresh water in 2025 for crop production. The innovation will save Jordan an equivalent amount of water from the country's water supply** thereby demonstrating that this new technology, if adopted widely, has the potential to significantly increase water security for the country.

SCALING READINESS METRICS

Scaling Readiness Score	Scalability Potential Score
2	60

This innovation is expected to contribute to the following impacts

CGIAR Impact Areas and Collective

1. Poverty Reduction, Livelihoods, and Jobs
2. Climate Adaptation and Mitigation
3. Environmental Health and Biodiversity

SDGs and SDG Targets

SDG 6 | Clean Water and Sanitation
SDG 1 | No poverty
SDG 2 | Zero Hunger
SDG 9 | Industry, Innovation and Infrastructure
SDG 11 | Sustainable Cities and Communities

TOP SCALING BOTTLENECKS IDENTIFIED

1. Affordability
2. Awareness
3. User confidence

SCALING READINESS GRAPH



INNOVATION PACKAGE

1. Mega-WaHa
2. Agricultural Credit Cooperation Finance Mechanisms
3. Social media campaign
4. Trial period
5. Product ambassadors
6. Training material and user manual
7. Hotline
8. Renewable energy
9. Flexibility of the design

INNOVATION PACKAGE DETAILS

The Innovation Package and Scaling Readiness (IPSR) workshop aimed to design an innovation package capable of achieving the MegaWaHa scaling ambition. This report identifies bottlenecks and enabling factors discovered during the workshop that impact the innovation scaling process. The IPSR workshop participants addressed the bottlenecks of affordability, awareness and user confidence and trust. The following enablers were proposed to complement the core innovation: financial modalities (e.g., Agricultural Credit Cooperation Finance Mechanisms), an awareness campaign (using social media), a hotline, product ambassadors (people whom people trust, like community leaders), a training manual, the use of renewable energy in remote areas (Jordan Renewable Energy and Energy Efficiency Fund), and flexibility of the design.

The table below provides an overview of the core innovation and key enablers that were described as needed to achieve the scaling ambition.

Core Innovation / Enabler	Name	Description
1 Core	Mega-WaHa	A state-of-the-art device that will, on average, produce 500 liters of pure water every day directly from the air regardless of the region, climate, or environmental conditions. This device is deployed to support water security in refugee-host communities in Jordan.
2 Enabler	Agricultural Credit Cooperation (ACC) Finance Mechanisms	ACC dedicated a loan for water resources development and water saving technology. Under this loan many activities can be financed such as: digging wells, water harvesting, purchasing and installing pumps water tanks, bonds, pipes, filters, emitters, irrigation network, etc. Recently, the ACC reduced the interest rate from 5% to 2 % on projects related to water, energy and field crops. The ACC loans conditions (low interest rate, flexible payment conditions and period, etc.) can serve wide spectrum of farmer's needs, flexibility in guarantees, and those farmers became more aware of water value and how important to save water, in addition, farmers realized that by saving water they save money on the long term.
3 Enabler	Social media campaign	A social media awareness and promotional campaign aimed at smallholder- and large farmers to introduce the innovation and its functionalities.
4 Enabler	Trial period	Users who are not satisfied with the performance of the device would be able to return the product within 30 days and receive their money back.
5 Enabler	Product ambassadors	Potential users can be reached through influencers within their community e.g. religious leaders, leaders of cooperatives etc. Winning the trust of key opinion leaders in the community can help spread the word and acceptance of the core innovation.
6 Enabler	Training material and user manual	A clear, step-by-step guidance on how to operate and maintain the device increases confidence and trust in the device performance.
7 Enabler	Hotline	A telephone number to call, providing immediate, accessible support for users of the MegaWaHa.
8 Enabler	Renewable energy in remote area	Integrating renewable energy into Mega-WaHa, will provide sustainable, cost-effective, and independent energy solutions, which is particularly important in rural areas.
9 Enabler	Flexibility of the design	The flexibility of the Mega-WaHa's enhances its usability and adoption across diverse settings. This adaptability allows the device to be customized and scaled to meet varying water generation needs, whether for small households, agricultural use, or larger community applications (new customer groups especially in FCM).

CONTRIBUTING CGIAR INITIATIVE AND PARTNERS

CGIAR LEAD INITIATIVE

Fragility, Conflict and Migration (FCM) Initiative

CONTRIBUTING BILATERAL PROJECTS

Jahez

PARTNERS INVOLVED

AquaPoro
World Food Program – Innovation Accelerator
International Water Management Institute (IWMI)

TYPE OF PARTNERS

Private sector
UN-Agency

DETAILED SCALING READINESS GRAPH AND METRICS

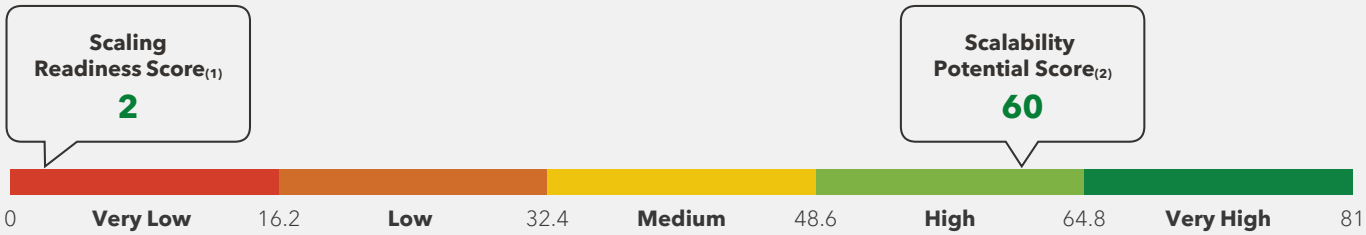
Each of the elements of the Innovation Package have been assessed for their innovation readiness and innovation use.

Level	Innovation Readiness	Innovation Use
0	The innovation is at idea stage	The innovation is not used
1	The innovation's basic principles are being researched for their ability to achieve a specific impact	The innovation is used by the organization(s) leading the innovation development
2	The innovation's key concepts are being formulated or designed	The innovation is used by some partners involved in the initial innovation development
3	The innovation's key concepts have been validated for their ability to achieve a specific impact	The innovation is commonly used by partners involved in the initial innovation development
4	The innovation is being tested for its ability to achieve a specific impact under fully controlled conditions	The innovation is used by some organizations connected to partners involved in the initial innovation development
5	The innovation is validated for its ability to achieve a specific impact under fully controlled conditions	The innovation is commonly used by organizations connected to partners involved in the initial innovation development
6	The innovation is being tested for its ability to achieve a specific impact under semi-controlled conditions	The innovation is used by organizations not connected to partners involved in the initial innovation development
7	The innovation is validated for its ability to achieve a specific impact under semi-controlled conditions	The innovation is commonly used by organizations not connected to partners involved in the initial innovation development
8	The innovation is being tested for its ability to achieve a specific impact under uncontrolled conditions	The innovation is used by some end-users or beneficiaries who were not involved in the initial innovation development
9	The innovation is validated for its ability to achieve a specific impact under uncontrolled conditions	The innovation is commonly used by end-users or beneficiaries who were not involved in the initial innovation development

More information on Innovation Readiness and Innovation Use can be found at www.scalingreadiness.org.

#	Innovation/Enabler Name	Innovation Readiness	Evidence #	Innovation Use	Evidence #
1	Mega-WaHa	2	I[1]	0	
2	Agricultural Credit Cooperation Finance Mechanisms	9	II[2]	7	III[3]
3	Social media campaign	7		8	
4	Trial period				
5	Product ambassadors	9		9	
6	Training material and user manual	9		8	
7	Hotline	9		9	
8	Renewable energy in remote area	9	IV[4]	9	IIV
9	Flexibility of the design	9		9	

SCALING READINESS METRICS



(1) Scaling Readiness score is based on the lowest scoring innovation
(2) Scalability potential score is based on the average readiness and use of all package elements

SCALING OPPORTUNITIES AND BOTTLENECKS

The deployment of the MegaWaHa presents several opportunities to support water security in refugee-host communities in Jordan. In particular, it has proven ability to generate pure water directly from the air regardless of the region, climate, or environmental conditions.

The key bottlenecks to its uptake as identified by experts in the IPSR workshop are:

1. Affordability
2. Awareness
3. User confidence

Experts ranked the **affordability** as top bottleneck for Mega-WaHa widespread adoption and scaling in refugee-hosting communities. The following factors contribute to the affordability challenges: (1) high initial cost; (2) production cost; and (3) limited purchasing power particularly in FCM context. Some solutions were proposed by experts to overcome the affordability constraint such as: (1) subsidies and financial support through government and/or public-private-partnerships; (2) Innovative financial mechanism, such as microfinancing (small loans); (3) scaling production through strategic partnerships with established local manufacturer can help scale production more quickly and efficiently, reduce per-unit costs.

[1] AQUAPORO
[2] Agricultural Credit Corporation (acc.gov.jo)
[3] <4D6963726F736F667420576F7264202D20C3D3D320E6DEE6C7DACF20C7E1C5DED1C7D62E646F63> (acc.gov.jo)
[4] Home Page - JREEEF (memr.gov.jo)

Further, **limited awareness** was ranked as second bottleneck for adoption and scaling. The following factors contribute to limited awareness: (1) lack of marketing and outreach; (2) geographic barriers (remote and rural areas); (3) lack of trust and credibility (insufficient proof of concept); (4) educational gap (technical complexity, skepticism towards new technology, and low level of digital literacy). Experts proposed some solutions like: (1) training manual, (2) social media campaign; (3) hotline; (4) product ambassador; (5) showcase success demonstrations/pilot.

For example:

- The **training materials** enhance user confidence and proficiency, ensuring that users can maximize the device's efficiency and longevity. By including detailed instructions, troubleshooting tips, and best practices, the training materials empower users to fully understand and utilize the MegaWaHa, leading to more widespread adoption and successful implementation in various settings.

- The **hotline** offers real-time assistance with troubleshooting, maintenance, and operational questions, ensuring that users can quickly resolve any issues they encounter. The availability of expert advice and guidance through the hotline enhances user confidence and satisfaction, facilitating the smooth and effective use of the Mega-WaHa. Additionally, the hotline fosters a sense of ongoing support and reliability, encouraging broader adoption and consistent, successful utilization of the device.

The third critical bottleneck to successful adoption and scaling of the innovation was **user confidence**. When potential users lack confidence in a new technology or product, they are less likely to adopt it, regardless of its potential benefits. This lack of confidence is due to a number of factors: (1) lack of proven track record of performance (new product); (2) limited users experience; (3) lack of clear benefit; (4) concerns about reliability; (5) lack of post-delivery support and services (insufficient customer support, training and resources); (6) social influence and perception (peer influence, brand reputation).

ACKNOWLEDGMENT

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The information for this Innovation Package and Scaling Readiness Report was generated during the workshop that took place in Amman, Jordan on 8 July 2024. This Report was prepared by Maha Al-Zu'bi, Mirja Michalscheck, Sarah Hulbert, and Josey Kamanda based on guidance from CGIAR's Portfolio Performance Unit (PPU). The authors thank AquaPoro and all the workshop participants and the CGIAR Innovation Packages and Scaling Readiness (IPSR) team for their valuable contributions.

For enquiries on the Mega-Waha, please contact: info@aquaporo.com

For general queries related to the Innovation Package and Scaling Readiness (IPSR) reports and processes, please contact performanceandresults@cgiar.org.

MORE INFORMATION

Reference Material

- CGIAR MELCOP Glossary including key Innovation and scaling concepts and definitions: https://drive.google.com/ file/d/1v0O5wt4z3bgs_wCYa7H2FifTVSAXAVjl/view
- Scaling readiness website: https://www.scalingreadiness.org
- Innovation Readiness levels: IPSR Infographic Innovation Readiness
- Innovation Use levels: IPSR Infographic Innovation Use
- IWMI website: https://www.iwmi.cgiar.org/
- FCM website: https://www.cgiar.org/initiative/fragility-conflict-and-migration
- Scientific article: https://www.nature.com/articles/s41467-022-32642-0

EVIDENCE ANNEX

The below evidence has been validated to support the innovation readiness and innovation use claims.

Evidence #	Evidence URL
I	AQUAPORO
II	Agricultural Credit Corporation (acc.gov.jo)
III	<4D6963726F736F667420576F7264202D20C3D3D320E6DEE6C7DACF20C7E1C5DED1C7D62E646F63> (acc.gov.jo)
IV	Home Page - JREEEF (memr.gov.jo)

EXPERTS ANNEX

The following experts contributed to the Innovation Package and Scaling Readiness workshop and assessment.

Name	Affiliation	Organization	Gender
Ali Shehadeh	Assistant Professor -Engineering Faculty	Yarmouk University	♀
Collette Linton	General Manager	Current River Environmental Consulting LLC	♂
Asem Natsheh	Deputy CR	CoWater International	♀
Khaled Nassar	Business Developer	Tetra tech / WEC- USIAD Project	♀
Maram Zayed	Researcher	Eco-Consult (Private Sector)	♂
Salsabeel Abu Dhrais	Specialist Research	WANA Institute	♂
Qasim Al Hyiari	Electric Engineer	Jordan Valley Authority	♀
Hamzah Alawaidi	Mechanical Engineer	Fresh graduate student	♀
Qais Alabadi	Pharmacist	University Student	♀
Shadia Ahmad	Deputy - CEO	Fatimah Al-Zahra CBO	♂
Ghada Qudah	CEO	Fatimah Al-Zahra CBO	♂
Mohamed Ghaith	Water and Environment Engineer	Jordan Valley Authority	♀
Ola Qawasmi	Researcher	National Agriculture Research Center	♂
Maha Al-Zu'bi	Regional Researcher	IWMI-MENA	♂
Nafn Amdar	Senior Research Officer	IWMI-MENA	♂
Mirja Michalscheck	Postdoctoral Fellow – Innovation Scaling	IWMI-Ghana	♂
Sarah Hulbert	New Venture Consultant	WFP	♂
Josey Kamanda	Researcher	IWMI-Kenya	♀
Kyle Cordova	Founder	AquaPoro	♀
Fouad Rihani	Commercial Product Director	AquaPoro	♀
Nabeel Abu Ata	Strategy Advisor	Kawar Group	♀
Hussam Massad	Chief Technology Officer	AquaPoro	♀
Sarah Ghazal	Master Student	University of Jordan	♂
Mohamed Khataibeh	Farmer / Farm Owner	Private Sector	♀
Osama Al-Zyoud	Farmer / Farm Owner	Private Sector	♀
Suhaib Bani Hani	Engineering Fellow	AquaPoro	♀
Obeida Mudraj	Procurement Engineer Specialist	AquaPoro	♀





About Stability-and-Peace Accelerator

The Stability-and-Peace Accelerator is a joint activity by the World Food Programme (WFP) Innovation Accelerator and the International Water Management Institute (IWMI), a CGIAR Research Center. Leveraging the combined expertise and resources of the WFP Innovation Accelerator and CGIAR, this program supports private-sector innovators in scaling climate-smart solutions across food, land, and water systems in fragile and conflict-affected communities in Africa, and the Middle East. It is part of the CGIAR Initiative on Fragility, Conflict, and Migration (FCM).

The Stability-and-Peace Accelerator selected four innovations that can significantly enhance the resilience of communities in FCAS. The selected innovations align with prioritized themes based on market demand and are expected to create tangible and scalable impacts toward achieving the Sustainable Development Goals SDG 1 (No Poverty), SDG 2 (Zero Hunger by 2023), SDG 5 (Gender Equality), SDG 13 (Climate Action), and SDG 17 (Partnerships for the Goals). The accelerator provides financial, technical, and business support, along with investment readiness coaching and marketing skills.

CGIAR Initiative on Fragility, Conflict, and Migration: The CGIAR Initiative on Fragility, Conflict, and Migration, also known as FCM, addresses challenges to livelihood, food, and climate security faced by some of the most vulnerable populations worldwide. The Initiative focuses on building climate resilience, promoting gender equity, and fostering social inclusion. Fragility, Conflict, and Migration - CGIAR

Disclaimer: This publication has been prepared as an output of the CGIAR Initiative on Fragility, Conflict and Migration and has not been independently peer reviewed. Responsibility for editing, proofreading, and layout, opinions expressed, and any possible errors lies with the authors and not the institutions involved.

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PLEASE REFER TO THE INNOVATION PACKAGE AND SCALING READINESS REPORT AS

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