

Impact of multi-dimensional water scarcity on food security

Results summary by the Water Scarcity Experts Group
from the AGUASAN Workshop 2022

The idea in a nutshell

The Challenge Addressed

The lack of socio-economic evidence of the impact of water scarcity on food security

The Vision

Improved Food Security Conditions for Vulnerable Communities in Water-Scarce Contexts

The Potential Solution

Predictive Food Security Platform: A dynamic and coherent water-climate-crop modelling platform to enable seasonal scenario planning and the selection of high-nutritional, water-saving value crops at country and regional scale in Jordan and Lebanon

Key target groups

Key Line Ministries, Development Entities, Small-scale farmers and processors (Small and Medium Enterprises)

Countries

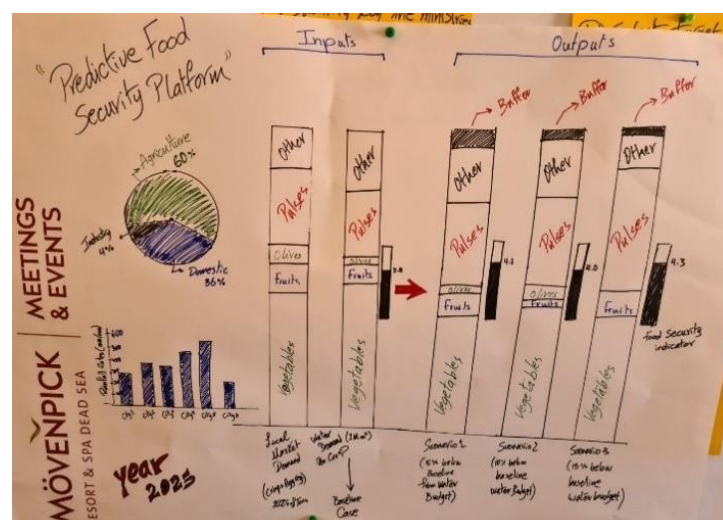
Jordan, Lebanon

The ideas and results presented have been co-created by one of the five water and climate experts groups during the [36th AGUASAN Workshop "Water Management in Times of Climate Change - Finding Actionable Solutions for Fragile Contexts in the Middle East"](#), taking place in Jordan in June 2022. Through an innovative format, the 5-day workshop supported the five thematic working groups to co-develop potential actionable solutions for water-climate issues, highly relevant for the region.

supplies, and thus, different scenarios for adaptation must be analysed to inform decision-makers on how to strategically reallocate water budgets for critical crops that would maintain a healthy national food security status. The proposed concept leverages the available datasets within governmental, non-governmental, and research institutions (for water, agricultural, food and other indicators) to create a predictive tool for food security using a modelling platform where water, climate, and crop data are integrated to enable scenario planning that would influence crop selection for each season on country and/or regional scales. This topic is also relevant to other topics presented in the AGUASAN

The idea

Viewing food security from the angle of the country's ability to supply food to its citizens is often lacking if merely considered using a simple supply-demand equation. While food security gaps are often filled by increasing food imports, recent world-wide interruptions to the food supply chain during 2020 (COVID-19 pandemic) and 2022 (Russo-Ukrainian war) have shown how critical it is to invest in food security at the state level. In water-scarce contexts such as in Jordan and Lebanon, fluctuating rainfall rates are significantly affecting local food



Initial prototype of Predictive Food Security Platform

workshop as it represents one angle to have a practical approach for IWRM, while it can also be adapted to refugee-hosting communities.

The predictive tool is one way to look at food security holistically on a country and regional scale with

focus on promoting high-nutritional value crops and/or crop groups that would minimize the virtual water exported to other countries that can be invested locally (e.g. high water demand fruits such as watermelon/strawberry that is grown for the export market).

Specific Aims:

The specific aims as developed as part of a Theory of Change are:

- Enabling the introduction of a dynamic and coherent database for Integrated Agri-Food Management
- Coordinating informed decision-making processes among parties for food security
- Introducing proven and smart models for water-food security at the local level
- Develop the online portal for the tool to allow access to relevant parties
- Develop multiple scenarios for food security using the tool and share them with key stakeholders for feedback
- **Optional:** Develop a pilot project for one locality where one of the scenarios can be tested with real interventions (e.g. one small city/village can be supported to test the switch in crop production for 1 season)

Lines of activities

- Data collection from several parties (governments, NGOs, research institutions, etc.) including water budgets, food production per group, food balance (imports, exports), consumption per capita, etc.
- Identification of data gaps and how to fill them through partners
- Normalization of data and cross-verification
- Identification of crop groups critical to food security (taken into account local context and nutritional value)
- Create a coordination core group from line ministries and other parties to be custodians of data, advise on tool parameters, and decision gates

Potential partners

Donors and other Development Agencies:

- SDC
- The Netherlands
- FAO
- UNDP

Government:

- Ministry of Agriculture
- Ministry of Water
- Agri Research Centers
- Ministry of Industry

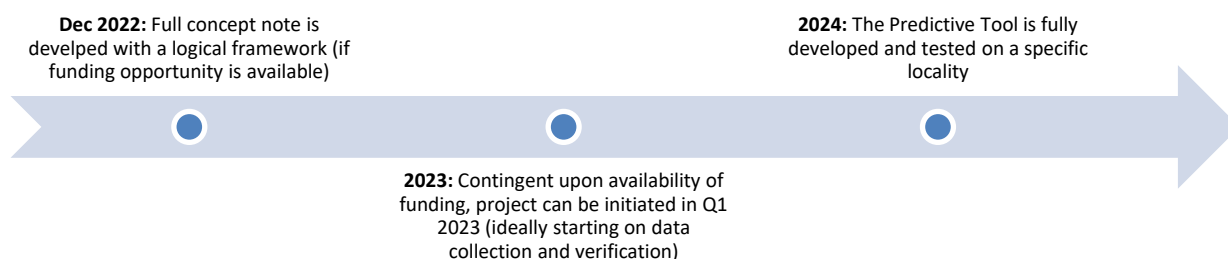
Others:

- Academic Institutions
- Local NGOs and CBOs

Potential Risks and Challenges

- Inadequate decision-making power/government instability
- Backfire from groups affected by changes in crop prioritization
- Challenges to data sharing among key entities
- Engagement of key stakeholders to implement the project

Roadmap with key milestones



Potential outcomes of the implementation of the idea

The proposed concept is expected to produce the following outcomes:

- A fully functional predictive tool for food security in Jordan and Lebanon
- A well-established inter-governmental coordination committee for food security
- Proven models of using scenario planning in improving food security at the local level

Expert Group

Contacts

To find out more, you can get in touch with the working group members:

- Oula Mehyiddin, Cooperation without Borders for Tailored Development,
oula_mehyiddin@cwblb.org
- Maisam Otoum, CEWAS, Jordan,
maisam.otoum@cewas.org
- Michelle Jalkh, Swiss Agency for Development and Cooperation, Lebanon,
michelle.jalkh@eda.admin.ch
- Fadi Muaqat, Humanitarian Affairs Officer/Australian Embassy Amman,
Fadi.AIMuaqat@dfat.gov.au
- Heba Ababneh, Swiss Agency for Development and Cooperation, Jordan,
heba.ababneh@eda.admin.ch



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