

FUSE – Jordan Activities Update



June, 2020

Introduction

The FUSE project is addressing Food-Water-Energy challenges and solutions, with a major focus on Amman and the greater Amman region. A series of workshops took place in March 2019, where stakeholders and policy experts shared visions,

challenges, coping strategies, and potential policy solutions. This document presents a short overview of activities of the second project year, such as model development, online meetings, model training and stakeholder communication.

FUSE in a nutshell

FUSE (Food-water-energy for Urban Sustainable Environments) is a transdisciplinary research project involving the Food-Water-Energy nexus in Jordan, with a focus on the Amman region. The project will develop a long-term systems model that can be used to identify viable paths to sustainability. It brings together natural and social scientists from Stanford University in California, USA, IIASA (International Institute for Applied Systems Analysis) in Laxenburg, Austria, UFZ (Helmholtz Centre for Environmental Research) in Leipzig, Germany, and ÖFSE (Austrian Foundation for Development Research) in Vienna, Austria. The project is a not-for-profit research effort and is part of the Sustainable Urbanisation Global Initiative of JPI Urban Europe and the Belmont Forum. Each of the national teams is supported individually by its own national science funding agency.

More information: <https://fuse.stanford.edu/>

Contact: Prof. Steven Gorelick (Stanford University): gorelick@stanford.edu (Project Coordination)
Ines Omann / Karin Küblböck (ÖFSE): k.kueblboeck@oefse.at (Stakeholder Participation)

FUSE – the second year

The FUSE project is now approaching the end of its second year. We are delighted to have made important, enduring connections with stakeholders, experts, and modelers with whom we engaged in 2018 and 2019. Our team of natural and social scientists and engineers has been actively engaged in understanding the intricacies of the food-water-energy system in the Amman region as well as the Jordan valley and the Highlands. There have been two distinct thrusts of our efforts: a focus on the water and agricultural sectors, and developing an understanding of the potential for solar energy, particularly in agriculture.

Integrated Model Development

The integrated systems model (Jordan Water Model), which is being developed in FUSE, is based on the national water policy evaluation model developed

in the preceding “[Jordan Water Project](#)” conducted by Stanford University, UFZ, Laval University, and Manchester University, in collaboration with Jordan University for Science and Technology, running from 2013 to 2018. It provided a nationwide interdisciplinary analysis of Jordan’s water security.

In FUSE, the Jordan Water Model is being complemented by an enhanced agriculture model and other components, such as solar farming. The model is in a mature state and produces updated results on water, a resource of major concern in Jordan, by inspecting water scarcity and security including agriculture. The model accounts for all sources of water and evaluates policies involving a variety of interventions that range from tariff increases to proposed major infrastructure (including the long-proposed Red Sea-Dead Sea conveyance project).

Jordan Cap Training

In the closely associated project Jordan Cap, UFZ has conducted a fourth and final workshop with employees from the Jordanian water authorities in February and March 2020. The goal of the project was to train experts in the use of the long-term strategic modelling tool developed in the Jordan Water Project. During the final workshop of this year, the trainees successfully designed and conducted their own case studies with the tool, including analyses involving water supply projects, population growth and returning refugee migration. Indications are that the Ministry of Water and Irrigation will use the Jordan Water Model to aid in their long-term water planning.

Communication with Stakeholders

After the first set of workshops in Amman in March 2019 the FUSE team continued communication with stakeholders. This was done by:

- setting up a [Facebook group](#) by our local partner [MIRRA](#)
- preparing and sending a [report](#) of the workshops to all participating and interested stakeholders (close to 100)
- conducting a videoconference with key stakeholders about the progress in the FUSE project in autumn 2019

Products planned for 2020

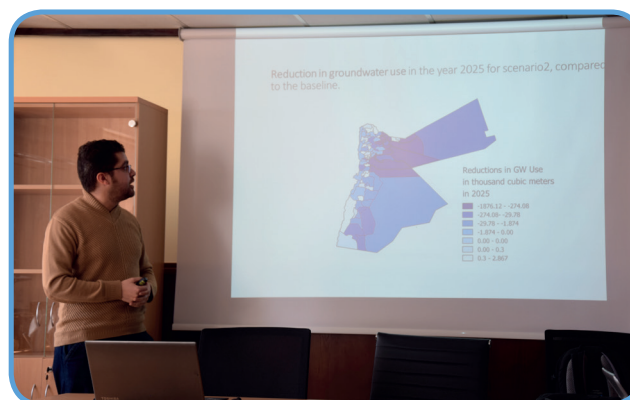
The following papers are planned to be submitted this year:

- Main assessment of freshwater sustainability scenarios and policies using the hydro-economic multi-agent Jordan Water Model (JWM): Submission in September 2020

- Economic analysis of the role of public and private water allocation institutions in the JWM in coping with freshwater scarcity: Submission in November 2020

Workshop in Amman in 2021

The FUSE project intends to hold a final workshop in Amman in 2021. The date and venue depend on the ability of our team to travel and to safely convene with stakeholders in Jordan, given the state of the global pandemic. At that time, we plan to present results that focus primarily on the water sector and prospects for the long-term future.



Imprint: ÖFSE, Sensengasse 3, 1090 Vienna, Austria. Authors: Ines Omann, Karin Küblböck, (ÖFSE); Steven Gorelick (Stanford University); Christian Klassert, Bernd Klauer, Heinrich Zozmann (UFZ); Samer Taloz, Elham Walid Al-Shurafat, MIRRA.

© Photos: Heinrich Zozmann. Design: Alexandra Erös, ÖFSE

The FUSE team would like to thank all partners in Jordan for their valuable contributions. This work was conducted as part of the Belmont Forum Sustainable Urbanisation Global Initiative (SUGI) Food-Water-Energy Nexus theme for which coordination was supported by the US National Science Foundation under grant ICER/EAR-1829999 to Stanford University. The Austrian partners ÖFSE and IIASA are funded by the Austrian Research Promotion Agency (FFG). UFZ receives funding from the Federal Ministry of Education and Research (BMBF). Any opinions, findings, and conclusions or recommendations expressed in this material do not necessarily reflect the views of the funding organizations.