

WS22/23

Exchange semester at German Jordanian University (GJU)

Part of the
IWRM-MENA Master Program at TH Köln



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Supported by: BPSA STUBE-Rheiland

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Introduction

Growing up in the countryside as a farming family member has influenced my study path direction to study agriculture Sciences. practicing agronomy along with my educational journey has sharpened my observations towards Agriculture sector, water generally and irrigation water precisely. Over the years, I realized that the water quantity decreased to the level where it barely reaches our fields at the ends of water canals. As well, the water quality worsened due to irresponsible practices all over the Nile River. My observation and concerns about the water were the driver for finding a suitable multi-disciplinary study program, therefore, I joined the Master of Integrated Water Resources Management program with a focus on the MENA region (IWRM-MENA) at TH Köln. The program aims at tackling the persisting global challenges from water scarcity, climate change, and natural resource over-exploitation through an integrative approach with different other fields. After joining the IWRM Program and gaining more detailed knowledge about the climate change as result of increasing greenhouse gases (GHG) and the associated disasters, risks and hazardous events which the globe witness such as severe flood events, drought. Those hazardous events endanger the humanity in terms of socioeconomic stability, food security, water security, and other aspects.

My name is Mahmoud Ali, I am an Egyptian Agriculture engineer. My main interests are Water, Agriculture, and Environmental Sustainability. I come from a village called Gizrt Saud (Saud Village). Saud is located in Sharkia Governorate in the Northeastern part of Egypt.

Out of the sense of responsibility, I have decided to take part of the action as I believe that accumulated small acts leads to bigger impact. What I needed to be featured with to go ahead and proceed with implementing my ideas are; (1) good understanding of the problem I am planning to tackle and propose an effective solution for, (2) a solid knowledge based on scientific background to find out the suitable adaptive measures and intervention that fit the context where applied, (3) network with professionals in the field, and (4) financial stability to be able to dedicate sufficient time for my plans.

For the forehead mentioned (1) and (2), my personal and educational background are satisfactory, however, points (3) and (4) were crucial. At this stage, STUBE Rheinland played a vital role in my change-making journey. I got to know STUBE-Rheiland through ESG at TH Köln. Participating in STUBE seminars gives individuals a great chance to widen oneself vision and motivate the person to proceed with what he/she is looking forward to, especially when they connect and network with other peer students who have gone through a similar experience. Personally, I find the Career-oriented placements and study periods (Berufsvorbereitende Praktika – und Studienaufenthalte) (BPSA) program offered by STUBE is a great support for students. I applied for the BPSA for my stays in Egypt and Jordan from Sep.2022 till Feb. 2023.

Egypt

Solid waste Background

Solid waste Management is one of the major challenges in the Middle East and North Africa (MENA) region. Egypt generates the highest amount of municipal waste in the region at 21 million tons/year. Landfills were traditionally used for waste disposal usually by burning the waste or incineration, where the combustion can be used to generate energy, but when not, the generated heat will be wasted in the environment causing air pollution (Mostafa, 2020). El-Messery, Ismail & Arafa, (2009), conduct a study to evaluate the solid waste management system in 143 villages representing the Egyptian rural area and found that the common practice in most of the Egyptian rural areas is throwing solid waste on drains and canal banks directly besides dumping and uncontrolled burning. In 2012, the waste generation in Egypt was about 0.4-0.5 kg/day per capita in the rural areas compared to 0.7- 1.0 kg/day per capita in the urban area, while the official waste collection coverage in the urban was 50-60% and 0-30% in rural areas (Mostafa, 2020).

Integrated Solid Waste Management Pilot project (EYES).

One of my main goals I have in mind to carry out is a pilot project for Integrated Solid Waste Management (ISWM) in the rural areas of Egypt in order to integrate the local community in the solid waste management and utilize social and technological innovation. The project aims at removing the accumulated solid waste, raise public awareness of the negative impact of solid waste, promote Reduce, Reuse, and recycle (3R) concept, and separate from source.

The pilot project is divided into 3 phases as follows:

Phase 1: Development of a Mobile Application

Phase one aims to facilitate the waste removal process and decrease the amount of accumulated waste in the village by at least 70%. This is planned to be done through the creation of a Mobile application with different user interfaces, community user interface, Municipality user interface, and at a later stage the private sector user interface.

Phase 2: Separation at Source

The second phase aims at the promotion of the separation at source concept through Community engagement and the Theory of Change behavior to:

- Ease the process of segregated waste collection, processing, and recycling.
- Pave the way to the potential private sector.
- Increase the potentialities of generating a profit and job opportunities from waste recycling.

Phase 3: Private Sector Participation

Phase 3 will be based on the private sector participation (PSP) to engage the private sector, promote the Public Private Partnership (PPP) concept, and strengthen the municipality's work. The private sector will be engaged in the collection of separated waste for recycling purposes such as bio, paper, plastic, metal, etc.

Accomplishments:

As a founder of the EYES project, I am proud to have achieved several important milestones. Firstly, I have successfully held meetings with community leaders to discuss the project and its objectives. These meetings were crucial in gaining support and buy-in from the community and helped to establish a positive relationship with key stakeholders.

Secondly, I was able to secure an informal agreement with the head of the municipality to move forward with the project. This agreement was an important step in gaining the support of the local government and ensured that the project was aligned with their priorities.

Thirdly, I am delighted to announce that I have been accepted into [KICKSTART](#) round 4 at TH Köln for the first phase of EYES. This is a significant milestone in the project's progress and gives me the necessary support and resources to advance towards my goals.

Finally, I am thrilled to report that we have begun the process of establishing a community-based organization with a focus on environmental sustainability. This organization will play a key role in the implementation and maintenance of the project, and will provide a platform for ongoing engagement and collaboration with the community. I am excited about the potential impact of this project and look forward to continuing to make progress towards our goals.

User Interface

Individuals/ Community members have the ability to sign up/in to report a Waste accumulation with few steps



Einblick in den Pitch von Team EYES. (Bild: StartUpLab@TH Köln)

EYES: Dabei handelt es sich um die erste Phase eines größeren Projekts für eine integrierte Abfallwirtschaft in ländlichen Gebieten in Ägypten. Es ermöglicht es den Bürgern, den anfallenden Abfall zu melden und zu verfolgen, und hilft den Kommunen, die Abfallbeseitigung zu planen, zu erfassen und zu überwachen.

Figure 1: screenshot from KICKSTART StartUpLab@TH Köln page

Workshops and events

1- 1st Egyptian Food Security Symposium

The Food Security Symposium was held in partnership between the World Food Program (WFP) and the Egyptian Ministry of International Cooperation, on Sep. 28th – 29th in Cairo. The symposium brought together speakers and representatives from governments, financial institutions and the private sector - including startups from Egypt, the MENA region and discussed the increasingly necessary issue of climate resilience. The speakers presented cutting-edge solutions through Agri-tech that enhances climate resilience with agricultural innovations, financial inclusion to reach and finance the most vulnerable communities, social development using safety nets and empowerment programs.

The Symposium highlighted the significance of acknowledging climate change as a part of our daily reality, particularly in the lead-up to the COP27 UN Climate Change Conference in Sharm El Sheikh.

The session I attended focused on the power of innovation to make agriculture and food systems more resilient to fight the hunger and improve people lives.

I had the chance to know and connect with some of the leading Agri-tech start-ups in Egypt as [Mozare3](#) and [Fresh source](#). Both start-ups offer the small holder farmers platforms to improve their livelihoods by bridging the gap between supply and demand, connecting them to the market, offer ad-on services such as pre-season contracts, micro credits, access to fertilizers, Agri-courses, and seasonal Jobs.



Figure 2: Food security Symposium Sep. 2022

Jordan

Water situation Background

Jordan's water situation is one of the most critical in the world, with the country facing severe water scarcity due to limited natural water resources, increasing demand, and inefficient water use practices. The country's water resources are under tremendous pressure due to the increasing demand from households, agriculture, and industry, leading to over-extraction from the available sources. Additionally, climate change exacerbates the water scarcity issue, with increasing temperatures and changes in rainfall patterns resulting in decreased water availability.

Exchange semester

As a part of my Master of Integrated Water Resources Management (IWRM-MENA) at Technical University of Cologne (TH Köln) in collaboration with the German Jordanian University (GJU), I had to do an exchange semester which aims to equip master students with practical knowledge and skills in managing water resources sustainably with focus on MENA region, particularly in the context of Jordan. The program provides students with the opportunity to learn about Jordan's unique water situation, which is characterized by water scarcity, rapid population growth, climate change, and political instability.

During the exchange semester I learnt about Jordan's water situation and how sustainable water management practices can be implemented to mitigate the issue. I have created a network of experts and alumni working in the water sector not only in Jordan but also in the region.



Figure 3: Students group picture with the lecturer at GJU, Amman, Jan 2023

Internship at ICARDA

I had the opportunity to complete a short unpaid part-time internship with International Center for Agricultural Research in the Dry Areas (ICARDA) in Amman, Jordan, where I worked on sustainable land management (SLM) and water harvesting projects from Dec.2022 till Jan.2023. During my time there, I gained hands-on experience in designing and implementing water harvesting techniques in Jordan's arid climate. I also learned about the importance of SLM practices to mitigate land degradation and improve agricultural productivity. The internship was a valuable experience that allowed me to apply my academic knowledge in a practical setting and contribute to ICARDA's efforts towards sustainable water management in Jordan. It provided me with valuable hands-on experience and exposure to the latest research and practices in the field.



Figure 4: A field visit to Almajdyeh site, Amman Jan.2023

Attended Workshops, and events.

1- Walk 2COP27

[Walk2COP27](#) hold an event that has been hosted by Royal Science Conservation of Nature ([RSCN](#)) Organization in Amman on Oct. 31st, 2022.

The Event highlighted how do you experience climate change, what are the best possible solutions, how can we scale those solutions, and what single thing would contribute most to increasing the scope, scale and speed of the transformation we need. The focus was on 4 outcomes of effective climate action: decarbonization, resilience, justice, and circularity.

Keynote addressed on climate change challenges and responses in Jordan through 2 panel discussion. Speakers represented different stakeholders.

Panel 1: climate change challenges and responses in Jordan: Royal Society for the Conservation of Nature, UNDP, Amman Jordan, and Bank al Etihad.

Panel 2: climate change and water in Jordan: EU Delegation to Jordan, Jordan University of Science and Technology (JUST), Bayoudha Village Organic Products.

Attending this event gave me a deep insight into water sector portfolio and the challenge it faces and what are the current responses and potential interventions. It was a great add for my study and have

a holistic view of the climate change impact on Jordan. additionally, I got to know more about the local and international stakeholders working in Jordan.



Figure 5: Walk 2COP27, Amman Oct. 2022

2- 1st National Water Harvesting policy dialogue (Amman, Dec. 2022)

The First National Dialogue for the Jordanian water harvesting sector was organized by The Inter-Islamic Network on Water Resources Development and Management ([INWRDAM](#)), funded by the Embassy of the Netherlands in Amman, in partnership with [IHE Delft](#), [AcaciaWater](#), [MoAgr](#), and Jordan Valley Authority (JVA). The project is in line with local water management policies and provides design tools to improve water harvesting practices and adapt to changing climates. Communities in priority areas will benefit from home-based businesses irrigated with harvested water and powered by solar energy, exemplifying the water-energy-food nexus.



Figure 6: National water harvesting dialogue ,Amman, Dec.2022

3- BONEX first stakeholders' workshop

BONEX is a [PRIMA-EU](#) funded project that focuses on the Mediterranean region's challenges of ensuring future food and water security while preserving ecosystems. The project aims to develop solutions that link governance with practice, promoting the implementation of WEFE nexus policies. BONEX will provide practical tools and examine context-adapted technological innovations to balance social, economic, and ecological trade-offs. The project brings together 16 partners from 8 different countries and will be implemented via seven demonstration projects. In Jordan, BONEX focuses on the Wadi Mujib basin, where German Jordanian University [GJU](#) and [IUCN](#) jointly establish and operate a demonstration site. my participation included supporting in the organization and implementation of the first stakeholders' workshop and in preparing materials and presentations, as well as with the simultaneous translation during the workshop.



Figure 7: Bonex 1st stakeholder workshop, Amman Dec. 2022

Leisure Time

Despite the busy schedule of the exchange semester and the internship, there were still opportunities to enjoy leisure time in Jordan. The country is home to many historical and cultural sites. During weekends and free time, I was able to visit some places and learn more about Jordan's rich history and traditions.

Additionally, there were many museums to explore, such as the Jordan Museum and the Royal Automobile Museum. I also had the opportunity to attend oriental music night. It was a unique and enjoyable way to experience. Taking some time to explore and have leisure activities with other fellow students (local and exchange) helped me to recharge and make the most of my time in Jordan.

Overall, the exchange semester in Jordan provided not only valuable academic and professional experiences, but also opportunities to immerse oneself in the rich cultural and historical heritage of the country.

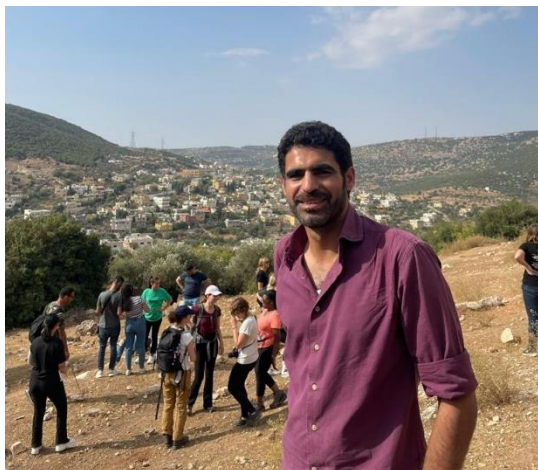


Figure 8: Leisure activities in Jordan 2022

BSPA program Impact

The support I received from the STUBE BPSA program during my exchange semester in Jordan had a profound impact on me. Not only did it allow me to gain valuable experience and knowledge in the field of sustainable water management and agriculture, but it also opened my eyes to the cultural richness and diversity of the region. Through STUBE BPSA's financial and logistical support, I was able to fully immerse myself in the local community and participate in various activities and events that enriched my understanding of the Jordanian culture. I gained a deeper understanding of the challenges faced by communities in the region, and I learned how to effectively work with and engage with people from different backgrounds and cultures.

Furthermore, the impact of the BPSA program extended beyond just my own experiences. After returning from my exchange semester back to Egypt, I also continued to work on the EYES project and started establish a community- based organization, helping to coordinate with local partners and ensure its success. The BPSA program not only allowed me to have a transformative experience, but it also enabled me to pay it forward and inspire others to engage with important global issues.

Köln, 26.02.2023

Mahmoud Ali

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