

## Reclaiming Water: An interdisciplinary approach to clean water in conflict

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### Research Domains

International contexts and perspectives (ICP)

### Abstract

The Reclaiming Water project is a Gaza-UK collaboration aiming to co-produce a socio-technical approach to water purification in Gaza. Responding to severe water scarcity, the project will co-design sustainable water purification technologies using locally available materials, with women as central agents in design, implementation, and stewardship. This interdisciplinary project is rooted in humanitarian compassion and academic-community collaboration. Gazan students will be trained to deliver participatory research methods in their communities, bridging the divide between local knowledge, culture and language, and academic research. The students' voices, experiences, and local knowledge shape the research from the ground up. The project also seeks to strengthen research capacity and higher education opportunities within conflict-affected contexts, positioning Gazan voices at the forefront of innovation and promoting long-term, equitable academic partnerships. This paper presents preliminary findings of foundational project activities (a preliminary needs assessment, stakeholder mapping, and feasibility study) and next steps for project development.

### Full paper

#### Introduction

The water situation in Gaza is desperate. People in Gaza have access to less than five litres of water per person per day for all uses [1], well below the WHO recommended minimum of 15 litres per person per day [2]. Gaza City has lost nearly all its water production capacity

[1], and less than 30% of water and sanitation items required by Medecins Sans Frontiers are being approved by Israeli authorities for entry into Gaza [3]. The larger generators that might help to restore a functioning water supply system are also being denied [3].

The health of women and girls is under particular threat during conflict. The UN report, 'Gender Alert: War on Women's Health' details the myriad ways in which the crisis in Gaza impacts women's health, including their sexual, reproductive and mental health [4]. Given their crucial role in caring for family members and the sick, and their central position within Muslim culture, improving women's access to clean water has wider societal impacts [5].

The *Reclaiming Water* project aims to save lives by co-producing a simple, portable technology to purify water, entrusting women to manage its use. Crucially, this will be achieved by recruiting and training student-researchers for the work on the ground in Gaza, which will also contribute to reconstruction of the education sector, another vital need in Gaza [6].

### Approach

Reclaiming Water takes an interdisciplinary approach to co-production of a water purifying technology and adopts a community-led resource management model to improve health outcomes in Gaza. Students in Gaza will be taught to deliver participatory research methods (including digital field maps and story circles), acting as a bridge between academia and their local communities.

Foundational activities have taken place, including a preliminary needs assessment, stakeholder mapping, and feasibility study, covering a range of socio-technical aspects. Methods evolved based on input from the Gaza team and the dynamic situation in Gaza. Literature becomes rapidly out-of-date, and the emphasis must be on the lived experiences of people on the ground. A series of case studies was created, capturing personal experiences with water in Gaza.

Communication with students in Gaza is approached with care and intentionality. The project prioritises using familiar and accessible communication methods. Significant attention is given to how outputs from early activities can be effectively used on the ground. A key focus is enabling students to train in participatory research methods, equipping them to independently conduct fieldwork. Translation support is provided throughout, with a deliberate effort to centre the Arabic language in all aspects of collaboration.

### Laying the foundations

The groundwork for the project has begun at Northumbria University in the UK, in collaboration with Professor Hatem Elaydi of the Islamic University of Gaza. A focus, right from the project's outset, has been the co-development of knowledge and ideas with Gazan students, ensuring their voices, experiences, and local knowledge shape the research from the ground up. Research assistants based in Northumbria have been able to message and meet with their Gazan peers and Professor Elaydi online, offering valuable insights and feedback throughout their initial research.

The situation in Gaza is unique and continuously evolving. Early activities focus on tracking this evolution from the perspective of water use. Secondary sources were scoured to better understand peoples' relationship to water in Gaza and the challenges faced, in particular by women and vulnerable communities. Support from students in Gaza was fundamental to interpreting this information and developing a selection of 'Water stories', case studies that capture the human dimensions of the water crisis.

Water systems do not exist independently from other infrastructural and societal systems. For example, large-scale water supply systems depend on energy infrastructure for pumping, and clean water access is intrinsically linked to public health. Mapping these interconnections has offered insight into the challenges (and potential opportunities) that are so unique to Gaza.

### Looking to the future

The groundwork completed demonstrates the viability and urgency of the *Reclaiming Water* project and reflects the power of academic-community collaboration under conditions of extreme adversity. As the project progresses, the students in Gaza will evolve from engaged collaborators to empowered leaders. These students will apply participatory methods to co-develop water purification solutions in partnership with women in their communities.

Incorporating the experiences, knowledge, and leadership of Gazan students, the project will go beyond providing clean water to contribute to the revitalisation of Gaza's higher education sector - supporting local research capacity, fostering academic resilience, and empowering a new generation of scholars to lead recovery and innovation from within.