

Citizen Observatories for Decentralised Wastewater Management in Palestine



INTRODUCTION

Water is scarce in the Wadi El Nar river basin and the disposal of untreated wastewater from non-sewered towns causes environmental and public health hazards. Decentralised solutions for wastewater treatment can offer efficient and more flexible options needed to deal with wastewater challenges. Yet the success of decentralized treatment relies on greater awareness and understanding of wastewater issues and sustainable water (re-)use.

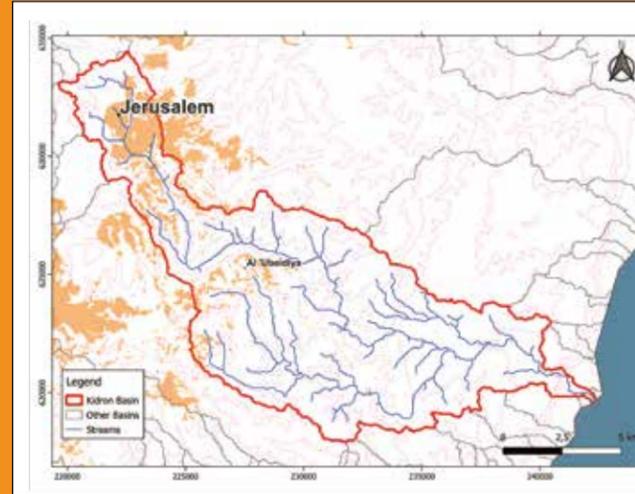
The KidronNar project combines the demonstration of decentralized waste water solutions with the so-called citizen observatories, involving communities in participatory monitoring of wastewater-related pollution or nuisances.

What are citizen observatories?

Citizen Observatories are community-based environmental monitoring and information systems that invite individuals to share observations about their local environment, typically via smart phone apps or the web¹.

In the Wadi El Nar river basin, the KidronNar project helped to set up citizen observatories to create awareness about the sources, amounts and uses of water and, ultimately, contribute to the sustainable utilization of the available water.

One citizen observatory was developed for the Al Ubeidyeh school, and one for the Assasweh community.

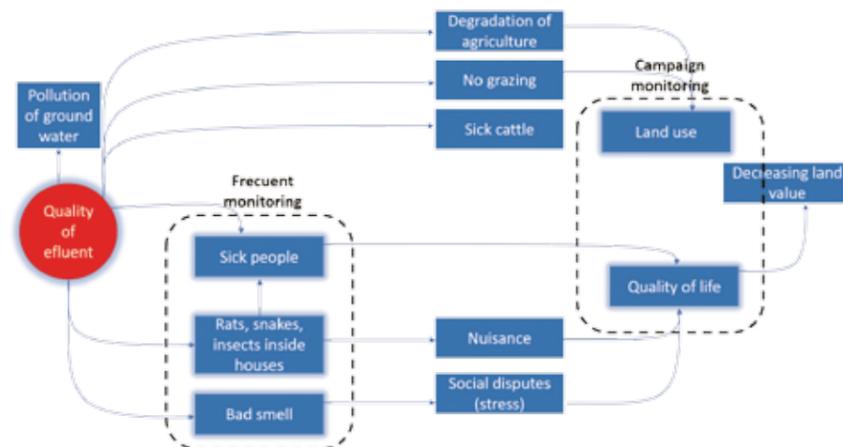


Setting up citizen observatories

Following the Ground Truth 2.0 methodology², a co-design approach was used in Assasweh community and the Al Ubeidyeh schools. Local stakeholders, including representatives of the local school and municipality, as well as community members met in several facilitated workshops to analyse their local wastewater-related problems. Based on this, they agreed on the specific purpose and design of their citizen observatory and monitoring schemes.

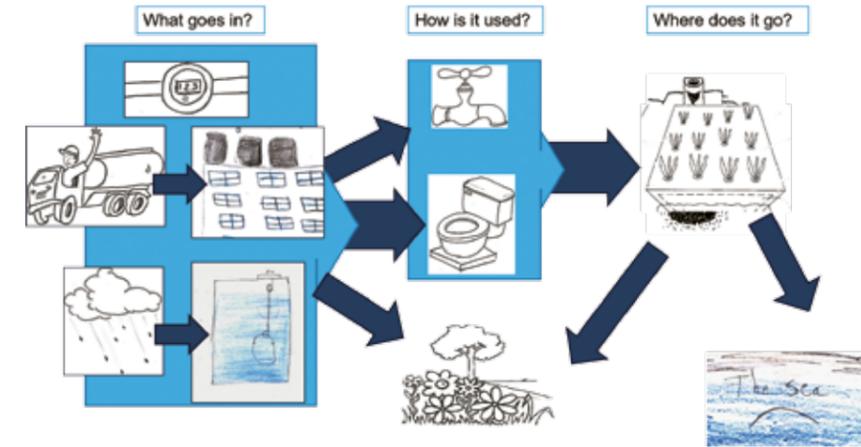
Problem analysis Assasweh community

During the co-design process, members of the Assasweh community produced a detailed analysis of their wastewater-related problems. Based on this, they identified monitoring priorities.



Al Ubeidyeh school water balance: ideas for reuse

At the Al Ubeidyeh school, workshops were held with pupils. They identified water sources, water uses and water discharges for their own school. The pupils jointly developed a map of these sources and uses, and identified how effluent of the wastewater treatment plant could be used around the school. This information was used to design the plant and reuse scheme and to develop support for the project.



Monitoring tools & training

In order to enable the monitoring by pupils and teachers of the Al Ubeidyeh school and members of the Assasweh community, monitoring platforms were set up via the open source app Epicollect. Data was then collected via phones and tablets.

Al Ubeidyeh school observatory

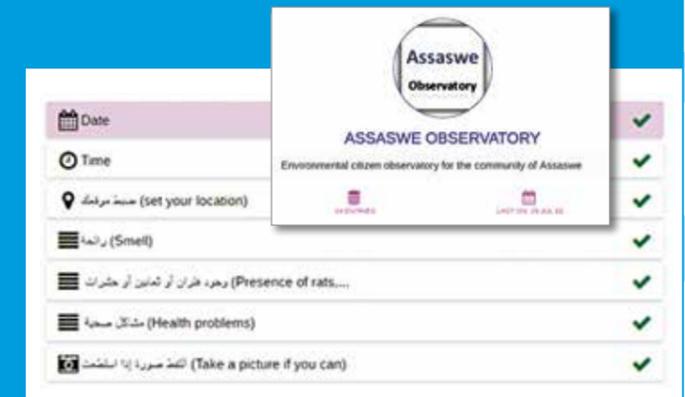
In the school, members of the environmental club were in charge of monitoring and reporting water sources used within their schools via Epicollect, under the supervision of their teachers.

Sources	Uses	About	Sources	Uses	About
Sources of water (مصادر المياه)			Water uses (استخدامات المياه)		
	6	Water truck is here! (حاجنة المياه قد وصلت)		1	Number of uses (عدد الاستخدامات)
	0	It rained today! (امطرت اليوم)		1	Number of uses (عدد الاستخدامات)
				0	Number of uses (عدد الاستخدامات)
				0	There is no water!

As part of the Assasweh community observatory, community members were monitoring indicators related to water balance, smell, pests, and sickness. Trainings on how to use the Epicollect app and register observations, and meetings discussing the water and environmental situation of the community helped members to identify their needs which in turn allowed for effective monitoring.

At end of 2019, a waste water treatment plant was constructed in Assasweh:

- The 1st phase of the data collection in Assasweh took place before the treatment plant went into operation. This phase covered the water balance and health, environmental and socioeconomic problems caused by disposal of untreated wastewater at the edge of the community.
- The 2nd phase of observations were collected after treatment started in 2020 and provided indications of improvements made due to installing a trunkline to the constructed decentralized wastewater treatment plant. This was concluded with a meeting in which citizens provided feedback on the data collected, and their experience with the treatment plant.

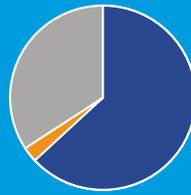


Results

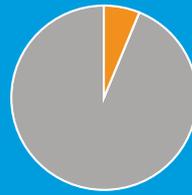
Citizen data was collected by the citizen observatories in two phases and used for different purposes. During the first phase, the analysis of data about water use in the Assasweh community and the Al Ubeidyeh school was used to inform the design of the two decentralised wastewater treatment plants.

The second phase focused on the impact of the wastewater treatment plant. The analysis of the data collected in the Assasweh community showed how negative effects of open wastewater had been reduced. This was confirmed at a closing meeting with the citizen observers. They shared stories on how the reduction of the smell allowed them to sit outside again and how they saw less bugs and rats.

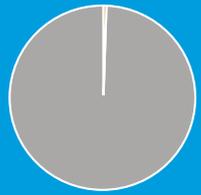
2019 – 345 entries



2020 – 82 entries



2021 – 5 entries



■ Evidence of rats, snakes or other pests (e.g. new damage done or dead animals)
■ Observation of one or more rats, snakes or other pests
■ None of the above

Evidence of rats in the Assasweh community over a three day period

The pie charts above show that the sightings of and nuisance from rats have drastically deteriorated since the treatment plant was installed.

Analyzing and discussing the collected data helped sharing knowledge, improving water use practices and creating a joint understanding of the local community's role in making a positive change, for the citizens themselves, the project members, and the municipality.



About the KidronNar project

The KidronNar project (2017-2022) investigated and demonstrated the feasibility of a decentralised approach to treatment and reuse of wastewater in Wadi El Nar river basin. IHE Delft, local authorities and grass root organisations jointly developed practical and innovative wastewater management schemes, built trust and strengthened relations.

For information about the KidronNar project, please contact Peter van der Steen (p.vandersteen@un-ihe.org).

For information about the citizen observatories, please contact Uta Wehn (u.wehn@un-ihe.org).

References:

- 1 WeObserve (2021). www.weobserve.eu/about/citizen-observatories/
- 2 Ground Truth 2.0 co-design methodology www.gt20.eu/knowledge-base/deliverable-d1-13-guidelines-for-citizen-observatories-and-future-recommendations/

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