

Sustainable wastewater and nutrient management in rural Georgia to address pollution in the Black Sea

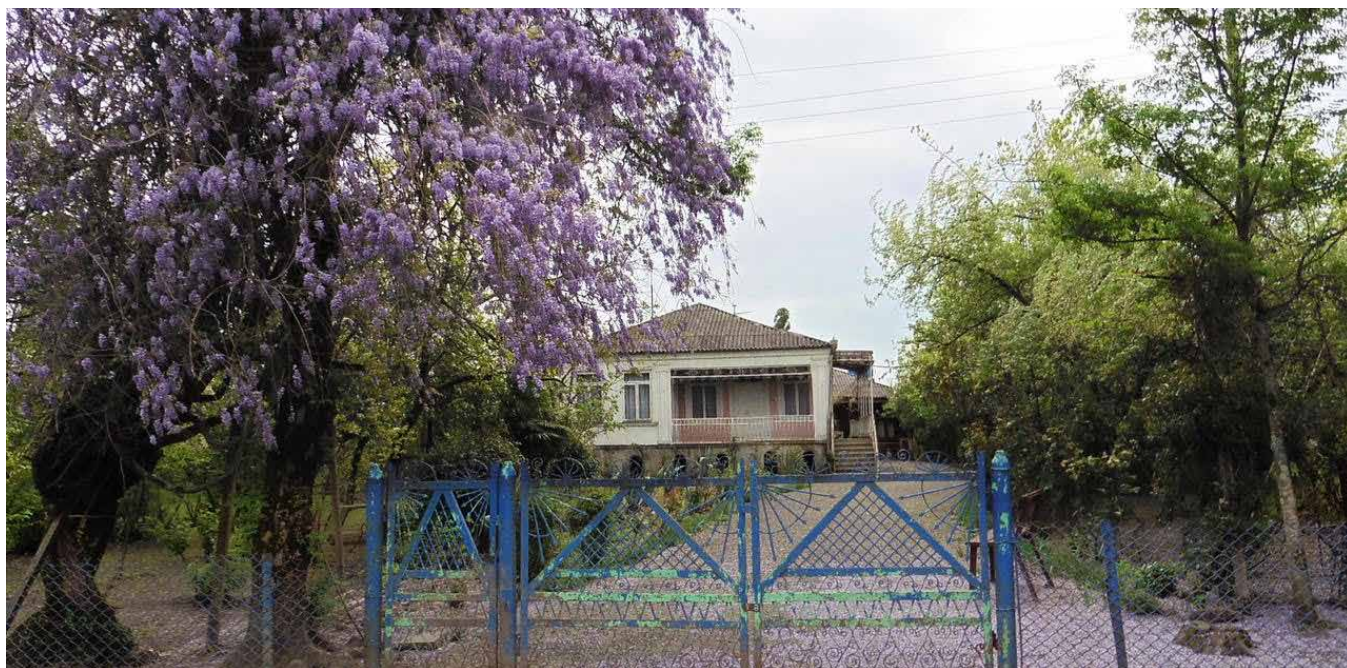
■ Bistra Mihaylova, Women Engage for a Common Future

The issue

Georgia is a country of 4.5 million people in the central and western part of South Caucasus. To the west it is bordered by the Black Sea with a coastline of 310 kilometres, to the north by the Russian Federation, to the south by Armenia and Türkiye, and to the east by Azerbaijan. As at 2022, only 34 per cent of the Georgian population had access to safely managed sanitation services, (World Health Organisation, European Region 2022) and 71 per cent of the population were connected to a water supply (Todradze and Apkhaidze 2021). Many rural households use pit latrines for sanitation and wells for drinking water. With increasing prosperity and water supply, more households are installing flush toilets, but without connection to sewage, meaning that 246.3 million cubic metres (World Health Organisation, European

Region 2022) of untreated wastewater is discharged into waterbodies each year. While the government of Georgia is investing in constructing water treatment facilities in bigger cities, this is not yet the case in rural areas.

Along the Black Sea coast, the discharge of untreated sewage waters, infiltration of animal manure and land erosion are issues of particular concern, causing microbiological contamination and eutrophication, posing a threat to public health and having negative impacts on Georgia's tourism industry. The main sources of water pollution came from pit latrines, poor management of wastewater, uncontrolled animal grazing, the unsafe disposal of waste including animal manure and the intensive use of chemical fertilizers.



Local farm, rural Georgia. Source: WECF 2015.

The response

In response, a project was developed to explore affordable options for simple decentralized sanitation systems and the safe reuse of resources that could be recovered from domestic and farm wastewater. The project focused on empowering women in the community to act as multipliers. The project was funded by the United Nations Environment Programme with a budget of USD 161,400, and was implemented by Women Engage for a Common Future in cooperation with the Rural Communities Development Agency, in two local villages, Khorga and Chaladidi, in the Khobi municipality of Georgia, between 2014 and 2016.

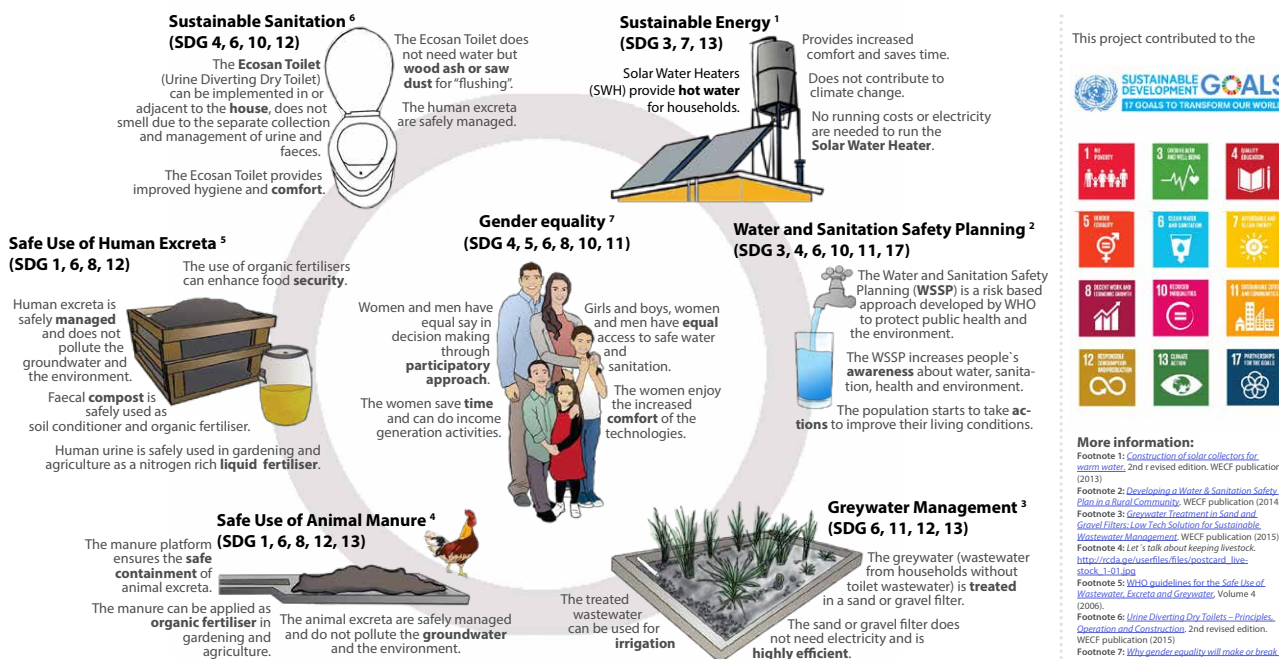
Results, accomplishments and outcomes

The project ensured broad public participation and constructed examples of the technologies being proposed to demonstrate their use. Organic gardens were used to test the treated urine from the demonstration systems as organic fertilizer. Through training, awareness on the importance of water protection and the proper management of wastewater

was increased. As a result, 43 households in the two villages expressed a willingness to invest in the installation of dry urine-diverting toilets and adapted technological solutions for sustainable wastewater management. The advantage of dry urine-diverting toilets is that they do not need to be connected to a sewage system and, unlike pit latrines, lie above ground and do not pollute the groundwater. Women were motivated by this sanitation solution for the reasons of increased comfort, hygiene and water protection, and the production of good fertilizers for the gardens (faecal matter and urine are treated and reused as fertilizer).

All constructed facilities continue being used properly by local families, including women-headed households, demonstrating an integrated way to treat the household wastewater streams. Most of these households have been using urine as fertilizer in their gardens. Faeces are composted to be used after safe treatment during a two-year period as fertilizer and soil improvement. Grey (waste) water treatment was introduced in sand and gravel grey water filters (Huhn *et al.* 2015), where

Sustainable Water, Wastewater and Nutrient Management in Georgian Rural Communities



This project contributed to the



More information:

Footnote 1: *Construction of solar collectors for warm water*, 2nd revised edition, WECF publication (2013).
Footnote 2: *Developing a Water & Sanitation Safety Plan in a Rural Community*, WECF publication (2014).
Footnote 3: *Greywater Treatment in Sand and Gravel Filters: Low Tech Solution for Sustainable Wastewater Management*, WECF publication (2015).
Footnote 4: Let's talk about keeping livestock, http://rcda.ge/userfiles/files/postcard_live_stack_1-31.jpg
Footnote 5: *WHO guidelines for the Safe Use of Wastewater, Excreta and Greywater*, Volume 4 (2006).
Footnote 6: *Urine Diverting Dry Toilets – Principles, Operation and Construction*, 2nd revised edition, WECF publication (2015).
Footnote 7: *Why gender equality will make or break the Sustainable Development Goals*, Sacha Galzou, World Economic Forum (2015).

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the wastewater either infiltrates the ground or is used for irrigation. The animal manure produced is safely composted on a manure platform while the overflow is used directly as fertilizer. It makes people less dependent on chemical fertilizers, another contribution to ground and surface water protection.

The increased knowledge and advocacy about locally adapted water and sanitation resulting from the project contributed to achieving the Sustainable Development Goals (SDGs), particularly SDGs 6, as well as SDGs 3, 4 and 5.

Challenges

- Drinking water quality in the target regions is not tested on a regular basis. Existing laboratories are far away and expensive, and authorities and community members are not aware of the need for testing.
- The capacity of small and medium enterprises in the water sector needs to be developed to correspond adequately to the local demand for wastewater and sanitation solutions.

- The project has raised awareness among the population and local authorities on the urgency of the problem of water pollution from human and animal waste.
- Widespread rural poverty prevents households from investing in sustainable water and sanitation solutions. Municipalities have other priorities and very limited resources. They lack knowledge of affordable and decentralized wastewater and sanitation solutions.
- Awareness among the population and authorities about the importance of safe wastewater treatment is very low. Resources and political will are needed to achieve changes.
- Sanitation remains an ignored topic, and little attention is paid at the national level to the related problems. The reuse of composted products from dry toilets as fertilizer in agriculture is not well accepted yet.

Opportunities for replication and scaling

Through a combination of affordable and effective measures, such as community-managed initiatives, increased recycling and composting, and simple wastewater filters, the project has contributed to the reduction of the pollution in the Black Sea along the Khobi river in Georgia.



Local farm, rural Georgia. Source: WECF 2015.



Grey water filter in rural Georgia. Source: WECF 2016.

References

Huhn, L., Deegener, S., Gamisonia, R. and Wendland, C. (2015). Greywater Treatment in Sand and Gravel Filters: Low Tech Solution for Sustainable Wastewater Management. Nairobi: United Nations Environment Programme – Global Programme of Action. http://www.wecf.org/wp-content/uploads/2018/11/Manualgreywaterfilter_website.pdf.

Todradze, G. and Apkhaidze, I. (eds.) (2021). Natural Resources of Georgia and Environmental Protection 2021: Statistical

Publication. Tbilisi: National Statistic Office of Georgia. https://www.geostat.ge/media/49757/GAREMO_eng_2021.pdf.

World Health Organization, European Region (2022). European Health Information Gateway: Population Using Safe Sanitation (%) 2000–2020. World Health Organization. https://gateway.euro.who.int/en/indicators/epw_10-population-using-safe-sanitation/visualizations/?country=GEO;WHO_EURO#id=36851&tab=graph. Accessed 24 May 2023.