The Potential of Reuse

Developing innovative sanitation solutions for the region
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Sustainable development, liveable communities, healthy environments: to make these a reality around the world, it is essential to ensure access to clean water and adequate sanitation, safely managed for all.

Introduction

Through our operations in Afghanistan, Iraq and Jordan, BORDA West and Central Asia (WesCA) contributes to reducing the ecological risk of untreated wastewater and to improving water resource management in the most water-scarce region in the world.

In 2017, the World Bank identified the Middle East and North Africa (MENA) region as a global hotspot for unsustainable water use, highlighting the threat to groundwater in particular. In some MENA countries, more than half of current water withdrawals exceed what is naturally available. At the same time, 82% of wastewater is not recycled. Water reuse, enabled by the safe treatment of wastewater, thus has significant potential to alleviate pressure on groundwater resources and meet the demand for non-drinking water applications.

The Central Asia region faces similar challenges. Although less scarce, water is not safely managed, and the lack of sanitation facilities leads to open defecation. These factors contribute to the increasing spread of infectious diseases. In the MENA region and Central Asia, it is both affordable and rapidly achievable to provide improved access to water and implement safe wastewater treatment systems—the preconditions for realising the Sustainable Development Goals (SDGs).

At BORDA WesCA, we take an environmental resource management approach that recognises inter-linkages between SDGs. We work to bring about liveable communities by advancing progress towards SDG 6 (clean water and sanitation for all). This in turn contributes to the achievement of SDG 3 (improving general public health by reducing the spread of diseases), SDG 2 (increasing food security by reusing treated wastewater in agriculture and applying fertiliser produced from sanitation systems), and SDG 7 (energy supply through biogas). Taken together, these impacts spur local, national and regional economic growth (SDG 8), providing better living conditions for all.

BORDA’s activities extend on all levels of intervention for making rural and urban areas more liveable, from building infrastructure to empowering social processes to raising awareness in local communities to developing and implementing innovative solutions—all in collaboration with local partners who share our aim of healthy, safe living spaces for all.

This publication represents a regional overview of our methodology, scope of activities, and impact on the daily lives of water users in the countries where we operate.
Facts & Figures

- 174 million people in the region still lack basic sanitation services, 50 million of whom practise open defecation
- No safely managed sanitation in rural areas
- 114 million lack basic handwashing facilities, 61 million of whom do not have any sanitary facilities
- Most heavily damned rivers worldwide leading to water shortages down river
- By 2050, water availability per capita will be cut in half
- Since 1960s: extensive tapping of non-renewable aquifers
- 82% of wastewater is not recycled
- Some 60% of surface water resources in the region are trans-boundary, a main source of interstate conflicts
Contributing to advocacy dialogue to achieve the Sustainable Development Goals (SDGs)

BORDA acknowledges the inter-dependency of the SDGs and the inter-linked efforts needed to achieve them. From improving water management to supplying energy to strengthening food security—all under the umbrella of human rights—our team facilitates productive dialogue between stakeholders from local communities, national decision-makers and regional actors. Through surveys, workshops, talk series and even casual discussions with political representatives, BORDA advocates for human rights with special attention paid to the intersection of gender equality and water issues.

Regional level

The “Water and Energy (WE) talk” series is a recurring event that gathers curious people to address current questions in the field of water and energy. The dialogue facilitates idea-sharing between regional stakeholders including professionals in the field, students and journalists.

National level

Our team met H.E Rula Ghani, first lady of Afghanistan, and her advisor on health affairs to discuss sanitation needs and solutions in Afghanistan.

Local level

Questionnaires, workshops and meet-ups with users allow our team to listen and to understand local communities’ needs. This helps us design relevant, adaptable solutions that communities actually want to use.
Contributing to worldwide expertise on improved sanitation

Despite numerous innovations and technologies for dealing with humanitarian crises, faecal sludge management is still often absent at the onset of an emergency. Our team, in collaboration with Solidarité International and WASTE, has developed and is disseminating guidelines on the establishment of faecal sludge disposal sites in the first phase of a humanitarian crisis. Options for handling faecal sludge along with a range of appropriate crisis-tested solutions are identified and made available to stakeholders, organisations, donors and other interested groups, as well as researchers and students working in the WASH field.

Available for download at borda-wesca.org/library
Addressing the challenges of rapid and unplanned urbanisation

As a result of years of conflict, Afghanistan has suffered from significant population displacement leading to the rapid growth of unplanned settlements in cities. This development has caused numerous negative environmental impacts including more-frequent water shortages, accelerated groundwater depletion, and increased water pollution due to a lack of wastewater management.

Since 2012, BORDA has engaged in extensive implementation of decentralised wastewater treatment systems (DEWATS) in the city of Kabul and other areas of Afghanistan. DEWATS—a cost-effective, reliable and environmentally sustainable treatment option—treats domestic wastewater up to 90% using locally available materials and labor in a simple-to-operate system.

Systemising wastewater management

Population: 35.5 million
19.8 million lack basic sanitation services
4 million people still defecate in the open

Afghanistan

DEWATS project at Wazir Akbar Khan Hospital - reducing the spread of infectious diseases. Prior to the DEWATS construction, the hospital’s blackwater was discharged a few meters away from the emergency room entrance.

1 Afgh invested in sanitation saves 5 Afgh in public health
Over 2000 “BORDA trained” local engineers, craftsmen and site supervisors
Addressing gender inequalities

A lack of adequate sanitation facilities in schools contributes to absenteeism among girls. Personal hygiene, health and physical safety are at stake. When girls are not able to use a clean and safe bathroom as often as needed, they are not able to change during menstruation, are at greater risk of developing urinary tract infections, and may even fall victim to sexual and gender-based violence (SGBV). In addition to building school-based sanitation infrastructure, BORDA educates students on good hygiene practices including proper hand-washing.

37% of girls miss at least one day of school per menstrual cycle
Only 12% of girls use pads

Building rural resilience

Between 1990 and 2005, Afghanistan lost 33.8% of its forests and woodlands. This decline is due to multiple factors including climate change, increased population-related stresses on the environment, and rural households’ reliance on woody biomass as their primary domestic fuel source. Extensive wood-burning increases greenhouse gas emissions, accelerates deforestation, generates indoor air pollution that harms residents’ health, and increases household expenses.

Biogas technology offers a sustainable, high quality and versatile form of bio-energy that can serve as a suitable alternative to wood-burning. Animal manure feeds the biogas system, which in turn supplies homes with gas for cooking and heating. The system also produces compost fertiliser that can improve farms’ productivity. More energy, more income, lower cost: biogas embodies sustainability.

“Using the animal manure to heat up the house and cook is very practical, neither I nor my wives need to go outside the farm premises anymore to pick up fire wood” - Abdel Hahad, biogas user in Bamyan
Supplying water for therapeutic gardening

BORDA collaborates with human rights organisations to support the construction of safe spaces for victims of violence, abuse and other human rights violations. Therapeutic garden facilities provide outdoor spaces specifically designed to meet the physical, psychological, social and spiritual needs of refugees and internally displaced people.

In Chamchamal, Northern Iraq, BORDA has collaborated with the Jiyan Foundation to design and build a decentralised wastewater treatment system (DEWATS) for the therapeutic garden at the Jiyan Foundation Healing Centre. The system supplies sufficient reusable water for the garden’s plants, conserving valuable drinking water for the area’s residents.

Population: 38.3 million

- 33.55 million have access to basic sanitation services, 12.2 million of those have safely managed services
- 5.22 million are without access to basic services

The wastewater treatment system at the Jiyan Foundation Healing Centre cleans 100m³ of greywater per day, enough for the entire garden. The garden’s therapeutic approach assists victims in the healing process.

Iraq

Relieving the plight of refugees and internally displaced people

3 million internally displaced persons (IDPs)
Improving living conditions in the camps

The emergency setting of the refugee and IDP camps requires quick humanitarian responses. BORDA designs and builds decentralised wastewater treatment systems (DEWATS) to address the needs of refugee settlements. Low-contaminated wastewater, such as water from showering, is pre-treated and reused in local agriculture to irrigate crops. In addition to reducing the environmental pollution caused by temporary, dense human settlement, this reusable water improves living conditions for displaced people and increases positive interactions between refugees and host communities.

In the Kurdish Region of Iraq (KRI), BORDA has built wastewater treatment systems in the camps at Quratou, Setak, Soran and Zergwez. By enabling the reuse of water and reducing environmental pollution, the treatment systems have helped to mitigate conflict between camp residents and the local population over natural resources.

Fostering capacity development in wastewater management

BORDA works to strengthen capacities in sustainable sanitation and water management. To that end, our team has developed specialised, target-group oriented trainings for public and private sector professionals, NGOs and civil society groups, local and international service providers, the academic community, and WASH-sector entrepreneurs. Participation is at the centre of our work: our methodology consists of supporting participants in planning and designing their own sustainable sanitation projects within the framework of intensive five-day workshops.

“This training was brilliant and fills in the gaps in terms of understanding the wastewater management. I will definitely share what I have learned with my team and hope for further collaboration with BORDA and its partner organisation CEWAS.”

- Atallah Muteran
Directorate of Water Baghdad
Fostering innovation from the municipal level to the national level

In Jordan, around 40% of the population lack a sewer connection. Overloaded septic tanks and illegal dumping threaten groundwater quality. In addition, Jordan suffers from water scarcity. Improved wastewater management offers a sustainable way to address the challenges of groundwater contamination and increasing water shortages. BORDA works hand in hand with municipalities, engages in policy with the Ministry of Water and Irrigation (MWI), and surveys local communities to determine their water and sanitation needs. Through this collaboration, we design suitable wastewater treatment infrastructure along with the business models that make the systems sustainable and the policies that support long-term behavioural changes.

Maximising the reuse of water

Population: 9.7 million
7.5 million of those have safely managed services
250 thousand people lack access to basic sanitation services

BORDA organised a workshop to tap the knowledge of experts working in areas related to water governance. Participants shared and discussed their experiences with wastewater and faecal sludge management, reuse of bio-solids, financing, service provision, and cross-sector cooperation.

The agricultural sector accounts for 50% of water usage but contributes only 3% to GDP
Preserving natural bio-diversity and ecosystems

Eco-tourism financially supports the maintenance of nature reserves and allows people to more fully appreciate Jordan’s landscapes. Yet it presents a significant challenge: ensuring that the waste generated by visitors does not damage sensitive ecosystems. In environmentally protected areas, BORDA studies local biosystems in order to identify suitable options for close-to-nature treatment systems. This process involves selecting appropriate filter materials on-site, and identifying, collecting and potting indigenous plants that can be employed to transform grey- and blackwater into useful resources.

Establishing an integrated water management hub

In March 2018 the BORDA regional office in Amman, Jordan opened the Technical Service Unit (TSU). Always striving for excellence, our team has gathered a group of engineers and urban planners to serve as technical support for various BORDA units. Using the lessons learned from their own experiences and their knowledge of the latest innovations in the field, TSU experts advise BORDA project implementers, monitor and evaluate our projects on a daily basis, and manage knowledge exchange internally and with local and international partners.

At the Feynan Ecolodge’s in the Dana Biosphere, our team has identified the process of sludge mineralisation as a suitable solution to treat the wastewater from the lodge. The lodge will benefit from a sustainable low-maintenance solution incorporating different modules of a close-to-nature system that uses native reed plants and local filter material. The treated wastewater will be reused for irrigation of native trees and biogas will be generated for cooking, complementing Feynan Ecolodge's holistic approach. The system will ensure that the treated wastewater reaches the local effluent requirements for safe reuse, and it will also create a natural micro-climate around the lodge.

The Technical Service Unit (TSU) visited an olive farm in Azraq, a town north of Amman, to study options for implementing a wastewater treatment plant to irrigate the olive trees.
Reference


WashWatch.org [website consulted on August 2018]

UNHCR.org/iraq.html [website consulted on July 2018]