



Wastewater governance: Balancing different interests

Responsible, effective wastewater management is needed to address global water crises. This requires careful balance of the often-competing interests of stakeholders, as what poses a risk to the environment and public health may be a valuable resource to farmers and industry. How do we manage these different interests from a policy and practical perspective?

The challenge

Globally, over 80 per cent of all wastewater is discharged without treatment. In low-income countries, only eight per cent of the wastewater is treated. Instead, this wastewater is typically disposed of in the closest surface water drain or informal drainage canal. Even in high-income countries where wastewater is collected, it often undergoes only partial treatment, causing degradation of aquatic ecosystems and poses a public health risk. The need to address this global challenge is emphasized in the 2030 Agenda, SDG 6.3: *By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.*

Progress to achieve SDG 6.3 will make important contributions to sustainable development. Opportunities for reuse, recycling and cost-recovery are significant, as wastewater is a potential source of energy and nutrients. Improved sanitation and wastewater systems underpin public health by preventing exposure of human populations to pathogens and toxic substances. Systems that ensure wastewater is fully treated before its release to the environment reduce threats to ecosystems and protect water resources from pollution.

However, these benefits can only be achieved with good governance of wastewater resources.

Common wastewater governance gaps include: the lack of coordinated policies, the chronic shortage of technical staff and limited technical know-how, and limited financial resources

for planning and implementation of sanitation and wastewater treatment services. In many countries accountability and regulations related to wastewater treatment compliance are very weak. Moreover, the different options for reuse of wastewater and competing interests can make wastewater governance complex.

Recent thinking and experiences

The following case studies illustrate different challenges and solutions for wastewater management across several geographic regions. They show how governance of this increasingly valuable resource can be improved by finding solutions that benefit key stakeholders, such as farmers, city governments, households and the private sector.

Addressing water scarcity through reuse in agriculture – the case of Jordan | In Jordan, which has one of the lowest levels of water resource availability per capita in the world, water scarcity and lack of other options pushed decision-makers to adopt the use of treated wastewater to overcome the mismatch between water supply and demand in the agricultural sector.

If adequately treated and safely applied, domestic and municipal wastewater is a valuable source of both water and nutrients and can contribute to food security and the improvement of livelihoods. However, if wastewater is used in agriculture without necessary safety precautions, microbiological and chemical pollutants can accumulate in crops, livestock products, soil or water resources, and lead to severe health impacts.

The Jordanian government aligned with the 2006 World Health Organization (WHO) *Guidelines for the Safe Use of Wastewater, Excreta and Greywater in Agriculture*, which led to establishment of a national comprehensive risk monitoring and management plan. WHO propose the use of a multiple barrier approach to protect public health along the sanitation and food chains, from wastewater generation to consumption, instead of focusing only on the quality of wastewater at its point of use.

The initiative led to issuing a new standard for irrigation water that paved the way for the use of treated wastewater. Awareness among farmers increased and they were trained on ways to make use of nutrients in the treated wastewater. These interventions showed that farmers can save more than 50 per cent of the fertilization cost, equivalent to more than Euro 330 per farmer per year per hectare in the Jordan Valley. Additionally, a monitoring programme for crops irrigated with treated wastewater was established. This programme is the corner stone of the monitoring system in which crops irrigated with treated wastewater are tested annually for all types of microbiological and chemical contaminants.

Developing new collaboration mechanisms for wastewater management and reuse – the case of Södertälje, Sweden | In Sweden, reuse goals are being set to reduce the amount of phosphorus and nitrogen entering the environment, and reducing nutrients degrading the Baltic Sea.

A decentralized wastewater management approach was developed in the Municipality of Södertälje, through a collaboration between the municipal environmental authority, the municipal

energy, water and sanitation company, and a local farmers organization. A wet composting reactor was built on a farm for treatment and reuse of source separated blackwater from more than 500 households. The reactor has been operational since 2012.

Through the establishment of this sustainable infrastructure for blackwater recycling, the municipality and farmers demonstrate how it is possible to recycle a larger share (about 90 per cent) of nutrients from household wastewater. This is a much higher contribution to the ambition of the Swedish environmental act in regards to resource efficiency related to water and plant nutrients than what is normally achieved.

Balancing interests at the municipal level – the case of Cochabamba, Bolivia | Finding win-win solutions to implement wastewater reuse requires creative thinking and partnerships across different stakeholders. In the Municipality of Cliza, in Cochabamba, the sewerage system previously discharged all wastewater collected from the urban centre (population 10,000 people) directly into the Cliza River which runs across the city.

The Municipality of Cliza, aware of the environmental and health risks, decided to implement a wastewater treatment plant. However, the settlements around the area where the plant was to be built opposed the construction because they feared it would generate bad odours and decrease the value of their land. This is a very common problem in Bolivia because of negative experiences with other plants (usually stabilization ponds) operating poorly.



Photo courtesy of IUCN

Since the best place to build the plant for the urban centre was in the peri-urban areas where there is still agricultural activity, the Municipality and NGO AGUATUYA proposed the implementation of a new treatment system capable of producing water that could be used for crop irrigation without creating odour or mosquito problems. A community of farmers provided the land needed (aprox. 8,000 m²) in exchange for the right to use the treated water for irrigation. The Municipal system, built with support of the Swedish International Development Cooperation Agency, treats and reuses 100 per cent of the wastewater generated in the urban centre for irrigation.

Urban wastewater management – the case of eThekweni Metro (Durban) South Africa | In the new democratic dispensation of South Africa, post 1994, the jurisdiction of Durban city grew to incorporate several other satellite municipalities and rural/peri-urban settlements. Technically the city boundaries expanded fivefold to become the eThekweni Metro. The eThekweni Metro Water Services Department (EMWS) took a strategic decision to develop a sewerage fringe. This meant that everyone outside the sewerage fringe (perimeter) could not be viably serviced by existing wastewater networks and plants due to the topography and capacity. In response to this challenge, the municipality considered decentralized and novel sanitation and wastewater systems to service the communities outside the fringe, with emphasis on reuse.

Throughout this endeavour Durban has been testing and scaling up many new solutions. To date, more than 80,000 urine diverting dry toilets (UDDT) have been installed in households, but achieving user acceptance and reuse of waste have remained challenging. The Decentralised Wastewater Treatment System (DEWATS) with reuse has been rolled out, and innovative technologies and service provision models for on-site systems are being explored, e.g. treatment through black soldier fly larvae – larvae consume the human excreta and can then be sold as valuable protein feed for animals. These are just some of the solutions that are aimed to provide mutual benefits to the local communities and environment.

Onsite sanitation systems – the case of Sinnar, India | More than half of the world's population lives in urban areas, and sanitation coverage is not keeping up with population growth. Emptying, transporting and adequate discharge and treatment of this faecal sludge is thus essential. Over a billion people in urban and peri-urban areas of Africa, Asia, and Latin America are served by onsite sanitation technologies and around 2.7 billion need faecal sludge management (FSM) services today. FSM can involve a myriad of actors, some operating informally, who perform various functions along the sanitation value chain.

With few regulations and poor oversight, most onsite sanitation systems do not conform to recommended design standards posing health and environment risks. (e.g. discharge in open drains, soak pits close to drinking water wells). Furthermore, limited involvement of local government often results in unregulated septic tank emptying services and sludge handling by private players, who often resort to illegal dumping.

With support from CEPT University, the municipal government of the city of Sinnar in India prepared an Integrated Faecal Sludge Management (IFSM) plan, which ensures that all toilets are connected to improved onsite sanitation systems, with



Photo: iStock

scheduled emptying services on a 3-year cycle. The collected waste is treated at a facility built and managed by a private contractor.

When emptying services are demand-based, the charge of emptying by private players is often high. The introduction of schedule-based emptying has benefits for both customers and the environment. Through performance-based contracts, customers can be assured of a high quality of service, additionally rates for customers drops due to economies of scale, lowering the charge per individual emptying. As for the environment, effluent quality will improve as it is assumed that solid waste from septic tanks will not overflow to drains or soak pits.

The city has engaged a private sector enterprise for scheduled emptying services. The contractor will be regulated and paid for through tax receipts. The city government has introduced a sanitation tax to make sure that adequate funds are available for operation and maintenance of the FSM services. The collected sludge can also be treated and converted into compost, which in turn the private operator can sell for additional revenue.

Recommendations

Recommendations have been formulated from the above case studies and discussion from the event *Balancing competing interests and opportunities for better wastewater governance* held at World Water Week 2017.

Wastewater contains potential sources of energy, nutrients and above all, water | Improved management of wastewater must be promoted as a means to protect both human and ecosystem health. It also presents opportunities to recover energy, nutrients and scarce water resources, and reuse of these valuable by-products can support the transition to a circular economy. Agricultural applications are particularly good opportunities for water recycling and resource recovery.

The role of local government is crucial | Local governments must play a role in creating an enabling environment for involvement of different stakeholders across the sanitation value chain. Local regulations are key to strengthening wastewater governance and can provide opportunities for resource sharing.

Financial sustainability plays an instrumental role in improving wastewater governance | Financial tools and public-private partnerships can help diversify risk and promote high-quality outputs. Involvement of the private sector can result in more economically efficient and reliable service delivery through the pursuit of profit maximization. Tools such as sanitation taxes help citizens hold governments accountable for ensuring service delivery while also securing a reliable funding source for current and future services.

Dialogue and stakeholder involvement are critical throughout the process | From planning to implementation, dialogue and stakeholder involvement is needed at every step to understand different users and their needs. This approach can often lead to stronger outcomes like establishing grounds for partnership or finding mutually acceptable trade-offs. At the same time, in some cases a choice for one reuse approach over another may mean certain groups 'lose out'; attention is needed to avoid exacerbating or reinforcing inequalities.

About this publication

At World Water Week 2017, Stockholm Environment Institute, GIZ, the UNDP-SIWI Water Governance Facility, CEPT University, the Water Research Commission of South Africa, and the Sustainable Sanitation Alliance organized a session to explore these questions through a series of case studies from regions facing different wastewater challenges. This policy brief provides an overview of these cases and key messages that emerged from the session.

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Suggested reading

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