

Chapter 4

Water supply and sanitation for human settlements

UN-Habitat

Hezekiah Pireh and Giuliana Ferrero

With contributions from:

Nidhi Nagabhatla (UNU-CRIS), Gemma Arthurson and Yasmine Zaki Abdelaziz (IOM),
Sanjaya Bhatia (UNDRR Incheon), Sean Furey (RWSN), and Carlos de Oliveira Galvão (IAHR)



4.1 Introduction

• • •
The magnitude of the WASH challenges in formal and informal human settlements is such that no one country or institution alone can overcome the growing demand for these services

The need for partnerships and cooperation on water supply, sanitation and hygiene (WASH) in human settlements, regardless whether they are formal or informal, is driven by three main factors.

First, the cross-sectoral nature of WASH creates the need for partnerships. Various actors, including the private sector, non-governmental organizations (NGOs) and communities, along with government ministries and departments responsible for WASH, health, housing, agriculture, education, planning and infrastructure, among others, are all handling various aspects of the water supply and sanitation sector. Partnerships and cooperation open up space for additional actors relevant to – but not always considered to be part of – the WASH sector.

Second, the magnitude of the WASH challenges in formal and informal human settlements is such that no one country or institution alone can overcome the growing demand for these services (WHO/UNICEF, 2021). Pollution, climate change impacts and environmental degradation of freshwater resources, combined with the huge infrastructure gap in a world of scarce financial resources, explains the multitude of state and non-state actors involved in water supply and sanitation service provision.

Third, there is consensus that WASH initiatives are much more likely to meet their objectives if the intended beneficiaries participate in a meaningful way in multistakeholder partnerships and cooperation, especially in rural areas and secondary towns (UN-Habitat, 2008). Evidence suggests that effective stakeholder involvement in the decision-making process and in planning and implementation leads to services that are more appropriate to the needs and resources of poor communities, and increases public acceptance and ownership of systems (Jones, 2003). Stakeholder engagement also ensures from the onset that accountability and transparency are built into the programme (Evans et al., 2005).

This chapter presents an analysis of a number of examples of WASH-related partnerships and cooperation in formal and informal settlements that address specific objectives, including: those aimed at strengthening the capacity of operators through peer-to-peer support; those aimed at addressing wastewater management; those aimed at ensuring that interventions are informed by and respond to the needs of local stakeholders; those aimed at building resilience to climate change; and those aimed at improving access to services in refugee and migrant settlements.

4.2 Water operators' partnerships

Water supply and sanitation service provision in human settlements is affected by a plethora of governance and operational challenges. In the last decades, service providers across the globe have been turning to peer-to-peer partnerships to enhance their capacity and performance while striving to provide affordable quality services for all. These not-for-profit partnerships are referred to as *water operators' partnerships* (WOPs). They work by connecting established, well-functioning utilities with other utilities that need assistance or guidance. Building on peers' shared understanding of professional demands and challenges, partners conduct joint diagnoses to assess challenges and design solutions. WOPs are non-commercial partnerships that rely on trust and open exchange of information and expertise.

The United Nations Secretary-General's Advisory Board on Water and Sanitation first called on development actors to support these partnerships in 2006 and requested the United Nations Human Settlements Programme (UN-Habitat) to host the Global Water Operators' Partnerships Alliance (GWOPA)¹³ to support water operators through WOPs. WOPs are implemented in a variety of settings that include cities and small towns in low- and middle-income countries and fragile states. In the global WOPs database maintained by

¹³ <https://gwopa.org/>

Box 4.1 The experience of Ghana Water Company Ltd. in pro-poor services: From mentee to mentor

About half of the 17 million urban residents in Ghana live in low-income urban communities (LIUCs).

While Ghana Water Company Limited (GWCL) is responsible for potable water supply to all urban communities in Ghana, only a fraction of the LIUC's residents have direct access to GWCL's piped network.

Over the last 15 years, GWCL has been the beneficiary of a series of WOPs, first supported by Dutch and South African public companies, to improve operational performance and attract additional investments. GWCL then received mentorship and funding from the Dutch WaterWorX Programme and the Dutch Water for Life Foundation to extend service delivery to LIUCs by providing direct access to water services to over 750,000 people. This process led to the creation of a specialized Low-Income Customer Support Unit, making service delivery to the underserved poor a viable market.

The impact associated to this success story grew further in 2021 when GWCL embarked on a new WOP, this time as a mentor, together with VEI Dutch water operators, to support the development of pro-poor activities at the Guma Valley Water Company in Sierra Leone.

Source: GWOPA (2021).

GWOPA, out of the 425 WOPs documented, the majority (50%) involves two utilities from the Global South; and 38% are partnerships between a northern and a southern utility. The remaining are triangular partnerships¹⁴ (10%) and partnerships among utilities from the Global North (2%).

WOPs can vary in terms of duration, objectives, and the number and nature of partners involved. Some WOPs focus on a single technical issue and last less than a year; others cover several aspects of service delivery and organizational functioning, and last for some years. In general, WOPs make their impact by helping utilities acquire and apply knowledge, establish new practices and implement improved approaches. The areas tackled through mentorship encompass the management, financial and technical levels. Utilities may want to increase efficiency, take up new mandates, such as providing services in low-income areas, expanding sanitation service coverage, enhancing environmental performance, facilitating access to finance, and/or rebuilding human resource capacity following a restructuring. The resulting capacity and performance improvements can facilitate utilities' access to financing for infrastructural investments, supporting further extensions or improvements in services. WOPs have been gaining importance on the global development agenda, as demonstrated by the EU-WOP programme launched by GWOPA in 2021. The EU-WOP programme is a €9 million initiative funded by the European Commission; it involves 22 WOPs created among utilities from African, Arab, Asian, European and Latin American countries.¹⁵

WOPs can be a valuable instrument to reach underserved populations in urban contexts, and implementing WOPs can have a ripple effect because the beneficiary or mentee utility, after having enhanced its capacities and acquired new competences, can go on and use this expertise to help other utilities (Box 4.1).

Moreover, many countries are still facing challenges in extending services to rural areas, where coverage of safely managed drinking water services (60%) is lower than in urban areas (86%) (WHO/UNICEF, 2021). However, the WOP model has proven effective in rural areas of Latin America. For example, the National Federation for Sanitation Services Cooperatives (FESAN) in Chile supported the Rural Community Development Association (ADECOR) in Guatemala to provide water services to indigenous communities (Box 4.2). A long-lasting impact on rural water providers can be achieved by partnerships that tap into local knowledge in a participatory manner.

The positive outcomes generated by WOPs include organizational changes related to improvements in staff knowledge, skills, awareness and attitude, in addition to a deeper understanding of the organization's needs and strategies on how to address them (Pascual-Sanz et al., 2018). This translated in an estimated number of 63.7 million indirect beneficiaries (UN-Habitat, n.d.). However, from a practical standpoint, some challenges still persist. For example, the performance indicators normally used to monitor how capacity development takes place in WOPs provide little insight into the intangible elements of capacity development and the effectiveness of the partnership (Pascual-Sanz et al., 2013). Other aspects to be carefully considered while implementing a WOP are the context in which it takes place, including language, cultural norms and governance structures (Tutusaus and Schwartz, 2016). Lastly, questions of power dynamics should be more openly discussed within the WOP community, as operators and donors have various interests at stake (Beck, 2021).

¹⁴ Triangular cooperation normally involves a traditional donor from the ranks of the Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD), an emerging donor in the South, and a beneficiary country in the South (Ashoff, 2010).

¹⁵ <https://gwopa.org/eu-wops/>.

4.3 Wastewater management

• • •
**Water operators’
partnerships work
by connecting
established,
well-functioning
utilities with other
utilities that need
assistance or
guidance**

Increases in rural and urban populations, rapid economic development and expanding agricultural production have increased the volume of water consumed and discharged as wastewater. Lack of adequate infrastructure and resources to treat wastewater in cities and towns in a number of developing countries results in a large proportion of wastewater being discharged directly into drainage channels, rivers, lakes and oceans. It is estimated that well over 80% of the world’s wastewater flows back into the environment without being treated or reused (WWAP, 2017). As a result, at least 2 billion people (globally) use a drinking water source contaminated with faeces, putting them at risk of contracting cholera, dysentery, typhoid and polio (WHO/UNICEF, 2021).

Over the years, a number of partnerships have been created at global, regional and country levels to address wastewater management in an efficient and sustainable way. At the global level, the Global Wastewater Initiative (GW²), a global multiple stakeholder platform, was launched in 2013. It brings together United Nations agencies, NGOs, academia, the private sector, development banks and others, to step up efforts against wastewater pollution worldwide, and to change the paradigm of how wastewater is commonly seen, from simple waste to a valuable and rich resource.

At the regional level, findings from two regional case studies in Israel, the ‘Karmiel Region Union of Towns for Sewage Treatment’ and the ‘Treatment and Reuse of Wastewater in the area of the Hadera Stream, Ltd.’, suggest that *“regional cooperation can be an efficient tool in promoting advanced wastewater treatment, and has several advantages: an efficient use of limited resources (financial and land); balancing disparities between municipalities (size, socio-economic features, consciousness and ability of local leaders); and reducing spillover effects”* (Hophmayer-Tokich and Kliot, 2008, p. 554).

At the national level, the United States Environmental Protection Agency (US EPA) and 20 partner organizations involved in managing decentralized wastewater systems entered into a Memorandum of Understanding to work collaboratively to encourage proper management of decentralized wastewater systems and increase collaboration among US EPA, state and local governments, and decentralized system practitioners and providers. It aims to encourage proper decentralized wastewater system management and protect the nation’s public health and water resources with an emphasis on small, rural and suburban communities. The partnership was initiated in 2005 with eight public and private sector organizations, and had expanded to 20 partners in 2020 (US EPA, n.d.).

4.4 Multistakeholder partnerships in rural and secondary towns

In the Lake Victoria region in East Africa, multistakeholder forums were created by UN-Habitat in 2005 to enhance local ownership of WASH interventions in secondary towns around the lake. It is generally acknowledged that giving stakeholders a voice and choice in the basic service delivery process, and building their capacity to manage and maintain them, leads to services that are more appropriate to the needs and resources of poor communities, and increases public acceptance and ownership of systems (WWAP/UN-Water, 2019). Stakeholder engagement also ensures that accountability and transparency are built in to programmes from the onset.

The Lake Victoria Water and Sanitation Initiative (LVWATSAN), initially supported by the Government of the Netherlands in 2005 and later by the African Development Bank (AfDB) in 2011, involved a group of diverse stakeholders representing a range of knowledge and expertise and attributed with specific responsibilities:

Box 4.2 Providing water services to indigenous communities in Guatemala through the FESAN–ADECOR water operators’ partnership

In 2017–2018, the National Federation for Sanitary Services Cooperatives (FESAN) from Chile supported the Rural Community Development Association (ADECOR) to expand inclusive and sustainable access to safe drinking water for people living in rural areas of Guatemala, to support women in conditions of extreme poverty, and to increase women’s participation in the sphere of water.

This water operators’ partnership (WOP), financed by the Inter-American Development Bank, was characterized by the participation of water professionals and local leaders. A needs assessment was conducted that highlighted issues with water access, systems functionality and environmental hazards. Then, FESAN went on to share their rich experience about technical and administrative capacity-building. As a result, the Municipality of San Martín Jilotepeque in Guatemala decided to establish an independent drinking water service unit, aligned with the culture and identity of the Kaqchikel ethnic group. The final phase of the WOP focused on training women and men from Maya indigenous communities on sustainable management models for rural drinking water supply, which allowed them to expand career opportunities.

As a result of this WOP, local communities and rural water operators of the district of San Martín Jilotepeque were able to supply drinking water to indigenous populations. Considering the local culture in a participatory manner is fundamental to make a long-lasting impact in rural water suppliers, impact workers and help them take ownerships of the solutions.

Source: GWOPA (2019).

- i. **Respective ministries of water** – responsible for ensuring that the objectives, roles and responsibilities of the national governments are aligned. The ministries also coordinated activities falling under other ministries, such as environment, local government and public works.
- ii. **Municipal authorities** – responsible for providing guidance on urban planning, especially in solid waste, drainage and on-site sanitation. The authorities participated at all stages of the project to ensure that LVWATSAN was properly integrated into the local urban system.
- iii. **NGOs and community groups** – responsible for community mobilization and implementation of community water and sanitation schemes. NGOs and community-based organizations (CBOs) were also responsible for community awareness-raising, training and education activities. Partnership building with local authorities created opportunities for contracting NGOs and CBOs for service provision.
- iv. **Regional water service boards** – key organization in the sector reforms and are looking at LVWATSAN as a way to operationalize water sector reforms at the local level. They were also responsible for setting pro-poor policies, such as adjusting tariff structures. The Initiative assisted in building the capacity of the Boards in the areas of regulation and management of local service providers.
- v. **Local water and sanitation service providers** – large utilities and small-scale providers are managers of assets and any assistance in infrastructure or capacity-building has a direct impact on the management of their operations. The Initiative improved on their assets and management capacity, for sustainability of the project. It also assisted in building the capacity of local service providers in the areas of business plan development, financial management (including tariff-setting), technical management (including operations and maintenance), and demand management.
- vi. **Local private sector** – town-wide improvements in water supply, sanitation, drainage and solid waste management attract further investments and increase local economic activities in the participating towns. The local private sector was, therefore, a direct beneficiary of the programme.
- vii. **Local water vendor associations** – responsible for most of the service provision to the poor communities in the participating towns. The Initiative supported them in establishing and supporting the formation of associations of small-scale service providers; providing access to finance and supporting development of entrepreneurship skills; regulating prices and monitoring quality of water supplied to consumers; and establishing linkages with utilities (through franchising etc.) to ensure vertical integration and synergy.
- viii. **Local media** – responsible for raising levels of awareness about water, sanitation, waste management and drainage issues in the Lake Victoria region in general, and in the participating towns, in particular, among political leaders, policy-makers, development partners and beneficiary communities.

In selecting membership, consideration was given to the diverse

Box 4.3 Smart rainwater management and drought resilience in rural semi-arid communities: A case study of Northeast Brazil

The smart rainwater management in Northeast Brazil was triggered by a drought between 1979 and 1983, which killed nearly one million people. Since the late 1970s, the Governmental Agricultural Research Center for the Semi-arid Region (EMBRAPA Semi-Arid) conducts research on rainwater harvesting systems. In 1990, the Regional Institute of Small Appropriate Agriculture and Animal Husbandry (IRPAA) and other non-governmental organizations started undertaking research and dissemination of rainwater harvesting technologies, as part of the model 'Living in Harmony with the Semi-Arid Climate'. Over the course of the 1990s, it became necessary to create the institutional basis to implement larger programmes, so the government funded the Brazilian Rainwater Catchment and Management Association in July 1999, bringing together researchers and users of rainwater technologies.

In the same year, non-governmental organizations founded the Semi-Arid Network (ASA), which brought together more than 2000 grassroots organizations, including non-governmental organizations, farmers' unions, cooperatives, associations and church communities. The ASA launched the campaign under the slogan 'No family without safe drinking water' and proposed the One Million Cisterns Programme (P1MC), to be implemented by civil society in a decentralized way (at the community, municipal, micro-regional, state and semi-arid regional levels). The P1MC was complemented by the Programme One Piece of Land and Two Types of Waters (P1+2), calling for every rural family to have: (1) a piece of land large enough to produce food, raise livestock, and ensure a sustainable life; and (2) two types of water storage, one for drinking and another for agricultural production.

The rainwater management programmes, executed principally by ASA with governmental financing, are a success story. The community went from 1 million dead people to 1 million cisterns. In the drought of 1979 to 1983, about 1 million people in the Northeast died of starvation, that is, hunger or thirst. In the drought that lasted from 2012 to 2017, there were no records of deaths by starvation, no large migrations, no emergencies and much less looting in the cities of the hinterland.

The One Million Cisterns Programme received the Future Policy Award 2017 during the 13th Conference of the Parties of the UN Convention to Combat Desertification in Ordos, China, because it "is a participative, bottom-up way to provide water for consumption, for producing food and raising livestock in Brazil's drought-prone semi-arid region using simple rainwater collection technology. It empowers millions of the region's poorest people to be in control of their own needs, to generate income and enhance their food security".

Source: Text excerpted and adapted from Gleason Espíndola et al. (2020, pp. 210–211, 215–216).

stakeholder interests and the need for a balanced geographical and gender distribution. Identifying credible individuals who can represent the issues and concerns of a particular stakeholder group is an efficient way to obtain active engagement.

To document this engagement experience in the Lake Victoria region, the multistakeholder engagement guide *How to Set Up and Manage a Town-Level Multistakeholder Forum: A Step-by-Step Guide* (UN-Habitat, 2008) has been used to set up a number of town-level multistakeholder platforms for citizen feedback and oversight in the provision of urban water and sanitation services in Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda. The multistakeholder platforms have also been used in these countries to involve residents in city-wide issues, including

Box 4.4 Uptime Consortium and Catalyst Facility: A new partnership approach to scaling up sustainable rural water services

Rural water supply in low- and middle-income countries, particularly in Sub-Saharan Africa, is typified by a mix of community-based management and self-supply (Carter, 2021). While decentralizing to the community and household level has advantages, there are also marked disadvantages when it comes to uneven and unreliable sustainability and equity (Whaley et al., 2020; Sutton and Butterworth, 2021). Thorough analysis and action research by the University of Oxford and partners in Kenya revealed that, if repair times for waterpoints are brought down from weeks to 1–3 days, willingness to pay goes up and cost recovery improves (Foster et al., 2022). Professionalized operators can maximize ‘uptime’ of rural water services if incentivized to do so through performance-based contracts and blended finance (McNicholl et al., 2019). With this insight, the Uptime Catalyst Facility was created in 2020, initially comprising five non-governmental organizations (NGOs) and private sector operators in Burkina Faso, the Central African Republic, Kenya and Uganda, serving over a million people. This has now expanded to seven countries and 1.6 million people served (uptimewater.org, n.d.), but the goal is to scale up to 100 million people by 2030. For this, partnerships are essential, and a first step was collaboration with the Rural Water Supply Network (RWSN) to find operators and governments that could adopt this approach.

the improvement of municipal governance. Institutionalized citizen engagement within the local governments in turn enhanced public accountability, performance and customer responsiveness in water and sanitation service provision.

A similar multistakeholder engagement initiative in Northern Brazil is summarized in Box 4.3.

In remote rural areas, where water supply is often provided through a combination of community engagement and household self-supply, participatory approaches through partnerships can lead to improvements in maintenance and cost recovery (Box 4.4).

4.5 **Water resilience** **in cities**

Making Cities Resilient 2030 (MCR2030)¹⁶ is a multi-stakeholder initiative for improving local resilience, including reducing disaster and climate risks, through advocacy, sharing knowledge and experiences, establishing mutually reinforcing city-to-city learning networks, injecting technical expertise, connecting multiple layers of government, and building partnerships. Through delivering a clear roadmap to urban resilience, providing tools, access to knowledge and monitoring and reporting tools, MCR2030 is supporting cities on their journey to reduce risk and build resilience. The founding partners are the World Council for City Data, the United Nations Development Programme (UNDP), the United Nations Office for Project Services (UNOPS), UN-Habitat, the World Bank, United Cities and Local Governments (UCLG), Local Governments for Sustainability (ICLEI), R-Cities, the United Nations Office for Disaster Risk Reduction (UNDRR), C40 Cities, the Japan International Cooperation Agency (JICA) and the International Federation of Red Cross and Red Crescent Societies (IFRC). In addition, there are over 280 other partners that provide services to cities.

MCR2030 strives to ensure cities become inclusive, safe, resilient and sustainable by 2030, contributing directly to the achievement of Sustainable Development Goal (SDG) 11 and other global frameworks (Sendai Framework, Paris Agreement, New Urban Agenda).

¹⁶ The information in this section is based upon: www.unisdr.org/campaign/resilientcities/assets/home/documents/MCR2030in%20English.pdf.

MCR2030 tools promote a better understanding of the role of water in the development of an urban settlement. The tools promote diagnostics of risks to human settlements, including from excess or scarcity of water, an analytical approach to address the challenges posed by this situation, and an action plan to handle risks, including water-related risks. For example, the tools emphasize that deforestation may increase the potential for flash flooding, and green areas may help in flood and stormwater management. As such, the Disaster Resilience Scorecard for Cities encourages cities to examine the “‘Water/sanitation loss factor’. If: a = estimated # of days to restore regular service area-wide and b = % of user accounts affected... then water/sanitation loss factor = $a \times b$ ” (UNDRR, 2017, p. 66). This kind of calculations helps to understand the customer service days at risk, so that city planners are better equipped to analyse vulnerabilities in the WASH sector.

4.6 Migrants and refugees

• • •
*Over the years,
a number of
partnerships have
been created at
global, regional
and country
levels to address
wastewater
management in
an efficient and
sustainable way*

At the end of 2020, the number of forcibly displaced people was estimated to be 82.4 million, with 48 million of these internally displaced (UNHCR, 2022). International human rights law requires that states guarantee everyone the right to an adequate supply of safe water for personal and domestic use. However, forced migration puts an increased strain on water resources and more importantly, on the local entities (utilities, communities) responsible for providing water supply and sanitation services. While states are the primary duty-bearers for these rights, multi-stakeholder partnerships between United Nations agencies, international organizations, NGOs and civil society are required to respond to the complexity of contemporary displacement dynamics, impacts and drivers, which affect both displaced populations and host communities.

The Global Compact for Safe, Orderly and Regular Migration (GCM)¹⁷ commits states to provide evidence- and human rights-based policy-making and public discourse on migration. Water governance and effective policy responses are required to consider the full spectrum of human mobility under a human rights framework, with consideration for the relationship between migration and water – that is, how water insecurity drives migration, and how pressure on water resources is also an impact of migration (Global High-Level Panel of Water and Peace, 2017).

In addition to high-level water governance, intra-sectoral partnerships for crisis management are formulated through the Global WASH Cluster to ensure coordination and response quality and capacity for WASH assistance to people affected by emergencies (e.g. operational support to national WASH coordination boards, enhancing emergency preparedness of WASH participants; liability and learning to enable WASH actions and promotion for WASH as an essential part of the humanitarian response in both emergency and development settings). This is specific to emergencies when for example a human settlement displacement camp is being set up. WASH actors need to collaborate under the National WASH Cluster, which is the main coordination mechanism for partnerships and cooperation in emergencies.¹⁸

Within displacement settings, water user committees can facilitate collaboration with local water authorities as well as promote women’s participation (Box 4.5).

¹⁷ For more information, please see: www.ohchr.org/en/migration/global-compact-safe-orderly-and-regular-migration-gcm.

¹⁸ For more information, please see: <https://washcluster.net/>.

Box 4.5 Supporting community-based WASH collaboration in displacement settings

The International Organization for Migration (IOM) has worked to improve access to safe drinking water and sanitation in the Gedo Region of Somalia. A crucial element for ensuring water sustainability has been the establishment of several water user committees, which own and manage the water infrastructure and services. Their members are elected by the community and entrusted with responsibility for the operation and maintenance of the waterpoints on the site, in order to ensure their long-term sustainability. Water committees can also take on other roles, such as promoting positive hygiene behaviour change such as safe storage and collection of water, and safe food and hand hygiene.

It is key for women to be active participants of the committees, given that they are primarily responsible for domestic water collection, and are the main water decision-makers at the household level. Water committees can also work to mitigate disputes over water, promoting cooperation and conflict resolution.

Women's participation and inclusion in labour (work) activities form also a challenge in northeast Nigeria, where the role of women is largely limited to domestic chores, with little or no opportunity to participate in activities that bring them out into the public domain. The IOM encourages women to be fully involved at every stage of programme development, for example selecting where to drill boreholes and place sanitation infrastructure. Further, the IOM has engaged Hygiene Promotion and Community Engagement Volunteers, 80% of whom are women, who are actively involved in mass campaigns and risk communication and community engagement, leading a large transformation in attitude towards, and access to, these types of roles.

Contributed by IOM.

4.7 Conclusions

Experiences on WASH-related partnerships and cooperation in human settlements highlighted in this chapter are driven by the need to accelerate change, create greater impact and achieve sustainable results by sharing knowledge, resources and technical expertise. WOPs, for example, are a valuable tool to enhance the performance of water and sanitation service providers by connecting a strong utility with another utility that needs assistance or guidance.

At the project management level, multistakeholder partnerships involving local community groups and local governments illustrate the value of partnerships in ensuring community ownership and engagement in the management of water and sanitation facilities.

Partnerships and cooperation at global, regional and national levels are equally instrumental in advocating for better performance in wastewater management in diverse human settlements. Strengthening city-to-city learning networks is an equally unique partnership opportunity for improving local resilience. Partnerships on water and sanitation in migrant and refugee contexts also demonstrate the impact of cooperation to ensure supply of these essential services to displaced populations.

References

- Ashoff, G. 2010. *Triangular Cooperation: Opportunities, Risks, and Conditions for Effectiveness*. *Development Outreach*. World Bank. <https://openknowledge.worldbank.org/handle/10986/6081>. License: CC BY 3.0 IGO.
- Beck, A. 2021. *Water Operator Partnerships after 15 Years: Re-Politicising the Debate*. EADI blog. www.developmentresearch.eu/?p=1029.
- Carter, R. 2021. *Rural Community Water Supply: Sustainable Services for All*. Rugby, UK, Practical Action Publishing. doi.org/10.3362/9781788531689.
- Evans, B., Joe McMahon, J. and Caplan, K. 2005. *The Partnership Paperchase: Structuring Partnership Agreements in Water and Sanitation in Low-Income Communities*. London, Building Partnerships for Development in Water and Sanitation.
- Foster, T., Hope, R., Nyaga, C., Koehler, J., Katuva, J., Thomson, K., and Gladstone N. 2022. *Investing in Professionalized Maintenance to Increase Social and Economic Returns from Drinking Water Infrastructure in Rural Kenya*. Policy Brief. Oxford, UK, Smith School of Enterprise and the Environment, School of Geography and the Environment, University of Oxford. www.smithschool.ox.ac.uk/sites/default/files/2022-02/Kitui-maintenance-policy-brief_0.pdf.
- Gleason Espíndola, J. A., Casiano Flores, C. A., Pacheco-Vega, R. and Pacheco Montes, M. R. (eds.). 2020. *International Rainwater Catchment Systems Experiences: Towards Water Security*. London, IWA Publishing.
- Global High-Level Panel of Water and Peace. 2017. *A Matter of Survival: Report of the Global High-Level Panel on Water and Peace*. Geneva, Geneva Water Hub. www.genevawaterhub.org/resource/matter-survival.
- GWOPA (Global Water Operators' Partnerships Alliance). 2019. *Access to Drinking Water in Guatemala thanks to Local Water Committees*. GWOPA website. <https://old.gwopa.org/en/gwopa-news/access-to-drinking-water-in-guatemala-thanks-to-local-water-committees-3-2>.
- _____. 2021. *The Impact of a WOPA in Serving Low-Income Urban Communities in Ghana*. GWOPA website. <https://gwopa.org/the-impact-of-a-wop-in-serving-low-income-urban-communities-in-ghana/>.
- Hophmayer-Tokich, S. and Kliot, N. 2008. Inter-municipal cooperation for wastewater treatment: Case studies from Israel. *Journal of Environmental Management*, Vol. 86, No. 3, pp. 554–565. doi.org/10.1016/j.jenvman.2006.12.015.
- McNicholl, D., Hope, R., Money, A., Lane, A., Armstrong, A., Van der Wilk, N., Dupuis, M., Harvey, A., Nyaga, C., Womble, S., Favre, D., Allen, J., Katuva, J., Barbotte, T., Buhungiro, E., Thomson, P. and Koehler, J. 2019 *Performance-Based Funding for Reliable Rural Water Services in Africa*. Uptime Consortium Working Paper, Vol. 1, Oxford, UK, Smith School of Enterprise and the Environment, University of Oxford. <https://static1.squarespace.com/static/5d5fc19961d87c00011689d2/t/5f02887c0e31a70a9c5fc990/1594001552517/Performance-based+funding+for+reliable+rural+water+services.pdf>.
- Pascual-Sanz, M., Perkins, J., Kiyenje, J., Wright-Contreras, L. 2018. Water operators' partnerships for universal and sustainable access to water services. A. M. Badia Martín and L. Huici Sancho (eds.), *Agua, recurso natural limitado: Entre el desarrollo sostenible y la seguridad internacional* [Water, limited natural resource: Between sustainable development and international security]. Madrid, Marcial Pons. (In Spanish.)
- Pascual-Sanz, M., Veenstra, S., Wehn de Montalvo, U., Van Tulder, R. and Alaerts, G. 2013. What counts as 'results' in capacity development partnerships between water operators? A multi-path approach toward accountability, adaptation and learning. *Water Policy*, Vol. 15, No. S2, pp. 242–266. doi.org/10.2166/wp.2013.022.
- Sutton, S. and Butterworth, J. 2021. *Self Supply: Filling the Gaps in Public Water Supply Provision*. Rugby, UK, Practical Action Publishing. <https://practicalactionpublishing.com/book/2530/download?type=download>.
- Tutusaus, M. and Schwartz, K. 2016. National Water Operators' Partnerships: A promising instrument for capacity development? *Journal of Water, Sanitation and Hygiene for Development*, Vol. 6, No. 3, pp. 500–506. doi.org/10.2166/washdev.2016.040.
- UNDRR (United Nations Office for Disaster Risk Reduction). 2017. *Disaster Resilience Scorecard for Cities. Detailed Level Assessment*. UNDRR. <https://mcr2030.undrr.org/disaster-resilience-scorecard-cities>.
- UN-Habitat (United Nations Human Settlements Programme). 2008. *Stakeholder Engagement and Partnership Building in the Lake Victoria Region Water and Sanitation Initiative. How to Set Up and Manage a Town-Level Multistakeholder Forum: A Step-by-Step Guide*. Nairobi, UN-Habitat. <https://unhabitat.org/how-to-set-up-and-manage-a-town-level-multistakeholder-forum-a-step-by-step-guide>.
- _____. n.d. WOPs Database. <https://gwopa.org/resources/wops-database/> (Accessed on 19 April 2022).
- UNHCR (Office of the United Nations High Commissioner for Refugees). 2022. *Global Trends Report: Forced Displacement in 2021*. Geneva, UNHCR. www.unhcr.org/62a9d1494/global-trends-report-2021.
- Uptimewater.com. n.d. *Global Dashboard*. www.uptimewater.com/global-dashboard (Accessed on 15 November 2022).
- US EPA (United States Environmental Protection Agency). n.d. *EPA's Decentralized Wastewater Partnership*. US EPA website. www.epa.gov/septic/epas-decentralized-wastewater-partnership.
- Whaley, L., Cleaver, F. and Mwachungu, E. 2021. Flesh and bones: Working with the grain to improve community management of water. *World Development*, Vol. 138, Article 105286. doi.org/10.1016/j.worlddev.2020.105286.
- WHO/UNICEF (World Health Organization/United Nations Children's Fund). 2021. *Progress on Household Drinking Water, Sanitation and Hygiene 2000–2020: Five Years into the SDGs*. Geneva, WHO/UNICEF. www.who.int/publications/i/item/9789240030848. Licence: CC BY-NC-SA 3.0 IGO.
- WWAP (UNESCO World Water Assessment Programme). 2017. *The United Nations World Water Development Report 2017. Wastewater: The Untapped Resource*. Paris, UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000247153>.
- WWAP (UNESCO World Water Assessment Programme)/UN-Water. 2019. *The United Nations World Water Development Report 2019: Leaving No One Behind*. Paris, UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000367306>.