

IS CONSOLIDATION THE ANSWER TO IMPROVING RURAL WATER SERVICES IN LOW-INCOME COUNTRIES?

LESSONS FROM OECD COUNTRY EXPERIENCE

REAL-Water Research Brief

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INTRODUCTION

The ambitious targets set out in Sustainable Development Goal (SDG) 6.1 for 2030 have established a high bar for expanding safely managed rural water services. As of 2020, 83 out of 99 countries covered by the Joint Monitoring Programme (JMP) of the World Health Organization and UNICEF were not on track to achieve SDG 6.1, and only 60% of the global rural population had access to safely managed services (WHO/UNICEF 2021).

Community-based management (CBM) emerged from the UN International Drinking Water and Sanitation Decade ending in 1990. By the turn of the millennium, this model was established as the predominant policy instrument for governments to address water services in rural areas, relying heavily on 'self-sustaining' community involvement and financing (Harvey and Reed 2004; Lockwood and Smits 2011). The widespread adoption of CBM was in part a response to failure of the state to provide services through centralized approaches, as well the result of politically driven processes of decentralization of governance functions, with the goal of reducing the state's role in the direct management of public services (Moriarty et al. 2013).

Since 2000, however, the limitations of the CBM model have been well documented. Despite improvements in rural access rates to water services during this period, most studies point toward poor CBM performance, particularly for unsupported CBM in low-income countries (Thapa, Farid, and Prevost 2021; World Bank Group 2017). The financial challenges facing CBM are often notable, with levels of tariff payment generally insufficient to support direct operating costs (World Bank Group 2017; McNicholl et al. 2019; Armstrong, Hope, and Koehler 2022). There are, however, exceptions to these findings where specific conditions are seen to enable better performance, including deep boreholes in the context of freshwater scarcity and piped supplies on premises (Whittington et al. 2009; Marks et al. 2018). In cases where there is adequate long-term support and significant investment, either from public sources or development assistance, the community management model can perform well. These conditions are more common in middle-income countries, such as Morocco; Brazil (World Bank Group 2017); Perú, which has significantly increased public investment and extended the reach of the sector regulator to rural service provision (WHO, UNICEF, and World Bank 2022), and Indonesia, where the donor and government funded PAMSIMAS program has yielded high rates of sustained functionality (Daniel, Al Djono, and Iswarani 2023) (Government of Indonesia, 2023).

Considering the shortcomings of CBM, many governments in low- and lower-middle-income countries are introducing and testing alternative management arrangements for rural water service provision. New sector policies and changes to regulatory frameworks have allowed the adoption of both public utility and private operator models, which have achieved different levels of scale. Globally, this points to a trajectory away from the unsupported CBM approaches towards more formalized and more formally regulated alternatives that aim to deliver higher levels of service (and ultimately, piped supply on premises). It is equally the case that CBM will not disappear overnight, nor will the need to rely upon communities for some portion of the organization and delivery of water services. This policy transition from unsupported CBM to more professionalized management alternatives, including supported CBM, must account for a range of rural consumers and markets, including highly dispersed communities.

AN EMERGING TREND TOWARD ECONOMIES OF SCALE

One of the commonly cited obstacles to improving service quality is the decentralized and fragmented nature of the rural water sector, which makes it difficult to engage with and efficiently regulate many thousands of service providers (Gerlach 2019; ESAWAS 2022). To overcome this challenge, one of the emerging approaches pursued by low- and lower-middle-income countries is to group together rural water supply schemes into larger service areas or to expand an existing service provider’s responsibility across multiple service areas. Table 1 below provides highlights from six countries in sub-Saharan Africa indicating that although these approaches have been established, full coverage across all rural areas is a long-term process. The rationale behind this trend is to achieve economies of scale, increase the revenue base, reduce overhead costs, and limit exposure by pooling the risks of infrastructure failure (World Bank WSP and AFDB 2013; Hope et al. 2020).

Table 1: Examples of consolidation of rural water provision in Africa

EXAMPLES OF CONSOLIDATION OF RURAL WATER PROVISION IN AFRICA					
COUNTRY - MODEL	LEVEL OF CONSOLIDATION	POP. SERVED (CURENT)	MANAGEMENT ENTITY	CONTRACTING MECHANISM	STATUS
Benin - Private operator	National : 3 sub-national service areas	6.7 million	Consortium of private operators	Public Private Partnership (PPP) with 10-year lease contracts signed between government leasing company and consortium of private operators	Reforms in place since 2007; first lease agreements signed in 2022. Expected to expand to 9.3 million by 2030
Ghana - Public utility	National	~ 1.2 million people	Community Water and Sanitation Agency (CWSA) – acting as public utility	Mandated through CWSA Act 564 (1998); amendment of act under process to transform into rural utility.	Applies to piped supply schemes across entire rural population Reform of CWSA in progress Potential to expand to additional ~850 piped schemes
Rwanda - Private operator	District	~ 9.7 million of rural population across all 27 districts	46 private operators licensed by national regulator and able to cover more than one district	PPP with 5-year lease contracts signed between operator and district government authorities who own assets	Started in 2004, now covering all rural water supply schemes
Senegal - Private operator	National: rural areas divided into eight sub-national perimeters	Applies to entire rural population of over 7 million	Private operators	PPP with 10-year lease contracts let by national asset holding agency (<i>Office des Forages Ruraux</i>)	Started in 2015 Only four of eight PPP contracts assigned and operational as of 2022

Uganda - Area Service Provider (ASP)	District	~ 14 districts serving ~ 400,000 people	ASPs may be private companies, NGOs or Handpump Mechanic Associations	PPP - district local government signs performance-based agreement with ASP	In process of scaling up – sector framework for ASPs launched in 2020. Applies to all ~92,000 point sources in rural areas
Zambia - Public utility	Provincial		Commercial Utilities, but can delegate to private operators	License from the National Water Supply and Sanitation Council	Mandated apply to entire rural population (10.8 million), In process of scaling up - strategy instigated in 2018

DEFINITIONS: CONSOLIDATION OR AGGREGATION?

The literature on expansion of management arrangements to achieve economies of scale, more professionalized service provision and lowering operational costs includes multiple terms with varying definitions. The two most widely used terms are “consolidation” and “aggregation” but “regionalization”, “clustering” or “bundling” are also found. Table 2 below provides a (non-exhaustive) list of terms and their definitions found in the literature. These definitions mostly refer to urban or small-town settings and are drawn from a range of income classifications, with a majority coming from high or middle (lower and upper) countries. The two main definitions relate to consolidation and aggregation, both of which are linked to the concept of “utilitization”, which refers to the creation of new dedicated rural operators, either by expanding the umbrella of management to incorporate physically separate schemes or by expanding existing urban utilities by extending physical (piped) networks into contiguous rural areas (World Bank Group 2017; Franceys 2019; Adank, van Lieshout, and Ward 2021; Huston et al. 2021).

In addition to the definitions given in Table 2, there are various references to associations or groupings of service providers from the rural water literature. These references do not explicitly use terms such as consolidation or aggregation, but they directly align with the objectives of building economies of scale and sharing of technical expertise and resources. The references mainly come from experiences in forming associations of CBM entities or establishing circuit rider support models for CBM in Latin America such as the *Técnico en Operación y Mantenimiento* or TOM and the “*Asociación Hondureña de Juntas Administrativas de Agua y Saneamiento*” or AHJASA from Honduras (Fragano et al. 2001; Lockwood 2002) and the SISAR association, or Integrated Rural Sanitation System, from Ceará state in north-eastern Brazil (World Bank Group 2017).

Table 2: Definitions from the literature

DEFINITIONS OF CONSOLIDATION AND AGGREGATION				
TERM	DEFINITION	CONTEXT	SUB-SECTOR	SOURCE
Consolidation	Consolidation occurs when two or more separate legal entities become a single entity operating under the same governance, management and financial functions. It may or may not include physically interconnecting assets. Consolidation can occur on a regional basis when systems fully merge the geographically-spread governance, management, and administrative assets.	High income	Urban, small town	US Water Alliance (2019)
Consolidation	The process whereby successful operators are able to grow their business by competing for and winning contracts with more towns.	Low, lower-middle, upper-middle, and high income	Urban, small town	World Bank (2007)
Consolidation	Consolidation may range from the physical connection to nearby larger systems, to systems being operated and/or managed by an external provider with responsibility for multiple systems.	Upper middle and high income	Rural, small town	OECD (2018)
Consolidation	Expansion of a service provider into multiple service areas as a result of market expansion.	Low, lower-middle, upper-middle, and high income	Rural, small town	IRC (2021)
Aggregation	The process by which two or more water and sanitation service providers consolidate some or all their activities under a shared organizational structure, whether it implies physical infrastructure interconnection or not, and whether the original service providers continue to exist or not.	Low, lower-middle, upper-middle, and high income	Urban, small town	World Bank (2017)
Aggregation	The grouping together as one administrative unit to employ skilled technical and managerial staff or to secure the services of a full-service operator.	Low, lower-middle, upper-middle, and high income	Urban, small town	World Bank (2017)
Aggregation	A grouping of several service areas under one management entity, often driven by government policy.	Low, lower-middle, upper-middle, and high income	Rural, small town	IRC (2021)
Aggregation	The grouping of several municipalities into a single administrative structure for the provision of a particular service	Low, lower-middle, upper-middle, and high income	Small and medium towns	World Bank (2005)
Aggregation (bundling)	The management or maintenance of multiple schemes within one service provider's remit. Can take the form of associations or federations, or through the bundling of schemes which are delegated by the local authority (or communities) to private operators.	Low income, lower middle income	Rural	WaterAid (2018)

Regionalization	A spectrum of collaborative activities, ranging from the most informal to the most formal of partnerships between communities in the same geographic area. Many terms are used for regionalization, including regional collaboration and partnerships.	High income	Rural, small town	RCAP (2021)
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Based on the literature and examples shown in Table 2, the working definitions relating to rural water management arrangements are proposed as follows:

- i. **Consolidation:** the merger of management entities, with utilities moving into new service areas and/or taking over other (smaller) utilities, often linked to market expansion.
- ii. **Aggregation:** a grouping of service areas and/or physical schemes under one management entity (for some/all functions) often driven by government policy; such aggregation may also include ‘horizontal’ forms of self-organization through associations or cooperatives.

These definitions apply to the rural water sector in the global South with utilities moving into new service areas (e.g., the Commercial Utilities in Zambia expanding to service rural populations), or through aggregation mandated by government policy (e.g., PPPs in Benin). The concept of aggregation is more relevant in the case of CBM arrangements particularly where some functions are outsourced to professional management organizations, as is occurring through the Area Service Providers in Uganda or through associations of management entities, for example in Ghana. Both consolidation and aggregation approaches require greater levels of managerial, financial and technical competencies than those required for operating individual small schemes. These improved capacities, however, can make rural water supplies more attractive to both public finance and blended finance.

The question of accountability and responsiveness to customers and how this may be affected through processes of consolidation or aggregation is not clear and requires further research. It could be assumed that accountability would be weakened as larger, more monopolistic entities may tend to have less incentive to be responsive to customer demands. However, it may also be the case that consumers relying on smaller, more informal providers would benefit from the actions of a regulator that enforces greater accountability measures on more formalized utilities. Such formalization may then overcome the limitations of the ‘short arm’ of accountability, which has been recognized as a weakness, particularly of CBM arrangements (Lockwood and Smits 2011) (UNDP/UNICEF; 2015).

LEARNING FROM THE PAST: EXPERIENCE FROM OECD COUNTRIES

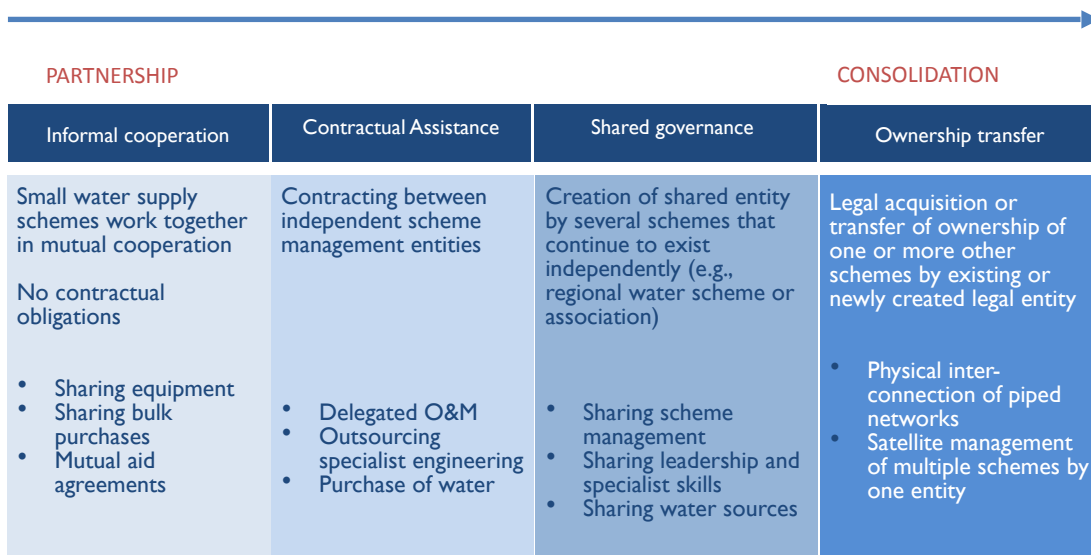
This drive for economies of scale through the consolidation and aggregation of small-scale rural water supplies in low-income countries echoes similar efforts in many upper-middle- and high-income countries over the last fifty years. Have these processes led to improved outcomes in these contexts? What can be learned from them? And, what are the pitfalls that we can expect to encounter along the way?

MANY SMALL-SCALE RURAL OPERATORS IN OECD COUNTRIES FACED SIMILAR CHALLENGES TO THOSE SEEN IN RURAL COMMUNITIES IN LOW-INCOME COUNTRIES TODAY. Rural water system operators in Organization for Economic Co-operation and Development (OECD) countries have typically relied upon a small customer base which can render investment and

maintenance costs unaffordable and present a downward, re-enforcing cycle of “the three lows” of low revenue, low investment and low quality of service, which in turn can lead to unreliable water supplies and public health risks (McFarlane and Harris 2018; Rickert et al. 2016; González-Gómez et al. 2013; Feinstein et al. 2020; Hendry and Akoumianaki 2016). In response to these financial challenges, many OECD countries turned to consolidation or aggregation to achieve economies of scale, improve the competency of management, support better operational resilience, and raise technical capacities of operator staff to meet increasingly stringent standards imposed via public health regulations.

OVERCOMING THE CHALLENGE OF LACK OF SCALE. Depending on the jurisdiction and geography of communities, attempts to achieve economies of scale in OECD contexts have included both consolidation and aggregation. These processes often evolve over time and go through progressive stages along a spectrum from less formalized partnership arrangements to consolidation involving legal transfer and ownership (see Figure 1). Consolidation can occur across and between different management and governance models and there are examples of this process involving (unincorporated) local government or municipal water providers, public utilities, cooperatively owned or not-for-profit schemes, and small private companies (World Bank Group 2017; Landes et al. 2021).

Figure 1: From partnership to consolidation of management and governance models



Increasing level of formalization and transfer of (legal) responsibility

Source: adapted from Landes, 2021

In addition to scaling of benefits and the potential to attract greater financing, consolidation or aggregation offer the potential to apply carefully targeted internal subsidies across different user groups (Cook, Fuente, and Whittington 2020). For example, consolidation was a strategy adopted by the water sector in England, which, following the second-world war in 1945, was highly fragmented, with more than 1,000 institutions involved and highly localized planning. The focus of post-war legislation in England was the strengthening of local authorities and increased public investment to expand services to rural

communities (OFWAT 2005). Similar expansion of regional utilities into rural areas and management takeovers of existing community or municipal-managed schemes have occurred in the Netherlands and Croatia (Adank, van Lieshout, and Ward 2021). Rural water providers in OECD countries also have a long history of aggregation through associations with “shared governance,” as the example from Austria illustrates (see Box 1).

EVIDENCE FROM OECD COUNTRIES

While the *potential* benefits of consolidation may appear compelling, the global evidence that consolidation improves service delivery is limited. A World Bank study from 2017 analyzed data from the International Benchmarking Network for 1,306 utilities from over 140 countries. It found only 79 cases with a comparison of pre- and post-consolidation. In many of these cases, although improvements to service levels were achieved, consolidation was not found to improve operational or financial performance, particularly in cases of consolidation of smaller, more rural town suppliers with larger, urban utilities (World Bank, 2017). A more recent study of 33 examples of utility-managed rural water services concludes that consolidated utilities in Western Europe performed well in terms of non-revenue water and operational cost recovery, as did urban utilities in Vietnam and the national utility (ONEA) in Burkina Faso that extended services into rural areas. The remaining examples from low-income countries scored less well, both on operational cost coverage (with the exception of donor supported Safe Water Enterprises in Ghana), and on improvements to non-revenue water (Adank, van Lieshout, and Ward 2021).

Box 1: Association of rural water cooperatives

Upper Austria Water, or OÖ Wasser, is an autonomous, self-reliant, non-profit association of more than 1,700 cooperatives created in 1946. It has a shared governance structure, chaired by a board of seven directors and manages water-related activities, especially in rural areas, and is in charge of decentralized, small-scale water supply and sewerage. The association provides support to its members on technical, legal, financial, and organizational issues. It supplies operational and maintenance services (technical assistance, emergency supply, mobile technical equipment), pooling programs (for water meter purchase and water analyses, for example), and measurement services (such as leak detection, pipe and valve location, flow rates and pressure, and aquifer tests). It also proposes education and training sessions and conducts networking activities and information exchange opportunities for its members.

Source: World Bank, 2018 Beyond Utility Reach? How to Close the Urban - Rural Access Gap; pg. 64

Obstacles to successful consolidation observed from the OECD experience include:

- **geographic or topographic** limits to the physical integration of piped networks;
- **institutional** barriers where consolidation crosses administrative and jurisdictional boundaries;
- **socio-political resistance** to being ‘taken over’ on the part of smaller communities, who see the process as giving up control within an asymmetrical power relationship;
- **financial constraints** posed by lower population densities and/or a culture of low or non-payment of tariffs;
- **ambiguity over responsibility** for capital maintenance costs and for taking on the liabilities of legacy debts on the part of the controlling entity;

- **time and resources required to properly consult** community members and other stakeholders.

IS CONSOLIDATION THE RIGHT STRATEGY FOR IMPROVING RURAL WATER SERVICES IN LOW- INCOME COUNTRIES?

While the experiences from OECD countries suggest potential benefits related to consolidation or aggregation strategies, successful examples are largely from those countries that can also make significant public investments in the underlying processes, including support for long term capacity building of operators, improving sector governance arrangements, and subsidizing some level of capital and operating costs. The difficulties in addressing these requirements are still evident in many low-income countries and have likely also limited the effectiveness of CBM in the past. Consolidation or aggregation alone, therefore, should not be viewed as a panacea. Broader efforts to reform the sector are likely needed for consolidation to fulfill its potential to achieve improved services at lower cost. Priority areas of research that would strengthen emerging consolidation and aggregation efforts in low- and middle-income countries are described in Box 2.

Box 2: Research opportunities for exploring the potential of consolidation in low-income country settings

- The extent of consolidation across OECD countries and the scale at which this has occurred (national, regional or more localized).
- The different scales that can support consolidation across management arrangements, including supported CBM, private operator and public utility provision.
- Tariff modeling and thresholds for financial viability to meet different costs categories (including generating profit where relevant) for consolidated service provision.
- The impact of different technologies as drivers of operating costs under different conditions.
- The (minimum) sector enabling environment conditions that are required to facilitate consolidation in terms of policy, legislative and regulatory and accountability arrangements.
- Evaluations of ongoing consolidation efforts to document changes in service delivery, financial performance, and drivers of success or failure.

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