Performance and prospects of rural drinking water services in francophone West Africa

RWSN

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Cover photo: A settlement along the Senegal river. Photo by GRET Senegal.

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A solar piped water scheme in Tinkole, Mali. Photo by Johannes Wagner.

Acronyms

ADAE	Association pour le Développement des Adductions d'Eau (Burkina Faso)
AEP	Adduction d'eau potable / Piped water scheme
AEPS	Adduction d'eau potable simplifiée / Simplified piped water scheme
AFD	Agence Française de Développement / French Development Agency
ANAEPMR	Agence Nationale d'Approvisionnement en Eau Potable en Milieu Rural / National Rural Drinking Water Agency (Benin)
ANEPA	Agence Nationale pour l'Eau Potable / National Drinking Water Agency (Mauritania)
ARE	Autorité de Régulation / Regulatory Authority (Mauritania)
COPIFOR	Comité de Pilotage de Forage (Senegal)
DBO	Design-Build-Operate
DEM	Direction de l'Exploitation et de la Maintenance (Senegal)
ESAWAS	Eastern and Southern Africa Water and Sanitation Regulators Association
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit / German Development Agency
GLAAS	UN-Water Global Analysis and Assessment of Sanitation and Drinking-water
Inf	Informant
IWA	International Water Association
JMP	Joint Monitoring Programme
MEA	Ministère de l'environnement, de l'eau et de l'assainissement/ Environment, Water and Sanitation Ministry (Burkina Faso)
MHA	Ministère de l'hydraulique et de l'assainissement / Hydraulics and Sanitation Ministry (Niger)
MMEA	Ministère des mines, de l'énergie et de l'eau / Mines, Energy and Water Ministry (Mali)
OFOR	Office des forages ruraux / Rural Boreholes Agency (Senegal)
ONSER	Office National des Services d'Eau en milieu Rural / National agency for rural water services (Mauritania)
PEAS	Postes d'Eau Autonomes Simplifiés
PMH	Pompes à Motricité Humaine / Handpump
PPP	Public-Private Partnership
RWS	Rural water services
RWSN	Rural water supply network
SDE	Sénégalaise Des Eaux (Senegal urban water utility)
SDG	Sustainable Development Goal
SEOH	Société d'Exploitation des Ouvrages Hydrauliques (Senegal rural water utility)
SPEPA	Loi sur le Service Public de l'Eau Potable et de l'Assainissement / Water and sanitation law (Senegal)
STEFI	Independent technical and financial monitoring offices in Mali (Suivi TEchnique et Financier)
WASH	Water, Sanitation and Hygiene
WHO	World Health Organisation
WSP	Water and Sanitation Program
WSS	Water Supply and Sanitation

Tap of solar-powered water kiosk in Dionkoni, Mali. Photo by Johannes Wagner.

Executive summary

This study looks at the evolution of rural water supply policies in francophone West Africa and the performance of the delegation of rural water services. Since the 1980s, rural water services have been predominantly managed by community-based organisations, partly due to a decrease in the State budgetary and human resources caused by structural adjustment programmes. In parallel, many countries have followed a decentralisation process and transferred the responsibility for rural water services provision to the local level.

The six countries reviewed in this study (Benin, Burkina Faso, Mali, Mauritania, Niger and Senegal) were selected given their long experience with the delegation of rural water services at the local level, some of them since the 1990s; and recent reforms in some of these countries in the rural water sector towards re-centralisation of rural water authorities and delegation of rural water services at a much wider regional scale (e.g. Mauritania, Senegal and Benin). While these efforts are pioneering in terms of reforming and clarifying the institutional framework, they are also indicative of attempts by the State to "take back control" to some extent from local actors. There is a tension between such reforms and broader decentralisation processes, which are often incomplete: in countries where rural water services delivery is decentralised, municipalities often lack the financial and human resources to carry out their mandate. The drivers for reform are varied, but include:

- The evolution of rural water infrastructure, in quantity and quality, and the hybridisation of rural and urban water infrastructure, especially in small towns and rural growth centres;
- The influence of donors, especially the World Bank and the French Development Agency (AFD);
- Water resource concerns;
- The influence of parallel reforms in the urban water sector;
- Political leadership, regional alignment and competition between countries.
- Equity concerns and policy ambition to harmonise rural and urban water tariffs.

The delegation of water services in rural areas is not a panacea, or claiming to be the sole alternative to community-based management. In many countries there is a gap between theory and practice, with alternative models for rural water services delivery co-existing with informal arrangements, where services should have been delegated. The focus of such reforms has been on piped water systems, with point sources such as handpumps left out of ambitious rural water reform plans. However, in many of the West African countries under review, point sources still serve the majority of the rural population, and will continue to remain essential for some time.

Increased efficiencies and better performance of service provision are a key factor for motivating these reforms, as overall financing for the rural water sector remains limited in volume and efficiency. To improve the financial viability of rural water services, West African countries have experimented with clustering / aggregating / consolidating infrastructure to delegate rural water services at the scale of several municipalities, a district or a region, including through contracts to regroup several local authorities, such as (i) Design, Build and Operate contracts (DBO), (ii) regional delegation of rural water services, and (iii) inter-municipal arrangements.

Rural water tariffs in the region are often below cost-recovery levels, although much higher than urban water tariffs (which are often subsidised). Subsidies for rural water mostly target the construction of new infrastructure or major repairs rather than operation and maintenance costs. In contrast, Mauritania may be one of the few examples where the State is planning to provide subsidies for rural water services delivery. .

The fact that many West African countries have a vibrant market of rural water operators, public and private, local and international, is positive. Supporting services providers is key to ensuring the sustainability of rural water services, yet rural water operators often receive limited support by the State. In West Africa, this is done by (i) providing technical assistance at decentralised level to local operators, and to service authorities, to allow them to grow into their role and/or (ii) aggregating or re-centralising to bring in professional operators to accelerate the development of the rural water sector. However, experiences are mixed: in Senegal, some felt that the ongoing regionalisation reform has “dispossessed the country of local capacity” by replacing local water user associations with international consortia for service delivery. Others argue that this reform can improve rural water services delivery and build the capacity of local actors.

Mairie de Safo Commune Rurale, Mali. Photo by Souleymane Bathieno/HP+ on Flickr.

From the perspective of the operators, there are several risks – additional to commercial risk – which often compound the inherent difficulties of rural water services provision under delegation contracts. They include: (i) a weak institutional framework, which may lead to poor enforcement of delegation contracts; (ii) the lack of technical and financial capacity of local authorities, when they are the service authority (iii) the lack of social acceptability by communities if reforms do not lead to the results announced by service authorities, which can translate into low use of water services, refusal to pay, social tensions, degradation and vandalism of rural water infrastructure. In addition, contextual factors including water resources issues (quality and quantity) climate change, population growth, and broader security, State fragility, and governance issues are at the forefront of water services providers' and policy-makers' concerns.

The lack of regulation, data and monitoring was highlighted as an issue hampering progress and sustainability of rural water services in West Africa. The question of the scope of rural water regulation and where to anchor it (at the national and/or local level) is also evolving in many of the countries under review. In all contexts, operators and authorities need to be accompanied and equipped to report to the regulating authority (if it exists), water users, and the State.

West African countries have the ambition to achieve SDG6.1 and to advance to higher levels of service in rural areas. However, there is a tension between two schools of thoughts aiming at professionalising rural water services: one which advocates for decentralisation and supporting local authorities in their mandate; and another which seeks to re-centralise (in part or completely) service authorities, which enables delegation of services at a wider scale. This is a debate which is playing out not only in some of the countries reviewed in this study, but also others in the region (including Côte d'Ivoire, Cameroon, and Togo).

While no unique solution seems either plausible or pragmatic for all countries in West Africa, clearer evidence of what works and why is central to determining future policy and investments. This study identifies some of the key questions in this ongoing debate, which necessitate further reflection:

- Will the move to re-centralise rural water service authorities improve financing, performance monitoring and asset management?
- Where decentralisation is ongoing, what will the role of local stakeholders (including local government) be in countries that have recently re-centralised the rural water sector? Will they be able to hold service authorities and operators accountable?
- In contexts where it has been decided not to subsidise rural water tariffs, how should water services delivery be funded sustainably while ensuring equity between rural and urban residents?
- Will regulation evolve to ensure the sustainability of rural water services under delegation?
- In contexts where international expertise is needed to deliver universal rural water services in the short-term, how will local capacity be developed to ensure the sustainability of rural water services in the long-term?

Introduction

Pathways to universal drinking water services do not only consist in building water supply systems, but in guaranteeing the quality and sustainability of water supply services. With two billion people –lacking safely managed drinking water services, and 771 million without basic water services (80% of whom live in rural areas), the Sustainable Development Goals pose a triple challenge: to reach the unserved in rural areas, to raise service levels, and to sustain existing and future services. In Africa, rates of progress will need to quadruple to reach universal access to basic drinking water services by 2030 (JMP, 2022).

In response to this challenge, many countries in West Africa have been undergoing a transformation in how they plan to increase, deliver and maintain universal water services to their citizens in rural areas.[1] This REACH/ RWSN policy paper explores the different pathways some West African countries have chosen to take to provide and improve drinking water services to their rural residents. The key questions it seeks to answer are:

1. How and why do national models of rural water service delivery emerge?
2. What are the pathways and pitfalls to different models of rural water service delivery in West Africa?

This policy paper targets decision-makers in government and donors, as well as practitioners in the rural water sector more broadly. It builds on a literature review, case study selection and analysis for six countries (Benin, Burkina Faso, Mali, Mauritania, Niger and Senegal) and semi-structured interviews with 25 experts in rural water services in the West African region. These experts were identified from the RWSN, pS-Eau and Experts Solidaires networks, by direct recommendation and chain sampling. Given the variety of context and the timespan this work covers, it does not aim to be exhaustive on the subject, but rather seeks to reflect on the commonalities between approaches and draw lessons on what can help rural water service delivery models be successful in and outside of the region.

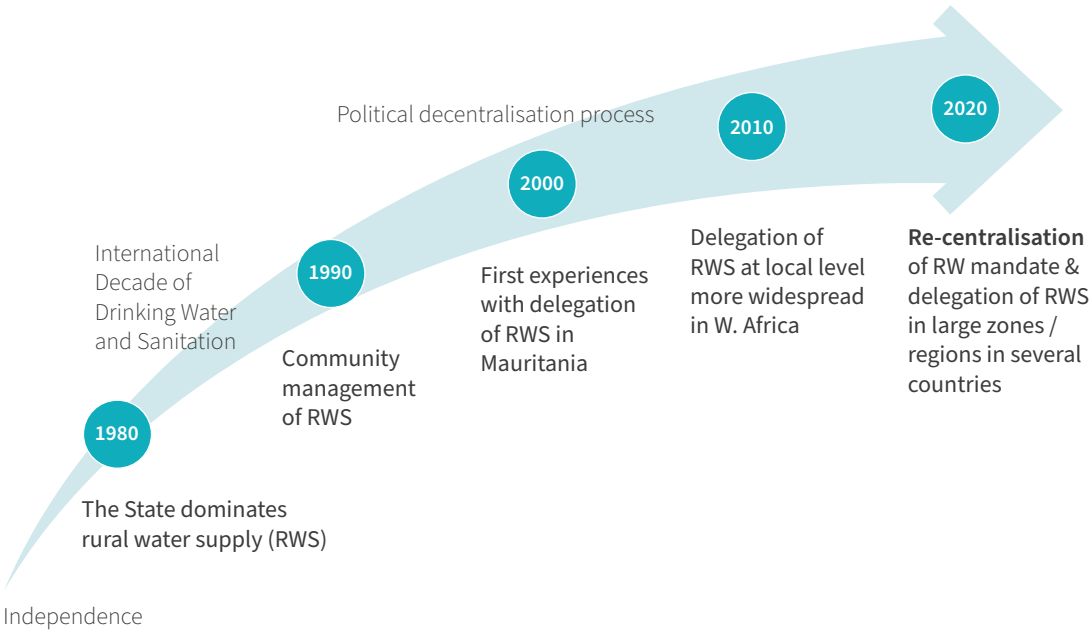
1 In this paper, “rural” refers to the perimeter served by the national utility/utilities in charge of the urban areas, whatever is the administrative definition of “urban” in the country. It includes both rural areas and small towns (sometimes referred to as “semi-urban” in the West African context).

Part 1: Historical evolution of rural water services in West Africa

1.1 The period leading up to the 1980s

There is relatively little documentation of how rural water services provision was managed in West African countries prior to independence. Human settlements map on to resource availability and ancient trading routes from the coast to the hinterland (Herbst, 2014). Rural residents were left to their own devices, relied on surface water, and private or collective self-supply through shallow wells for multiple water uses. Under colonialism, rural water infrastructure (initially wells, and later boreholes) was developed to serve the colonial economy (Blanc, 2012, Repussard, 2011) with a focus on irrigation (e.g. Office du Niger), and managed in a centralised, top down, infrastructure-led approach. In parallel, the local private sector started to develop and specialise in the drilling and construction of rural water infrastructure, including the manufacturing of low-cost pumps (Danert, 2006).

Figure 1: Overview of the historical evolution of rural water policies in West Africa. RWS = rural water supply.



After independence, the State took the responsibility of providing water infrastructure in rural areas. Western African States established policies for free water and centralised pump maintenance (Blanc, 2012); rural water infrastructure, operators, maintenance staff, and consumables were all paid for by the State, following a similar centralised, top down approach. In rural areas, the provision of water infrastructure was perceived as a way for the newly-established States to assert their presence, and the deployment of rural water infrastructure became a major focus of the States' development policy (Gomez-Temesio, 2019). However, water services provided by the State covered only a small share of the needs of the rural population.

The legacy of the colonial period on the provision of (mostly urban) water services in West Africa can still be felt to this day. Urban water services in West Africa have had a long history of private sector involvement (Blanc, 2012), dominated by international private operators which are often subsidiaries of the groups that are now Veolia, Saur and Suez. In many places, operators used to run water and electricity services simultaneously; the two sectors were later separated, and private water operators remained in place in some form or other after independence (Blanc, 2012). In fact, the influence of France on water services in West Africa is manifold: as a former colonial power,[2] as one of the major donors to the water sector (both through the French bilateral agency but also through decentralised cooperation[3] (Dussaux, 2010)), and due to the dominance of French (mostly urban) water operators in the region. It has been claimed that private sector involvement in public services, including water, is more prevalent in francophone Africa because of the civil law systems in place in those countries, which codify the delegation of public service management (Kleemeier and Lockwood 2012).

1.2 The International Decade of Drinking Water Supply and Sanitation (1980s)

An increase in investments in rural water infrastructure, and the development of rural water policies, took off in West Africa due to a series of triggers, including: (i) the droughts of the 1970s in the Sahel, which brought into focus the urgent need to expand rural water services, (ii) the economic crises of the 1980s, which led to Structural Adjustment Programmes and an increase in the involvement of international donors in the (rural) water sector, and (iii) a renewed focus on access to drinking water supply through the 1977 UN Water Mar del Plata conference leading to the International Decade of Drinking Water Supply of the 1980s.

Rural water infrastructure evolved not only in quantity but also in the type of infrastructure being deployed. Handpumps became prevalent in many West African countries (though not all – in Senegal and Mauritania for instance, the emphasis was placed on motorised schemes with piped networks, sometimes multi-village, and standpipes/ private connections). The focus was on increasing access to water to mitigate the impact of droughts without much attention being paid to water quality.

2 In 2012, an AFD publication stated: "The decentralisation that has started in West Africa, accompanied by a movement for delegating water services to municipalities in rural areas, seems to raise problems that remain unresolved […] A better analysis of the French experience of generalising access to water in rural municipalities might provide some initial teachings in this domain." (Blanc, 2012).

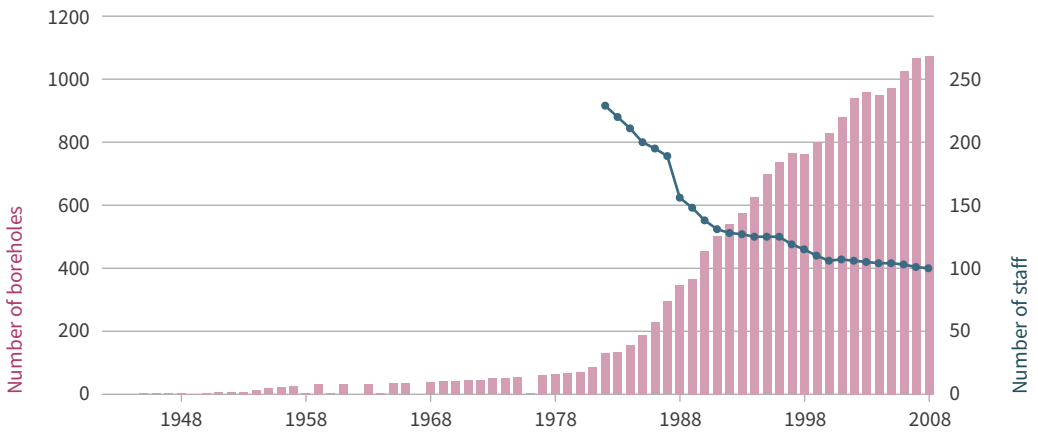
3 The 2005 Oudin Law gave French municipalities, water agencies and decentralised actors the right to use up to 1% of their water and sanitation budget to international cooperation or humanitarian activities. As of 2022, 190 French decentralised structures (municipalities, intermunicipalities, *départements* and regions) were actively involved in decentralised cooperation projects in the WSS sector in West Africa, mostly in Burkina Faso (53 projects), Mali (48), Senegal (44), Togo (24), Niger (16), Benin (16), and Guinea-Conakry (10) (Decentralised cooperation atlas, 2023).

Concerns related to the sustainability of rural water systems and efforts to professionalise rural water supplies were also emerging (Smits, 2016, Gomez-Temesio, 2019). At the time, the focus was on supporting community management and the adoption of low-cost technologies. Community maintenance was to be supported by "a national strategy of standardisation and well-organised distribution of spare parts" as well as by training area mechanics for rural water infrastructure, rather than the system of centralised maintenance which was practiced up until then in many West African countries, but was deemed to be too costly (World Bank/UNDP, 1986; Inf. 19).

As investments in rural water infrastructure in West Africa increased dramatically in the 1980s, donors sought to influence rural water institutions and policies. At the same time, under the pressure of international financial institutions, the State started to disengage from many sectors (including drinking water) due to the deterioration of the economic situation. This was the era of the IMF's Structural Adjustment Programmes; many West African states were forced to let go of government staff and scale down the level of support they provided, including in the rural water sector. This led to a paradoxical situation where there were more rural water assets to manage by newly created rural water institutions, with far fewer civil servants.

As an illustration of this challenge, figure 2 below shows the number of rural water staff in the national rural water maintenance department in Senegal (*Direction de l'Exploitation et de la Maintenance*, DEM, created in 1984), compared with the total number of boreholes[4] (forages) in the country. In 1984, the DEM had around 230 staff for 200 boreholes; by the end of the 1990s, it had around 100 staff for 800 boreholes. The State's focus on the provision of rural water infrastructure in the 1980s was such that Abdou Diouf ,the then-president of Senegal was nicknamed "*Monsieur Forage*", as he criss-crossed the country for the opening ceremonies of hundreds of boreholes during his presidency (Gomez-Temesio, 2019).

Figure 2: Evolution of the number of boreholes (red bars) and staff (blue line) of the national rural water maintenance department in Senegal (Source: Repussard, 2011 based on Niang & Sarr (2008).



4 In the context of Senegal, boreholes (forages) are usually motorised, with a water tower, piped networks which cover multiple villages (an average of 7 villages (SDC, 2009)) and a mix of standpipes and private connections.

The drastic decrease in the State budgetary and human resources in many West African countries due to the IMF's structural adjustment process was one of the root causes behind the shift to community-based management as the preferred model for the management rural water supply (Inf. 4; Gomez-Temesio, 2019; SOTERCO, 2021). Community-based organisations, such as Water User Associations had often de facto taken responsibility for rural water supply management as the State had started to disengage from rural water operations in the late 1970s; most of the rural water training programmes and maintenance resources provided by the State for rural water disappeared. The formalisation of community-based management was championed by international donors and became the dominant rural water supply paradigm globally. It is premised upon the expectation that rural water users are willing and able to self-organise and cover the cost of operation and maintenance (O&M) (World Bank/UNDP, 1986).

This paradigm shift signalled a re-positioning of the role of the State in the West African rural water sector. In theory, the State was supposed to transition to a less operational role, focused on regulation and strategy (World Bank/UNDP, 1986). In practice, many communities continued to depend on the State not only for rural water infrastructure provision but also for operational needs such as rehabilitation and important repairs, due to a lack of technical and financial resources. However, State support for infrastructure provision, rehabilitation or repairs was often provided on an ad hoc and partial basis, without any clear system for prioritising the communities most in need (Gomez-Temesio, 2019).[5]

Mairie in Burkina Faso. Photo by Thierry Fayret on Flickr.

5 From Gomez-Temesio, 2019: "Boreholes are built on Senegalese territory by the State through the Rural Hydraulics Department, with or without the financial support of a partner. [in practice], boreholes are not dug after several months of work; they "arrive" after a decision in Dakar. (...) This arrival is achieved through the intermediation of a figure who recurs in the stories, the 'son of the village': (...) a native of the village or area in question who lives in Dakar, often a manager in the public administration, but who also has a political career. [This is for two reasons]: First, to 'help' one's village as a moral obligation based on a rhetoric of belonging; and second, to serve the interests of his village in order to build a political base".

1.3 The 1990s: political decentralisation movement and the start of the delegation of public services in rural water

In the 1990s and 2000s, the decentralisation movement and adoption of decentralisation laws led many West African governments to transfer the mandate for rural water services delivery to newly created rural municipalities, thereby challenging the community-based management paradigm. This trend was widespread but not universal (e.g. Senegal, where the mandate for rural water services was not transferred to local government) and the process varied between countries. This movement away from the reliance on community-based management was also happening in other parts of the world (Smits and Lockwood, 2015).

The end of the principle of "free water", which had been the cornerstone of national rural water policies in the region, dovetailed with the adoption of neoliberal policies at the global level that sought a role for free markets in the water sector. These were promoted by the Dublin principles in 1992 which stated that water "has an economic value in all its competing uses and should be recognised as an economic good" (Schmidt, 2021). Many West African countries, guided by international donors, adopted policies that stipulated that rural communities were responsible for self-financing their waterpoint's operation and maintenance. Evidence suggests that payments for drinking water supply from piped water schemes are well anchored into practice in West Africa, where collection rates can be quite high (COWI, 2016; MMEA, 2022). For point sources, data is more ambivalent (Foster & Hope, 2017; Jones, 2013).

As the sale of drinking water for rural residents became more common, West African countries became interested in alternative models for rural water services delivery, including the delegation of public services (see Box 1). Mauritania was the first country in the region to implement an innovative delegation of water services in rural and semi-urban areas in the early 1990s. Surprisingly, it happened rather endogenously without any donor support or investment programme, on the basis of a relatively vague government decree in the early 1990s (Inf. 4). Many local private operators took up this opportunity and within 5-10 years, hundreds of private operators were active in rural, semi-urban and urban areas, and had managed to connect thousands of new customers.[6] In the case of Mauritania, Structural Adjustment Programmes provided not only the impetus for the State's disengagement from water services provision, but also the workforce, as many of the new "*concessionnaires*" (small operators) were recruited through a State initiative to provide work opportunities to young unemployed graduates affected by the economic crisis (Carlier, 2001).

Donors, more specifically the World Bank (including the Water and Sanitation Program (WSP[7])), and the French Development Agency (AFD), were identified as catalysts in the region for the promotion, sharing, replication and scaling up of alternative models for rural water supply in the 1990s and 2000s. In the case of the World Bank, this was somehow ironic as it was also one of the original promoters of community-based management in the 1990s (Inf. 4; McCommon et al, 1990). The experience of Mauritania with private operators was documented by the WSP of the World Bank (WSP, 2000; WSP, 2000b). WSP notably organised a study tour to Mauritania in the early 2000s for other West African countries and introduced the delegated management model in Niger in the early 2000s, through technical assistance and training.

6 In the 1990s, the operators who did provide private connections often did by ignoring the cumbersome contractual conditions which required them to have private connections done by a certified plumber and inspected by the authorities (Carlier, 2001).

7 The Water and Sanitation Program of the World Bank has been incorporated in the Global Water Security and Sanitation Partnership since 2017.

In some countries, donors built on 'spontaneous' cases of delegated management, mostly in urban and peri-urban areas but also in rural areas, as was the case in Mali and Niger (inf. 4; Hydroconseil, 2001; Hydroconseil, 2007). The European Union also played an important role by funding a large-scale regional solar power development programme, aiming to increase piped water supply to small centres in West Africa (Blanc, 2012). A "competition effect" (Inf. 6) between West African countries, along with the "friendly pressure" of donors (Inf. 4), influenced countries such as Niger, Mali and Burkina Faso in promoting the delegation of rural and/or semi-urban water services.

This is where approaches to rural water sector policies split, with some States following the logic of decentralisation to transfer the competency for (rural) water service provision to the local level (e.g. Niger, Mali and Burkina Faso), while in other countries (Senegal, Mauritania and Benin more recently), the central State has sought to take back control from the local level. The following section will examine the drivers, challenges and lessons learnt (up until now) from these efforts at reforming the rural water sector.

Box 1: Decentralisation, re-centralisation of rural water mandates, and delegation of rural water services

Decentralisation can be defined as measures to transfer a range of powers, responsibilities and resources related to the mandate of rural water services from central government to subnational governments (OECD, 2019). In this study, (re-)centralisation relates to the mandate for rural water services being transferred from the local level (be it local government or local water user associations) back to central government.

The **delegation of public services** is a transfer of responsibility from the State (be it central or local) to a public or private entity, including private operators and / or associations of water users. The water services delegated can vary in scope and in scale. The choice of the type of delegation can be made at the national level or left to the initiative of the local authorities (see Annex 2 for more details) and will depend on the expectations and risks transferred to the operator. (Experts Solidaires, 2021).

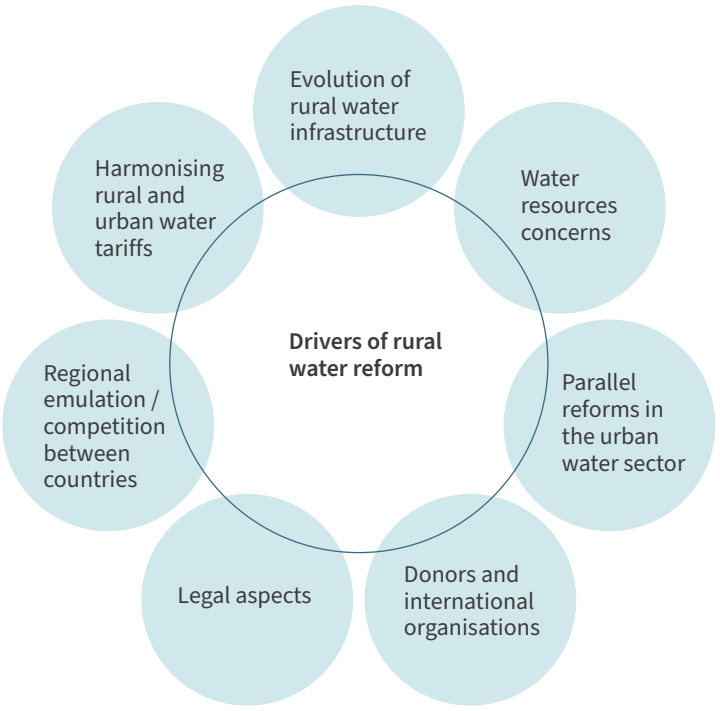
Decentralisation and delegation can take place at different geographical scales; a central authority can delegate services to an operator at the local scale, as is the case in Mauritania. Similarly, local authorities, when they are the service authority, can decide to delegate services at a wider scale, through inter-municipal arrangements for instance.

Part 2: Key insights, prospects and progress in rural water services in francophone West Africa

2.1 Drivers for rural water sector reform

In the late 1990s and 2000s, many countries in West Africa pushed reforms which aimed at professionalising rural water services delivery with a focus on the delegation of water services. These reforms often focused on the "grey zone" of rural water supply (Inf. 19): small towns and their vicinity, which are not located in the service area of urban utilities and are usually home to a mix of infrastructure types and service delivery models.

Figure 3: Overview of drivers for rural water reform in the countries reviewed



The following factors have been identified as drivers of these reforms (Figure 3):

- **The evolution of rural water infrastructure**: Rural water infrastructure, principally financed by the State via donors, increased in number over the decades but also in complexity, transitioning from wells, boreholes and handpumps to mechanised systems (solar, petrol-powered or connected to the national electricity grid) and piped water schemes, including multi-village piped systems (e.g. Senegal, Benin) which require more professional management. In 2010, piped water schemes were estimated to provide water to 20% of rural residents in the six countries under review; in 2022, this has increased to 30% (JMP, 2022). Annex 3 provides an overview of the types of piped water schemes commonly encountered in rural and semi-urban areas in West Africa.
- **Water resources concerns**: In some cases, the evolution of rural water infrastructure itself was driven by water resources concerns: for instance, groundwater quality issues in some areas of Senegal (especially the "Groundnut Basin", with high levels of saline contamination) led to long-distance water transfers and a "hybridisation" of urban and rural infrastructure (Inf. 4), with urban operators contracted to operate complex infrastructure in rural areas. It also showed that it was possible to attract private operators to manage water supply in rural areas.[8] More recently, water resources concerns are also the main motive behind the development of a multi-village piped water scheme in Burkina Faso (Inf. 20).
- **Donors and international institutions**: The World Bank, including its Water and Sanitation Program (WSP), and the French Development Agency (AFD) were identified by many experts as the main champions of reform in the region (Inf. 4, Inf. 11, Inf. 19, Inf. 20, Inf. 21, Inf.22).[9]

  - » They often encouraged **cross-fertilisation and exchange of ideas** across borders: for example, the ongoing regionalisation reform in Benin was informed by technical assistance with experts from Senegal and Niger supported by the World Bank (Inf. 14 & 15). Some experts bemoaned the demise of the WSP, which they felt contributed to the body of evidence in the rural water sector in the region (Inf. 19).
  - » They also promoted **private sector participation** in rural water in the region, sometimes with financial strings attached, especially in the case of the World Bank (Inf. 4, Inf. 19, Inf. 21, Inf. 22). In Benin, in 2007, the World Bank made rural water public-private partnerships conditional on providing financial support. This had for consequence a rapid spread of delegation contracts to private operators in municipalities across the country – but with mixed results in terms of the quality and sustainability of services (Migan et al, 2015).
  - » "**Economic diplomacy**" was also described as one of the motivations behind the championing of these models by some donors (i.e. the creation of opportunities for the relevant donor's industry to bid for tenders in sectors where they are competitive (Inf. 3 &19).

8 From Diallo, 2015: "Two pilot projects funded by Saudi Arabia caught the attention of the Senegal-based [World Bank PPP team], and our government colleagues. The Islamic Development Bank helped with an effort to implement two large rural water supply projects in areas facing poor quality of water resources, and it was the first large transaction in rural water that involved the private sector. It gave us a sense of our path forward, and with advisory services provided by the Water and Sanitation Program (WSP) of the World Bank Group, we began designing a new PPP paradigm for Senegal's rural water sector […] To conceptualise this new model, we actually looked back, re-examining a 1996 urban water PPP project installed across several Senegalese regions".

9 Other donors with influence on rural water reform in the region included the Swiss Agency for Development and Cooperation (inf. 4), the European Union, and Danida (inf. 20).

» AFD also pushed in its projects for a **small number of larger contracts to "maximise impact" and "reduce transaction costs"** (including their own), as those are usually higher in the rural water sector than the urban water sector (with more contracts to manage for a smaller "impact" in terms of number of beneficiaries – Inf. 1 & 22); this project management logic has a direct impact on rural water policies in the region.

» Linked to donors, some private **consultancies** (including technical assistance) have a great deal of influence in pushing particular approaches and are often more comfortable with a rationale based on economic costs and benefits, rather than a participatory, multi-stakeholder approach taking full account of the local context (Inf. 22).

- **Parallel reforms in the urban water sector**: The urban water sector in West Africa has a long history of private sector participation. For urban drinking water supply, reforms to bring in more private sector participation increased in the 1990s-2000s (Fall et al, 2009). In Senegal, the decision to establish a central rural water agency (OFOR) was "driven by a desire to draw lessons from the successful experience in urban water" (Diallo, 2015). Besides, the "grey zone" is also an interesting market for urban water operators, especially if they already have a presence in the country. In Senegal, for example, the urban water operator, SDE, bid for and won one of the regional rural water tenders (Inf. 21).[10]
- **Legal aspects** were mentioned as a driver for reform, but the reasons differed depending on the country. In the case of Benin, for instance, a lack of legal basis on which to hold community-based organisations legally responsible for the management (or mismanagement) of water services delivery was given as one of the main reasons to pursue rural water reforms in the early 2000s (Inf. 2). In Mauritania, legal difficulties associated with modifying existing delegation contracts was given as another reason for one donor to push for a reform of the Water Law in the 2010s (Inf. 21).
- **Regional emulation and competition between West African countries, and political leadership**. A shared history and language means that reform elements travel across borders. As shown, donors play an important role in promoting or pushing these models, as does political leadership, and international milestones and goals which allow governments to compare progress and promote greater ambition (Diallo, 2015).
- **Harmonising rural water tariffs and bringing them in line with urban water tariffs**, out of equity concerns. In some of the countries reviewed, the disparity between rural water tariffs, which are often double or more those for urban residents, has been a key motivation for recent reforms (e.g. Mauritania).

10 SDE has since lost its urban water services contract to a subsidiary of Suez, with local media speculating that it had been awarded the rural delegation contract as "compensation". (Takouleu, 2019).

2.2 Pathways to rural water service delivery

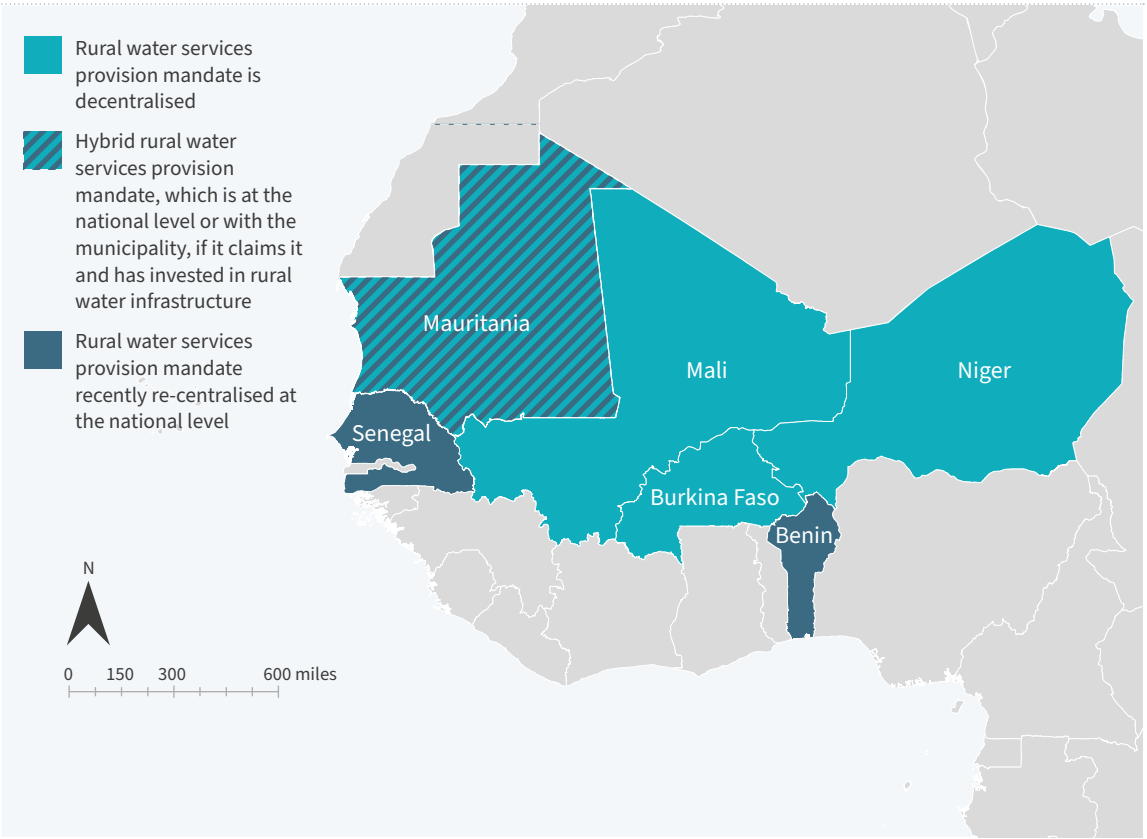
This section draws from a review of rural services delivery focused on six countries in West Africa: Benin, Burkina Faso, Niger, Mali, Mauritania and Senegal.

2.2.1 Countries with decentralised rural water authorities: Benin (until 2016), Burkina Faso, Niger, and Mali

In these countries, in line with ongoing decentralisation reforms, the mandate for water services provision was transferred to the local level, usually municipalities, in the late 1990s – 2000s. Municipalities were encouraged or mandated to delegate the management of drinking water supply services in small towns and semi-urban areas, specifically for small piped water systems and water kiosks. However, informal, community-based management of point sources still remains predominant. In some countries (e.g. Niger, Mali, Burkina Faso), the government has also recently considered or enacted the expansion of the urban utility's service area to include some small towns – following the "utilisation" trend which has been seen elsewhere (Franceys, 2019; Carter, 2021).

The objective of the delegation of rural water services by municipalities to professional (private or public) operators is to (i) reinforce technical capacity for adequate service delivery and (ii) increase the viability of rural water services through clustering of rural water schemes.

Figure 4: Rural water service authorities in the countries under review.



2.2.2 Countries centralising or re-centralising rural water authorities: Senegal, Mauritania and Benin (since 2016)

In some countries, the central State has sought to take back control from the local level (be it local authorities (Benin) or community-based organisations (Senegal)) through the creation of centralised agencies for the rural water sector. In Mauritania, for instance, after the ad-hoc proliferation of private operators in the 1990s, reform efforts were "indicative of attempts by the State to take back control: the private operators were performing well despite precarious conditions and had connected thousands of people to water services in rural and semi-urban areas. The State then took over the most profitable towns through the national urban water utility. Then it created a national rural water agency which took over the management of the secondary cities and became the delegating authority for private operators" (Inf. 4). Mauritania is the only country reviewed with a hybrid mandate for rural water services: the official mandate rests with National Directorate for Water of the Ministry at the national level,[11] except if the municipality claims this mandate and if they have invested in their rural water infrastructure (Inf. 21 & 22).

According to the proponents of such reforms, the move away from decentralised rural water authorities aims to remedy issues of (i) scale – to improve financial viability, (ii) capacity in terms of technical and human resources; and (iii) asset management – for the State to take ownership of and manage its rural water assets.

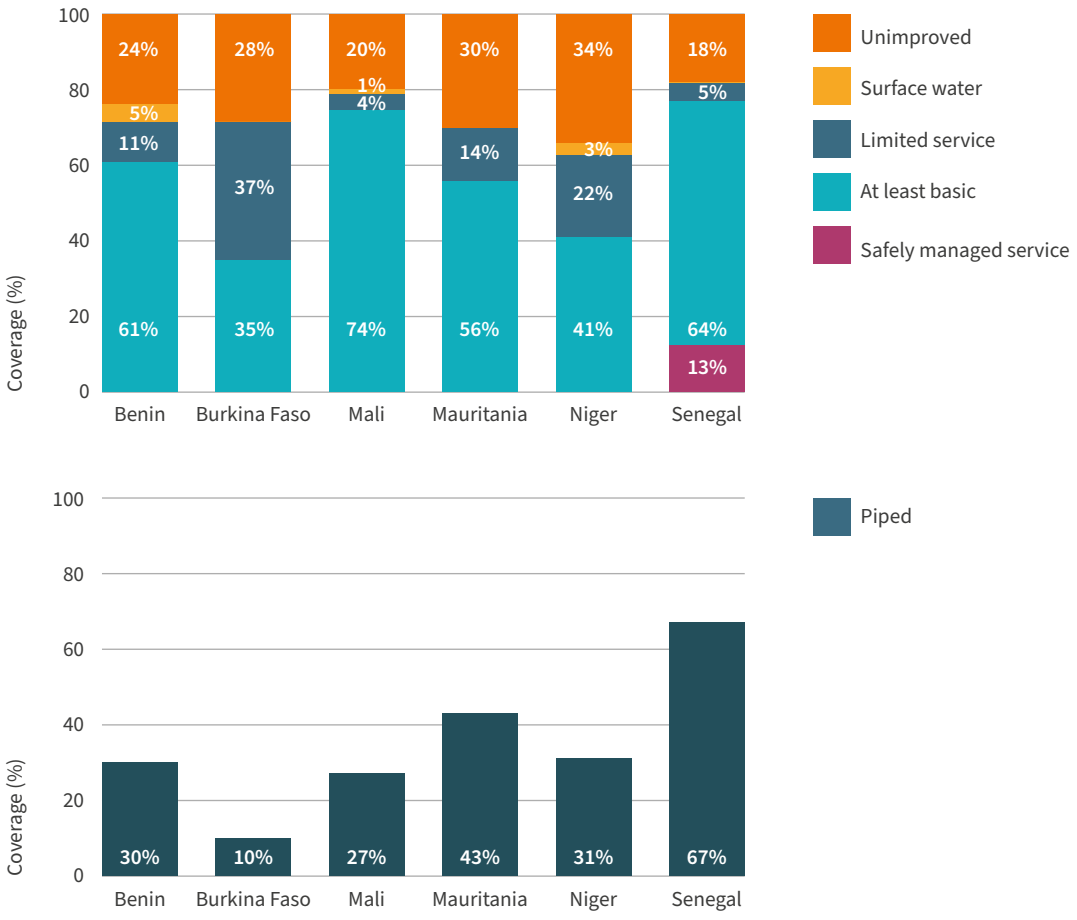
A solar piped water scheme in Moribala, Mali. Photo by Johannes Wagner.

11 In practice, only a small number of Mauritanian municipalities have claimed this mandate. (inf. 22).

2.2.3 Delegation of rural water services

Decentralisation and delegation can take place at different geographical scales (Box 1); in 2010, 25% of rural piped water schemes were estimated to be under delegation in the countries under review (World Bank, 2010[12]). Since then, there is an overall trend towards the delegation of rural water services becoming more widespread in many countries, although in some, the trend has stabilised or even decreased slightly (e.g. Burkina Faso). It was difficult to provide a precise estimate of the number of piped water schemes under delegation arrangements in some countries due to uncertainties around the rate of delegation and/or incorporation of rural water infrastructure as well as ongoing reforms. Table 1 below summarises the extent of the delegation of rural water services in the countries under review. Annex 1 and 2 provide more detail on the evolution and current status of rural water services delivery models in the six countries reviewed.

Figure 5: Service levels (top) and access to piped water (bottom) for rural residents. Source: JMP, 2022.



12 The 2010 study looked at the same six countries, with the addition of Rwanda.

Table 1: Extent of the delegation of piped water services in the six countries under review. Sources: JMP, 2022; ANAEPMR (2022); MEA (2022); MMEA (2022); ESAWAS, 2022; COWI (2016); OFOR (2023); MHA (2021).

Country	Type of rural water authority	Scale of delegation	Rural population with basic service coverage, 2022 (%)	Rural population served by piped water, 2022 (%)	Number of rural piped water systems (year data was collected)	Extent of delegation of rural piped water services
Benin	Decentralised until 2016, then re-centralised through ANAEPMR	Local, then regional since 2022 (3 large zones)	60.77%	30%	900 (2022)	100% piped water systems delegated to 3 regional operators*
Burkina Faso	Decentralised	Local	34.84%	10%	2320 (2022)	25% of the piped water systems delegated to 16 operators
Mali	Decentralised	Local	74.45%	27%	2998 (2021)	Delegation is mandatory, but the extent of actual delegation could not be confirmed
Mauritania	Hybrid: centralised or local (see section 2.2.2)	Local, then regional since 2023 (8 large zones)	55.64%	43%	around 1500 (2022)	Services delegated for around 100 piped water schemes (7% of the population) until early 2023. Tenders for regional delegation (8 large zones covering all the rural population) launched in 2023.
Niger	Decentralised	Local	40.85%	30%	more than 1000 (2016)	72% (2021) of piped water systems delegated to more than 80 local operators
Senegal	Decentralised to ASUFORs until 2014, then re-centralised through OFOR	Local, then regional since 2016 (8 large zones)	77% (Safely managed: 12.65%; Basic: 64.32%)	67%	2247 (2022)	45% of the piped water systems delegated to 5 operators (2023). Rate of incorporation of infrastructure varies between 39% (Aquatech) and 100% (SEOH)

*rate of incorporation of rural water infrastructure by regional operators unknown.

2.3 Key challenges and lessons learnt from the West African experience with delegation of rural water services

As in other parts of the world, and throughout the African continent, rural and semi-urban areas present inherent challenges for water services provision in West Africa, due to:

- The low density of population which makes financial viability more difficult for water operators;
- The lack of a clear institutional framework for service delivery;
- The multiplicity of actors involved in the rural water sector, with adds a layer of complexity to efforts by governments to improve coordination and accountability; and
- The type and number of water infrastructure assets involved.

In addition, contextual factors are often at the forefront of water service providers' and policy-makers' concerns. They include water resources issues (quality and quantity) aggravated by climate change, but also population growth especially in small towns, and broader security, State fragility, and governance issues, particularly in Burkina Faso, Mali and Niger.

The delegation of water services in rural and semi-urban areas is not a panacea to these issues, or claiming to be the sole alternative to community-based management. Countries in West Africa are trialing different approaches, often in parallel, to improve water services for residents in rural areas and small towns. In doing so, they must strike a balance between the interests of the State, those of citizens/ water users, and those of the (public or private) operator. This section does not intend to be exhaustive but will focus on key challenges, learnings and gaps between theory and practice.

2.3.1 Rural water service delivery models and infrastructure

Key message

Rural water operators will be able and interested in providing rural water services if the financial viability of the services to be delegated is ensured, and risks are adequately shared between the operator and the delegating authority. For this, the type, size and scope of rural water services to be delegated, the type and length of the delegation contract, and contractual modalities need to be optimised. West African countries have trialled Design-Build-Operate (DBO) contracts, large regional and inter-municipal arrangements to delegate rural water services.

Service delivery models for rural water services do not always correspond to the legal and institutional framework. There is a need to acknowledge this gap between theory and practice. For instance several alternative models for rural water services delivery may co-exist sometimes in the same municipality, community or area, due to "a superposition of reforms": "real management models are often characterised by a mix of features from different theoretical models" (SDC, 2009). Informal arrangements (incl. community-based management) are still the predominant form of rural water services management in many cases (GRET, 2018), where services should have been delegated to a third party according to the legal and institutional framework. In Mauritania, for instance, "the idea of delegating water services, as stipulated by the Water Law, is not always done in practice" (Inf. 1).

In Burkina Faso, public service delegation has been the official management model for small piped water networks and water kiosks since 2010; in practice, around a third of small piped water networks and virtually none of the water kiosks were under delegation in 2016 (MEA, 2019b); furthermore, the rate of small piped water networks under delegation had decreased to 25% by 2022 (MEA, 2022).[13]

This lack of compliance can be for various reasons:

- **The lack of communication and stakeholder engagement upstream and during the reform**,: In Senegal, several regional operators are struggling to incorporate all the rural water infrastructure in their perimeters, due to a high degree of resistance from local communities and ASUFORs (Inf. 21; SOTERCO, 2021).
- **Wider political economy issues which slow or delay rural water policy reform**. For instance, in Senegal, a 2008 Water and Sanitation Law (loi SPEPA) on the institutional organisation of the water and sanitation sector was promulgated but its implementing decrees were not enacted. (Inf. 20, MHA, 2016).

West African countries have experimented with clustering / aggregating / consolidating[14] infrastructure to delegate rural water services at the scale of several municipalities, a district, or a region, which can present several advantages (Figure 6) (Migan et al, 2015; Experts Solidaires, 2021):

- **Increased efficiencies** in service delivery through economies of scale to some extent, and facilitating cost-sharing between water schemes within a cluster;
- **Increased performance by making the opportunity appealing** to professional operators who are attracted by bigger water sale volumes, leading to enhanced professional capacity in a larger scale of operation;
- **Harmonised tariffs** within a larger geographical area (unless tariffs are mandated at national level by the State);
- **Reducing transaction costs** for public authorities (including for tendering the contracts as well as overseeing their implementation) as well as the operator, who then has fewer contracts to bid for, implement and monitor;
- **Attracting funding** from donors or commercial banks by proposing larger transactions with fewer transaction costs;
- **Building up capacity** by giving the more robust operators the opportunity to scale up; but also to strengthen the capacity of delegating authorities (local authorities) to negotiate and control the conditions of service delegation;
- Can facilitate access to **water resources** and foster an integrated approach to water resources management;
- **Reducing information asymmetry** between service authorities and large multi-scheme operators.[15]

13 The reasons for this decrease are not documented, but could be due to (i) an increase in the number of piped water systems built, while delegation is not implemented immediately after completion and (ii) some operators having to abandon some sites, either because of the security situation or because of the low level of recovery of operating costs.

14 See Lockwood, 2023 for a review of the definitions of aggregation and consolidation.

15 Effective regulation can also perform this function.

However, the clustering[16] / aggregation process can also present trade-offs (Figure 6):

- As the size of the perimeter increases, it becomes more complex, and more removed from end-users, and the process itself of the operator taking over the infrastructure becomes lengthier. Recent analysis (for the urban water sector) also shows that the effect of aggregation varies and does not automatically translate into lower unit costs or better performance, because of significant transaction costs in some cases (World Bank, 2017).
- While larger perimeters can help unlock financing by some donors, smaller perimeters can encourage domestic finance.
- In addition, some forms of clustering / aggregation may require political will to succeed; risk of failure may arise from change in political leadership.
- There may be resistance from those who "lose out" to cost-sharing, or loss of control over water resources.

Figure 6: Advantages / disadvantages of clustering / aggregation of rural water services. RWS = rural water services. Source: the authors, based on Migan et al (2015), Experts Solidaires (2021) and Hydrophil (2013).

Advantages of clustering / aggregation for RWS:

- Allows increased efficiencies and facilitating cost-sharing between water schemes in a cluster
- Larger scale of operation makes services delivery more attractive to professional operators
- Harmonised tariffs within a geographical area (unless mandated by the State)
- Reducing transaction costs for public authorities/ operators
- Attracting funding (larger transactions, fewer transaction costs)
- Building up the capacity of operators and local authorities
- Reduce information asymmetry between service authorities and large operators
- Facilitates access to water resources in water-scarce areas (in the case of multi-village piped schemes) and can foster an integrated approach to water resources management

Disadvantages of clustering / aggregation of RWS:

- Economies of scale may not materialise beyond a threshold which is context-dependent; large perimeters can lead to high transaction costs, and do not automatically translate into lower unit costs or better performance
- As the size of the perimeter increases, it becomes more complex, and the process of the operator taking over the infrastructure becomes lengthier
- Decision-making is more removed from end-users, which can result in a loss of accountability unless well regulated
- May result in a loss of control over water resources
- Introduces risk of resistance to cost-sharing from those that "lose out"
- Requires political will to aggregate at the local level

16 Clustering can refer to (i) the grouping of several local authorities / municipalities into a single administrative structure for the provision of a particular service (Kingdom et al, 2005) and/or (ii) the consolidation of the market of (usually private) small operators into a smaller number of more robust operators specialised in water services provision (or some of the functions associated with water services provision).

West African countries have trialled the following approaches for public services delegation (Annex 2):

- **Design-Build-Operate (DBO) contracts regrouping several local authorities** for the construction and management of rural and semi-urban water services. For instance, AFD experimented with DBO contracts, first in Burkina Faso (Blanc et al, 2012) and later in Mali (tender currently on hold due to the diplomatic situation). From the donor's perspective, this has the advantage of (i) reducing "transaction costs" and maximising impact (in terms of number of beneficiaries) for the donor, as well as reducing the overall procurement process from 7 to 3-4 years; (ii) ensuring that the construction is done optimally so as to lower O&M costs, as the operator has an incentive to design and build well (iii) going to scale by including 15-20 small towns in the perimeter of the DBO contract and (iv) ensuring mutual learning, pooling of competences and exchanges between municipalities through an inter-municipal arrangement.
- **Large regional delegations** of water services in rural and semi-urban areas (e.g. Senegal, Benin and Mauritania), all of which are in progress.
  - » **Mauritania has the longest experience with delegation of (rural) water services in the region since the 1990s**, first at the local level, with private operators developing in small and large towns in a endogenous manner (Carlier, 2001). Since 2009, with the support of AFD, Mauritania has pursued formally the delegation of semi-urban water services at local level, and has planned to tender large regional rural water services delivery contracts, similar to (and influenced by) the Senegalese experience (Inf. 21). However, the tenders have taken several years to be approved, due to political economy issues (including frequent changes in political leadership at the Ministry (Inf. 3, 7 & 21)).
  - » **Senegal's regionalisation of rural water services started in 2014, with the support of the World Bank**. Initially, the reform would have seen the country split into three large zones, with private operators responsible for wholesale of water and O&M support to ASUFORs, who were to remain in charge of water services delivery (MHA, 2016). However, the scale and scope of the reform rapidly changed: tenders were launched for private operators to be recruited in 8 regions within the framework of 10-year affermage contracts for rural water services delivery. In practice, the transfer of rural water infrastructure, and the delegation of services to private water operators has suffered from bottlenecks linked to (i) a large share of the rural water infrastructure being not operational (with the State often unable to invest in its rehabilitation) and/or (ii) rural water infrastructure not being transferred to operators, in part due to strong opposition from ASUFORs and the communes (Inf. 20; Experts Solidaires, 2021; SOTERCO, 2021). As of 2023, 45% of rural water supply systems in the country were under delegation in 5 out of 8 regions (OFOR, 2023).[17] The remainder were mostly managed by ASUFORs, with a small number under transitional management.[18]
  - » **In Benin, 3 regional delegations contracts covering the totality of the country (except the urban utility perimeter) were signed in 2022**, and rural water infrastructure is in the process of being transferred to the operators. The State has allocated financial resources (with the support of the World Bank in particular) to rehabilitate the relatively large (30-50%) share of non-operational rural water infrastructure (Inf. 6,14,15). This ambitious reform of the rural water sector is set to spill over into the urban water sector in a second phase (Inf. 14 & 15).

17 A fifth operator, SDER, started operations in 2023 in two additional regions; contracts had been signed in 2019 but pending approval by the State due to the evaluation of the reform.

18 COPIFORs are a transitional management model in Senegal incorporating ASUFORs, local authorities and OFOR, which mandates water services provision to a local operator for a short period, pending incorporation by the regional operator.

- **Inter-municipal arrangements**: Inter-municipal arrangements[19] are being trialled in countries where water services are the mandate of municipalities to improve economies of scale and capacity, including in Niger, Burkina Faso and Mali; this is to encourage operators to share the costs of services provision between profitable and less-profitable sites. It is officially recommended in the rural water policy guidelines of Burkina Faso (MEA, 2019). In practice, inter-municipalities are still the exception in Mali, Niger and Burkina Faso, and are often victim of political infighting or contractual disagreements; the few that do exist have benefited from continued external support (Inf. 11, 12 & 16). Operators and mayors may find it simpler to sign individual contracts, though in this case there is no incentive to prevent operators from neglecting the less profitable municipalities. One exception could be for multi-village piped water systems, where infrastructure is not clustered but shared by several municipalities; in this case, inter-municipalities appear to be a pre-requisite (Inf. 20).

2.3.2 Sector policy, strategy, and institutional capacity to leave no one behind

Key message

A clear political, institutional, regulatory and legal framework, which enable long-term contracts and give operators some visibility and clear contractual terms, is essential to the delegation of rural water services both in centralised and decentralised mandates.

The lack of a clear institutional framework for service delivery is still a challenge in many West African contexts. At national level, the rural water sector suffers from the frequent changes in ministers and/or institutional reforms that paralyse rural water policy (Inf. 16). In addition to this, broader governance issues have affected the rural water sector, particularly in conflict-affected states in West Africa.

In this context, recent efforts by Senegal, Mauritania and Benin are pioneering in terms of reforming and clarifying the institutional framework. They are also indicative of attempts by the State to "take back control" to some extent from local actors, be they local authorities or community-based organisations. In Senegal, bottlenecks in the transfer of rural water infrastructure (a significant share of which needed rehabilitation) forced some operators (e.g. SEOH) to undertake rehabilitation works themselves, which fall under the obligations of the Senegalese State, but without reaching an agreement on reimbursement modalities (SOTERCO, 2021). In some cases, the private operator is struggling financially as many user associations (ASUFORs) are refusing to hand over rural water infrastructure to the private operator.

In countries where rural water services are the mandate of the municipality, there is often a lack of resources (both human and financial) to implement this mandate. This leads to a blurring of the role of the municipality and the deconcentrated levels of the State, and a power asymmetry as municipalities remain reliant on deconcentrated levels of the State for human, technical and financial resources (Inf. 16). Responsibilities are not clear and do not always correspond to the institutional and legal framework. In some cases tensions arise between central and local authorities on the one hand, and between the State (central and local authorities) and local communities on the other:

19 The concept of intermunicipalities seems to be a transposition of the French experience, where intermunicipal arrangements are the norm, but the incentives that are paramount to their sustainability need to be identified in other contexts.

- Communities that have invested in their drinking water systems are reluctant to hand over the assets and its management to the State or to local authorities, especially when a third party (e.g. private operator) is involved (e.g. Senegal, Mali in Blanc et al, 2012), or when the users' association has saved substantial amounts of money over the years (e.g. Senegal).
- In Mali and in Niger, some local authorities refuse to work with the government-mandated technical and financial auditors (Inf. 2,20 & 23), and to pay for their services, even if the contribution ('STEFI fee') is supposed to be included in the tariff.

For municipalities to be able to fulfil their mandate, they need (i) technical support and a political engagement in favour of decentralisation (ii) financial and human resources and (iii) accountability to users. In Burkina Faso, the delegation of piped water schemes is supposed to be led by municipalities, at municipal or inter-municipal level, to enable clustering and improve financial viability; there are initiatives to accompany and support municipalities in their new mandate (*appui à la maitrise d'ouvrage communale*). However, tendering is often done in practice by the regional water directorates; some advance that this is due to a lack of technical, financial and human resources at municipal level; others argue that this is due to the reluctance of the regional water directorate to hand over this responsibility to municipalities, **which are systematically excluded from processes which they should lead** as part of their mandate as service authorities ("*maitres d'ouvrage*") (Inf. 20). Delegation contracts are then "imposed" by regional directorates on municipalities, which can create tensions and confusion (World Bank, 2019) and threatens the sustainability of services. In Niger, a lack of technical support from central authorities to municipalities was partly due to the fact that the "the national institutions that had transferred the mandate for water and sanitation services delivery […] have always contested the relevance of decentralisation" (Inf. 20).

Some types of rural water infrastructure such as handpumps are left out of ambitious rural water reform plans, or "neglected" on purpose. Aside from Mauritania and Senegal, the majority of the rural population in the countries under review still relies heavily on point sources for drinking water (see Annex 1). In Burkina Faso, the State envisions that rural water services will be delivered by piped water networks by 2030, with 70% of the rural population having individual connections and 30% relying on standpipes (MEA, 2019). As only 10% of the rural population currently has access to piped water, experts caution that this is "a delusion" (Inf. 20). Currently, handpumps in Burkina Faso are either managed by community-based organisations or integrated in private operators' perimeters. A 2009 study shows that local authorities may choose to neglect them "on purpose" to make way for other types of infrastructure[20]; an operator was also forced to close down handpumps within 500 metres of standposts, as sales from the handpumps were difficult to monitor and the non-revenue water supplied from them undercut the sales from the piped schemes (Kleemeier and Lockwood 2012). Experts were divided on the topic, with some arguing that "including handpumps in the perimeter of a private operator [in addition to piped schemes] doesn't work… a municipality can manage handpumps, but not a private operator. It is too complicated for the operator to recover the costs. " Others argued that positive experiences with private management of handpumps exist (Inf. 20; Inf. 6).

20 From Blanc et al, 2012 (p.426): "The mayors were divided between a desire to see all the handpumps in their village operate, and the feeling that the development of their community should involve the gradual phasing out of the handpumps and replacing them with standpipes, or even private connections, which are signs of development. Should access to all the handpumps be prohibited? As the political impact of such a measure presented a risk, it was decided not to repair the broken pumps, but the operator was obliged to earmark an amount for handpump maintenance so that they could be started up again if needed" (p. 426).

If handpumps are neglected, what does it mean for equity and universal access to water services delivery for rural residents? A study of 31 municipalities in Burkina Faso showed that 69% of the population relied on handpumps only for drinking water, while the rest relied on a combination of handpumps, water kiosks and standpipes. In some of the better-serviced communities, handpumps may not be needed to maintain access to universal water services, but this represented a very small share of the population (Pezon, 2020). The vast majority of the rural population in Burkina Faso and in many West African countries will continue to rely on handpumps to gain or maintain universal access to drinking water services. In countries such as Mauritania, however, piped water schemes with standpipes or private connections are widespread, and handpumps not used except in rare cases (Experts Solidaires, 2021).

2.3.3 Sector financing

Key message

Transparent financing and subsidies, including for O&M when tariffs are below the operational cost recovery level, may be needed to ensure the acceptability of services by rural populations.

As in many other parts of the developing world, rural residents in West Africa suffer from the paradox that they are paying for a service that is often of lower quality than in urban areas, for a higher price.

Rural water services are characterised by low financial viability, due to (i) limited revenue compounded by low levels of user consumption, particularly when there are alternative and competing water supply sources, and few private connections (too costly); and (ii) the high costs associated with service delivery, including the price of energy. In Niger, it is estimated that only 36% of rural water supply schemes (incl. more than 50% of the solar and hybrid systems) are able to ensure cost recovery of operation and maintenance (COWI, 2016). This is in line with other countries globally: GLAAS data show that in only one quarter of the countries under review, tariffs cover 80% of the costs of O&M of drinking water supply in rural areas (UN Water/ WHO, 2022).

Tariffs are often below cost-recovery levels, with tariff policies being political decisions. In Benin, the tariff applied by the new operators is “applied in practice, but not codified on paper” (Inf. 14 & 15). In Burkina Faso, a 2019 decree stated that water tariffs should be reduced from 500 FCFA/m3 to 300 FCFA/ m3 in semi-urban areas from 2030. It is difficult to see how this revised tariff would cover Operation and Maintenance costs without subsidies, as operators of piped water schemes already struggle with cost recovery under the current tariff (Inf. 11). Operators deplore the fact that tariffs are often “announced by decree instead of being calculated” to ensure viability of rural water services (Inf. 6). In Senegal, OFOR announced that the first regional operator’s tariffs (SEOH) would be 10% lower than what was previously charged by ASUFORs, and would constitute “a first step towards social justice in the water sector” (Sow, 2016) while covering the totality of the costs of operations and maintenance (UN Water/ WHO, 2022). However, it was reported that in some cases, OFOR had put pressure on the new regional operators to propose tariffs that were lower than in their offer, in order to make the transition more acceptable to water users (Inf. 21); or to enlarge the scope of the services to be provided by the operators without increasing the price (Inf. 20). This resulted in tariffs that were “artificially low”, and not adequate for the reality of the work (Inf. 21). The 2021 evaluation of the rural water sector reform showed that this has impacted negatively the balance sheets of some rural water operators, with at least one operator in a precarious financial situation, although others have managed despite the difficulties (SOTERCO, 2021).

Subsidies mostly target the construction of new infrastructure or major repairs. In Burkina Faso, the State transfers funds to local authorities for the rehabilitation and construction of infrastructure only (UN Water/ WHO, 2022); budgets are often insufficient and executed by the regional or central levels of the State rather than the municipalities themselves (Inf. 11). In Benin, the State has allocated financial resources (with the support of the World Bank) to rehabilitate the relatively large (30-50% (Inf. 6, 14 &15) share of non-operational rural water infrastructure. In Senegal, the lack of public funds to upgrade existing rural water assets has constituted one of the main stumbling blocks of the reform, as OFOR was not able to fulfil one of the contractual clauses consisting of entrusting operators with functional infrastructure (SOTERCO, 2021). Subsidies in the rural water sector currently only target OFOR, whose plan to reach financial autonomy through operators' fees has suffered from the ongoing reform's setbacks (SOTERCO, 2021).

Mauritania may be one of the rare examples where the State is planning to provide subsidies for rural water tariffs to cover the costs of Operations & Maintenance of rural water services. During the COVID19 pandemic, the Mauritanian State subsidised the provision of water. This led decision-makers to consider subsidising rural water tariffs so as to improve the quality of service delivery without repercussions for water users. The State has published unified tariffs for the zones which are currently being considered for the delegation of rural water services delivery, and is asking operators to bid on this basis, with the understanding that the State will fill the gap between the tariff and the operators' price to ensure cost recovery. However, it remains to be seen whether the regional delegation will go ahead, and whether the State will compensate operators as planned in the long-term (Inf. 21).

Photo by Arne Hoel / World Bank

In contexts where the choice is made not to subsidise rural water tariffs, how should water services be funded? In the countries under review, the average price of water for rural residents is often more than double that of urban. The case for the re-distribution of subsidies to benefit rural residents is obvious, but politically challenging. To improve the financial viability of rural water services, some West African countries recommend (1) the use of solar energy to reduce operating expenses (wherever possible from a technical point of view) and (2) a focus on private connections, piped water schemes and standpipes to increase financial viability (e.g. Burkina Faso). More evidence is needed to understand the extent to which services can be financially viable a scale with these measures, or whether additional external financing is needed to sustain services.

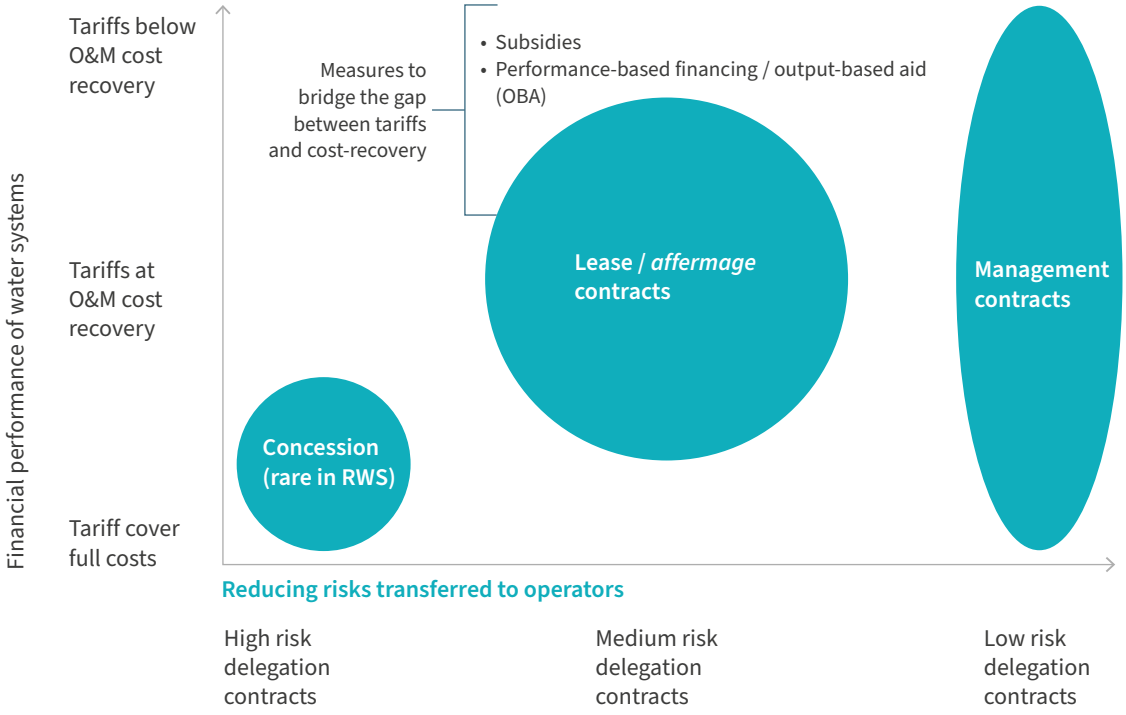
How are rural water assets managed and the rehabilitation of rural water infrastructure financed? Under *affermage* contracts, provisions for the renewal and extension of infrastructure often exist contractually through the payment of a fee (*redevance*) by the operator, but are contested due to a lack of transparency of financial flows. The lack of clarity or the non-respect of contractual obligations between delegating authority and operator can cause confusion and resentment between parties, and prevent rehabilitation of aging infrastructure. When the State is responsible for rehabilitation and major repairs of rural water infrastructure, it often lacks the funds to do so, which jeopardises progress made in rural water coverage and rural water reform (e.g. Senegal). In Benin, the early experimentation with municipal *affermage* contracts in the early 2010s showed that the most problematic element found in the model contract proposed by the central ministry was that contracting parties' obligations were unclear, particularly with respect to major rehabilitation. When local authorities did agree that this was their responsibility, they were rarely able to mobilise these initial funds, which was a breach of contract as the operators relied on these rehabilitations to be financially successful (Migan et al, 2015). In Burkina Faso, the lack of transparency around financial flows linked to the renewal fee is also a source of tensions between operators and the State[21] (Inf. 17). In Niger, the 2016 evaluation showed that giving operators the right tools to report on financial flows in a transparent manner could lead to a regularisation of unpaid fees by operators, but it needs continued support from the State and the regulator (COWI, 2016). If this question is not solved, it will be difficult to avoid a vicious circle of degradation of infrastructure and setbacks in service delivery provision. An institutional framework with the power to enforce contractual obligations can help mitigate such a risk.

Some West African countries have piloted delegation arrangements with private operators which include a part of the investment taken over by the delegatee to leverage operators' willingness to invest in expanding services (see Annex 2). There are positive experiences of such arrangements at municipal level in Mauritania, Senegal (Inf. 21), Benin (Migan et al, 2015) and Niger, where the 2016 national evaluation highlighted the interest of some delegatees to invest up to 10% of their revenue in expanding infrastructure (COWI, 2016; SEVES, 2018). In Niger, the strict application of the 5-year standard contracts was identified as one of the main obstacle to investment by the operators, as any investment would be at a loss under such conditions. Adapting the length and conditions of delegation contracts to the operators' investment, and building the capacity of operators (Inf. 4) and municipalities to manage such contracts, would help unlock the potential for private operators to access financing and expand services (SEVES, 2018).

21 "when there are breakdowns, the operators let the breakdown drag out so that people turn to the State to finance the (piped water systems) rehabilitation programmes… we (the State) have no visibility on their renewal funds." (inf. 17)

Overall financing for the rural water sector remains limited in volume and efficiency. In additional to traditional sources of finance, the rural water sector in West Africa should also benefit from additional funding for climate adaptation (African Union, 2023) and mitigation (Aqua for All, 2021). Some West African operators have also benefited from financial instruments which are more flexible than traditional donor financing, such as performance-based financing, and water purchase agreements (e.g. Uptime) to bridge the gap between revenue from tariffs and cost-recovery (Figure 7).

Figure 7: Subsidies and output-based aid/ payment for results can help extend delegation contracts in the rural water sector in circumstances where tariffs are below O&M cost recovery. Source: adapted from Hydrophil (2013). See Annex 2 for more details.



2.3.4 Regulation, data & monitoring to inform decision-making, planning and asset management

Key message

The public services delegation mechanisms that work best are those that are subject to a regular framework for dialogue. Regulation, data and monitoring still require improvement to inform decision-making for rural water services. Whether anchored at national or local level, regulation should be based on principles of efficiency, transparency and accountability, and address local water users' concerns.

The lack of regulation, data and monitoring was highlighted as an issue hampering progress of rural water reforms in West Africa (Inf. 6 & 19): "Phases of reform give the impression that things are progressing, but the main challenge after this is monitoring and regulation".

India Mark 2 handpump in Tiefala, Mali. Photo by Johannes Wagner.

Monitoring is often patchy; for instance, in Mauritania, ONSER is unable to monitor water services delivery at the national level, aside from the services that are directly under its mandate (MHA, 2014). In Niger, the 2016 evaluation found that service delivery in the rural water sector "is not well known or monitored by the Ministry" (COWI, 2016). It was also difficult as part of this study to estimate the rate of rural water services under delegation in some countries, and their performance, due to lack of data (see Table 1).

Effective regulation of water services in rural areas can help promote sustainable water services, especially when they have been delegated to a third party; however, the fragmentation of rural water supplies is commonly cited as an obstacle to efficient management and regulation. While there are no 'right' or 'wrong' approaches to anchoring regulation, a blurring of roles and a lack of accountability should be avoided (Gerlach, 2019). Regulation should be based on principles of efficiency, transparency and accountability, and address local water users' concerns (GRET, 2022). In West Africa, regulation of rural water services, when it exists, can be anchored:

- **At central level, as in Mauritania**, where there is one central regulator (ARE) in charge of regulating several sectors, including water. While the central regulatory authority has the mandate to exercise its functions on all water service providers, in practice, it only regulates a small segment of the WSS services provided by private operators (covering only 7% of the rural population), leaving other sub-sectors largely unregulated (ESAWAS, 2022).
- **At local level, as in Mali and Niger**. In these countries, private independent technical and financial monitoring offices (based on the Malian STEFI – *Suivi TEchnique et Financier* model) were introduced as a means of supporting municipalities in monitoring delegation contracts. However, these STEFIs have also shown their limits, with strong disparities in effectiveness (only 2 out of 6 provide complete data) and a lack of financial viability (Inf. 4 & 23); some municipalities in Mali refuse to work with STEFI, and would prefer to spend the STEFI fee on municipal services (Inf. 20). As a result, the establishment of a centralised regulatory units in charge of coordinating and supervising the activity of STEFIs is being considered (Experts Solidaires, 2021), including in Mali where the mandate of the water and energy regulation commission, which up until now only covered urban water, may be extended to include rural water (Inf. 2). The local STEFI in Mali are frustrated by the lack of response to the reports which they share with the central administration (Inf. 23).

In countries where the regionalisation of service delivery is ongoing (e.g. Benin, Mauritania and Senegal), the question of the scale (national or local) and purpose of regulation is also evolving. In Senegal, regulation by contract between the regional private operators and the contracting authority (OFOR, the Ministry of Water and the Ministry of Finance) is blamed for not taking into account local concerns and lack of satisfaction with services (Inf. 21). The concept of an interim "local monitoring committee" (COPIFOR), which is being piloted and would bring together OFOR, the operator, the municipality and water users' representatives, could perhaps be a way to add a local regulatory mechanism to national regulation. Other initiatives seek to develop or reinforce local or national advocacy mechanisms in the water sector to contribute to the governance and regulation of the sector (GRET, 2021). Overall, it was found that **the public services delegation mechanisms that work best are those that are subject to a regular framework for dialogue** between public and private actors for the concerted resolution of difficulties encountered in the context of a delegation contract. How to fund this framework for dialogue remains difficult – often, without donor support, it is more theory than practice (Experts Solidaires, 2021).

In all contexts, be it at the regional or local level, local operators and authorities need to be accompanied and equipped to report to the State or a regulator. A national evaluation of delegated management of water services in Niger (COWI, 2016) found that, if local operators and municipalities were given the tools to report on services delivery, they were willing and able to do so. "The problem wasn't that there was any collusion or embezzlement of funds by the municipalities and the service providers, as was assumed initially; but rather the lack of control and support from the State, which never offered any tools to help people [operators and municipalities] fulfil their obligations…" (Inf. 20).

Should national (often focused on urban or piped water supply) regulation arrangements evolve to cover alternative models for rural water services? Because of the longstanding history of private sector involvement in urban water service delivery in the region, contractual performance is often monitored based on indicators used by the urban water sector. This is especially the case for **water quality monitoring**, where the standards of the urban water sector are unrealistic and very often cannot be met due in rural areas to human, technical and financial constraints (Inf. 6). More research is needed to understand how water quality monitoring can be adapted to rural realities while ensuring the same quality of service for urban and rural residents.

2.3.5 Human capacity, including market capacity

Key message

The professionalisation of rural water services provision depends on the existence of qualified operators interested in working in rural areas (public or private, local or international). In West Africa are two pathways to supporting the development of professionalised services: (i) providing technical assistance at decentralised level to local operators and service authorities (ii) bringing in large operators (often international) to accelerate the development of the rural water sector. Reform efforts must take into account local operators' experience to avoid the perception of "dispossessing the country of local capacity", which also has an impact of social acceptability and the sustainability of water services.

The fact that many West African countries have a vibrant market of rural water operators, public and private, local and international, is positive. The capacity of operators has implications on the resilience of service delivery overall. In West Africa, the rural water sector currently attracts a mix of:

- **Local private operators**. The maturity, size and capacity of local private operators varies; for instance, in Burkina Faso, many local operators are usually medium to small-size organisations specialised in rural and semi-urban water services delivery, while in Mali, local private operators are often small local traders and are not specialised in the water sector (Inf. 6). In Mauritania, several generations of *concessionaires* have given rise to savvy operators such as CDS, who specialise in delegation contracts for rural water and energy access.
- Operators can also include **public federations of water user associations** such as the FAUEREB in Burkina Faso.
- **International private operators** who generally operate in consortia in larger perimeters, such as in Senegal, Burkina Faso or Benin, or in inter-municipal arrangements, and are often present in several countries in the region.

Supporting the development and professionalisation of service provision is key to ensuring the sustainability of rural water services. Governments in West Africa are currently considering the following approaches to do so :

- **Providing technical assistance at decentralised level to local operators, and to service authorities, to allow them to grow into their role**. Examples include the STEFI model (see above – with mixed results) but also the World Bank's efforts to train local small private operators in Benin, prior to the regionalisation reform, to strengthen their potential to seek commercial loans when investing in water schemes (World Bank, 2017).
- **By bringing in large operators to accelerate the development of the rural water sector**. Here experiences are mixed: in Senegal, some felt that the regionalisation reform has "dispossessed the country of local capacity": the ASUFORs who had been managing rural water services for decades have felt "disempowered" by the ongoing regionalisation reform, which effectively took their role of manager away to replace it with the role of water user representation (Inf. 20 & 21). In Mauritania, it will be interesting to see whether local and/ or international operators will be selected as part of the ongoing regionalisation reform. In Benin, it will be important to see how local operators, who had emerged after the reforms of the early 2000s, will be integrated into the ongoing regionalisation reform; and how municipalities will transition to their new role (Inf. 14 &15).

While it is encouraging to see these developments, more needs to be done to make the rural water services provision in West Africa an attractive market (IWA, 2014). From the perspective of the operators, there are several risks – additional to commercial risk – which often compound the inherent difficulties of rural water services provision, and which need to be managed or mitigated:

- **The need to create an enabling environment for service delivery**, with appropriate contract design and an institutional framework that enables the enforcement of contractual terms, and regulates operators and service authorities;
- **The lack of technical capacity** of the local authorities to supervise operators, who feel that they are "on their own" to solve problems which would require joint solutions (Inf. 6). A lack of understanding by local authorities of contractual responsibilities can make dialogue between the operator and the municipalities difficult.
- **The lack of social acceptability** by communities can translate into low use of water services, refusal to pay, social tensions, degradation and vandalism of rural water infrastructure. As "80% of the problems faced (by operators) are due to non-payment by water users" (Inf. 6), getting social acceptability right is key to the sustainability of services provision, and the State can play an important role in this, including through coordination and regulation of the sector. The 2021 evaluation of the rural water reform in Senegal highlights the need to improve communication with the population and the involvement of local authorities and ASUFORs (SOTERCO, 2021).
- **The need to improve accountability by the service authority and/or the operator to water users**. In response to this, some countries such as Benin and Senegal are formalising the role of drinking water user associations (which will be taken on by ASUFORs in Senegal) to improve accountability to service providers and the State. It remains to be seen how sustainable user engagement mechanisms will be when donor support ends, and whether they will be able to truly make authorities and service providers accountable to users in practice.


Photo by © Souleymane Bathieno/HP+ on Flickr

Conclusion

This paper set out to explore **two questions: (1) How and why have national models of rural water service delivery emerged, and (2) what are the pathways and pitfalls of different models of rural water service delivery in West Africa?** Evidence and insights were drawn from a literature review, case studies and interviews with 25 informants providing individual perspectives. An external and independent review process attempted to strengthen and improve the analysis without attempting to lose the breadth of perspectives and differing opinions. We acknowledge the inevitable gaps and uncertainties and make no claim to a representative study. The findings are incomplete and provisional, and we hope they provide a platform for wider debate and action.

In West Africa, prior to independence, rural water infrastructure was developed to serve the colonial economy; rural water supply was dominated by traditional wells, surface water, rainwater harvesting and low infrastructure options. With independence, the pace and nature of rural water service delivery has changed. We would consider four conditions as influential in supporting regional progress towards safely managed drinking water: 1) **state power and stability**, 2) **sustainable financing for rural water services**, through a combination of tariffs and subsidies where service delivery is not financially viable (from public finance or donors), 3) **contractual conditions** that promote accountability to rural water users, are attractive to professional operators (whether public or private) and designed on the basis of reliable data, and 4) **taking into account the transitional politics of reform**. Where power, politics, finance and accountability align, pathways to drinking water security are plausible.

However, few countries meet all four conditions, which presents an opportunity for renewed thinking and engagement to promote the extent and speed of change necessary to achieve SDG 6.1. We propose that **effective institutional structures** – from the high-level political authority to the local level of implementation – are key to ensuring progress in rural drinking water service provision, particularly when such services are delegated to a third party. While there is no blueprint to guide action and solve the well-rehearsed challenges of rural water services delivery, we identified two general approaches to **professionalising and sustaining rural water services** in West Africa:

- On the one hand, there are strategies aiming at supporting service authorities in their mandates at the decentralised level (e.g. Mali, Burkina Faso and Niger). This includes delegation of rural water services to operators at the local level, , and/or clustering through inter-municipal arrangements.
- Other approaches seek to re-centralise (in part or completely) rural water services authorities at the national level. In this case, services can be delegated at a much wider regional level (e.g. Benin, Senegal) and/or at the local level (e.g. Mauritania, until 2023).

This is a debate which is playing out not only in the countries reviewed in this study, but also others in the region (including Côte d'Ivoire, and Togo) and beyond.

Both approaches can promote professional rural water services delivery, but the **tension between political decentralisation processes and a partial or complete re-centralisation of rural water services delivery** needs to be addressed explicitly.

Furthermore, experiences with re-centralisation/ decentralisation of service authorities, and the delegation of rural water services at local or regional level, should be analysed carefully to understand their impact on service quality and population coverage. An institutional framework that monitors clear target and promotes a transparent framework for accountability and dialogue on performance will enable the pathways (around decentralisation of service authorities and delegation arrangements of service operators) to be corrected if necessary.

Ensuring sustainable rural water services is conditional on **providing adequate financial resources, and financial sustainability in the long-term**. The lack of financial resources for the rehabilitation of aging rural water infrastructure by the State can pose a threat to services delivery (e.g. Senegal). When the State mandates rural water tariffs, financial resources are needed to bridge the gap between what users pay and the real cost of services provision. In many contexts, making rural water services work financially without subsidies will be difficult, especially when tariffs are below cost-recovery levels and/or will be reduced further due to equity concerns or politics. **Subsidies** will need to be well targeted and linked to outcomes to be most effective; here, it is encouraging to see Mauritania make strides in this direction. In contexts where governments make the choice not to subsidise rural water tariffs, how should water services delivery be funded sustainably? These questions require policy answers to ensure services are sustainable and provide value over time. Early experience with payments for results at scale are being trialled in West Africa under Uptime, a mechanism that issues non-repayable funding to rural water maintenance providers against guaranteed service outcomes.

The experience of Senegal shows that the **length, complexity and politics of transition** should not be underestimated, and highlights the importance of involving local actors (users, operators and authorities) upstream of and throughout the reform. Another consideration to bear in mind is how to strike the balance **between short-terms gains over long-term sustainability**, particularly with regards to local capacity for planning, managing and delivering rural water services. In particular, explicitly linking new infrastructure investments with service delivery approaches is crucial to delivering more sustainable outcomes. Finally, with reforms often focusing on the “grey zone” of small towns and piped water supply, governments must ensure rural populations served by point sources or lacking access so are not left behind.

Will data, performance monitoring and asset management improve as a result of ongoing reforms?
With the STEFI model and its national variations, West African countries had an innovative monitoring and regulatory system for rural water services at the local level a few decades ago, but their efficiency and financial viability is mixed, and the use of the data for decision-making at national and local level is unclear. While asset ownership is usually well defined in West Africa, there is little evidence that asset management for rural water infrastructure has been institutionalised in most countries under review; most countries manage and plan rural water infrastructure in an ad hoc manner, often only responding as and when service failure occurs (World Bank, 2017). It remains to be seen whether ongoing reforms will improve this situation and deliver sustainable rural water services for all.

Annex 1: Snapshot of rural water services delivery in Benin, Burkina Faso, Mali, Mauritania, Niger and Senegal

Country	Water Services Provision Model for piped water systems (includes standpipes, private connections, and kiosks)	Water Services Provision Model for point sources (includes handpumps)
Benin	**Rural population served by piped water: 26%** (JMP, 2020) **1990s-2005**: demand-based approach, with community-based management **2005-2016**: decentralised mandate for rural water services: municipalities provided water services themselves or delegated this responsibility to a private operator or a community-based organisation; **Since 2016: re-centralisation & regionalisation in progress**. The National Rural Water Supply Programme 2016-2030 has two objectives: to provide universal access to water supply services and to professionalise service delivery in the rural areas of the country. Implemented by ANAEPMR (est. 2017), a national asset-holding company for the rural water supply sector, which delegates service provision to professional operators across 3 regional service areas. The contracts were signed in 2022.	**Rural population served by point sources: 45%** (JMP, 2020) **1990s-2005**: demand-based approach, community-based management **2005-2016**: Point sources are to be managed by municipalities or delegated to a private operator or community-based management. **Since 2022**: Point sources are not included in the regional service areas of the regional delegatees.[22]
Burkina Faso	**Rural population served by piped water: 8%** (JMP, 2020) **1980s-2000s**: community-based management **Decentralised rural water services since the early 2000s**: the 2000 decree on the Reform of rural and semi-urban water supply (Burkina Faso, 2000) strongly recommends for piped water systems (Adduction d'Eau Potable Simplifiée – AEPS) and water kiosks/ standpipes (Postes d'Eau Autonomes Simplifies – PEAS) to be delegated to professional operators (public or private).[23] The Reform was updated in 2018-19 to better clarify the roles and responsibilities of actors in the rural water sector. In 2019, a national strategy was developed which aims to harmonise the tariff conditions for access to drinking water between rural and urban areas.	**Rural population served by point sources: 63%** (JMP, 2020) **1980s-2000s**: community-based management The 2000 decree on the Reform of rural and semi-urban water supply (Burkina Faso, 2000) recommends for municipalities to delegate the management of handpumps to water users' associations, with the support of a maintenance specialist.[24]
Mali	**Rural population served by piped water: 22%** (JMP, 2020) **Decentralised water services since the early 2000s**: Following the adoption of the National Drinking Water Strategy (2000) and the Water Code (2002), local governments have the responsibility for ensuring the planning, implementation and running of drinking water services (maitrise d'ouvrage) but had to delegate the actual day-to-day operation to private operators or users' associations.[25] In 2017/18, the urban utility SOMAGEP's service area was extended towards semi-urban areas; more than 90 systems were included in SOMAGEP's service area in smaller towns/rural growth centres. A new National Water Policy is being developed with the ambition to achieve SDG 6.1 in Mali by 2030.	**Rural population served by point sources: 54%** (JMP, 2020) The management of handpumps can be delegated to community-based organisations or private operators.

22 There seems to have been some back-and-forth on this point, as earlier documents indicated that handpumps would be included in the service areas of the delegatees. (Experts Solidaires, 2021).

23 As of 2016, 33% of piped water systems (261 out of 785) had been delegated to 12 operators.

24 In practice, while 84% of WUA have signed a handpump management agreement with a municipality, only 24% (155 out of 623) maintenance and repair officers have a contract with a municipality; and only 9% (59 out of 623) had carried out preventative maintenance on handpumps. (Burkina Faso, 2019).

25 Between 2003 and 2008, about 25% of rural and semi-urban piped water networks were placed under delegated management in Mali (WSP, 2010).

Country	Water Services Provision Model for piped water systems (includes standpipes, private connections, and kiosks)	Water Services Provision Model for point sources (includes handpumps)
Mauritania	**Rural population served by piped water: 37%** (JMP, 2020) **Since 1990s**: A hybrid approach of centralised and decentralised rural water services In Mauritania, rural water services can be the mandate of the national State or the mandate of the municipality, if the municipality has invested in capital infrastructure. There are more than 1,500 piped rural water supply systems: around 1,000 are managed directly or indirectly by the Office National du Service (ONSER – formerly ANEPA), an organisation under the supervision of the State created in 2001; around 400 are managed by community-based organisations, municipalities and by private operators; and around 100 by formal delegation, which is being piloted since 2009. The Mauritanian government, with AFD support, has launched invitations to tender for the regional delegation of the public water service to private operators in rural areas in June 2023. A decree was published to harmonise rural and urban water tariffs in April 2023.	**Rural population served by point sources: 31%** (JMP, 2020) Community-based management is the preferred management model in settlements with fewer than 500 residents.
Niger	**Rural population served by piped water: 29%** (JMP, 2020) **Decentralised water services since the early 2000s**: In rural areas, Niger has nearly a thousand rural water supply systems, more than two-thirds of which are solar-powered. In 2008, the Water Code recommended that municipalities, which are mandated to provide water services, delegate water services to small private operators or to community-based organisations, depending on the type of infrastructure.	**Rural population served by point sources: 34%** (JMP, 2020) Community-based management is the preferred management model for water point sources.
Senegal	**Rural population served by piped water: 65%** (JMP, 2020) **1990s-2014: decentralised water services**. In 1995, Senegal began a reform of rural water supply that gave a major role to local Associations of Borehole Users (ASUFORs) in the management of the rural water services. A 2008 law on the Public Drinking Water and Sanitation Service (SPEPA) initiated a transfer of competences to the municipalities, but was never implemented in practice. **Since 2014**: **regionalised rural water service provision – in progress** In 2014, a law created the national Office des Forages (OFOR) whose mission is to manage around 2,000 piped water networks, and mobilise private operators for the implementation of 8 regional public service delegations, within the framework of 10-year *affermage* contracts. In theory, municipalities remain responsible for the development of water and sanitation plans to identify their investment priorities. The process of contracting delegatees for 8 regional service areas began in 2015 and made it possible to mobilise international players. However, in 2021, 4 of the 8 delegation contracts were suspended by presidential decree to evaluate the reform, in part due to opposition from ASUFORs and the communes. The evaluation's recommendations are currently being implemented.	**Rural population served by point sources: 14%** (JMP, 2020) All rural water infrastructure, including handpumps, is within the regional operator's service area.

Annex 2: Types of delegation of water services

Type of contract	Management	Lease/ *Affermage*	Concession
Examples		*Affermage* is a widely used form of delegation in West Africa, at national, regional and local level, incl. in Senegal, Burkina Faso, Mali, Niger. *Affermage à ilôt concessif* (*Affermage* with a small concessive component) piloted in Niger (SEVES, 2018); and in Mauritania and Senegal (inf. 21), whereby a small proportion of investments are paid for by the operator.	Experiment with subsidised rural water PPP concessions in selected municipalities in Benin (2014-2022) (Migan et al, 2015)
Definition of operator duties	Supplies management services for the scheme in return for a management fee	Runs the business, retains revenue from customer tariffs, and pays a lease fee to the contracting authority	Runs the business, finances investment, and may own the infrastructure assets
Selected responsibilities of the operator	Provides management services	Employs staff, operates and maintains scheme. Usually no infrastructure asset investment responsibility	Employs staff, operates and maintains scheme, and finances investment in infrastructure (new and/or rehabilitation)
Typical payment mechanism for the operator	Fixed fee + bonus or penalties/fines (can be based on performance)	Revenue from customers minus lease fee.	Revenue from customers minus any concession fee
Risk level for the private sector	Low	Significant	Major
Investment responsibility	Infrastructure and operating asset investment from Contracting Authority	Infrastructure assets from Contracting Authority. Operating assets from Operator	Infrastructure and operating assets investment from the Operator
Ownership of infrastructure assets	Contracting Authority	Contracting Authority	Contracting Authority or Operator
Typical timeframe of contract	3-5 years	6-15 years	15-30 years

Source: Adapted from WSP (2014)

Annex 3: Types of piped water schemes

Type	Characteristics	Population served	Network length	Storage capacity	Production capacity
Scheme with a single communal distribution point / *Poste d'eau autonome (PEA)*	No distribution network, communal distribution point at the borehole, limited storage	500 – 1,000	0.1 km	2 – 10 m3	5 – 10 m3 /day
Scheme with multiple communal distribution points/ *Adduction d'eau simplifiée (AEPS)*	Limited reach of the network, stand posts only, limited storage capacity	500 – 2,000	< 2 km	10 – 50 m3	5 – 40 m3/ day
Scheme with multiple distribution points and household connections	Extended network, stand posts and household connections, higher capacity storage	2,000 – 10,000	2 – 10 km	10 – 50 m3	20 – 300 m3 / day
Multi-village schemes	Larger piped schemes with transportation of water to up to dozens of villages	5,000 – 200,000	10 – 250 km	10 – 50 m3	100 – 2000 m3 /day

Source: Adapted from World Bank (2010)

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Vergnet Hydro foot pump in Kebila, Mali. Photo by Johannes Wagner.

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REACH is a global research programme to improve water security for 10 million poor people in Africa and Asia by 2024. It is funded by the UK Foreign, Commonwealth and Development Office (FCDO) (Project code 201880). REACH is led by the University of Oxford in partnership with a global network of collaborators: UNICEF, Bangladesh University of Engineering and Technology, University of Nairobi, Water and Land Resource Centre of Addis Ababa University, International Food Policy Research Institute, Skat Foundation hosting the Rural Water Supply Network and the University of Dhaka.

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