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Water policy, politics, and practice: The case of Kitui County, Kenya

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The devolution of governance to county level in Kenya provides a window for innovation in water policy and practice, critical to improving water security in rural areas where almost half of households lack basic water services. In rural Kitui County, Kenya, a number of projects supported by different funders have served as policy experiments over the past 10 years. We apply an action-oriented knowledge framework to explore the kinds of knowledge that have been produced in the course of these interventions and reflect on what kinds of knowledge are contributing to institutional change and how they are contributing to sustainability in the rural water sector. Actionable recommendations for the further development of county-level water policy include: First, ensure local ownership of the policy-making process whilst enabling appropriate technical and legal support; second, take long timeframes of institutional change into account in donor programming; third, establish water, sanitation and hygiene forums bringing diverse actors within the sector together to build cohesion, facilitate knowledge exchange, enable collaborative learning, and deliver collective action.

KEYWORDS

water policy, water services, decentralization, policy experiments, pluralism, knowledge, sustainability, Kenya

Introduction

Policy practices

Since the late 1980s, over 80 percent of developing countries have adopted some form of decentralization due to widespread international support for decentralized governance (Crawford and Hartmann, 2008) with the goal being to address pressing social, economic and environmental challenges. Specifically, the goal comprises poverty reduction, conflict resolution, and the improvement of basic service provision, *inter alia*. The water sector in Kenya is undergoing significant institutional change following the country's governance reform (Cheeseman et al., 2016; Koehler, 2018; Koehler et al., 2021), which provides policy windows to test and implement wide-ranging sector change required for progress

toward universal basic water services by 2030. The challenge is particularly acute in rural areas, where just under half the population live without access to basic or safely managed water services (WHO/UNICEF, 2021).

Decentralization reforms are commonly introduced to improve accountability and responsiveness of government by altering the distribution and structure of resources, responsibilities, and accountability (Smoke, 2003; Conyers, 2007; Faguet, 2014; Gaynor, 2014; Mwihaki, 2018). While decentralization is often presented as a common tool in water policy to improve service delivery, it often fails to deliver on its promises (Robinson, 2007). Further, Prasad (2006) argues that the profit-seeking motive of the private sector seems difficult to reconcile with providing services to the poor due to its tendency to “cherry-pick” better-off customers in less risky environments. Whilst public, private, and civil society actors are active in experimenting and driving the future direction of water policy, experience with such reforms and outcomes for the water services sector are mixed.

We reflect on policy practices over the past 10 years in one of Kenya’s larger counties, Kitui County, where the majority of the 1.13 million people reside in rural areas. Three kinds of knowledge are examined that can be used to support actions for sustainability of the rural water sector: knowledge that informs intentional design, knowledge that enhances shared agency, and knowledge that enables contextual realization (Caniglia et al., 2021). We use this framework to reflect on how research in Kitui has helped actors engage with different kinds of knowledge and how that has created change.

Policy change in Kenya’s water sector

The Constitution of Kenya 2010 made some significant changes to governance structures, including introducing counties as a devolved level of government with specified mandates, which included, among others, water and sanitation services, stormwater drainage, soil and water conservation and the responsibility to ensure public participation in public affairs (Government of Kenya, 2010). The new county governments came into effect after the 2013 general election with the requirement to establish county policies and legislation consistent with the constitution and national policies and legislation.

Devolving water services to the 47 counties has posed a major challenge for the new county-level institutions creating the potential for growing regional discrepancies. To streamline the process and level the field, new laws, policies, and regulations are needed. However, political processes are unfolding in parallel with the technocratic building of institutions. We identify four institutional interests that may interfere in and perturb systematic, linear sector change and are outlined in the following

paragraph: (a) national-county power dynamics; (b) within-county power dynamics; (c) community alignment, and (d) externally driven policy experiments.

The national Water Act 2016 clarifies some aspects of service provision and the structure of the new subnational institutions; however, county budget allocations, especially for the rural water sector and institutions such as schools and clinics remain ambiguous (Hope et al., 2021). Within county water directorates there are varying political processes that are not clear from the outside. This includes varying agendas of the Members of County Assembly (MCA) and the County Executive Committee (CEC), who are partly motivated by election cycles and community support (Koehler, 2018), and the interests of the bureaucratic elite, which may diverge. In terms of community alignment, voting blocs may emerge in alignment with politically associated investments in local economic infrastructure, which can influence adoption or rejection of new approaches. Finally, development projects—viewed here as externally driven policy experiments—create implicit pressure for change and impact that may not always align with the strategic priorities set by the governor or other county-level government actors. This complex array of policy influences demonstrates the need for a legal framework at the county level to guide decision-making, operations, and financing in the water sector. The development of such a framework and its implementation will in turn be subject to these overlapping processes. However, we describe below how new knowledge contributions to intentional design, shared agency, and contextual realization have increased the likelihood of Kitui County achieving sustainable rural water services.

Policy window for research and policy engagement in the Kitui County water sector

Kitui County is Kenya’s sixth-largest county by area (30,430 km²), with 95 percent of the 1.1 million residents living in rural areas (KNBS, 2019). It has an arid and semi-arid climate featuring a bi-modal annual rainfall pattern. The longer dry season commences in May or June and lasts until rains arrive in October or November, but the seasons vary unpredictably and in some years there is very little rainfall for almost 6 months (Hope et al., 2021). For the 400,000 people in Kitui relying on surface water as their main drinking water source (KNBS, 2019) and those who practice rainwater harvesting via roofs and gutters, rock catchments and sand dams, the extended dry period creates water supply challenges. Groundwater resources, lifted by hand pumps or pumped to piped systems and kiosks using solar, electric or diesel power, offer a buffer against drought for many Kitui county residents, but there are issues with quality (natural salinity), infrastructure maintenance and

functionality. In 2017, an audit of water infrastructure in the county identified 460 piped water schemes, of which only 56 percent were fully functioning, and 687 hand pumps, of which only 45 percent were fully functioning (Nyaga, 2019; Figure 1). With large-scale institutional change ongoing in the country, a policy window opened for rural water sector research and policy engagement. Permission for the research described in this study was agreed with the Kitui County Government, the national Ministry of Education and UNICEF (Kenya). The National Council for Science and Technology Institute awarded a research license to the University of Oxford and the University of Nairobi supported by ethical approval from the University of Oxford.

Projects as policy experiments

Rondinelli (1983) argues the more complex development problems, and the more uncertain the relationship between policy prescription and development outcome, the more necessary are simplifying models of change and detailed planning and management procedures. Mosse (2005) states that the relationship between policy and practice is understood in terms of an unintended “gap” between theory and practice, reduced by better policy more effectively implemented. He then asks the provocative question: “*What if, instead of policy producing practice, practices produce policy...?*” (p.3). He argues that changes to governance brought by development schemes cannot be imposed but require collaboration and compromise. Reputation and legitimacy—upon which governance depends—are scarce resources for governments, donors, state development agencies, or even NGOs operating in competitive environments (Li, 1999). The question is not *whether* but *how* a development project works, through its contribution to knowledge production during and beyond implementation; not whether a project succeeds, but how “success” is produced and claimed.

In this knowledge production process, key elements include control over the interpretation of events as power lies in the narratives that maintain an organization’s own definition of the problem, the constant work of translation (of policy goals into practical interests and practical interests back into policy goals), and also creating order and unity through political acts of composition of the social domain despite ongoing fragmentation and dissent (Latour, 2000). In the context of Kitui County the “system” challenges require that government makes a tangible commitment via policy interpreting the challenges of rural water services in a future-oriented way, requiring an adequate composition of actors included in the system, translating their activities within a sanctioned composition.

Experiments as knowledge producers at the science–policy interface are expected to provide decision-makers with evidence of the effects of a policy (McFadgen and Huitema, 2018). We

use Caniglia et al.’s (2021) pluralistic and integrated approach to action-oriented knowledge for sustainability to reflect on the processes of interpretation, translation, and composition across three dimensions of actions for sustainability: first, knowledge informing intentional design, second, knowledge enhancing shared agency by addressing differences in interests, views, values, and power, and third, knowledge enabling the realization of action in specific contexts.

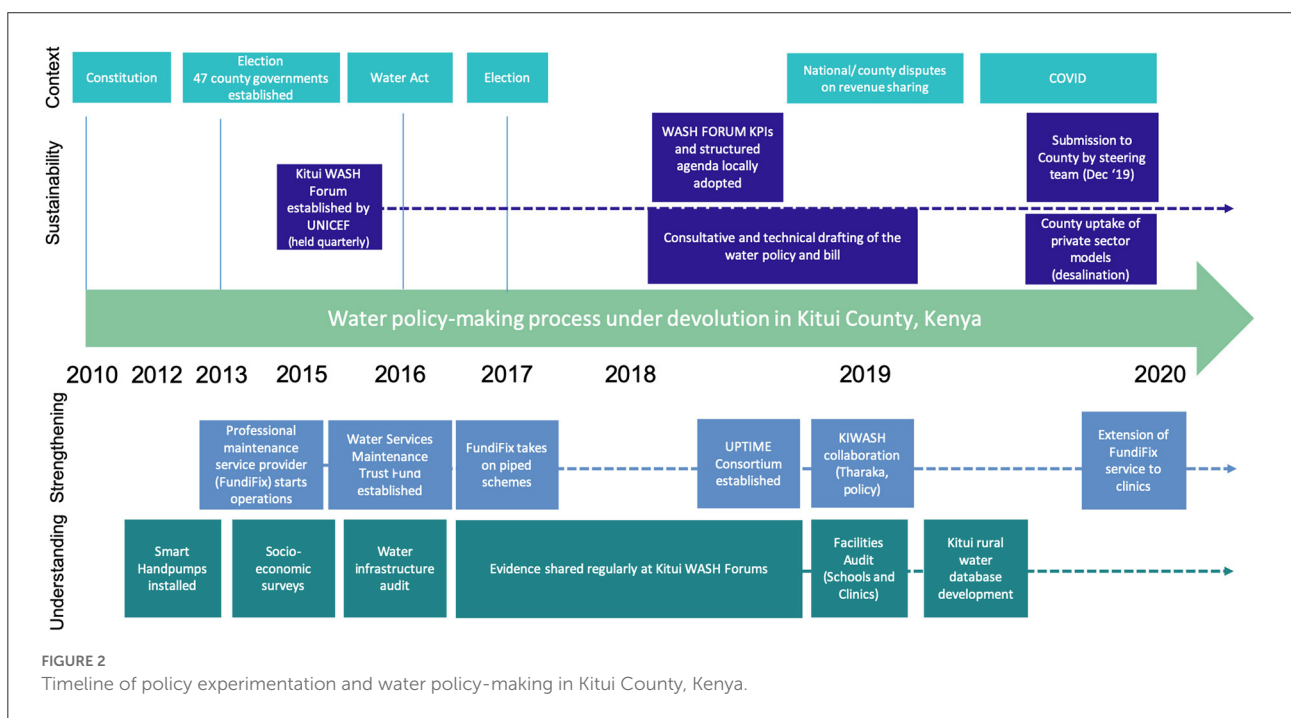
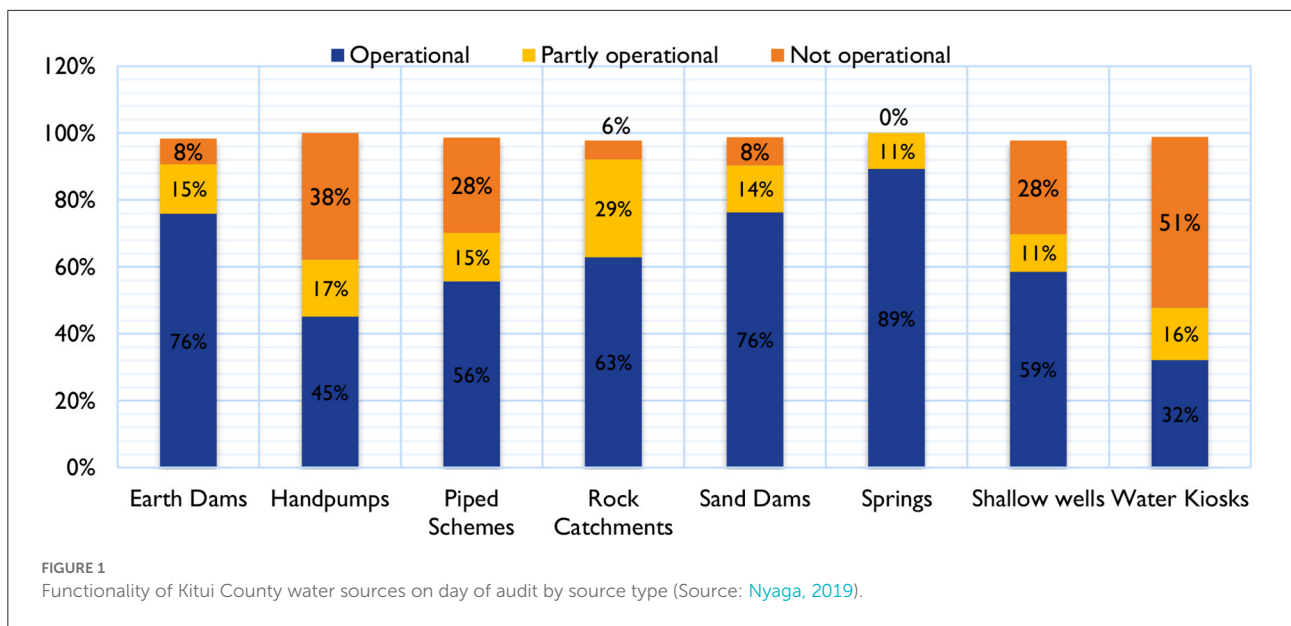
Individual and social learning require that societal and academic actors develop a capacity for knowledge pluralism, which, according to Caniglia et al. (2021), can enhance sustainability science in two main ways: investigating the role of knowledge in action processes as well as navigating action processes through knowledge, which can help researchers and practitioners in the design, formative evaluation, and further development of interventions. In line with the authors’ claim we recognize that if we want to contribute to shaping change toward sustainability through research, we need to shift away from the assumption that researchers should be separate from the processes of change that they investigate. That said, experimenting in real-world settings raises methodological questions around the participation of stakeholders as well as ethical questions around responsibility for and legitimacy of interventions (Bergmann et al., 2021).

In Kitui County, Kenya, a number of projects supported by different funders have served as policy experiments (see Figure 2). Activities led by the University of Oxford started in 2012 with the authors’ involvement, leading to the establishment of the FundiFix company in 2014 and to supporting the registration of the Kitui Water Services Maintenance Trust Fund in 2016. This work was supported by research grants from DFID/FCDO (2011–14; 2015–2021), UNICEF (2014–16) and USAID (2016–2021). Moreover, FundiFix developments in Kitui County were informed by parallel work in Kwale County and with national policy-makers. Knowledge production was tied to different financing streams.

The UK Foreign, Commonwealth and Development Office (FCDO, formerly DFID) provided the original funding for the deployment of smart handpumps in Mwingi North from 2012 (see Section Outcomes), and through the REACH programme it provided policy direction with the wider objective of making over 10 million people water secure, thus guiding policy into the direction of water-related poverty alleviation.

The United Nations Children’s Fund (UNICEF) has operated in Kenya for decades, supporting water and sanitation projects, coordinating the various actors in the rural water sector through regular Water, Sanitation and Hygiene (WASH) forums, and also funding the development of a professional maintenance service provision model.

The United States Agency for International Development (USAID) has also had several large-scale WASH-focused programs in the county, including the Kenya Integrated Water and Sanitation Program (KIWASH), Afya Halisi, and the



Sustainable WASH Systems (SWS) Learning Partnership. With broad actor recognition of the need for a legal framework at the county level to guide decision-making, operations, and financing in the water sector, a first county water bill is in development and due to be presented to the county assembly in 2022.

In Table 1 we use Caniglia et al.'s framework of kinds of knowledge supporting actions for sustainability to explore how various data collection activities and policy experiments in Kitui County provide knowledge and address the following

questions: First, what understanding of the system and of information dissemination motivates policy development (intentional design)? Second, what collaborative approaches support the development of a policy that is both accepted and understood (shared agency)? Third, what implications do policy and legislation have on the long-term sustainability of service delivery (contextual realization)?

The following three sections explore the relationship between policy experiments, different kinds of knowledge

TABLE 1 Kinds of knowledge supporting actions for sustainability of the rural water sector in Kitui County, Kenya [adapted from Caniglia et al. (2021)].

	Kinds of knowledge	Description <i>Knowledge that...</i>	Examples of knowledge production and exchange in Kenya
Knowledge informing intentional design	Generative	Draws upon and engages with multiple perspectives for the creation of new and alternative social–ecological, institutional and cultural relationships and arrangements	Design and testing of professional service provider FundiFix
	Prescriptive	Informs recommendations about more desirable options to realize intentions and that guides and inspires actors in creating change	Water infrastructure audits (communities, schools, clinics) and household survey
	Strategic	Defines priorities of actions for the realization of intentions and that relies on an understanding of fits and misfits between intentions and context, the anticipation of possible consequences of actions and the capacity to change circumstances	Working papers, briefs, articles: evidence base for policy experimentation
Knowledge enhancing shared agency	Empowering	Enables agency (individual and collective), builds capacities and supports actors to realize intentions	Kitui WASH Forum Database development
	Co-produced	Emerges from collective processes, includes different actors and incorporates their diverse and divergent perspectives, views and interests	FundiFix negotiation with users and government (incl. contracting, tariff-setting, and revenue collection); integration of water quality monitoring
	Critical	Questions existing institutions, interrogates prevailing power asymmetries, and contests conventional assumptions and values	Paradigm disruption of community management; development of new legislation
Knowledge enabling contextual realization	Situated	Emerges from and is often tailored to specific contexts	FundiFix expansion to clinics and schools
	Tactical	Supports actors in advancing toward the realization of change by creating alliances and capitalizing on existing resources and opportunities	Water Services Maintenance Trust Fund
	Emergent	Knowledge generated in open-ended and exploratory cycles of intervention, reflection and evaluation	Kitui Water Policy and Bill

production and exchange activities and their influence on the policy process in Kitui County. It should be noted that most activities have primary and secondary contributions toward knowledge for rural water sustainability. Moreover, while the framework provides a useful classification, we recognize its general nature which has the consequence that there is no unique allocation of activities to the kinds of knowledge produced. Furthermore, the composition of authors with affiliations across research and private sector institutions, their interpretation of the framework, and translation with regard to specific activities in Kitui need to be highlighted in this context.

Knowledge production and exchange informing intentional design toward rural water sustainability

By establishing an intention to act, actors commit to creating change in situations characterized by normative uncertainties, contradictions, and political conflicts (Turnhout

et al., 2020; Caniglia et al., 2021). The intention to act is usually supported by improved information through different knowledge production and exchange activities outlined below. These do not necessarily resolve conflicts but can reduce uncertainties.

The rural water challenge of how to achieve reliable water services for those parts of the population outside formal service provision areas has been extensively reported in the literature (Harvey and Reed, 2006; Whittington et al., 2008; Foster, 2013; Whaley and Cleaver, 2017) and provided the motivation for the intentional design and testing of a professional repair and maintenance service model in Kitui County, Kenya, called FundiFix (REACH, 2016). The type of knowledge obtained is generative – bringing different inputs together to create new and alternative institutional arrangements. In this case novel information gathered by smart handpumps enabled a reduction of days that handpumps remained broken from around a month to <3 days (Thomson et al., 2012; SSEE, 2014; Thomson, 2020) and a willingness-to-pay study with the rural communities gauged community interest and supported the design of the professionalized maintenance service model

(Koehler et al., 2015). Drawing on multiple perspectives the model constitutes a policy experiment built on the principles of professional services, smart monitoring, financial sustainability, and institutional coordination. Further knowledge production and exchange activities as well as funding requirements have contributed to the evolution of FundiFix to an established service, including its expansion from handpumps only to serving piped schemes in 2017. With growing user demand, though not always regular user payments, FundiFix is now providing around 55,000 people in Kitui County with reliable water.

In order to better understand the rural water situation in Kitui County several data collection activities were conducted: two water audits and the development of a WASH database. These generated prescriptive knowledge for WASH actors in the county and provided a basis for scaling the service from Mwingi North to other sub-counties.

The first water infrastructure audit included 3,100 rural waterpoints in 2017 in liaison with relevant county offices, including Office of the Governor, Ministry, and sub-County Water Officers. Better understanding the types and functionality of waterpoints across the county constituted knowledge that informs recommendations about options of possible improvements in the system (Nyaga, 2019). The audit data complement a household survey conducted in Mwingi North in 2018 and informed the development of a Kitui County Energy Plan in 2020, supported by IIED and CAFOD, with a pilot planned for the water sector due to the availability of extensive information. The audit data were also used by Kitui County Government to negotiate a planned World Bank investment in solar water infrastructure in the county. In addition, at the institutional level, an audit of water, sanitation and hygiene facilities in schools and healthcare facilities was developed in consultation with UNICEF Kenya, the Ministry of Education, and the County Ministries of Health and Water, and completed in October 2019, followed by dissemination through national and county platforms in 2020/21.

The facilities audit included 1,887 primary and secondary schools in Kitui County and 121 healthcare facilities, including hospitals, health centers and dispensaries (Hope et al., 2021; Katuva et al., 2022). The need for institutional coordination across the health, education, and WASH sectors is demonstrated by the evidence: half of the schools have no hand-washing facility, a third of healthcare dispensaries lack basic hygiene services and one in five lack basic water services, fewer than one in two schools report toilets as clean, few teachers have water quality concerns (4 percent) though monthly monitoring at schools reveals multiple hazards, including *E. coli*, fluoride, salinity, and nitrate. While both levels of government acknowledge the need for strategic action to expand the professional service to schools and health care facilities, at the time of writing specific commitment has yet to materialize.

Information generated in these activities has been synthesized in various knowledge products as part of a strategic approach to building an evidence base on Kitui's water sector, such as working papers, policy briefs and journal articles (Thomson et al., 2012; SSEE, 2014, 2015; Hope, 2015; Koehler et al., 2015, 2020; REACH, 2016; Nyaga, 2018, 2019; McNicholl et al., 2019, 2020; Hope et al., 2020, 2021; Foster et al., 2022; Katuva et al., 2022). These provide the evidence base for knowledge exchange with county and national government stakeholders, also to navigate the challenge of allocating responsibility in Kenya's devolved system, and with wider WASH actors in the public, private and civil society sectors. Academic output based on such policy experiments is also geared to contribute to sector change by providing new empirical and theoretical perspectives on the ancient challenge of rural water sustainability and by strategically influencing funding agencies in the design of their future WASH programming.

Knowledge production and exchange enhancing shared agency in rural water sustainability

Shared agency is a critical element in policy experiments to ensure credibility and legitimacy (McFadgen and Huitema, 2018). Improving sustainability usually requires that several individuals and organizations exercise their will by taking action in concerted ways. Shared agency for change is developed through social interactions, for instance in the case of cooperative efforts involving multiple societal actors in an organization (Caniglia et al., 2021).

First, institutional coordination in the form of the Kitui WASH forums provides an opportunity for actors to advance shared agency by creating alliances while capitalizing on existing resources and opportunities. Initiated by UNICEF, these forums are convened quarterly, with at least ten coalition meetings held to date and with the participation of 47–63 actors drawn from national and county governments, NGOs, bilateral programs, donors, the private sector, community groups, and academic/research institutions (Nyaga, 2018). The primary goal of the forums is to systematically plan for WASH investments and to document all available data on operational, financial and institutional aspects of WASH systems. WASH forum surveys conducted from 2017 to 2021 provide insights about the coalition, including behaviors, priorities for rural water sustainability in Kitui County, and feedback on the design of the coalition's dialogue. In 2019, Kitui County Government adopted ten Key Performance Indicators (KPIs) for monitoring water sector change with respect to the Governor's manifesto and the Ministry of Water objective. These forums also provided the opportunity for the previous data collection campaigns

(e.g., audits) to be shared and discussed and for tactical interventions in the water policy and bill development process. Kitui County has committed to taking over the financing of the forums in the future. The knowledge produced through this institutional experiment may have supported the empowerment of local actors for better coordination of the Kitui WASH sector; however, many practices occurring in parallel need to be considered concurrently.

It was clear from the first WASH forums that there were insufficient data to guide planning and investment. Therefore, a WASH database has been proposed by the research teams as the uncertainty in decision-making is partly around the lack of data available or shared between stakeholders. The database thus provided a common framework which supported but did not impose a means to increase transparency and accountability in decision-making, leaving it open on who engages when and in what way. The process of database development was anchored within the Kitui WASH forums to ensure collective development and to understand stakeholder motivators for adoption, strengthening interventions required for the successful adoption of databases, and the role or impact of databases in supporting alignment of sector priorities and actors for sustainability. In interviews conducted for an organizational network analysis (ONA) priorities around monitoring water schemes were also identified by some actors (Kiamba and Chintalapati, 2019). The database provides an inventory of water infrastructure, using the data and knowledge generated through the audits, and to be kept updated *via* the flow of operational and financial performance reports. Pending on-going use, it may progressively influence sector planning, resource allocations, and wider accountability including by donor programming.

Second, emerging from collective processes with local stakeholders and communities is the business development of the maintenance service provider FundiFix. This co-production of knowledge with communities involves the contracting arrangements, financial procedures, and service scope with regard to water quality. Contracts with communities are on a 1-year rolling basis established through regular engagement between the service provider, local county water office, and local communities. Tariffs are set based in line with a willingness-to-pay study (Koehler et al., 2015), however, revenue collection is variable and not as predicted by the willingness-to-pay study. On-going community engagement by the service provider is needed to adapt to local challenges and ensure that the service caters to local needs. Bukachi et al. (2020) also found that there are gendered implications of revenue collection and community reservations about the professional maintenance approach. Since 2019 FundiFix operations expanded to include water quality monitoring, hosting a field water quality lab in their premises in Kyuso Town (Charles et al., 2020; Nowicki et al., 2020). Shared agency of the service provider and local

communities thus indicates need for and supports continued improvements in service performance and delivery.

Third, in order to achieve system transformation toward sustainability, a critical engagement with existing institutions is necessary. The policy experiments in Kitui County have questioned the long-standing community management paradigm by examining community preferences and capacity around service provision (Hope, 2015; Hope et al., 2021). The FundiFix model recognizes the role of communities and attempts to reallocate operational risks to lead to better outcomes with a professionalized service which guarantees repairs within 3 days for handpumps and service visits for piped systems within 5 days. This maintains the role of community organization around asset ownership, collecting fees, and managing their own waterpoints but allows maintenance risks to be pooled at a supra-communal level (REACH, 2016).

By formally recognizing the role of both public and private actors in the water sector, the national Water Act of 2016 had already provided a pathway for the critical evaluation of the community-based management paradigm, creating a legislated “space” in which professional maintenance service providers have been able to develop (Article 94) (Republic of Kenya, 2016). The county water bill and policy now provide a local pathway to institutionalize such approaches in Kitui County, building on previous policy experiments. After incorporating inputs from the County Assembly Committee members, the updated version of the draft policy and bill were presented to public actor validation workshops held in November 2019 at the eight sub-counties and at the county level. A total of 755 people (528 men and 227 women) participated in the sub-county workshops. These actors included (i) chairpersons of major water schemes, (ii) representatives of NGOs, (iii) representatives of CBOs, (iv) rural administration (county and national government), (v) religious leaders, (vi) representatives of key institutions, (vii) political leaders (MCAs and MPs) and (viii) advocacy groups. The public participation aimed at creating awareness of the policy and the bill, and at obtaining critical views of the public and other WASH actors at the sub-county level.

Knowledge production and exchange enabling the realization of rural water sustainability in specific contexts

Actions to improve sustainability take place in co-evolving social, cultural, ecological, economic, institutional and technological systems (Caniglia et al., 2021). Three elements are critical in the contextual realization of rural water sector change in Kitui County: the COVID-19 context and the increasing challenge of WASH service delivery due to climate variability, the evolution of a funding mechanism to allow the longer-term sustainability of WASH services, and the political process

of passing the Kitui water policy and bill through the county assembly and the executive committee.

First, the specific context of the COVID-19 pandemic highlighted the opportunity to pilot the delivery model with healthcare facilities in Kitui. With FCDO/REACH funding, FundiFix extended its services to 11 healthcare facilities as an immediate COVID-19 response but also with the longer-term goal of bridging the institutional gap between the water, health and education sectors (Katuva et al., 2022) and promoting equal conditions for the rural population. Partners thus became agents of change, which was mediated by trust and “shared agency”. The wider context demonstrates that government and other actors were unable to respond to the unsatisfactory water and hygiene conditions in rural healthcare facilities before and during the initial stages of the pandemic. This experiment tailored to the context of the global pandemic provides further situated knowledge of the scope of professional service models to operate in a crisis situation and serve essential facilities such as rural healthcare facilities and thus also achieve further scale to ensure long-term sustainability; however, resources and a clear allocation of responsibilities remain major gaps in a rapid response to a global crisis.

Second, while many rural water users subscribe to the professional maintenance service, they only cover between 15 to 25 percent of the direct service costs and their payment behaviors remain irregular in many cases. This led to a further tactical step in the policy experiment to establish a funding mechanism, the Kitui County Water Service Maintenance Trust Fund (WSMTF), in 2016. This Trust Fund provides a mechanism to pool funding from government, donors, and private investors, based on performance-based evidence of waterpoint functionality and user payments, which allows advancement toward the realization of change by creating alliances and capitalizing on existing resources and opportunities in the rural water sector (Hope et al., 2019, 168). In 2017, donor funds paid for 81 percent of WSMTF contracts; by 2020, the donor proportion had fallen to 24 percent (REACH, 2021). In the same period, the annual WSMTF resources increased from just under USD 50,000 to over USD 190,000 as the number of water users expanded from 15,000 people to over 75,000 people. This work has supported the concurrent development of the Uptime consortium of rural water service providers which, as of 2021, had attracted USD 1 million for results-based contracts guaranteeing reliable water services for around 1.5 million people in four countries (McNicholl et al., 2021).

Finally, the aforementioned policy experiments and knowledge production activities contributed to building an emergent evidence base for the drafting of Kitui’s first water bill and policy, both of which were funded by USAID programs. The policy and bill incorporate new findings of the institutional experiments in the county, and have been and continue to be open to exploratory cycles of intervention, reflection and

evaluation in the county’s process of establishing its water institutions. This is reflected in the iterative process involved in the drafting of the water bill, which was achieved via a number of technocratic procedures under interference of political interests. Formation of a technical working group was followed by a desk review and a situation analysis. Then followed the stage of the consultative and technical drafting of the county water policy and the water bill as well as a meeting with Kenya legal experts on water issues. In a county assembly committee workshop the political aspects were taken into account and mediated. Importantly, for content communication and translation, public consultations were also held; however, these were also at times used for political purposes. Finally, various views were taken into account for the preparation of the final drafts of the policy and water bill. If enacted, the county water bill will be key for sustainable change in the areas of coordination, finance, monitoring framework, and professional service delivery models. The core components are explored in more depth in Section Outcomes.

Outcome and implications: Key institutional changes in Kitui’s water sector

Outcomes

The Kitui water bill and policy offers a basis to advance more sustainable WASH systems with clarity and political support on revised arrangements for roles and responsibilities of county government to plan, build, maintain, monitor, and finance sustainable WASH services. It provides for sustainable funding and finance arrangements, including guidelines linking capital and operational expenditure, affordable tariffs, and alternative funding models, also highlighting sector coordination through WASH forum and monitoring systems. It further discusses service delivery contracts, including rural water utilities and maintenance service providers, with their role in ensuring non-discrimination in service provision by wealth, location, gender, and facilities (e.g. schools, healthcare facilities, and hospitals). Finally, it makes provisions for water resource management and protection, both of surface water and groundwater (Koehler et al., 2021). The work was informed by national policy developments and existing constitutional commitments with reference to the Sustainable Development Goals (SDG 6). We provide a more detailed overview on the six key contributions of the new policy and bill below.

- i. *Institutionalization of the County WASHCOORD Forum:* The County WASHCOORD Forum, which was externally launched by UNICEF, will be internalized into county operations through being legally enshrined and financially supported by the county government. It provides a

- structure within which various civil society, research institutions and NGO actors can engage with the county government on policy, planning and performance. The structure is also cascaded to the sub-county level. If the bill is enacted, the Forum shall be funded from the Kitui County Water Services Fund (see *Establishment of a Kitui County Water Services Fund*).
- ii. *Leadership of the County Water Directorate*: The County Water Directorate has the primary responsibility to ensure water and sanitation services are monitored and reach the public. The bill clarifies various responsibilities and structures within the directorate in relation to planning, approving designs, certifying works, monitoring, reporting, and inspections. Some unique roles for the Directorate include registration of WRUAs and community water providers, establishing an information management system for water services, monitoring services, and reporting and issuing service quality compliance certificates.
 - iii. *Establishment of a Kitui County Water Services Fund*: After the incubation of the Water Services Maintenance Trust Fund as part of the research project, a County Water Services Fund is formally integrated into county operations and established under Article 65 to pool and manage public, private and donor funds to finance specific activities that support the county's long-term goals to deliver sustainable universal access to safe and affordable water and sanitation services. Kitui County Water Services Fund is expected to receive funds from the County Budget (ten percent), levies from the County Water Service Providers, and support from external partners. The Fund shall be invested in specific strategic activities which are typically under-funded, including county WASH sector coordination, operation and maintenance, water security, human resource capacity building, and water resources protection. At least 50 percent of the annual budget of the fund shall be ringfenced for operation, repair and/or maintenance of drinking water supply and sanitation infrastructure, equipment and facilities in areas considered not to be commercially viable. To strengthen accountability, the fund shall be administered by a Fund Administrator guided by a Fund Advisory Panel as per Fund Utilization Policy.
 - iv. *Recognition of the role of County Water Service Providers and Maintenance Service Providers*: Recognizing factors that affect the performance of water service providers (WSP) and other rural social enterprises, including clustering of schemes, scale, exclusivity, and formal contracting, the county shall have one or more WSPs to provide water services within a specified service area. Other entities providing water services shall operate under license from the respective county WSP. This implies that the County WSPs shall have delegated responsibility to regulate these water providers (such as community water projects) within their areas. The bill proposes strict performance and fiscal accountability on all WSPs to enhance water and sanitation service delivery. The county will recognize the role of Maintenance Service Providers on professional preventive and/or responsive repair and maintenance to keep water supply infrastructure functioning on a daily basis. The Water and Maintenance Service Providers shall be eligible for financial and technical support from the County Government.
 - v. *Water Action Groups (WAG) for accountability in regulation*: WAG is a nascent structure incubated by the national regulator WASREB to give consumers a voice on the quality of water services. This provides an accountability loop on the WSPs. The WAGs may receive funding support from the County Water Services Fund.
 - vi. *Linking the resource and supply—Water Resources User Associations (WRUAs)*: A WRUA is a structure provided for in national water legislation to facilitate community-based water resource management. The WRUAs provide a vehicle through which source protection measures can be implemented. The bill enables a relationship between WRUAs and the County Government as well as with the national government. The WRUAs shall be registered by the county government and may receive funds from the County Water Services Fund to support county level conservation activities, subject to meeting accountability criteria.
- Several questions concerning ownership and accountability arose in the policy process that required exchange of knowledge and further discussion between different parties.
- Clause 62 of the Kitui bill tackles the long-standing challenge in rural water management of ownership of community water assets, including land ownership and control of access to community water assets. It stipulates that all water works developed by WASH actors in future when the bill becomes law shall be held in trust by the county government. There remains a challenge with respect to ownership of existing water assets, mostly due to informal processes previously applied by sector actors, where free land and labor contribution by the community was the norm. Lack of official land acquisition paperwork has allowed individual owners or their families to claim ownership or compensation a few years later and at times interrupted service access. For the latter issue, the bill provides for processes for ascertaining the origin of water assets for community water works. Further, Clause 77(6) provides for the formalization of all agreements entailing any land granted or leased by a community or an individual for the purpose of developing county water and sanitation assets.
- Another important issue is the accountability for work done by contractors and the capacity gap in terms of executing the contracted works. According to Clause 60, a project implementation committee shall be established, with links to

the WASHCOORD Forum, to monitor project implementation. The committee will approve the Certificate of Completion to confirm that the works have been completed in accordance with the approved design and any design changes approved by the Directorate.

Wider sector implications

By formally recognizing the role of public, private and community actors in the rural water sector, Kenya's national Water Act of 2016 provided a pathway for extending beyond the community-based management paradigm in rural water services, creating a legislated "space" in which intentionally designed professional maintenance service providers have been able to develop (Article 94) ([Republic of Kenya, 2016](#)) relying on shared agency. Building on previous work, Kitui County's Water Bill and Policy are poised to institutionalize such approaches at the county level. Some challenging issues remain:

Limited gender and minority representation in the policy process

There was low representation of women during the public participation forums (31 percent women against 69 percent men). Women being key actors in WASH issues, they ought to be encouraged to attend these decision-making forums to share their knowledge and perspectives, also by facilitating female focus group discussions. This requires structural adjustments also in terms of gender representation in the Water Directorate. The bill now requires that a third of either gender is represented in all county water sector appointments. It also recognizes vulnerable groups by instituting special measures that ensure their access to water and sanitation services. These measures include setting investment priorities and tariff policies that are responsive to the needs of vulnerable groups.

Varied knowledge of policy process and sector-specific issues

Given the recent decentralization reform, many participants in the development of the policy document had limited knowledge of pertinent policy issues including the formulation process. For example, most participants struggled to differentiate policy measures from development plan activities. Moreover, members of the Technical Working Group had diverse opinions on which issues needed to be included in the policy and bill. Here the role of policy experiments and the evidence they provide became critical again, for example in improving knowledge about the role of trust funds as a longer-term financial mechanism.

Impact of political interests

Political interests affect policy development, sometimes push relevant knowledge into the background, and potentially hamper longer-term initiatives. Competition between different Members of County Assembly led to conflicts of interest in terms of influence. The majority of the MCAs were incentivized by monetary allowances to align public support, mostly from their wards, which limits and sometimes hinders their broader contribution toward the subject matter of improving wider rural water sustainability, especially with regard to long-term initiatives.

Recommendations

The core recommendation emerging from this exploration of how knowledge production has informed policy development in Kitui County is that local ownership of the policy-making process is central to its success. Indeed, there is a fine balancing act for local and external actors to effectively reach an acceptable outcome while recognizing the need for technical support. The policy development process must be owned by the institution that will be responsible for implementation as well as enforcement. In the case of Kitui County Water Policy, the Water Department in the Ministry of Agriculture, Water and Livestock Development took full responsibility in coordinating the entire process. The involvement of experienced representatives of the public and non-state actors in the policy formulation process is critical. These should be of senior level who have the capacity to feed knowledge gains into the process and can confidently commit their departments. In the case of Kitui County, the Technical Working Group comprised senior officers in various departments of the Kitui County Government. These officers were able to deliberate on matters with professionalism and they fully owned the policy document.

That said, there are three important caveats that should be considered in relation to devolved water policy development. First, most members of Kitui's Technical Working Group are County Government officials with many other responsibilities. As such they may not have time to develop technical documents and therefore seek policy support from government institutions responsible for policy development, such as the Kenya Institute of Public Policy Research and Analysis (KIPPRA). Second, ensuring a balanced and representative policy development team with broad expertise for the comprehensive representation of issues requires further effort. Third, development partners funded activities for the policy and bill development process. Government funding to support the process would likely change the policy-making dynamics and the question of ownership over certain aspects.

To advance along the path to sustainable WASH services in Kitui County and beyond, further recommendations from this research include:

- (1) Account for the long timeframes of institutional change. Harnessing the opening of a policy window for institutional change in the rural water sector (i.e., decentralization in Kenya) is critical; yet in most cases the following legal and policy changes will require a decadal timeframe. Moreover, most large donors operate within 3–5-year timeframes and therefore limit financial sustainability in their design. This requires new thinking on how to catalyze more flexible funding approaches to reflect on the relative risks and benefits of the size and duration of donor projects on system sustainability.
- (2) Draw on legal expertise and build trust for policy experiments in the rural water sector. Incubating a professional service model and sharing performance data has been critical in demonstrating an alternative approach to rural water services in Kitui County and in exploring its opportunities and challenges. FundiFix acted as a policy experiment, sharing otherwise commercially sensitive data to promote sector understanding and inform policy design. Moreover, local legal expertise for institutional innovation, including the Trust Fund, as well as the development of the water bill and policy has been critical for anchoring institutional change in existing frameworks and building trust with national and county governments. This is important to ensure the institutional and financial backing for policy experiments to become embedded in long-term practice of delivering rural water services.
- (3) Establish collaborative learning approaches through WASH forums. Bringing the diverse actors of Kitui's WASH sector together for multilateral communication has been and continues to be critical for building cohesion, knowledge exchange, and collective action. As a place where the dynamics of national-county policy, intra-county politics, community and donor practice play out, such forums provide an important platform for coordinating sector activities and long-term planning as well as defining boundaries of the WASH system, including clarifying responsibilities.

Discussion

What if, instead of policy producing practice, practices produce policy? The discussion of policy, politics, and practice in Kitui's water sector highlights that [Mosse's \(2005\)](#) question is highly relevant, including the question of control over interpretation, translation, and composition of who sits at the table in the design, agency, and contextual realization of policy changes toward a more sustainable water sector along the pillars of equality, institutions, accountability, and finance.

Policy experiments that produce new insights appear to be critical for breaking out of the reproduction of existing policy

models in national-county, within-county and external policy dynamics; yet the broader instrumentalities and contingencies of aid and the scales within which they operate remain. While we apply a pluralistic and integrated approach to action-oriented knowledge for sustainability, as [Caniglia et al. \(2021\)](#) suggest, we recognize that the seats at the table still remain limited across public, private, and community actors. For instance, limited gender and minority representation as well as various power games with internal and external actors cloud the plurality of voices, even if initially heard, that are integrated into the final drafts of the bill and policy. Using this knowledge framework, however, allows us to question and discuss the types of “knowledge”, or evidence, produced alongside rural water sector development in Kitui County. It proves a useful framework in the context of sustainability research; however, we recognize that the application to the knowledge production and exchange activities in Kitui could be conducted in multiple ways depending on the composition of decision-making bodies and the intent and perspectives of the designers, implementers, and researchers represented there as well as on the interpretation and narratives they provide, and the translation of policy goals into practice and vice versa ([Latour, 2000](#)).

A further step would be to critically review new path dependencies that the different types of knowledge create. Whether actors engage with knowledge that informs institutional design, or with knowledge that nurtures shared agency, or with knowledge that becomes relevant in specific contexts, or with a combination thereof, may provide early insights into how sustainable certain policy experiments might be in the long run. However, it will only be evidenced by on-going county investment in the various tools and approaches. Whether the water policy in Kitui County, Kenya, will become a major driver in producing sustainable practices will have far-reaching consequences not only for the county itself but for the rural water sector more broadly. What is critical to note is the decadal timeframes for progress and that work on sustainability requires patience and multiple partnerships among public, private, and civil society actors to increase chances of progress.

Author contributions

JK: conceptualization, methodology, investigation, writing—original draft, and review and editing. CN and PK: investigation and review and editing. RH: conceptualization and writing—review and editing. NG: review and editing. MT, AM, and AT: conceptualization and review and editing. All authors contributed to manuscript revision, read, and approved the submitted version.

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Conflict of interest

Author CN is a Director of FundiFix Ltd. since inception in 2015 and is also contracted by the University of Oxford to support research on the delivery of its operations in Kenya. Author JK is part of a University of Oxford research team that designed and incubated the FundiFix model. Authors RH, MT, and AM are Trustees of the Water Services Maintenance Trust Fund (registered under Kenyan law) which provides results-based funding to address the subsidy required for FundiFix to

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