2017

Green Technology Center
17th fl. Namsan Sq. Bldg. 173, Toegye-ro, Jung-gu
Seoul 100-705, S. Korea
(PH) +82 2 3393 3917
(FX) +82 2 3393 3919
(EM) Jie.son@gtck.re.kr
www.gtck.re.kr

CATALYZING LOW COST GREEN TECHNOLOGIES FOR SUSTAINABLE WATER SERVICE DELIVERY (KENYA)

PPP BUSINESS MODEL – FINAL REPORT

HYUNG-JU KIM, JI-HEE SON, KIRSTY TAYLOR, RYWON YANG
GREEN TECHNOLOGY CENTER - KOREA

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

PROJECT DESCRIPTION, PURPOSE AND SCOPE

This business model report is prepared as part of the Climate Technology Center and Network (CTCN) technical assistance (TA) on "Catalysing low cost green technologies for sustainable water service delivery in Kenya". The assistance was organized at the request of Kenya's Water Services Trust Fund (WSTF) via the national designated entity (NDE), Kenya Industrial Research and Development Institute (KIRDI), to the CTCN. The United Nations Environmental Programme — Denmark Technical University Partnership (UDP) carried out most stages of this TA , while the Green Technology Center — Korea (GTC) is working as a consultant to prepare the business model for Public Private Partnerships (PPP) using green technologies in water services in arid and semi-arid lands (ASAL) and peri-urban areas. The proposed model is presented in this report.

The business model may be implemented by the WSTF to support its mandate to assist in financing the provision of water services to areas of Kenya without adequate water services (Water Act 2002). To help the Government of Kenya (GoK) toward its goal of increasing and improving water provision at real cost and reducing grant dependency, a financing model that revolves public funds through profitable private sector-led projects is needed. In order to meet financing and of operation and maintenance costs in the water services sector, collection of user fees must be increased and non-revenue water (NRW) reduced. This requires an improvement of infrastructure and a professionalization of services.

The model aims to bring in new partners (development cooperation, private sector and local entrepreneurs) to support WSTF in bringing new financing and expertise to water service provision in challenging areas. New partners require clarification of roles and legal issues, as well as means of enhancing the financial feasibility of water services projects. Thus, this model seeks the mutual benefits of profitability to attract the private sector while retaining the social mission of providing water services for underserved areas.

Different geographic areas display different and dynamic water supply contexts. The proposed business model should both address and fit the local environment across various ecological zones, ASAL and peri-urban areas. It has a focus on creating entrepreneurial livelihoods, as PPPs should directly benefit individuals and their communities.

The universal goals of creating a PSP business model are to:

1) **Increase amount and sustainability of water services financing;**
2) **Increase the sustainability of water services projects, and**
3) **Ensure sustainability of water resources.**

KEY POINTS OF TECHNICAL FEASIBILITY STUDY AND PPP CONSULTATION

The technical feasibility study previously conducted by UDP identified contextual features that increase or limit viability of selected technologies to provide sustainable water supply to underserved areas. Some 105 technology points were sampled across Embu, Baringo, Isiolo and Homabay counties. The counties were selected to represent Kenya's agro-climatic zones ranging from humid to very arid. The study delivered the following key findings.

Sustainability/performance of green technologies were affected by various issues:

- ✓ Small capacity of water pans (10,000-30,000 m^3) and solar systems (less than 5 kw)
- ✓ Poor design, management and high siltation of water pans
- ✓ Limited experience on small wind turbines
- ✓ Low capital investment limits technology type and capacity
- ✓ Limited skills and attention for operating and managing rural and peri-urban supply systems
- ✓ Rural water supplies are mainly run by communities, lacking knowledge on management, operation and maintenance

However, PPP potential for selected technologies was found:

- ✓ Micro grids are being enabled through use of solar for water distribution, creating potential revenues for operator businesses
- ✓ Various private players are already operating solar systems, but often in an informal manner
- ✓ Some innovative PPP models have been trialed
- ✓ Clustering management and O&M service provision enhances economies of scale, thus increasing private operators' profit margins

There are potential challenges to PPPs:

- ✓ Donor dependency especially in rural areas limits space for private operators
- ✓ Dispersed nature of rural water supply raises system management costs

Study recommendations:

- ✓ Rethink community management arrangements for water systems
- ✓ Cluster technology to ease management and O&M services
- ✓ Increase project planning support
- ✓ Enhance post implementation support and capacity development at all levels

KENYAN COUNTRY CONTEXT

Water scarcity is threatening Kenya's human and economic development, as public services have failed to keep pace with needs of a growing and urbanizing population.

Surface water resources cover only 2% of the country. Annual renewable freshwater resources and water withdrawal are estimated at 20.2 km^3 and 2.7 km^3, respectively, but vary significantly by region and season. The country's water supply and sanitation is characterized by low access and poor service quality especially in rural areas and urban slums. Most recent data (2015) indicates that 63% of the population had access to improved water with 37% relying on unimproved sources such as ponds, shallow wells and rivers.

About half of Kenya's 47 counties are ASALs, including 9 arid and 14 semi-arid counties where extreme droughts have caused severe crop and livestock losses, famine and population displacement. Increasing frequency and prolongation of droughts has been attributed to climate change.

PPPS IN KENYA

PPPs are defined in the PPP Policy 2005 and in the PPP Act 2013 as:

"… an arrangement between a public entity and a private party under which

(a) The private party undertakes to perform a public function or provide a service on behalf of the public entity;

(b) The private party receives a benefit for performing the function, either by way of:

i. Compensation from a public fund
ii. Charges or fees collected by a private party from users or customers of a service provided to them; or
iii. Combination of such compensation and such charges for fees; and

(c) The private party is generally liable for risks arising from the performance depending on the terms of the agreement."

Public function, private benefit from government compensation and/or user fees and transfer of risk are all essential for a project to classify as a PPP. The public organization forming the PPP must be the organization mandated to perform that function.

Interaction with the private sector does not necessarily imply a PPP according to the specific definition of the PPP Act. For example, purchasing goods or specific short term services (e.g. turnkey construction contracts) from private suppliers are conventional public procurement, while privatization of public assets is a sales transaction. Neither count as PPPs.

Though Kenyan PPP legislation is outlined at relevant points in this report to inform future WSTF strategy and decision-making, it is important to note that other forms of partnership with the private sector are available. These may be preferable for commercially challenging rural water services given that PPPs "proper" are complex, require a reasonably mature and competitive market and are often best suited to longer contracts of 20+ years. The model presented is therefore referred to as a Private Sector Participation (PSP) Model to avoid confusion with the strict definition of the PPP Act. Under this model, it would not be mandatory to follow the PPP Unit process – however it is recommended to bear the steps of this well laid out process in mind. It is also recommended to continue discourse with the PPP Unit to determine if or when would be the right time and manner to engage in its process in future.

For WSTF's future PPP development under the PPP Act 2013, the WSTF mandate to assist in financing the development and management of water services in marginalized and underserved areas, would allow it to potentially form PPPs where aspects of that finance function are partially carried out by a private actor – i.e. a commercial bank to manage a Water Services Endowment Fund, suggested as a new financing mechanism in this report. Meanwhile, under their mandates to provide water services to citizens in their jurisdictions, county governments can form PPPs with private actors to provide some or all of the functions of water service provision on their behalf.

WATER SERVICES PPPS IN KENYA

Seeing water as both a social and an economic good, the Government of Kenya (GoK) has ambition to make water available to all at market price. This would enable user fees to recover operation costs with some remaining revenue for repairs and facility expansion. Alignment of water sector regulation with Kenya's recent political devolution and PPP laws has opened opportunities for water sector PPPs to serve water scarce communities in peri-urban areas and ASALs at county and catchment levels. However, lack of experience,

trust, financing, and funding at county level are challenges to the initiation, effectiveness and sustainability of water services PPPs.

There now exists a legal framework for county governments to form PPP projects for water services under certain conditions. Furthermore, the PPP Project Facilitation Fund Regulations 2015 outline the eligibility of applications to the government support mechanism for PPPs.

In addition, the Kenyan water services landscape has evolved through various arrangements in recent years. Responsibilities for water service provision have been devolved from the national to regional and then to county level in stages. There is now a further aim to move from public to private service provision, as well as to move from grants to concessional loan finance and internal revenue generation. Finally, the WSTF aims to move from funding community to professional management of rural water points where possible. The progression of these factors is outlined in Table 1.

Table 1. Evolution of Kenyan Water Services and Suggested Future Direction

AS-WAS (PRE-2002)	AS-WAS (POST-2002)	AS-IS (POST-2010)	PSP MODEL PROPOSAL	FUTURE GOALS
• Central Government Mandate • No private Sector • Grants	• Decentralizing to regional Water Service Boards • Setting up and semi-private water utilities as WSPs • Grants	• County Government Mandate • Unstructured/limited private sector participation in WSP water services and informal community management • Grants	• **Private sector partnerships with Counties** • **Local Entrepreneur management of franchises** • **Grants → concessional loans**	• Private sector led with community government oversight • Concessional/commercial loans • Local entrepreneur management

Rural Water Services PPPs have not yet been attempted through the Kenya PPP Unit but some pilot projects are underway that involve innovative private partnerships. Some of these are presented in the case study section 2.4.

CROSS-CUTTING ISSUES

Cross-cutting considerations of the Water Services PSP Business Model include: i) Climate Change; ii) Human Rights; iii) Gender and Youth; and iv) Water Resource Management. Civil Society Organizations and other actors can play an important role in ensuring these issues are addressed, but WSTF will ultimately be responsible for their inclusion in programme design and implementation.

- ✓ **Climate change** impacts should be deliberately factored into water services planning to ensure resilience of infrastructure. Increased climate instability in Kenya is thought to have caused or exacerbated droughts and floods, causing serious socio-economic and environmental impacts (Njoka, 2016). This model targets rainwater harvesting and green energy technologies (water pans, solar and wind pumping) to help distribute water over greater distances to larger populations while avoiding increased fossil fuel emissions (Global Public Policy Network on Water Management, 2009).
- ✓ **The human right to water** and sanitation has been explicitly recognized by the UN General Assembly (2010), which also acknowledged these as essential to the realization of all human rights (Resolution 64/292). The constitution of Kenya under the bill of rights also recognizes adequate access to safe and sufficient water as a basic entitlement.

- ✓ **A gender-sensitive, youth-inclusive approach** should be adopted for water services planning and implementation. Target proportions of women, men, and also young people should be consulted in each water project design and should also be given equal access to trainings, jobs or other income generating activities created.

- ✓ **Water Resource Management (WRM)** can be strengthened by water harvesting and storage using water pans for human and livestock consumption, to diversify water usage away from sole reliance on boreholes. There is also need for groundwater recharging. Availability and reliability of water sources are vital to the success of water services projects. Thus, plans are outlined for payment for watershed services as part of this assistance.

WATER SERVICE PPP/PSP CASE STUDIES

Private participation in developing countries' rural water services is relatively new and lessons can be learned from recent projects in Kenya and elsewhere. Table 2 presents summaries of cases of companies in Kenya (Grundfos, RFL Ltd., Kenya Markets Trust and RIWIK) as well as PPP cases from Senegal and Rwanda. Such case studies are a useful guide, but context-specific considerations are required for water services PPP models relevant to peri-urban and ASAL contexts to cater to a small often low income user base.

Table 2. Summary of Case Studies

CASE	SUCCESS FACTORS	IDENTIFIED NEED FOR …
Grundfos *41+ solar pump installations on boreholes in Kenya since 2009*	• Donor-funded capital expendeture • User fees cover operations and maintainence • Mobile payment and financial management platform • Professional repair service	• Public funds must cover CAPEX • O&M recovery subsidy and/or guarantees for revenue streams • Incentives for private investors and small water providers • Consumer education on cost of water
Fundifix *Maintainence-only service for 66+ handpumps in Kenya since 2015*	• Remote automated monitoring (transmitters fitted to pumps) • Professional services (performance-based contracts) • User pre-payments & monitoring (Mpesa) • Free maintainence trial transitioned to pre-paid system	• Institutional sustainability (through coordination and investment) • Operational sustainability (Mpesa payment system) • Financial sustainability ("3Ts" : Tariffs (users), taxes (government) and tansfers (donors))
Kenya Markets Trust *Lease/management with 11 small private operators*	• New urban Public Private Community Partnership models incentivize lower non-revenue water (NRW) • Transforms rural water user associations (WUAs) into water companies to be private service operators • Community monitoring for efficiency, quality, outreach and consumer rights	• Private participation only possible with high community consultation • Separation of governance/executive roles • Growing customer base for quality water
RIWIK *'Local for local' franchise model for small wind turbines from 2012-2015*	• Micro-franchise models • Local customer base (local craftsmen produce/sell SWTs) • Market niche protection (reduced product price through microfinance)	• Demonstration projects • Feedback mechanisms for quality control and learning • Marketing to strengthen brand identity/ increase awareness

	• Guaranteed mainainance and repair	• Expanding target market via community groups • Appropriate franchisee financing mechanisms
Senegal *All rural water O&M integrated into large clusters of leasing public-private partnerships (PPPs) since 2012.*	• Private operators hired to manage O&M and repair/renew small infrastructure • Several operators manage 1,500 schemes split into rural areas/perimeters for 7.5 million people	• Government approved financial model has helped leverage private sector participation at scale • Over time, it has been possible to get the private sector to take on more risks
Rwanda Since 2004, clustered district water system O&M by small private water operators (PWO) via competetive service contracts	• Water systems clustered for economies of scale/cross-subsidization • Achieving financial capacity for major repairs and income superior/equal to expenses	• Further tariff development necessary to ensure sustainability of rural repairs • Support from dedicated Water and Sanitation Corporation (WASAC) department and regional operational officers • Independent regulator engages utilities/ sector institutions on technical and contract standards, service levels, tariffs, benchmarking, and terms of reference

WATER SERVICES PSP MODEL

A model for catalyzing future financing and participation from new and existing local and international partners in water services for Kenya's ASAL and peri-urban areas is proposed via the **WSTF Water Services PSP Programme (WSPP).** The WSPP aims to repackage and leverage public finance for private participation in water services project initiation and sustainability. In addition, a **Water Services Endowment Fund (WSEF)** is suggested as a kind of "Water Bank" for community and SME investments in project extension and improvement.

The WSPP and the WSEF can be facilitated by establishing a dedicated, well-staffed **PSP Center** within WSTF. This center should consist of trained staff able to act as coordinators and contact points for programme stakeholders. The PSP Center should form necessary guidelines, frameworks and partnerships for programme implementation. An **advisory and oversight board** should also be established. This can be the existing WSTF board or a newly-created board to take in stakeholders at all levels of the programme. Funding for the establishment of such instruments should be well budgeted for in any programme funding application.

Key considerations for creating the model included WSTF aims of:

- **Transitioning from concessional financing** to sustainable internal cost recovery of projects where possible, based on voiced intention of current donors to end grants
- **Engaging with new partners** from both the public and private sector to leverage both finance expertise and efficiencies – at both international and national levels
- **Implementing innovative financing structures** (e.g. clustering, cross subsidization, an endowment fund to mobilize community savings, increased access to commercial finance)
- **Transitioning from community to professional management structures** for increased project sustainability

- **Innovative revenue generation through** use of green technologies (water pans, solar, wind pumping), multiple use of water.
- **Promoting sustainable infrastructure** including rehabilitation and optimization of existing infrastructure

The basic outline of the PSP Programme Model is presented in Figure 1 below.

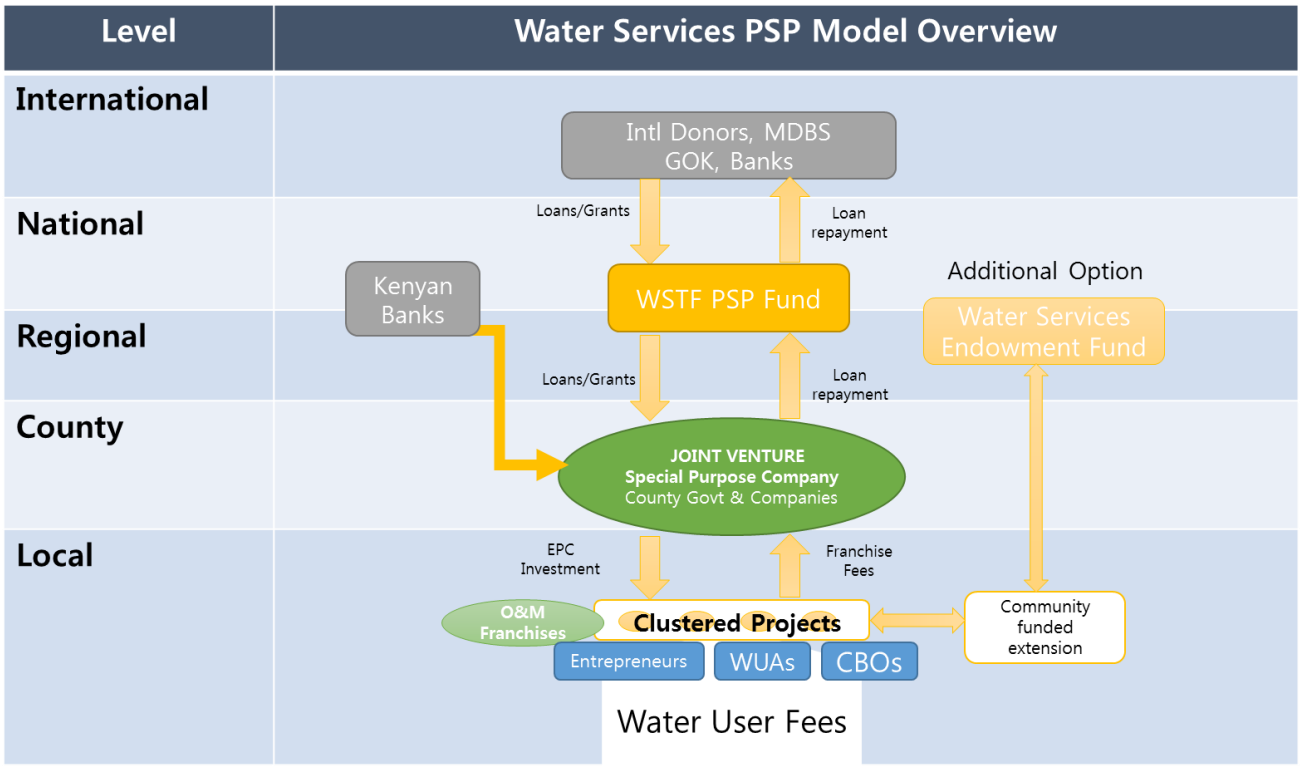


Figure 1. Basic Outline of the PSP Programme Model

MODEL DESCRIPTION

The PSP model for water services to underserved areas promotes joint investment in and ownership of clustered projects by counties and private entities. In this model, the county government acts as project initiator, a regulatory force. The County engages private participation by inviting a private company or companies to join it as active shareholders in a water services special services company (SPC). In the joint venture, the SPC's private partner(s) and subcontractors undertake construction, high-level operational functions such as management of finance and major repairs and contractual arrangements with smaller private water service providers (WSPs). These WSPs are franchise holders of green technology water service points at local level, carrying out basic daily O&M tasks and earning revenue from water service fees paid by water users.

Thus, the key success factors of the model are: clustering of projects ; creation of Joint Venture Special Purpose Companies (SPCs) and the micro-franchising model. These are briefly outlined below.

1) Clustering

Bundling small projects into larger clusters to increase overall investment size can promote efficient and effective management of systems. Furthermore, using funds from profitable water points (e.g. services for institutions or businesses) to cross-subsidize low yield social water projects can help sustain returns across the cluster while also honouring the right to water in underserved areas. Clusters should therefore aim for overall profitability while prohibiting cherrypicking of only commercially attractive projects. However, additional public support may also be necessary in some areas (e.g. remote ASALs) where sufficient number profitable projects cannot be created to sustain those that are necessary but not financially viable. Investments can also be made more attractive by enabling different payment structures for multiple uses of water, and fostering improved livelihoods related to water services to raise users' water consumption while enhancing ability to pay.

2) Joint Venture Special Purpose Companies at County/Cross-County Level

Joint venture Special Purpose Companies (JV SPCs) between county governments and private sector actors can adopt a commercial eye paired with strong public oversight and support. The SPC enables project financing, which can attract better credit terms, improve the return on capital invested and create tax advantages. Under a well-constructed shareholder agreement, the advantages of a joint venture include i) the fact that the public party has some control over key decisions; ii) transparency on accounts and finances presented to board; iii) better public perception of county's continued service provision, and iv) continuity of partners, even if the private partner changes[1].

3) Micro-Franchising

Following the formation of the JV SPC to manage the cluster, individual projects should be tendered for O&M micro-franchise contracts. Micro-franchisees pay the franchisor start-up fees and a percentage of ongoing sales to gain the right to provide water services. Franchise contracts are temporary and do not result in franchisees' ownership of the business or technology. Thus, technology risks remain with the joint venture and small scale entrepreneurs do not have to pay for its purchase.

Green technology rural water services are well suited to micro-financing as high capital for technology installation can be shouldered by the joint venture as franchisor, and low expendeture O&M duties can be carried out by micro-entrepreneurs or communities as franchisees.

Micro-franchising of Kenyan water services yields benefits of scale while remaining rooted in local bottom-of-pyramid market context. By enabling micro enterprises take over the customer-facing O&M, the franchisor can extend into underserved areas, ensuring social development as well as profitability.

[1] The benefit of share of profits should not be greatly considered by counties as they will not receive preferential equity.

R&R AT EACH LEVEL

Table 3 below outlines the R&R at each level of the model.

Table 3. R&R of PPP Model (According to Geographic Level)

LEVEL	AGENCIES R&R/ITEM	WSTF ENGAGEMENT	DESIRED OUTCOME
International *Financing, framework, technical assistance*	International treaties on Water (water as a human right)	Continued adherence in all programmes	Adherence to water as a human right
	Development partners provide funds and offer national level and "train the trainers" capacity building	Repackaging international finance into simple concessional loans and grants	Simple loan structure for water services PPPs Increased capacities at all levels
National *Financing, policy, regulation*	Consultation/cooperation with **central government ministries and agencies** (e.g. MWI, NWCPC, MOA, WRMA, PPP Unit) • WASREB: licenses franchise companies • WRMA: collects extraction fees	Integrate policy, strategy, and regulation & planning to set standards/type of private sector clustered projects (e.g. size range, technology type)	Nationally coordinated programme adhering to all relevant standards
	• **PSP Center : management of** the Water Services PSP Programme	Establishment and hosting of the center	Smooth implementation of programme
	• **Water Services PSP Advisory and Oversight Board:** for oversight and coordination of Water Services PSP SPCs	Set up by WSTF including representatives from WSTF, county, SPC, water users, CSOs, donors, and government agencies	Monitoring, evaluation and accountability
Regional *Water resource management, project development*	**Cross-county project development :** • **Water Service Boards :** develop, maintain and manage national public water works until transfer to county government, authority, joint committee or a WSP. provide technical services and capacity building to county governments **Water Resource Management :** • **Basin Water Resource Committees (BWRCs)** grant and manage water permits • **Water Resources User Associations (WRUAs)** : manage and conserve common water resources – provide Water Catchment Plans that can guide cluster water resource management *(WRUA operate at sub-county level)*	Ensure Water Resource Management is addressed at all levels and with relevant agencies (ultimately referring back to the Water Resource Management Authority) Earmark grant funding for WRUA sub-catchment management plans that will benefity water resource management of a given cluster	Integrated water resource management for sustained water supply and environmental protection
County *Financing, clustering, forming SPCs*	**Counties** identify and cluster projects with both social and commercial considerations, then form joint venture special purpose companies for increased finance and technical capabilities	Facilitation of joint venture formation through guidelines, capacity building, matching workshops, and other meetings	County and Private sector invested SPCs manage clustered projects formed with both social and commercial considerations

Local *Forming franchises for O&M*	**Franchise holders** (Entrepreneurs, Water User Associations, and Community Based Organizations**)** 1) Answer call for proposals for water projects issued by the county 2) Manage water service points and carry out basic O&M under franchises with the SPC 3) Pay startup fees and a percentage of income for right to collect water user fees, while carrying out routine O&M 4) Maintain right to invest in enhancing or extending the project	Gives guidance/minimum standards for Franchise model for joint ventures/private sector to design how local-level projects can use chnologies (boreholes, solar, wind water pans) and management structures that ensures both community involvement and professional management	Local entrepreneurs run franchises ensuring sustainable water services and income generation
All Levels	Monitoring and Evaluation, regulatory oversight, capacity building, knowledge sharing on lessons learned		

RISK ALLOCATION

Risk sharing and mitigation is essential for success of PPPs. In water service projects, the main concerns are: political, commercial, legal regulatory and contractual, water resource, and reputational risks. These are presented briefly in Table 4 and in more detail in Section 3.1.4. Risks should be allocated to the party who can manage them at lowest cost.

Table 4. Risk Overview

RISK	SUBCATEGORY	BEARER	MITIGATION
Political	**Expropriation** (taxes, licence and environmental restriction)	Company	Give incentive to ensure success at all levels, including government
	Political interference	Company	Roles of county & company clearly defined in contracts
	Currency devaluation	Intl. Company	Loans will be made by WSTF in Kenyan Shillings
	New standards/directives	WSTF	Cooperation with higher levels of government and adherence to current plans (e.g. Vision 2030 etc.)
Commercial	**Construction**	Joint Venture	Careful project selection, identification and design, Contracting and enforcement, reliable subcontractors, standardized/proven technologies used
	Operation and maintenance (O&M)	Franchise	Franchised business model used in every franchise, adequate initial and continuous training of franchisees, mobile payment platform simplifies financial management
	Insufficient revenue	Franchise	Sustainable/pro-poor tariff setting with WASREB, water resource management, expanding user base, sound financial planning
	Cash flow	Franchise	Financial management system which accounts for seasonal revenue fluctuations
	Credit risk	WSTF Banks	Ensuring viability of projects, using equiment as collateral, credit guarantee fund, mezannine financing
	Technology performance risk	Company	Training, repair contracts
	Information gaps/hidden costs	Company	Clear tendering and contracting process
	Project award	Company	Clear tendering process established and followed
Legal, regulatory and	**Contractual**	All	Kenyan legal repercussions
	Non-Enforcement of legislation	WSTF	Careful collaboration with regulatory authorities
	Regulation	JV	Franchise arrangements developed with WASREB
	Fiscal risk	WSTF, county	Contingent liability reporting
Water resource	**Scarcity**	All levels	WRMA cooperation, water storage, hydrological studies
	Quality/pollution	Franchise	Testing, monitoring, purification
	Climate change/rainfall pattern	All levels	Integrate climate change issues into planning
	Non-compliance	All levels	Oversight by PSP Advisory Board, civil society, etc.
Reputational	**Corruption**	All levels	Cashless mobile payment/financial management
	Stakeholder acceptance of PPP	WSTF	Awareness, training, consultation on PPP benefits
	Stakeholder acceptance of private involvement in water services	WSTF	Awareness raising, training, consultation Demonstrate benefits of PPP

Note: Where "Joint Venture" is written, the risk is borne by both county and private parties. Where "Company" is written, it refers to companies within the JV.

Allocation of risks in PPP contracts can affect the feasibility of different financing packages and the overall cost of financing.

FINANCING

General financing challenges for water services PPPs in underserved areas include small project size, perceived low opportunities for cost recovery and seasonality of cash flows. Solar or wind pumping systems come with specific challenges of higher initial capital expenditure than conventional technologies (though solar PV prices have fallen dramatically). On the other hand, green pumping systems have generally lower O&M costs, with occasional high repair and replacement costs. These challenges require thinking "outside the box" to customize financing mechanisms that attract private participation and finance to green water supply technologies in ASAL/peri-urban projects.

The WSTF Water Services PSP Programme (WSPP) is designed to repackage international and national public finance as concessional loans for water service project initiation. Grant finance should also be made available for activities including capacity building, technical assistance, feasibility studies and water resource management and conservation activities. WSPP grants and loans will therefore be extended to qualifying joint venture special purpose companies (JV SPCs) formed between county governments and private companies to create clustered water services franchises for ASAL and peri-urban areas. Grants may be extended for EPC during this small-scale pilot to prove the functionality of the model to all actors, and attract private sector involvement in the next stage.

This model's graduated approach of moving from grants to loans walks a line between two realities: 1) need to reduce concessionality due to inadequate government funds and donors plans to end grant support, and 2) private sector reluctance to invest in water services engineering, procurement and construction (EPC) due to low cost recovery.

Project finance for construction of green technology water points is invested in the JV SPC by the county government, private companies, the WSTF PSP Programme and local banks. The WSTF PSP Programme should use donor and public funds to reassure and incentivize private investors and creditors, and also work to strengthen communities' self-financing capabilities. It should offer 1) grants for feasibility studies, 2) subordinate concessional loans to fund projects and 3) credit guarantees to attract private lending. JV members make a minimum equity contribution (suggested 20% divided between companies and county), with remainder funded in credit, the majority in the form of a WSTF PSP concessional loan, with additional credit from commercial banks where possible.

At project identification and planning stage, the following elements must be considered: 1) better financial planning using a lifecycle costing approach; 2) ensuring shared ownership of projects and associated risks; and 3) building on previous results based aid approaches.

Since the WSTF finance remit covers commercially unviable rural areas and the underserved urban poor, a WSTF PSP business model should not necessarily aim for full internal cost recovery of all projects. O&M cost recovery has even remained elusive for high volume, high density urban WSPs to date. The franchise model should aim for O&M cost coverage from user fees where possible, from cross-subsidization from other projects where not, and from public subsidies as a last resort.

PRIVATE SECTOR

The bottom line for private sector engagement in PPPs is a minimum guarantee of payment and revenue. Thus, clear and reliable opportunity for profit is critical. JV SPC private sector participation includes for engineering, procurement and construction (EPC), green technology providers (solar/wind pumping systems), mobile payment platform providers, as well as technical services for large repairs. Meanwhile, franchises open new entrepreneurship opportunities for professionalization of community and water service entrepreneurs.

SPECIFICATIONS FOR TARGET TECHNOLOGIES

This model should set appropriate – but not stiflingly rigid - standards for target technologies (solar/wind pumping systems and improved water pans), balancing quality and affordability. Better skills and information are needed for planning, design, deployment and management of selected technologies. Franchises must have access to basic parts, trained mechanics and equipment for handling major repairs. Without these, infrastructure often lies non-operational for long periods.Technology companies must be responsible for handling non-routine maintenance and repairs.

Water Pans

Water pans intended to addresses livestock demand are also used for domestic purposes when needed. Issues of high siltation, infiltration and evaporation rates as well as poor sizing, surface to depth ratio, siting and site investigation reduce pan functionality. Pan retention after rains in target counties ranges from 2-3 months (especially in Isiolo) to 9-12 months (Baringo and Homabay).

Water pans of 30,000m^3 to 70,000m^3 are recommended, as these can retain water throughout the year[2], costing KShs 9.5 million to KShs 22 million respectively[3]. A 30,000 m^3 lined water pan could provide water for around 32 weeks after rain (14 weeks with no lining) compared to just five weeks for a 10,000m^3 unlined pan.

Solar Pumping Systems

Solar PV is predominantly used in ASAL areas but also in other ecological zones. Small capacity[4] varying solar irradiation, and poor orientation of modules reduces power output. Solar technology has enabled creation of mini-grids serving water kiosks and individuals. The average cost of a borehole fitted with a solar pumping system is KShs 3.45 million.

Wind Pumping Systems

At least 347 wind systems were deployed for rural water pumping in Kenya from the 1990's to 2000s. Uptake has steeply declined due to cheaper solar systems and limited wind data. Only one of 25 mechanical wind systems was working during the survey of target counties, often due to basic component failure. Training, parts supply chains and post-construction support must be guaranteed for success. As wind pumping has not proved successful to date, it is recommend that WSTF create a guideline, but the decision on taking up this technology should be left to the companies.

[2] Though in some areas such as Eldama Ravine, Baringo, 15,000m^3 could be sufficient to provide year-round supply.
[3] This is a considerable increase from the average water pan size surveyed, which was 17,800m^3 costing KShs 5.4 million, at mean rate of KShs 302 per m^3.
[4] 81% of installations being of less than 1.5 kW, limiting application to very small communities.

Water Use

Average consumption among survey users was 125 liters per household per day. An average of 141 households use each borehole and 162 each water pan. Technologies supplied water for domestic uses (96%), to livestock (74%) and for small scale irrigation (28%). Water for domestic use and livestock is important in all target counties. Demand for irrigation water was high in Embu (71.4%) less in Baringo (15.4%) and marginal in Isiolo (6.7%) and Homabay (2.9%).

SUMMARY AND RECOMMENDATIONS

This business model proposes WSTF repackaging of international grants and concessional loans to fund county-company JV SPCs to install clusters of green technology water service points featuring water pans as well as solar and wind pumps. As well as bringing a minimum level of equty, the JV SPC should then train and contract local water service enterprises to run micro-franchises in ASAL and peri-urban areas. The report also briefly introduces the option for community-led funding of service extension through a community water services endowment fund.

The report strives to clarify roles and responsibilities of different actors, sources of capital and distribution of risk. It also discusses fair tariff setting and revenue collection for the greater recovery of O&M costs, whcih is necessary for enhancing financial sustainability of ASAL and peri-urban water supply systems.

Key recommendations include:

- ✓ **Seeking new finance partnerships** (e.g. climate funds, impact investors and commercial banks)
- ✓ **Ensuring consultation, coordination and cooperation at all levels** (international, national, regional, county, local, and cross-cutting with the private sector and civil society)
- ✓ **Capacity building and technical assistance** targeted to specific needs at all levels
- ✓ **County-Company Joint Ventures** to ensure all actors keep « skin in the game » as well as clear roles and responsibilities
- ✓ **Moving to sustainable lifecycle financing** that reflects and allocates total project costs, and earmark grant funds for water resource management for each cluster
- ✓ **Separation of EPC and O&M functions** through micro-franchising

NEXT STEPS

The outcomes from the present CTCN assistance will contribute to addressing knowledge gaps to inform other programmes, and serve to catalyze financing from other public and private sources. The next steps for this model are the hosting of a dissemination workshop, the drafting of a concept note and activities to catalyze finance for pilot and ultimately programme initiation.

1. INTRODUCTION

1.1 PROJECT OVERVIEW AND STATUS

1.1.1 PROJECT DESCRIPTION

This business model report is prepared as part of the Climate Technology Center and Network (CTCN) technical assistance (TA) on "Catalysing low cost green technologies for sustainable water service delivery in Kenya". The assistance was organized at the request of Kenya's Water Services Trust Fund (WSTF) via the national designated entity (NDE), Kenya Industrial Research and Development Institute (KIRDI), to the CTCN. The United Nations Environmental Programme — Denmark Technical University Partnership (UDP) carried out most stages of this TA , while the Green Technology Center — Korea (GTC) is working as a consultant to prepare the business model for Public Private Partnerships (PPP) using green technologies in water services in arid and semi-arid lands (ASAL) and peri-urban areas. CTCN support services for this technical assistance project are focused on four core activities:

1) Development of an extensive water green technology research strategy on existing and potential low cost water green technologies to be adopted within WSTF programmes
2) Undertaking of a feasibility study on the appropriateness of available green technologies for different ecological/environmental contexts of Kenya, including piloting green water technologies in the various ecological zones in Kenya
3) Through a capacity building workshop, strengthening of WSTF and other climate change and green water technology national actors' institutional capacity in identifying Public Private Partnership (PPP) opportunities and engaging the private sector in the water sector, and
4) Developing a PPP business model on the deployment of green water technologies in Kenya based on the feasibility study and identifying funding opportunities (national and international co-investors, national and international funders).

More detail on previous stages of this technical assistance is included in Annex 1.

1.1.2 PURPOSE AND SCOPE OF THIS REPORT

This technical assistance aims to analyze potential private sector engagement for the deployment of three green technologies (water pans, solar pumping and wind pumping systems) and to foster cooperation and synergies between public and private actors. Based on outcomes from the feasibility study and consultations carried out in earlier stages, a PPP business model for the selected water technologies has been developed.

This report covers the relevant country context, current status of PPPs in Kenya in relation to the water service sector including national, legal and institutional considerations. It also outlines crosscutting issues (climate change, human rights, gender and youth, and water resource management). It presents case studies of other private sector partnership (PSP) models in Kenya and elsewhere. It then presents a PSP Business Model including detail on structure, roles and responsibilities (R&R) of involved actors, risk allocation, and financing. It then elaborates on each of the operational levels (International, National, Regional, County and Local) as well as addressing the specific roles and concerns of private sector actors in the Kenyan water services sector context.

Limitations

This report aims to offer a broad overview and clarification on PPPs and also PSPs in relation to water services. However, the scope of this project did not cover the detail needed to carry out the necessary checks required for the in-depth prescription of model financial functions (e.g. debt-equity ratio, loan agreements etc.). Thus, it is intended as a framework for further development for implementation as a PSP pilot study and ultimately as a WSTF programme.

1.1.3 GOALS AND OBJECTIVES

WSTF envisages a PPP business model for the water sector that will leverage new public and private sector finance, expertise and participation to improve service delivery in ASAL and peri-urban areas. GTC was asked to research WSTF engagement on two levels – as project implementer and for strategy development – to answer the queston of how the WSTF as a financier could form PPPs or PSPs.

In order to ensure the success of such a model, the following universal goals are outlined below:

1) **Increased and more sustainable of water services financing**

To achieve the first goal, new sources of financing and expertise must be leveraged through innovative financing mechanisms to catalyze private sector engagement and investment. New private actors can be engaged by reducing barriers to market entry and strategically providing incentives, guarantees and favorable interest rates on loans while ensuring both value for money for the public sector and equitable, affordable coverage for users. Public sector finance and expertise can also be tapped through coordination of international, Kenyan national and county funds, as well as accessing previously untapped climate change related funds. This should be done with the goal of reducing concessionality of finance as bilateral donors funding WSTF programmes have indicated intention to move from grants to loans. To achieve this, a clear financing model must be developed to cover both O&M and cost of finance through internally generated revenue.

2) **Increased sustainability of water services projects**

Increasing the sustainability of water services projects requires better management of and increased revenue streams paired with professionalized, sustainable O&M activities. Revenue management should aim to achieve break-even point of covering O&M and financing costs, and also generate profits for project extension and renewal. This can be achieved through lifecycle costing at the project planning stage, realistic tariff setting in accordance with regulatory guidance that can cover costs while maintaining affordability and willingness to pay where possible. Where this is not possible strategic government subsidies and/or funds from more commercially viable projects can cross subsidize those projects that do not break even in order to ensure coverage for poor and underserved citizens. More efficient user fee collection, revenue management and reduction in non-revenue water can further increase financial sustainability of projects. Finally, revenues can be increased through charging user fees based on multiple uses of water, increasing water resource through water storage, increasing user base through network extension and increasing water quality through water purification technologies.

Technology breakdowns should be minimized for continuous service delivery. This can be helped by standardization of technology quality and procedures as well as better O&M through training and

professionalization of rural water service providers, clarified and contracted roles and responsibilities for maintenance and especially large scale repairs.

3) **Sustainablility of water resources**

Kenya's frameworks and activities on water resource management (WRM) must be linked to water service project clusters in order to ensure constant quality supply. Water Resource User Associations (WRUA) should be engaged to identify potential payments for watershed services paid by joint ventures or supported by WSTF where necessary. Water service projects should be planneed in areas with sufficient borehole recharge, and with water pans to increase rainwater harvesting Issues of water quality.

A table outlining these goals, objectives, desired outputs and supporting activities is presented in Annex 2.

1.2 KENYAN COUNTRY CONTEXT

Classified as a middle-income country since 2014 and enjoying a real GDP economic growth rate of more than 5% for the last seven years, largely thanks to recent infrastructure investment, Kenya's critical water situation must now be solved to raise the wellbeing of its people and ensure sustained economic and social development, especially in the context of climate change (The World Bank Group, n.d.).

As one of Africa's most water-scarce countries with 936 cubic meters of water per capita in 2004, water is a crosscutting concern across key areas of the Kenyan economy including agriculture, energy, industry, tourism and health (World Resources Institute, 2007). In the context of climate change, the country is already suffering associated socio-economic losses due to its high dependence on climate sensitive natural resources, with sufficient water supply at the heart of Kenya's climate vulnerability across sectors. Agriculture generates 25% of the country's GDP and employs 80% of the population, with over 75% of agricultural output coming from small-scale, rain-fed farms – mainly tea, coffee, maize, cattle and sugarcane (World Resources Institute, 2007).

Kenya's diverse climate is divided into 7 agro climatic zones, which ranges from semi-humid along the Kenyan coast of the Indian ocean to arid in the interior and more than 80% of the country is covered by arid and semi-arid land (ASAL) area mainly found in the Northeastern counties. All Kenya's major river drain from the central highlands, divided by the rift into those flowing westwards into Lake Victoria and those flowing eastwards towards the Indian Ocean. There are five major drainage basins: Lake Victoria, the Rift Valley, the Athi-Galana-Sabaki River (and Coastal areas to its south), the Tana River and the northern Ewaso Ng'iro. As shown in Figure 2, ASAL areas of Kenya, arid counties include: Baringo, Isiolo, Garissa, Mandera, Marsabit, Samburu, Tana River, Turkana and Wagir, and semi-arid counties are: Embu, Kilifi, Kwale, Laikipia, Lamu, Makueni, Meru, Narok, Nyeri, Taita Taveta, Tharaka Nithi, Kitui, Kajiado and West Pokot.

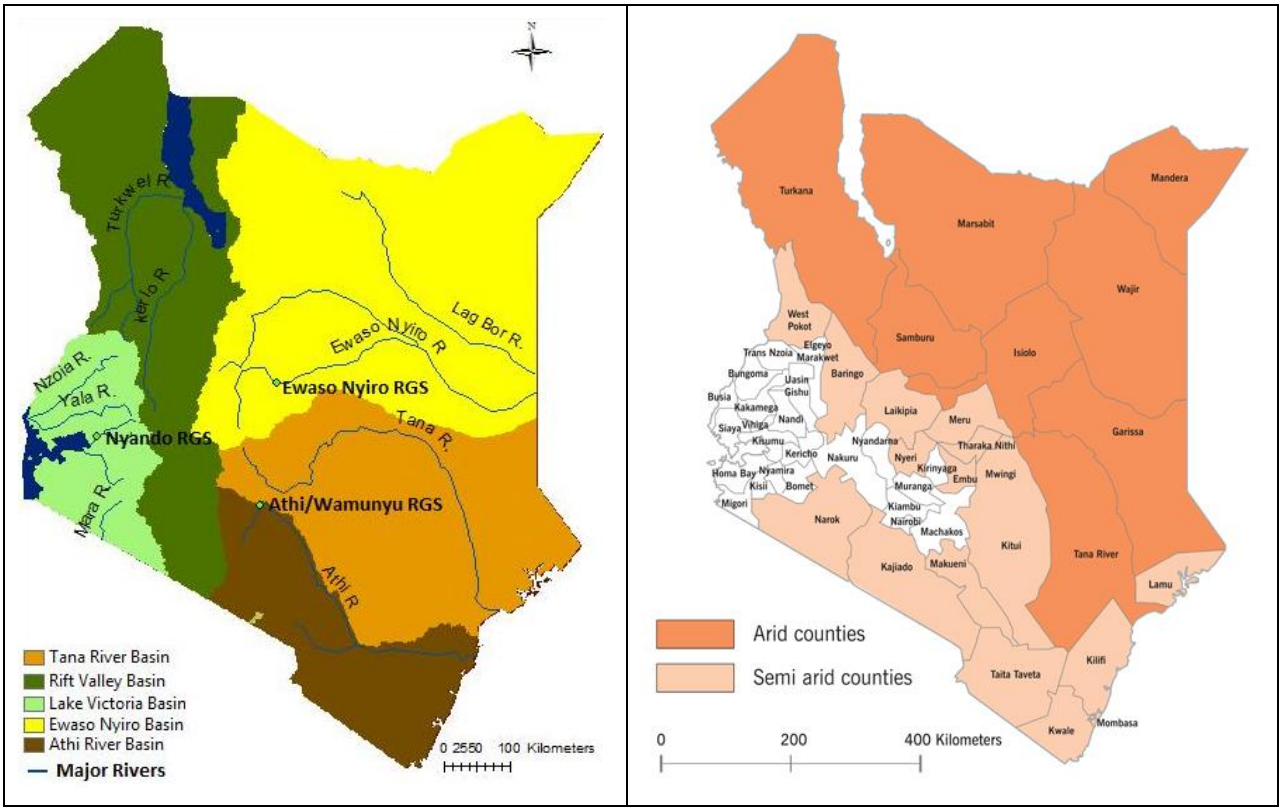


Figure 2. River Basins (left) and Arid and Semi-Arid Land (right) of Kenya (Onjira, 2014)

Kenya's diverse climate varies by season and ranges from tropical in the southern, western and central regions to semi-arid in the north and north-east. The migration through Kenya of the Inter-Tropical Convergence Zone (ITCZ) belt of low pressure and heavy precipitation in October to December causes Kenya's 'short' rains and its return in March to May causes the 'long' rains. During these periods, around 50-200mm of rainfall is received per month but the amount varies by year and area, exceeding 300mm per month in some localities.

Observed mean annual temperatures in Kenya have increased by 1.0°C since 1960 with predictions of a further rise of 1.0-2.8°C by the 2020s and 4.5°C by the 2090s (McSweeney, 2009). These temperature rises and disrupted rainfall patterns affecting the country in the form of increasing droughts, floods, forest fires and landslides are causing both loss of life and economic losses estimated at 3% of GDP (Republic of Kenya, 2015). Forecast precipitation pattern changes vary. Some reports predict an overall decrease in mean annual rainfall but a concentration in the short rains of October to December (AEA Group, 2008). However more recent Global Climate Modelling data reported in Kenya's National Adaptation Plan (2015-2030) indicate a possible increase in average rainfall by the 2060s, especially from October to December. The data suggest with greater confidence that the proportion of annual rainfall occurring in heavy events will increase by 2 to 11 per cent by the 2060s and by 2 to 12 per cent by the end of the century (AEA Group, 2008).

Droughts are now occurring annually, with major droughts every 10 years and moderate droughts and floods every 3-4 years. Drought in 1998-2000 led to economic losses of around US$2.8 billion from crops and livestock losses, forest fires, damage to fisheries, reduced hydropower generation and industrial activity. Floods in 1997/98 are estimated to have affected about 1 million people, costing the economy US$0.8-1.2 billion in damage to infrastructure, public health effects and loss of crops, with a further US$9 million in losses from property destruction, soil erosion, mudslides and landslides, water pollution and sedimentation

(Republic of Kenya, 2013a). More rapid evaporation, sea level rise and intrusion of salt water to water sources in coastal areas are also already taking effect.

A national emergency was triggered in April 2017 as drought affected health and local food security. The drought, which started in October 2016 had affected 23 of 47 counties as of February 2017 with about 4 million people in need of food aid. The government allocated $103 million to tackle the drought.

Though access to clean water has increased since 1990, 40% of the population still uses unsafe sources, and climate change is compounding existing challenges. Municipal water services reach just 25% of Kenyans, and supply just 39% of the population within their service areas (The World Bank Group, 2011).

1.2.1 ASAL AREAS

More than 80% of the country is made up of Arid and Semi-Arid Land (ASAL) areas, particularly in its north and north-eastern regions along the Rift Valley. These pastoral areas and marginal agricultural/peri-urban areas are particularly vulnerable to the impacts of climate change, especially in the water sector. Home to multiple ethnically diverse pastoral tribes including 4 million pastoralists (Kibirde, 2008), Kenya's ASALs are inhabited by about 30% of Kenya's people and also host over 70% of the country's livestock and 70% of wildlife. Significant water stress in ASAL areas is limiting economic development although 70% of livestock, which worth 800 million USD per year, is produced in the areas (IIED and SOS Sahel, 2010).

Access to good pastures is highly competitive and settlements have increased around mechanized borehole water points created to service grazing in these areas since the 1980s. However, lack of environmental or social consideration in their planning has weakened pastoralists' ability to manage water resources and withstand drought. Current macro-level infrastructure planning such as the LAPSSET (Lamu Port-Southern Sudan-Ethiopia Transport) corridor could further disrupt traditional livelihoods in these regions.

Kenyan ASAL regions receive rainfall below 500mm per year and are expected to see an overall decrease in precipitation due to climate change. Longer and more frequent dry spells punctuated by shorter but more intense periods of rainfall are expected to further deplete water and pasture resources. As rising temperatures increase water evaporation, declining soil moisture could exacerbate this issue in areas where groundwater is inhabitants' only reliable water source. Increasing droughts are already causing major food shortages, placing more than 2 million people in permanently on famine relief, rising to 5 million during severe droughts (UNDP Kenya).

Water scarcity is acute especially in dry season in ASALs areas. Furthermore, indiscriminate location of water points that is not informed by physical and social-economic baselines but by available funding has been a challenge. Groundwater salinity has limited water use, causing corrosion of pumping systems and increasing O&M costs for the community. Furthermore, the nomadic lifestyle of pastoralists in ASAL areas leads to cross border water point access, resulting in conflicts over different payment structures for communities and external users from other counties. A mechanism for different payment structures for local and visiting users should be established to reduce conflicts.

1.2.2 PERI-URBAN AREAS

Peri-urban areas between city and rural areas, also known as the rural-urban fringe, are growing in Kenya as in elsewhere in Africa as people move to the outskirts of cities during the process of urbanization. Land use change in peri-urban areas puts high pressure on social services and the environment, including on access to

and quality of water sources. Growing peri-urban populations create new externalities such as pressure on resources and increased water pollution from smallholder farming, for example. Thus, particular challenges of peri-urban areas include lack of potable water sources and drying of wells in summer months.

1.2.3 COUNTRY WATER POLICIES AND PLANS

The constitution of Kenya under the bill of rights recognizes that access to safe and sufficient water in adequate quantities as a basic entitlement, and water issues are intrinsic to many of the country's development and climate change response plans.

Specific water related policies include the National Water Harvesting and Storage Management Policy (MWI, 2010) supported by the National Water Master Plan (NWMP, 2013). The plan anticipates the development of 17,860 small dams and water pans adding an additional 893 million m^3 to Kenya's water storage capacity by national and county government departments and agencies, non-governmental organisations, communities, private sector and with support from development partners. Drought risk management is a shared function of both national and county governments under the Ending Drought Emergencies Second Medium Term Plan (2013-17).[5]

In relation to climate change response, water issues are widely featured in the climate change adaptation and mitigation measures being integrated into all government planning and development objectives. Kenya's Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC) (2015) estimates that over US$40 billion is required for mitigation and adaptation action across sectors by 2030, with international support needed for finance, investment, technology development and transfer, and capacity-building. The country's National Climate Change Response Strategy (NCCRS, 2010) includes water-related targets of: Increasing capture and retention of rainwater through construction of waterways; strategic bore holes and other water harvesting methods; desilting rivers and dams to improve carrying capacity; water storage and water quality; construction of structures to ensure availability of water during the dry season, and the protection of water towers. The strategy also features water-related adaptation measures for the agriculture and livestock sectors including promotion and development of irrigation schemes, construction of water basins and pans, investment in programs to harvest and store fodder for use during dry seasons, as well as promotion of efficient water use systems and use of marginal quality water. Water issues are also integrated across health, tourism, wildlife and human settlements sectors in the NCCRS. The National Climate Change Action Plan (NCCAP, 2013) has been followed by the Climate Change Act (2016). The National Adaptation Plan (NAP, 2016) estimates that a budget of US$5bn is required for mainstreaming climate change adaptation in the water and sanitation sector including activities that identify current and future vulnerabilities and develop strategies and plans to manage water sources, basins, water supply and waste water, including for large-scale irrigation projects. Kenya's Adaptation Technology Needs Assessment (2013) identified required technologies for groundwater abstraction, rainwater harvesting and desalination, as well as the development and implementation of policies and regulations to encourage water resource management and water conservation practices (Republic of Kenya, 2013b).

[5] The Sectoral Common Programme Framework for Ending Drought Emergencies (EDE) in Kenya's nine ASAL counties (2015) with a total budget of Kshs. 45,598 million under the EDE Second Medium Term Plan (2013-17) as part of Vision 2030. Implementation is to be led by the National Drought Management Authority.The overall EDE strategy aims to end the worst of the suffering caused by drought by 2022, by 1) strengthening the basic foundations for growth and development (security, infrastructure and human capital) and 2) by strengthening institutional and financing framework for drought risk management.

The country's long-term national development policy, Vision 2030, calls for water resource preservation. These are elaborated upon in the National Water Master Plan 2030 under the Ministry of Environment, Water and Natural Resources (2014). Its targets include: 1) Making improved water and sanitation available and accessible to all by 2030; 2) In agriculture, increasing the area under irrigation to 1.2million hectares; 3) To be a nation that has a clean, secure and sustainable environment by 2030 and 4) To generate more energy and increase efficiency in energy sector. The Green Economy Strategy and Implementation Plan (GESIP, 2015) also addresses water issues. The National Policy for the Sustainable Development of Arid and Semi-Arid Lands (2007), which aims to revitalize ASALs by creating new livelihood opportunities as well as providing health, education, and infrastructure services and decentralize planning of livelihoods, community participation and early warning systems. These efforts can support adoption of climate smart agriculture (CSA) such as use of drought tolerant crops (World Bank and CIAT, 2015). Kenya's Agriculture Sector Development Strategy 2010–2020 also includes commitments on expansion of irrigation infrastructure and investments in water storage and rainwater harvesting.

Main policies and plans related to water services are outlined in Table 5.

Table 5. Kenyan Policies and Plans related to Water Services

Title	Year	Policies and Plan	Institution
Vision 2030	2007	Aims to conserve water sources and start new ways of harvesting and using rain and underground water and to ensure that improved water and sanitation are available and accessible to all; Flagship projects for water and sanitation include: - construct multi-purpose dams and canal - expand pipeline in the coastal towns and the major irrigation schemes	Ministry of Planning and National Development and the National Economic and Social Council
National Water Services Strategy 2007-2015 (NWSS)	2007	Sets Kenya's target for water and sanitation services as 80% of the urban area and 50% of the rural area by 2015, and 100% by 2030	Ministry of Water and Irrigation
National Climate Change Response Strategy (NCCRS)	2010	Provides climate adaptation strategies such as : - promoting irrigated agriculture by developing irrigation schemes along river basins - construction of water basins and pans, reconfiguring irrigated production systems - enforcement and/or enactment of laws and regulations required for efficient water resource management - increasing capture and retention of rainwater through the construction of waterways, strategic boreholes and other water harvesting structures to ensure availability of water during dry seasons	Ministry of Environment and Mineral Resources
National Water Harvesting and Storage Management Policy	2010	Aims to sustainably facilitate the expansion of water harvesting, storage and development of flood capacity through construction of large and medium sized dams and development of underground water recharge systems based on harvesting of at least 15% of surface runoff	Ministry of Water and Irrigation
National Policy for Sustainable Development of ASALs in Kenya	2012	Aims to revitalize the country's ASALs by creating new livelihood opportunities and to provide health, education, and infrastructure services and decentralize planning of livelihoods, community participation and early warning systems	Ministry of State for Development of Northern Kenya and other Arid Lands
Technology Action Plan (TAP)	2013	Recognizes key climate adaptation technologies in water resources sector in Kenya : - roof rainwater harvesting - surface runoff water harvesting	National Environment Management Authority

		- reuse of treated wastewater for irrigation - construction of sand dams - drilling of boreholes - solar powered desalination	
National Water Master Plan (NWMP)	2014	Anticipated development of 17,860 small dams and water pans adding an additional 893 million m^3 to Kenya's water storage capacity by national and county government departments and agencies, non-governmental organizations, communities, private sector and with support from development partners	Ministry of Environment, Water and Natural Resources
Green Economy Strategy and Implementation Plan (GESIP)	2015	Supports development efforts towards addressing key challenges such as poverty, unemployment, climate change, infrastructure gap and food security by setting objectives and strategic actions that include : - objective : to increase per-capita water by 200m3 availability by 2015 - strategic actions : reduce non-revenue water by half ; promote rain water harvesting level	GoK
Water Act	2016	Provides for the decentralization of powers from the national to the regional and local level and the separation of water resources management from water and sanitation service delivery, as well as the institutional separation of policy, regulatory, asset holding and operational functions	GoK
National Adaptation Plan 2015-2030 (NAP)	2016	Recognizes the governance and institutional arrangements for implementation of adaptation actions in water and sanitation sector : - enhance capacity of institutions and bodies - promote awareness on water conservation - enlace water sector planning, service delivery , and collaboration of trans boundary water resource management - promote technologies that enlace water resource efficiently	Ministry of Environment and Natural Resources

In spite of both broad and specific policy work, some gaps still remain in linking water policy with the country's PPP drive, and with new devolution action. For example, Kenya's National Policy on Water Resources Management and development (1999) does not capture the development of PPPs/renewable energy of recent years.

1.3 KEY POINTS OF THE TECHNICAL FEASIBILITY STUDY

The technical feasibility study conducted by UDP in the previous stage of this technical assistance aimed to identify the contextual features that increase or limit the viability of selected technologies (water pans, solar and wind pumping). To this end, 105 technology points were sampled across Embu, Baringo, Isiolo and Homabay counties. The counties were selected to represent Kenya's agro-climatic zones ranging from humid to very arid.

The findings of the technical feasibility study are integrated and considered throughout this entire report and informed the development of the business model. However, Table 6 summarises some of the technical feasibility findings.

Table 6. Key Findings of the Technical Feasibility Study

KEY ISSUES	FINDINGS
Technological Challenges	**Sustainability/performance affected by:** ✓ Small capacity of water pans (10,000-30,000 m^3) and solar systems (less than 5 kw) ✓ High cases of siltation of water pans ✓ Poor design and management water pans ✓ Limited experience on wind technology, especially small wind turbines ✓ Low capital investment limiting technology type and capacity ✓ Rural water supplies are mainly managed by community committees that lack knowhow on management, operation and maintenance ✓ Limited skills and attention for operating and managing rural and peri-urban supply systems
PPP potential for selected Technologies	✓ Micro grids are being enabled through use of solar for water distribution, creating an enabling environment for operator businesses ✓ Various private players already operating solar systems ✓ Some innovative PPP models have been trialed ✓ Clustering management and O&M service provision enhances economies of scale, thus increasing private operators' profit margins
Potential challenges to PPPs	✓ Donor dependency especially in rural areas limits space for private operators ✓ Dispersed nature of rural water supply raises system management costs
Study recommendations	✓ Rethink community management arrangements for water systems ✓ Cluster technology to ease management and O&M services ✓ Increase project planning support ✓ Enhance post implementation support and capacity development at all levels

1.4 KEY POINTS OF THE PPP CONSULTATION FORUM

Key observations from the stakeholder consultation on the status of water services PPPs and the challenges to be overcome as well as some solutions are outlined in Table 7 below. Questionnaire responses are reflected throughout the report. Summary of response table is presented in Annex 3.

Table 7. Key Observations of the Stakeholder Consultation on Water Service PPPs

OBSERVATION ON PPPS FOR ASAL/PERI-URBAN AREAS	IMPLICATIONS FOR PPP MODEL
Perceptions • Water is a human right • Affordability/willingness to pay for water services is low	• Need for pro-poor/social considerations, education of communities on the value of PPPs
Profitability • Poor cost recovery of water system development deter private companies	• Need for clustering of profitable and social projects, with public subsidies for poorest communities
Demand for paid-for water varies by season	• Need to ensure financing model that cross-subsidizes across seasons
Resource • Little attention is given to groundwater recharge to meet regular supply	• Water resources management (WRM) issues and climate change impacts must be addressed in water services PPP development and water continuous supply
Context • Different geographic areas present varied water and livelihood challenges • Urbanization and other factors create a dynamic and changing context	• PPPs must be context specific based on analyses of local geographic, economic and social characteristics • Future demographic trends must also be considered
Mandate • County governments are now mandated with water services but currently lack capacity, budget and experience to carry out this role • Roles and responsibilities of water service PPP stakeholders have not yet been well outlined	• County governments' roles should clearly be defined to work with the private sector to address water challenges in their jurisdictions • Investment through county governments strengthens guarantees for private sector actors (though some request guarantees at WSTF/national level). • Need to facilitate private sector entry without neglecting critical roles of counties and communities in project sustainability
Service Providers • Community ownership and management is predominant but with limited capacity and success	• Need to overcome challenges of revenue collection, as well as build capacity of local entrepreneurs and micro-enterprises

2. PPPS IN KENYA

Seeing water as both a social and an economic good, the Government of Kenya (GoK) has an ambition to make water available to all at market price so that user fees may recover operation costs with some remaining revenue for repairs and facility expansion. Alignment of water sector regulation with Kenya's recent political devolution and PPP regulation development and drive has opened opportunities for water sector PPPs to serve water scarce communities in peri-urban areas and arid and semi-arid lands (ASALs) at county and catchment levels. However, lack of experience, trust, financing, and funding at county level are challenges to the initiation, effectiveness and sustainability of WS PPPs.

This section aims to clarify the status, legislation and regulation of PPPs in Kenya and link these to the water services context to provide a clear foundation on which a water services PPP business model can be built.

Section 2.1 outlines the current national legal and institutional frameworks, processes and key considerations for PPPs. Section 2.2 outlines the same for water services.

Though the current PPP legislation is outlined to inform future WSTF strategy and decision-making, it is important to note that other forms of partnership with the private sector are available. These may be preferable in the commercially challenging rural water services given that PPPs "proper" are complex, require a reasonably mature and competitive market and are often best suited to longer contracts of 20+ years.

2.1 PUBLIC-PRIVATE PARTNERSHIPS

2.1.1 NATIONAL LEGAL AND INSTITUTIONAL FRAMEWORK

At national level, Kenya is relatively well prepared for PPPs, ranking among the top three PPP-ready countries in Africa (Economist Intelligence Unit, 2015). PPPs for infrastructure and expansion of existing assets form are integral to Kenya's private sector development strategy to fill a US$2.1bn p.a. infrastructure funding gap to meet its Vision 2030 goals. It has a clear PPP legislative framework and the World Bank Infrastructure Finance and Public-Private Partnership Program (IFPPP), with a US$40m credit, has supported creation of a pipeline of bankable PPP projects from 2012-2017, with 72 projects in various sectors, including at county-level, selected by 2016 (The World Bank Group, 2016a). The World Bank identifies areas for further improvement as clarification on steps to take in sole bidder scenarios[6] and how to encourage competition for unsolicited PPP proposals[7].

Since 2005, Kenya has established a comprehensive legal and regulatory framework for PPPs, which were previously regulated by individual contracts. Legislation includes: the Public Procurement Disposal Act 2005 to combat issues such as lengthy contracting negotiation, insufficient evaluation of affordability or value for money (VFM), unclear tendering process, and generation of numerous litigations. A formal PPP policy was adopted in 2011. The cornerstone of current legislation is the PPP Act 2013, with subsequent PPP Regulations 2014 to elucidate this Act, and the PPP Amendment Bill 2016 which makes provisions to recognize county governments as distinct contracting authorities (CAs) for PPP projects. The PPP Bill 2016 is pending approval by the Kenyan Government. PPPs are also regulated by the Public Finance Management Act 2012. The County Governments Act 2012 legislates that county governments may undertake PPPs under certain

[6] Where a procuring entity receives only one bid in response to a PPP tender
[7] Referred to the PPP Act as a *privately initiated investment proposal*.

conditions. Furthermore, the PPP Project Facilitation Fund Regulations 2015 outline the eligibility of applications to the government support mechanism for PPPs. These acts have established a unified framework for the conduct of PPPs in Kenya under common legal norms and standards, and principles for project preparation assessment and so forth.

The PPP Act 2013 applies to all PPP procurement processes for private sector participation in the financing, construction, development, operation, or maintenance of government infrastructure or development projects through concession or other contractual arrangements. The Act defines PPPs in the Kenyan context, prescribes the PPP project cycle and stipulates requirements for each stage. It establishes the PPP Committee, PPP Unit as permanent organizations under the National Treasury, as well as PPP Nodes.

The PPP Committee consists of 13 members appointed by National Treasury Cabinet Secretary: eight from different ministries and four from the private sector (*PPP Act 2013* s 4) (Republic of Kenya, 2013c). It aims to assure PPP projects' consistency with national priorities and approves PPP project proposals and lists, formulates guidelines, standards, procedures, examines feasibility studies, oversees the entire PPP project implementation process, ensuring approval of any governmental support including from the Project Facilitation Fund (*PPP Act 2013* s 7).

The PPP Unit is the secretariat and technical arm of the Committee, providing technical, financial and legal expertise. It assists the Committee by making recommendations on project approval or governmental support, and by formulating guidelines and standards. The Unit also gathers and analyses data on PPP projects for example on identifying Government contingent liabilities and any financial issues or inducing private sector investment to improve PPP implementation. The PPP Unit provides capacity building and assists contracting authorities throughout the PPP process, and also ensures PPP process conformance to relevant laws and regulations (*PPP Act 2013* s 14).

PPP Nodes are established by each contracting authority to identify, screen and prioritize projects, oversee the management of the projects. They include the contracting authority accounting officer as well as the necessary financial, technical, procurement, legal personnel as necessary. The Node operates on behalf of the contracting authority to identify, screen, and prioritise projects and is responsible for ensuring all stages of a PPP project (preparation, feasibility, procurement, implementation) reach successful conclusion.

2.1.2 KEY CONSIDERATIONS AND PROCESSES UNDER THE PPP ACT

The PPP Act 2013 provides a framework for private sector participation in infrastructure development, operation and maintenance by way of concessions or other contractual agreements. Most fundamental is understanding the correct definition of PPPs.

2.1.3 DEFINITION OF PPPS

There is no internationally recognized definition of a PPP. The term can cover a wide range of arrangements whereby government responsibilities are outsourced to commercial partners, and risk is shared between the public and private sectors for service provision in areas mandated as public functions. The four main characteristics of PPP are that 1) efficiency gains should be achieved through appropriate sharing of risk and responsibility; 2) lifecycle and private investment are crucial elements of PPPs' incentive structures; 3) long term contractual relationship and 4) an innovation in the way the service is provided. In Kenya, PPPs are defined in the PPP Policy and in the PPP Act as:

"… an arrangement between a public entity and a private party under which-

(a) The private party undertakes to perform a public function or provide a service on behalf of the public entity;

(b) The private party receives a benefit for performing the function, either by way of

i. Compensation from a public fund

ii. Charges or fees collected by a private party from users or customers of a service provided to them; or

iii. Combination of such compensation and such charges for fees

(c) The private party is generally liable for risks arising from the performance depending on the terms of the agreement."

Thus, public function, private benefit (from government compensation and/or user fees) and a transfer of risk are all essential for a project to classify as a PPP. The public organization forming the PPP must be the organization mandated to perform that function. Further explanation is available in Annex 4.

Mere interaction with the private sector does not necessarily imply a PPP. For example, purchasing goods or short term services (e.g. turnkey construction contracts) from private supplies are conventional public procurement, while privatization of public assets is a sales transaction and not PPPs. The difference between public delivery, public procurement and PPPs is charted in Table 8 below.

Table 8. PPP versus Public Delivery and Public Procurement (Adapted from Kenya PPP Manual)

PUBLIC DELIVERY →	PUBLIC PROCUREMENT →	PPP
• Governments deliver public infrastructure and services directly themselves	• Government issues a tender, companies respond with proposals, (multiple) contracts are awarded, work is conducted for the government, which remains direct manager and risk-holder of infrastructure/service • Public financing	• Government tenders for a private partner to form a project agreement to design, construct, and finance, maintain and operate a public infrastructure or service over many years • Private partner is responsible for integrating, delivering and managing the project over its full lifetime • Usually involve some private finance

The PPP Act 2013 further outlines 13 types of arrangements that qualify as PPPs in Kenya these are: i) Management contract; ii) Output performance based contract, iii) Lease, iv) Concession, v) Build-Own-Operate-Transfer; vi) Build-Own Operate; vii) Build-Operate-and-Transfer; viii) Build-Lease-and-Transfer; ix) Build-Transfer-and-Operate, x) Develop-Operate-and-Transfer; xi) Rehabilitate-Operate-and-Transfer xii) Rehabilitate-Own-and-Operate; xiii) Land Swap (*PPP Act 2013* 2nd sch). These arrangements are presented as laid out in the act in Annex 5. Other arrangements could be used on approval of the Cabinet Secretary (*PPP Act 2013* s 19).

Key considerations in forming a PPP under the 2013 PPP Act are outlined in Box 1 below.

Box 1. Key considerations in forming a PPP under the 2013 Act

i. In order to engage with the PPP Unit a business model must fall within one of the 13 types of PPP defined in the Act

ii. The PPP Act requires the contracting authority to undertake a feasibility study of the PPP project in consultation with the PPP Unit. The PPP Unit Project Facilitation Fund can support such studies.

iii. Tests required for evaluating PPP viability are:
- Value for money
- Affordability to all parties (private operator, contracting authority and end users)
- Optimal risks transfer

iv. The Act provides different funding mechanisms to support different projects on PPP matters (Article 27) including:
a. Letter of support to cover political risk (but not sovereign guarantee);
b. Minimum revenue guarantee;
c. Facilitation fund (e.g. for feasibility studies);
d. Village Development Funds (provide subsidies to make services affordable);

v. The Act includes provision for a county adviser mandated to provide:
i. Capacity building on PPP matters at county level
ii. Assistance in packaging PPPs

Source: PPP Act 2013, Comments of PPP Unit staff in the Stakeholder Consultation

This report does not propose that the procedures of the PPP Act be followed in the current model, partly because the model does not fall squarely in one of the 13 arrangements presented in the act. Furthermore, the Kenya PPP Manual recognizes that though PPPs can result in better provision of public infrastructure and services for citizens**,** setting up and implementing PPP projects can be complex, costly and time consuming to the government. It adds that government agencies should only embark on PPPs where additional value created will offset the costs involved. It also notes that, development of PPPs should be an incremental process of fostering the market for private involvement. Given its complexity, the PPP Unit does not require smaller sized projects (less than 5 million Kshs at county level) to go through the PPP process, and further recognizes that other forms of public engagement with the private sector are options. These can include Private Sector Participation (PSP) and Public Private Community Partnerships (PPCPs) as piloted by Kenya Markets Trust. The model presented below is referred to as a Private Sector Participation (PSP) rather than a PPP model.

Details on the PPP Unit Process

Although the current model does not follow the PPP Unit process, this is nevertheless outlined below for the further reference of the WSTF for future project development.

The PPP Act provides two methods of PPP procurement. In principle, all projects should be procured through competitive bidding (*PPP Act 2013* s 29(2)), these can be initiated at national level or at county level by the county government or county corporation which intends to have its functions performed by a private party (PPP Amendment Bill 2016 s 2(b)) (Republic of Kenya, 2016). However, a contracting authority may consider a non-competitive process initiated by a private party (*PPP Act 2013* s 61) in cases where there is risk of project disruption, substantial intellectual property cost, or if the intellectual property or other exclusive rights are owned by a single right holder.

Project proposal requirements include technical requirements identified by the contracting authority or the PPP Unit/nodes through a sector diagnostic study and assessment, examined by a Feasibility study, and laid

out as tender conditions (*PPP Act 2013* s 20, 33, 43). The private party should comply with project agreement legal requirements such as qualification to bid (PPP Act 2013 s 38), basic terms and conditions (*PPP Act 2013* s 43(d), 3rd sch), and project specifications such as service level, performance indicators, safety, security and environment preservation, etc. (*PPP Act 2013* s 43(2)(c)).

Contracting authorities must consider social, economic and environmental impacts as well as affordability, value for money and public sector comparator (*PPP Act 2013* s 33(d)). Finally, fiscal and financial risk and contingent liabilities are examined by the Debt Management Office (DMO) during the F/S report approval stage and later by the negotiating committee.

The PPP Act provides a baseline agreement framework to reduce negotiation duration and provide foreseeability for involved parties (*PPP Act 2013* s 3). The minimum contractual obligations include the nature and scope of works and services, rights and obligations of each party, description of property and utilities, duration, dispute resolution mechanism, etc.

A private party may submit petitions or complaints during the project tendering and agreement process (*PPP Act 2013* s 67) and project agreements should specify a dispute resolution mechanism such as arbitration or other non-judicial means (*PPP Act 2013* s 62, 63(3), 3rd sch para 18). This compares well to other countries where a specific dispute resolution mechanism is not regulated.

2.2 WATER SERVICES

2.2.1 LEGAL AND INSTITUTIONAL FRAMEWORK

Under the Water Act 2002, water resource management was separated from water and sanitation service delivery – with institutional separation of policy, regulatory, asset holding and operational functions. This allows county governments and other public agencies to engage private companies in both water services infrastructure and delivery. The new Water Act 2016 harmonizes the legal framework of the Water Act 2002 with the 2010 Constitution's devolution of water services to counties, in recognition of their shared responsibility with national government, with the aim of "devolution of functions to the lowest appropriate level" with a user pays principle.

2.2.2 KENYA'S WATER SERVICES PSP AND PPP EXPERIENCE

Kenya's water and sanitation sector has seen almost no formal PPP activities and little PSP activities compared to other sectors such as electricity or communications. Similar to other Sub-Saharan African countries, Kenya has adopted short term affermage/lease WSS contracts with companies/community associations for O&M but with private actors making minimal upfront capital investment. Rather public/donor contributions fund construction of facilities by private companies or communities, which remain in public ownership with 1-3 year leases granted to communities and/or companies for O&M. However, there were extremely limited cases of private companies carrying out O&M for water pans in target counties, most likely because limited and low quality water supply had not presented opportunities to collect revenues from users. Though water services and sanitation infrastructure construction tenders have been routinely placed

by water service boards, including for water pans with prices ranging fairly widely, between KShs 1.97 million and KShs 9.37m,[8] as noted above, this form of public tendering does not classify as PPP.

Large scale PSP in water services has been allowed since 2003 following the Water Act 2002. This has been seen through the commercialization of water departments through service provision agreements (SPAs) with WASREB to form eight privately managed Water Services Boards (WSBs),[9] under which water service providers (WSP) operate. WSPs can be further divided into public limited companies (PLCs), community water projects, and individuals. Obosi's (2017) study of a sample of Lake Victoria South Water Service Board (LVSWSB) WSPs found PLCs were carrying out water services management contracts and communities were carrying out private ventures. His survey found that presence of these WSPs have generally improved water services, though they have not followed PPP policy or even a uniform structure. The PLCs were operating as public water utility companies, engaged in bureaucratic processes, closed to participatory processes, and receiving government bailout measures where necessary for salaries and debt payment. This led to slow improvement or even deterioration of water services in their areas of jurisdiction. Community water projects were operating as unregulated private ventures and lacked formalized, state supported water service delivery mechanisms. They thus lacked resources and coordination and risked duplication and inefficiencies in their efforts. Nonetheless, these partnerships were seen as more flexible – mobilizing funds from churches and NGOs.

Embu Water and Sanitation Company (EWASCO), which obtained commercial finance as a result of PPIAF support, has been hailed as a stand-out success case.[10] However, private investment and participation in the water sector has been severely limited by the inability to charge cost reflective tariffs due to the political sensitivities of doing so.

Implications for PSP Business Model

In light of Kenya's regulated PPP structure established under the national PPP Act 2013 and the pending PPP Amendment Bill (2016) to make this relevant to counties, there is now need for clarification on the legal framework, regulations and restrictions as well as of the R&R of all parties to enable practical application to water sector PPPs. The complexity can be reduced by selecting from available PPP options under the Act and applying them to specific water services models. However, the business model presented in Section 3 elaborates on a PSP model of a joint venture which is not covered in the PPP Act and therefore may not be automatically recognized by the PPP Unit.

This selection does not mean to preclude WSTF's future development of PPPs as defined by the Act – but is rather done in recognition of the need for flexibility in partnerships with private sector on water services given the many barriers to entry for private companies. For example, Kenya Markets Trust reports that companies will opt for alternative financing arrangements over PPPs when the preparation time becomes too long.

Though the WSTF engagement as outlined in this model is not a PPP "Proper", much can be learned from Kenya's PPP process. Two options for using this model for PPPs under the act in future could be 1) adjusting from a joint venture to remove county investment in the special purpose company (SPC), which could open

[8] Example of North Victoria WSB water pan development tenders in 2015-2016 for earthworks and construction of VIP washrooms, a cattle trough, fencing and planting grass on dam embankments.

[9] Coast, Nairobi, Central, Rift Valley, Northern, Lake Victoria South, Lake Victoria North and Tanathi

[10] Embu Water and Sanitation Company (EWASCO) obtaining commercial finance as a result of PPIAF support. PPIAF (2015), PPIAF support helps Kenyan water utility access commercial financing.

up the PPP process to select a private company for the project, or 2) making a special request to the PPP Committee to recognize the joint venture arrangement.

As there have been few water-sector relevant PPP contracts executed under the relatively new PPP Act, it is difficult to give Kenyan case study examples of how water PPPs will work in practice, however the fictitious future scenario of a water utility PPP as presented in the PPP Manual version 1 is presented in Annex 6.

2.3 CROSS-CUTTING ISSUES

The cross-cutting considerations in the preparation of the Water Services PSP Business Model are: i) Climate Change; ii) Human Rights; iii) Gender and Youth; and iv) Water Resource management.

2.3.1 CLIMATE CHANGE

Increased climate instability in Kenya is thought to have caused or exacerbated a series of droughts and floods, causing serious socio-economic and environmental impacts (Njoka, 2016). Climate change is expected to increase the amount of territory exposed to water scarcity, and impacts are predicted to affect Kenya more intensely than other countries because of high vulnerability and lower adaptive capacity (World Health Organization, 2009; REGLAP Secretariat, 2012). Already, the ASAL county of Isiolo notes: "Drying up of wells, rivers and boreholes is a major risk arising from climate change … some places which used to have water no longer have water. This is evidenced by drying up of rivers such as river Bisanadi." (Isiolo County, 2013)

To enhance climate adaptive capacity, it is recommended to strengthen the water management institutions' role at the at the national, county and community levels, including for hydro-meteorological monitoring, a baseline climate information system, environmental and climate change education and incentives to promote the protection and sustainable use of water sources (The World Bank Group, 2013).

Climate change impacts should be deliberately factored in the development of PPP in order to assist in improving the resilience of water and sanitation infrastructure, ensuring use of traditional and innovative technological solutions. This model therefore targets rainwater harvesting and green energy technologies (water pans, solar and wind pumping) to help distribute water over greater distances to larger population areas while avoiding increased fossil fuel emissions (Global Public Policy Network on Water Management, 2009).

Along with increasing water availability through these water points for irrigation and livestock purposes. Climate smart agriculture should also be encouraged to reduce waste water and to diversify of use of non-potable water. Integrated Water Resource Management (IWRM) is addressed in section 2.3.4 below.

2.3.2 HUMAN RIGHTS

International/national frameworks on water rights must also be reflected given WSTF's core business to ensure affordable water and sanitation services access in underserved areas. The UN General Assembly (2010) explicitly recognized the human right to water and sanitation and acknowledged that clean drinking water and sanitation are essential to the realization of all human rights (Resolution 64/292). The constitution of Kenya under the bill of rights also recognizes that access to safe and sufficient water in adequate quantities as a basic entitlement.

Civil society organizations have the capacity to reach out to, represent and defend vulnerable and socially excluded groups, therefore, civil society views, checks and balances should be well reflected in the model to address water as a public good and human right. The model should also reflect rights relating to nomadic culture and address concerns related to water conflicts.

2.3.3 GENDER AND YOUTH

> "The drilling of boreholes, construction of water storage tanks and construction of water pans shorten the time taken to fetch water. As a result, children and women who spend most of their time fetching water will have adequate time to engage in other economic activities." – *Isiolo County Integrated development plan 2013-17*

The technical feasibility study found that community representatives often failed to consider demand of certain segments of the population, such as youth or the poor. In such cases, community members often expressed dissatisfaction with service and low sense of ownership, and little willingness to pay for maintenance of the service[11]. Thus, social inclusion of and creation of job opportunities for all groups including youth is essential for the acceptance and success of the green technology PSP model. A gender-sensitive and youth-inclusive approach should be adopted in relation to water services. This should focus on ensuring target proportions of women and men, and also young people are consulted in each water point project design and are also given access to trainings and jobs or other income generating activities created. As the responsible water collectors, women should be incorporated as members of water management committees, as is the ambition of Isiolo County Government (Isiolo County, 2013). The same should apply to youth. Suggested targets based on Working for Water Programme of Republic of South Africa include jobs for minimum 60% of women and 20% youths (ages of 15-24) are created from the project (Republic of South Africa, n.d.). Where it is particularly difficult to engage women or youth by simply integrating them into project activities it may be necessary to actively empower these groups through targeted sessions.

While currently marginalized, these groups have high potential to drive project success as engaged key beneficiaries. Youths form a dynamic group and can offer innovative solutions to water challenges and take over the management and operation and maintenance of water projects with correct training.

[11] 6 of 10 public water kiosks in Uriri, Migori that were developed around 2014 are non-functional because on unreliability and cost of water instead users obtain water from privately operated kiosks sourcing water from shallow wells.

2.3.4 INTEGRATED WATER RESOURCE MANAGEMENT

Availability and reliability of water sources are vital to the success of water services projects. Therefore, water service provision through establishment of PPPs must also address water resource management issues. Integrated water resources managem ent (IWRM) is a process that 'promotes the coordinated development and management of water, land and related resources to maximize the result and economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems' (GWP-TAC, 2000). IWRM recognizes the interdependencies of multiple components of a regional water resource system (i.e. high irrigation demands and polluted drainage flow from agriculture mean less freshwater for drinking use). WRM requires that all different uses of water resources are considered together. Water allocation and management decisions should consider the effects of each use on the other (UNESCO, 2012). This perennial problem is taking on new dimensions as population growth and urbanization puts new and different pressures on water systems. Another trend is the growing tendency exploit groundwater to meet regular and drought time supply shortfall with little attention to recharge. As consistent water supply is necessary for water services, IWRM is included in the business model. Respective responsible institutions must work closely to effectively manage and balance water sources and supply.

Sustainable IWRM can be strengthened by water harvesting and storage using water pans for human and livestock consumption, to diversify water usage away from sole reliance on boreholes. There is also need for groundwater recharging. Therefore, use of water sources should also be considered such as through management of livestock numbers in arid counties, and regulating irrigation use in humid/semi-humid areas. Furthermore, promoting "enterprise oriented catchment management" offers opportunities for sustainable income generation opportunities. Water footprint analyses should be applied in dryland areas as a means of improving demand management, by identifying water needs, wastage and over-exploitation of groundwater. These analyses are also vital to aiding the monitoring of the physical limits of systems, thus improving drought risk assessment.

At the project level, the size of storage tanks in solar water pumping systems should reflect the water demand for the community to support domestic and other productive uses. Water pans and small storage structures applicable to wider ecological regions should be considered to ensure moderate flows for upstream and downstream users, promote production upstream and contribute to groundwater recharge.

An example of a fund for integrated water resource management is given in Box 2 on the recently established Nairobi Water Fund.

Box 2. Nairobi Water Fund

The Nairobi Water Fund is a USD$15 million PPP established in 2015 to protect the Tana River Basin through long-term investments in upstream conservation. Investments are made in agroforestry, drip irrigation, terracing and erosion control. The Fund is the first of its kind in Africa but builds on success of 32 funds in other regions. Major public and private water users contribute to finance upstream land and water conservation projects to benefit of people across the basin. Farmers' funded water conservation interventions include planting trees, setting up water pans and drip irrigation pipes, and constructing bench terraces to reduce soil run-off into the river.

The fund incudes both 1) a revolving fund spent on conservation projects and replenished through fees and donor/beneficiary contributions, and 2) an endowment invested to generate interest, which is then re-invested in upstream conservation projects.

Partners include: The Nature Conservancy; Nairobi City Water and Sewerage Company (NCWSC); Kenya Electricity Generating Company; International Center for Tropical Agriculture (CIAT); Tana and Athi Rivers Development Authority; Pentair; East Africa Breweries; Coca-Cola; Frigoken Horticulture and Kenya's Water Resources Management Agency.

Source: CIAT 2015. FAQs: The Nairobi Water Fund

http://www.ciatnews.cgiar.org/wp-content/uploads/2015/03/FAQ-water-fund-final.pdf

2.4 CASE STUDIES

PPPs are an emerging practice in the developing country water services – and lessons can be learned from these nascent arrangements. Cases from Kenya by the companies Grundfos, RFL Ltd., Kenya Markets Trust and RIWIK are presented below, as well as cases from Senegal and Rwanda.

2.4.1 GRUNDFOS

Danish Technology Company, Grundfos was founded in 1945 with more than 18,000 staff in more than 56 countries. The company's philanthropic arm – Lifelink – launched its first demonstration projects in Kenya in 2009, to provide water for nearly 100,000 people working with Danida, Nordic Climate Facility (NCF), UNICEF, WFP, the Red Cross and World Vision. Donors fund the Grundfos equipment installation, governments provide legal frameworks and set tariffs while Grundfos mobilizes and trains communities to manage and maintain the water points. Since 2012, Grundfos is serving 42 boreholes rehabilitated with pumps, solar PV, 10m^3 storage tanks and a prepay system on a 10-year service contract[12].

The Lifelink Water Management System provides real-time data on system performance and consumer behavior while the Lifelink Revenue Collection Platform provides secure revenue collection through pre-paid 'SmartCards' and mobile payments. Payments can be made 1) via water vendors or 2) vial mobile payment downloading credit, both using Grundfos Water Management system and AQTap software. In the Water Vendor method, the vendor sells and transfers credits to users on behalf of the WSP via the water management system or onsite at AQtap. Users can then use the pre-paid credits on their WaterCards. In the mobile payment method – the consumer requests mobile purchase of credit and receives automated data-validation of the transaction, transferring the credit to the WSP. The consumer uses the downloaded AQtap credit on their WaterCard to buy water.

Grundfos has observed that key factors for the success of systems include need for CAPEX from external funding, and part donor funding for O&M recovery subsidy and/or guarantees for revenue streams. The company also emphasizes need to increase commercial incentives for private investors and small water providers, as well as education for consumers on the costs of water.

Similarly, Davis and Shirtliff's iDayliff mobile monitoring solution allows customers to monitor and control water pumping equipment from their phones, speeding the repair process in case of breakdown. The company has also obtained finance for solar technologies through loans guaranteed by donors for lighting in the health sector for example.

On visiting Grundfos' site Wakalia, Embu, during the PPP feasibility study the technology was out of order due to a dispute between Grundfos and the community. Though generally pleased with the service, the caretaker complained that the service had not provided the income he expected. Grundfos on the other hand said that the community had not processed enough water payments to start generating an income. This yields the lesson that community and Private Sector must be in clear agreement of their R&R and benefit sharing before a project is embarked upon.

[12] Total installation cost was KShs 3.5 m, and Grundfos levies KShs 216,000 annually in O&M fees by obtaining revenue of KShs 20,000 per month per KShs 100/m3. However, it should be noted that community members were dissatisfied that Grundfos retains revenues for capital recovery, with a lack of local Grundfos representatives and lack of control over system development during the contract life. Further, though end-users could load credit onto water cards through local vendors or mobile platforms, slow replacement of lost cards led to lack of access to water services.

2.4.2 FUNDIFIX MODEL

RFL Ltd.'s Fundfix[13] is a legally registered Maintenance Service Provider (MSP) for rural handpumps and other infrastructure with mobile-enabled monitoring in Kyuso, Kenya. Its model for sustainable delivery of rural water services at scale emphasizes: a) institutional sustainability through coordination and investment b) operational sustainability through payments via the mpesa payment system, c) financial sustainability over time through a "3T model" of Tariffs (users), taxes (government) and transfers (donors), with the balance of each varying by project.

Four key building blocks are:

- Remote automated monitoring through transmitters fitted to pump handles that send data on movement (usage and functionality) to a central server via SMS, allowing remote monitoring via internet, validating repairs and information sharing in remote areas. This keeps the service accountable to government, donors and other stakeholders
- Professional services are linked to performance-based contracts - if a "normal" repair takes longer than three days, communities receive a free month of service, building in penalties for poor performance
- Regular prepaid user contributions are made through M-PESA, and up to ten registered community and committee members are sent notifications via SMS. This provides a mechanism for financial flows from rural water users to the MSP, one element of sustainable finance (tariffs)
- Free maintenance trial transitioned to pre-paid maintenance system from January 2015 – of 66 handpumps in the free trial 30% signed up, joined by 2 new communities (total 22 maintained handpumps)

Income in the first six months of operation is captured below.

Table 9. First Six Month Operational Cost

INCOME/COST	CONTENTS
Income: $1,057	• 72% in monthly payments, and 28% in registration fees. • 89% revenue collection in first 6 months (most in arrears were in the low use payment band)
Costs: $2,156.	• Local costs of running the maintenance service (transport, labor, spare parts and information) • Not including overheads such as office rental, utilities, support staff and consumables

This is a Maintenance Service Provider (MSP) rather than Water Service Provider (WSP) contract covering normal wear and tear, up to an annual maximum value and excluding theft, vandalism and dry wells. The Notice Period of several months means that if a monthly payment is missed, communities will still be covered by the service for some time, allowing for the seasonal nature of cash flows in rural areas, (e.g. advance payments can be made when money is available). MSPs can also expand beyond handpumps to other water point infrastructure (e.g. surface piped systems, submersible pumps or kiosks). Communities may join/leave

[13] Source: Study by Oxford University Smith School of Enterprise and the Environment

a MSP contract based on agreed performance criteria. Success factors include clear contracting, pooling risk at scale and having locally available mechanic with a motorbike at the sub-county office.

2.4.3 KENYA MARKETS TRUST'S PPCP MODEL

Kenya Market Assistance Programme (MAP)[14] sustainable water and sanitation services Public Private Community Partnership (PPCP) models have been developed in collaboration with Dutch development cooperation organization SNV on behalf of WSTF. The pilots blend subsidy with market finance to avoid private firms' borrowing at high market interest rates (currently capped at 14% but rising to 21% in the past), which in turn drive up tariffs. Leases have been formed with 11 private operators (POs) such as small businesses (e.g. petrol stations and shops) to manage water points. Community groups monitor performance, ensuring efficiency, quality, outreach and consumer rights. WASREB approves the water tariffs and enforcement framework, considering affordability and cost recovery. The model aims to: 1) transform rural water user associations (WUAs) into water companies, separating governance/executive roles, 2) engage private firms in lease/management contracts, and 3) create urban PPP models to incentivize lower non-revenue water (NRW) and grow customer base for quality water (Kenya Markets Trust, 2016). The model is outlined in Figure 3.

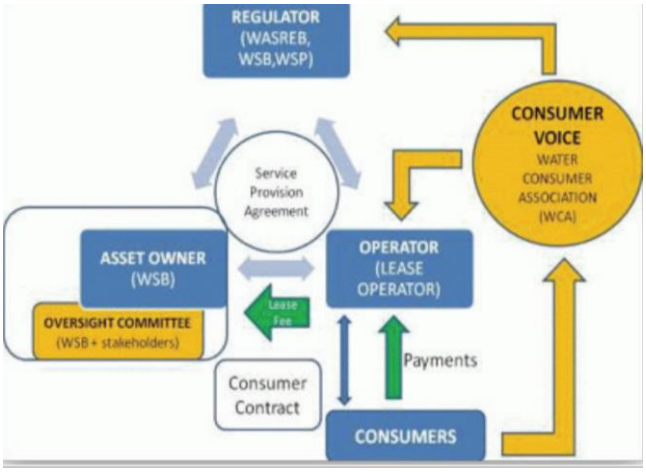


Figure 3. Pilot Public Private Community Partnership (PPCP) model (Kenya Markets Trust, 2016)

Other models in operation identified by MAP include 1) delegated management of O&M and revenue collection for bulk water supply; 2) lease operator O&M and rehabilitation investment for community supply; 3) co-management between the community-based owner and the day-to-day private operator; 4) maintenance service contract where the community operator contacts a private enterprise and 5) professional Management contract where the community owner contracts a professional manager and team for services. Key lessons learned include that *exte*nsive consultation is necessary with all stakeholders to ensure buy in of communities, councils and private actors is key for successful projects. The PPP Unit was not engaged in the development of these small scale projects.

[14] Dutch development organization SNV's work with Kenya Markets Trust to UKAID, MOFA Netherlands and Gatsby.

2.4.4 RIWIK FRANCHISE MODEL

Rural Investment Wind Power in Kenya (RIWIK) was a Limited Company established in February 2011 by Dutch technologists to work with local technically skilled entrepreneurs to produce, install and sell small wind turbines in rural Kenya. The case offers several lessons for private sector engagement in small-scale renewable energy technology deployment, especially in the Kenyan small wind turbine (SWT) context.

RIWIK aimed to select local entrepreneurs, train and certify them and sell them 'small wind turbine kits' so they can start a production unit of small wind turbines with mainly local products, working in a relatively small area where they knew the customers. The 24 DC, 800W rated turbine cost approximately 200.000 KShs in total. For end-users who could not afford the investment, a loan will be organized with a micro-finance or SACCO partner. RIWIK also supported entrepreneurs with technical trainings and a manual to produce and maintain the small wind turbines. The business model is shown in Figure 4 below.

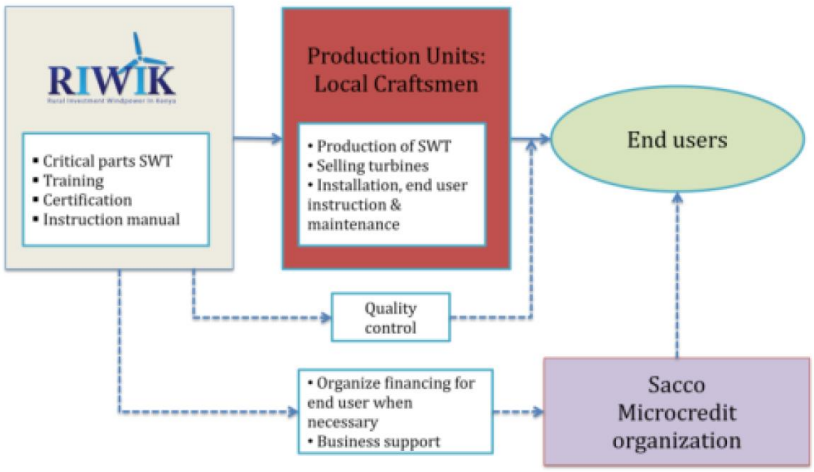


Figure 4. RIWIK Business Model (Fugers, 2011)

This model is inspired by micro-franchise models though it required higher technical skills and higher cost products than normally associated with BOP markets. It aimed to overcome key supply chain barriers through increased local awareness, reduced product price, guaranteed maintenance and repair, use of local agents, as well as by increasing customer base of existing local craftsmen ready to produce and sell SWTs. It also emphasized the need for market niche protection by temporarily reducing product price through end user financing mechanisms until technology and business models are mature. The guidelines for the RIWIK model were:

1) Create a learning environment by means of demonstration projects
2) Introduce feedback mechanisms for quality control and learning
3) Introduce central marketing to strengthen brand identity and increase awareness
4) Expand target market via community groups
5) Establish strategic partnerships
6) Establishing a successful franchisee network
7) Appropriate franchisee financing mechanisms

The target market was the many small business owners, relatively prosperous families and organizations that were currently not grid connected. After initial focus on wind turbines, the product range was extended to solar energy as a supplier of total off-grid energy solutions, providing energy systems, as well as advising on and supplying energy efficient appliances. The systems included solar panels, wind turbines, batteries, inverters, solar water heaters, efficient fridges and water pumps, and efficient lights. After a year and establishment of a diverse product range the company employed 6 people selling to the household market segment. The company was sold in 2015.

Small Wind Turbines alone have not found a sustainable market in Kenya under the presented model, however micro-franchising was found to work well as a means of leveraging both international and local expertise for the profitable dissemination of renewable energy technologies.

2.4.5 OTHER COUNTRIES

Diverse approaches and business models for rural water O&M emerging in different countries include water point maintenance subscription schemes in Tanzania (also running in Kenya's Turkana area), as well as professionalization of hand pump mechanics in Uganda and Sierra Leone. Case Studies from Senegal and from Rwanda are presented briefly in the boxes below. Case studies on clustering of water services projects are also presented in the Water Services PSP Model elaboration in Box 3 and Box 4.

Box 3. Clusters in Senegal's rural water system

Senegal has integrated all water service O&M into large clusters of rural water systems through leasing public-private partnerships (PPPs) since 2012. Private operators are hired to manage O&M and repair/renew small infrastructure equipment. Several operators manage 1,500 schemes split into different rural areas/perimeters for 7.5 million people.
Beginning with three pilots, the role of private operators has now been expanded from simply providing O&M services to also taking on commercial risks of running water systems. The new system strengthened the public sector's role through creation of a national level asset-holding agency to replace ASUFORs as the contracting authority. By 2013, the country's rural water facility inventory included 1,505 motorized boreholes, 2,093 hand pumps, and approximately 8,000 modern wells that provided drinking water access for 6.3 million of a rural population of 7.5 million.
The Asset holding agency and contracting authority follow a Government-approved financial model to forecast business development and perimeter expansion to maintain optimal financial balance in the short to medium term, with the aim of achieving self-sufficiency in the long term.

Source: Diallo, 2015, Levers of change in Senegal's rural water sector

Box 4. Financial sustainability of rural water supply in Rwanda

Since 2004, Rwanda has operated PPPs for water services payments to cover O&M costs. The system replaced community management funded by voluntary (non cost-reflective) lump sum payments from 1984-2004 preceded by unpaid local government managed services in the 1950s-80s.
Under the new decentralized system, district authorities form service contracts to delegate O&M to small entrepreneurial private water operators (PWO), who indicate their financial and technical capacities to manage the system through a competitive bidding process. Districts are encouraged to cluster water systems for economies of scale and cross-subsidization. Of five case studies presented, all districts had financial capacity for major repairs, and two had income superior or equal to expenses. However, further tariff development was deemed necessary to ensure sustainability of rural repairs.
A dedicated department within the Water and Sanitation Corporation (WASAC) ensures financial and technical sustainability of rural water supply services, with regional operational officers supporting billing and recovery, production, distribution and maintenance. Meanwhile, the independent regulator, RURA, engages with utilities and sector institutions on technical standards, service levels, tariffs, benchmarking, standard contracts and terms of reference.

Source: Sano, 2015, Financing of the water, sanitation and hygiene sector in Rwanda

3. WATER SERVICE PSP MODEL

3.1 OVERVIEW OF WATER SERVICE PSP MODEL

This section presents a model for catalyzing future financing and participation from new and existing local and international partners in water services for Kenya's ASAL and peri-urban areas. The main element of this model is referred to as a **WSTF Water Services PSP Programme (WSPP).** The WSPP aims to repackage and leverage public finance for private participation in water services project initiation and sustainability. In addition, a **Water Services Endowment Fund (WSEF)** is suggested as a fund to act as a kind of "Water Bank" for community and SME investments in project extension and improvement.

The WSPP and the WSEF can be facilitated by the establishment of a dedicated and well-staffed **PSP Center** within WSTF, which should form all necessary guidelines, frameworks and partnerships for their implementation. An **advisory and oversight board** should also be established.

Key considerations in creating the model included WSTF aims of:

- **Transitioning from concessional financing** to sustainable internal cost recovery of projects where possible, based on voiced intention of current donors to end grants
- **Engaging with new partners** from both the public and private sector to leverage both finance expertise and efficiencies – at both international and national levels
- **Implementing innovative financing structures** (e.g. clustering, cross subsidization, results based aid, hedging instruments, an endowment fund to mobilize community savings and increasing access to commercial finance)
- **Transitioning from community to professional management structures** for increased project sustainability
- **Innovative revenue generation through** use of sustainable and green technologies (borehole, solar, wind), multiple use of water
- **Promoting sustainable infrastructure** including rehabilitation, re-use and optimization of existing infrastructure

The Water Service PSP Business Model, designed to support these efforts, is elaborated from WSTF programme level to water service project implementation level, outlining how the WSTF programme can interact with partners on the international, national, regional, county and local levels to inform a desired *"change in the way we do business at WSTF"*. Though several stages are necessary for this business model to negotiate the complex water services landscape – it also strives to retain simplicity to reduce training, setup costs and enable easy understanding and buy-in for stakeholders. As such, it aims to incentivize win-win participation for stakeholders at every level.

3.1.1 KEY ELEMENTS OF THE WATER SERVICES PSP MODEL

The key elements of the water services PSP model at WSTF level are the Water Services PSP Programme (WSPP) and the suggested additional option of a Water Services Endowment Fund (WSEF) to serve users in typically underserved ASAL and peri-urban areas.It is recommended that the **WSTF establish a small but adequately staffed PSP Center** within the WSTF offices for programme implementation. An advisory and oversight board function is also needed.

Water Services PSP Programme (WSPP)

The WSTF Water Services PSP Programme (WSPP) is designed to repackage international and national public finance as concessional loans for water service project initiation. Grant finance should also be made available for activities including capacity building, technical assistance, feasibility studies and water resource management and conservation activities. WSPP grants and loans will therefore be extended to qualifying joint venture special purpose companies (JV SPCs) formed between county governments and private companies to create clustered water services franchises for ASAL and peri-urban areas. Furthermore, grants may also be extended for EPC during a small-scale pilot to prove the functionality of the model to all actors, and attract private sector involvement in the next stage.

As well as offering financing, the programme will establish a framework clarifying the roles and responsibilities for various actors involved in clustering and implementing water services franchises using the target technologies of wind and solar pumping systems and water pans. It will also provide guidelines and facilitate capacity building on each stage of the process, supported and implemented by relevant kenyan government agencies, donors or NGOs where most appropriate.

The envisioned stages for establishing and implementing the WSPP are:

1) **Programme establishment is led by WSTF** and consists of i) sourcing and repackaging of funds from donors and GoK ii) wide stakeholder consultation and creation of guidelines, iii) initial capacity building of county governments and private sector actors for their participation in the new programme, including the provision of guidelines and information.

2) **Project identification is led by county authorities** which i) identify projects in consultation with local communities, entrepreneurs and SMEs; ii) facilitate feasibility and other studies to ensure projects' viability; iii) bundle selected projects into an investable package; iii) submit the bundle of projects to the WSTF PSP committee for initial feedback and approval.

3) **Coordination is supported by WSTF** for county authorities to engage private sector participation, credit, investment, technology provision and expertise. This involves WSTF's support for the creation of joint ventures between counties and private companies for implementation of bundled projects by providing feasibility funding for feasibility studies, engineering, procurement and construction (EPC) as well as information and guidelines for water projects.

4) **Initial CAPEX finance** is provided by WSTF in the form of concessional loans, on the requirement of minimum initial equity investment from joint venture participants (the county and the private company(ies)). Credit from commercial banks or equity from other investors may be encouraged by WSTF in partnership if funding for a credit guarantee product can be secured (e.g. from a multilateral development bank).

5) **Implementation** is then carried out by the county-company joint ventures. The JV SPC is responsible for water point EPC and the subsiquent leasing of these businesses to local level water service providers (WSPs) as franchises. These WSPs should registered as legal entities and may take on several or just one water point. In isolated areas, community providers may remain the only feasible option. Even these participants can be professionalized through a standardized and regulated franchise approach.

6) **Monitoring and Evaluation (M&E) should happen at every level from community to government.** A PSP advisory and oversight board should be ultimately responsible for M&E, oversight and accountability, reporting to relevant ministries and institutions including WSTF donors. M&E Tools and Systems should be developed paired and M&E capacity building of sector institutions (e.g. MWI, WASREB, WSBs, and WSPs) should be raised to improve data capture, storage, analysis and reporting.

WSTF PSP Center should be established within the WSTF with dedicated and experienced staff to carry out various tasks and act as the coordination hub between all actors of the PSP Programme. It will be responsible for programme design, issuing guidelines, facilitating capacity building as well as technical assistance on contract formation, feasibility studies, and regulatory checks by qualified actors. The PSP Center effectively acts a PPP Node would under the PPP Act – supporting the selection of potential projects; supporting project procurement; monitoring implementation; carrying out regular reporting on activities; ensuring proper record keeping, etc.

PSP Advisory and Oversight Board offers monitoring checks and balances for the process. WSTF may consider using the existing WSTF Board of Trustees for oversight of the programme, or may create a dedicated board with members including representatives of central government agencies, counties, private sector and water user and water resource management associations to capture interests at every level of the programme.

Suggested WSTF Community Water Services Endowment Fund (WSEF)

The Community Water Services Endowment Fund (WSEF) is covered here briefly as an additional option to fund project renewal or extension by WSPs. An endowment fund is an investment fund that makes withdrawals from invested capital for specific needs, and only releases principal capital under specific conditions and for specific purposes. This is suggested as a mechanism to facilitate financing of water service project extensions through WSP savings, and where possible donor funds. This was based on the observation that WSPs are already saving revenues from water services in commercial banking facilities and may benefit from dedicated financial products oriented towards the water sector. The WSTF Endowment Fund could act as a "water bank" through which communities store funds to be invested in profitable water related activities, earn interest, with the principal only to be released when project renewal is necessary, or when a pre-determined target sum is reached to enable project extention. Use of funds should be restricted to this purpose, offering users security, convenience and transparent use of funds.

Water Resources Management Activities

WRM activities must be considered and integrated at every stage of PSP Model planning and implementation. These are mainly directed, regulated and carried out by entities under the Water Resources Management Authority (WRMA) but also have direct impacts on water services. Some examples of necessary WRM activities are outlined in the table below.

Table 10. Examples of Water Resource Management Activities

LEVEL	ACTIVITY
Planning and Regulation	• Must take into consideration all water uses in catchment areas to balance priorities and demands for long-term sustainability, making trade-offs between water use
Monitoring of water resources quantity	• Data on surface, groundwater, rainfall water resources is essential for the planning of water service projects to ensure sufficient supply
Evaluation of water resource quality	• Should be carried out regularly at source and water services water points
Permit issuance and control	• Permit issuance and control is low in Kenya and must be improved both for monitoring and regulatory purposes
Awareness raising and training	• Community sensitization meetings, workshops
Watershed conservation activities	• Rehabilitation and maintenance of riparian zones • Establishment of grass strips/terraces to reduce runoff and erosion on steep slopes • Reduced use of fertilizers and pesticides (e.g. through integrated crop/pest management), use of new/improved crop varieties • Agroforestry/tree planting – planting native trees and high-yielding fruit trees and cover crops for improved farm productivity, reduced runoff/erosion and increased biodiversity
Training for livelihoods enhancement	• Training provided to farmers by Ministry of Agriculture and Horticultural Crops Development Authority on issues such as: (a) soil and water conservation techniques to boost farm productivity; (b) use of improved fodder storage techniques; and (c) use of new/higher-value crops such as improved potato varieties, tree tomatoes and apples
Flood and drought disaster management	• **Drought:** Water use restriction based on river water levels, drought conciliation for reservoirs, climate change adaptation • **Flooding:** forecasting, warning systems, mitigation plans and technologies
Monitoring and evaluation	• Follow-up is needed to check that evaluations and good practices are being followed

Water harvesting is one way of increasing water resources through water pans, a target technology of this model. However the increased use of boreholes through project clusters presents challenges to water resource and interlinked ecosystems. There is need to raise awareness of the links between groundwater and surface water and address potential depletion of these in the planned in the model. Joint ventures must thus consider and take responsible action to protect critical groundwater recharge areas. Approaches already in action in Kenya include command and control (laws and regulations), community management (through WRUA) and market instruments (e.g. metering and volumetric pricing of water use). The planners and implementers of this model are obliged to follow such measures as is established by the laws and frameworks already in place. They also have an interest in supply augmentation (e.g. rainwater harvesting through water

pans and increased storage). In addition, WRUA and counties can carry out parallel demand management activities (e.g. water saving technologies, less water intensive crops) which may not necessarily be linked directly to the water service projects themselves. A table outlining approaches to water management is included in Annex 7. Most actively, the WSTF should support and provide stipulations/guidance on payments for ecosystem services.

Important planning tools for identifying target WRM activities include livelihood assessment, cost-benefit analysis, mapping of hotspot farms, and Environmental Impact Assessment. It is also necessary to have baseline hydrological data. The next step is to establish a strong business case and a simple market mechanism through which stakeholders can buy and sell ecosystem services.

Kenya's key WRM documentation includes the National Water Resources Management Strategy (NWRMS), The Catchment Management Strategy (CMS) at the Regional level, and the WRUA Sub-Catchment Management Plan (SCMP). WRUA, working at the sub-catchment area (sub-regional level), are an effective way of reflecting and managing different water users' interests in an equitable way for sustainable use and poverty alleviation. Addressing legal and ownership issues, they can also coordinate between land and water users and regulation. The 3-5 year work plan of the SCMP can form the basis for WRM activity funding proposals. Both the WSTF and the WRMA have supported WRUA to carry out activities by providing knowledge, technical and financial assistance according to the following organogram.

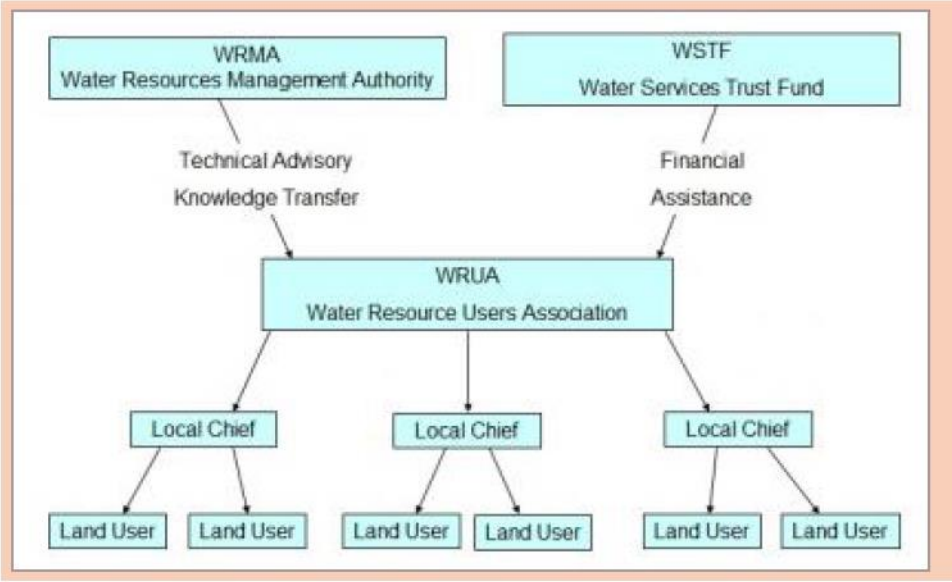


Figure 5. Organogram of WRMA/WSTF support to WRUA (WOCAT, 2017)

Payment for Ecosystem Services By Cluster

Water resource management activities can be included in clustered projects through payment for ecosystem services (PES). This involves paying land users to preserve the ecosystem by undertaking or refraining from certain activities.

Watershed services have economic value to water users but there are often conflicting demands over scarce resources, and upstream users may deplete or pollute sources before they reach downstream users. Thus, companies or associations of water users may pay small farmers for carrying out tree or grass planting to

preserve riverbanks to protect water resources vital to their businesses. However, not all of this model's target ASAL and peri-urban may also host large-scale users able and willing to pay for such services. Thus, the WSTF must consider context specific WRM activities and how to fund them. It is also necessary to identify cluster area users with a high enough interest and capacity to pay for ecosystem services. If not, then strong public support will be needed for PES through the WSTF or other mechanisms. Currently, WSTF acts on behalf of low income water users to pay farmers to plant trees and protect riverbanks to protect water resources.

The ecosystem services approach requires quantifying and deciding trade-offs on water use (i.e. who benefits and how much from use of water) in close coordination with WRUA, who should also be involved in participatory monitoring of both groundwater and groundwater-dependent systems. Furthermore, as there is a risk that water and land users will be resistant to proposed WRM/PES activities awareness raising, training and incentive building are all necessary to steer them toward sustainable behaviors.

1) Benefits of PES in the Model

Tree planting and anti-forestation activities can add a Reducing Emissions from Deforestation and Degradation (REDD) component to the project – making it more suitable for application to climate change funding. Livelihood enhancements included using grasses to stop soil erosion which also provides food for livestock as well as fruit tree and potato plating to bring additional income.

This can offer a flexible, customized approach of targeted interventions. It can also help promote social equality by targeting activities toward women and youth. It is important to avoid stifling entrepreneurial innovation and voluntary structures with too much government support. Focus should be on activity initiation with grants, technical or in-kind assistance (free seedlings plus training).

2) Case Study: Payment for Environmental Services pilot project in Lake Naivasha basin, Kenya

In a 2011 pilot by UNEP saw Lake Naivasha Growers Group and other downstream water users represented by Lake Naivasha Water Resource Users Association (LANAWRUA), compensated small-scale landowners/farmers for foregoing some potential income by managing their land to provide good quality water to downstream users.

Thus, downstream water users gave upstream ecosystem sellers/providers financial incentives of USD 10,000 for 470 farmers, followed by a second payment of USD 10,000 for 504 farmers. The farmers were represented by the Upper Turasha-Kinja and Wanjohi Water Resource Users Associations (WRUAs).

Table 11. Sellers and Buyers of Ecosystem Services in Lake Naivasha Basin, Kenya (Chiramba, Mogoi, Martinez, & Jones, 2011)

UPSTREAM SELLERS	DOWNSTREAM BUYERS
• 565 Small farmers represented by • Upper Turasha-Kinja and Wanjohi Water Resource Users Associations (WRUAs) • Focus on "hot-spot" farms on steep slopes with no soil/water conservation measures	• Nakuru Rural Water and Sewerage Company, • Naivasha Water and Sewerage Company, • Commercial horticultural growers • Kengen geothermal electricity generation plant, • Kenya Wildlife Service, • The tourism industry in Naivasha, • Lake Naivasha Riparian Association

3) Challenges

very high demand for project participation from farmers stretching project resources, unpredictable weather patterns disrupting seasons and conservation work such as tree planting, complex land ownership, low buy-in from beneficiaries (who do not wish to pay for PES).

3.1.2 STRUCTURE OF THE WATER SERVICES PSP MODEL

The stages of the Water Services PSP model can be understood according the geographic level of action as outlined in Figure 6 below.

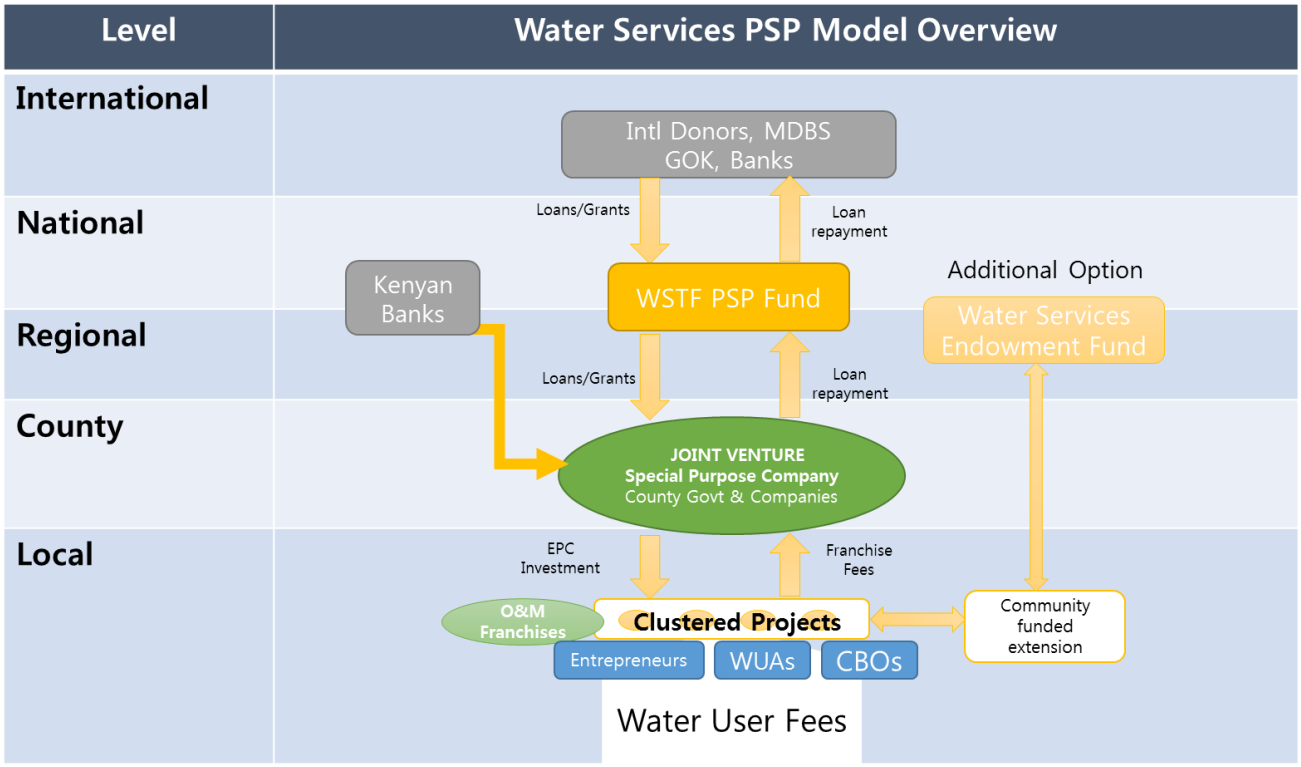


Figure 6. Model of the WSTF Water Services PSP Programme run by the WSTF PSP Center

Four key elements of this model are 1) clustering of projects, 2) formation of special purpose companies as joint ventures between counties and private companies and 3) micro-franchising. These concepts are outlined below.

1. Clustering of Projects

It is often difficult to convince the private sector that small projects for bottom of pyramid markets can achieve viable business opportunities. Thus, clustering of several water projects for financing and implementation as one larger package can help improve viability of private participation in water services. Increased overall budget size avoids the common issue of water service projects falling in an investment category in the "missing middle" between large scale commercial lending and small scale microfinance. Furthermore, if clusters are technically, economically, and politically viable they can provide the following to help facilitate private sector entry:

i) Economies of scale and reduced transaction costs for increased operational, procurement, and investment efficiency;

ii) Manageable monitoring and administration of fewer, larger groups of schemes;

iii) Enhanced professional capacity as larger scale operators can afford specialist skills to sustain services (e.g., pump repair technicians and qualified finance, management, and customer services staff);

iv) Coordinated and more sustainable use of water resources, and

v) Cost sharing (cross-subsidization) between higher and lower-cost service areas to improve affordability.

From the public sector's perspective, clustering allows pooled donor/public funds to be allocated to a dedicated body rather than to individual projects – thus reducing transaction costs and also costs of monitoring and administration. It also offers the opportunity for public bodies to group high magnitude projects (e.g. supply to institutions such as schools, hospitals or businesses) with smaller and potentially less viable projects to engage the private sector in social projects and avoid cherry-picking, and honor the public mandate to ensure water provision to all areas.

While bundling of projects aims to make an overall attractive unit, analysis of bankability must still occur at project level, as well as in consideration of the bundle as a whole. Commercial viability studies of clusters must consider the issues of each project and company. Profitability of each water point will vary depending on i) site topography and location (e.g. groundwater availability, presence of alternative water sources), ii) level of income and geographical dispersion of the population, iii) infrastructure conditions, and iv) CAPEX and O&M costs. As not all water service points can be commercially viable – particularly in ASAL areas – clustering must ensure balance between overall commercial attractiveness, ensuring services for the poor as well as avoiding resistance from vested interests (e.g. local political leaders and current water point managers).

A franchise model can help to facilitate clustered utilities operated by different people by standardizing business model, technologies and operating procedures, though bundled projects must not fail to address the fact that different projects have different contexts and needs.

Clustering must be done in consideration of providing adequate coverage but not create too crowded a market in any area as geographic density of alternative water supplies are a key determinant of user demand and payment.

Clustering Case Studies

Across Africa, clusters have been deliberately formed by public authorities bundling projects to form single contracts for tender, or by operators taking on many projects presented by public authorities through several separate procurement processes, as the cases from various countries in Table 12 shows.

Some clustering of water services projects has also been attempted in Kenya. The Water Sector Reform Programme (WSRP)[15] supported large-scale commercialization of services and promoted the syndication of utilities into viable clusters to ensure sustainability and realize economies of scale. For example, in 2011,

[15] Jointly operated by SIDA, GTZ and Government of Kenya

clustering of Kisumu County water supplies was pursued under an expanded Kisumu Water and Sewerage Company Limited.

Table 12. Case Studies of Clustering (Diallo, 2015)

COUNTRY	NATURE	DETAIL
Niger	Procurement process	• Geographical clustering occurred at operator level (rather than structured by government) • Separate small water supply schemes bid at once, minimizing public transaction costs. • One operator won several successive tenders to operate 24 schemes in the same area.
Burkina Faso, Mauritania and Rwanda	Single contract	• Government aggregated several schemes into one tendered contract • Rwanda averages three relatively large schemes per operator
Senegal	Three large regional affermage PPP contracts managed by one entity	• Office of Rural Borehole Management (OFOR) manages 100-150 water systems per cluster • First managed rural boreholes/network maintenance, later water production • E.g. Gorom-Lampsar (GL) Notto-Diosmone-Palmarin (NDP) cluster groups 14 rural WSS systems supplying 23,000m^3 a day to 350,000 people under a single affermage contract.
Benin	Sites of differing profitability clustered for commercial viability	• Cross-subsidy between less and more profitable sites • Resources shared to optimize operating costs • Sites bundled to scale transaction packages to attract experienced and financially robust operators

Clustering under the Proposed Model

The current model recommends that county governments select projects for clustering within the parameters set by WSTF guidance. The aim of such guidance is not to be restrictive, but rather to facilitate the effective clustering of projects by clarifying processes and relevant regulations and ensuring that clustered projects offer value for money, are commercially viable and meet all necessary environmental and social standards. This should be done by capturing consultations from all relevant authorities (e.g. WASREB, WRMA, private sector companies and associations, financiers, etc.). Counties should then hold an open tender for private companies to join them to form the SPC, including some equity investment from both the company and the county government.

County governments are the actors forming clusters at the county level, and should also be free to engage in clustering and subsequent formation of SPCs across county lines, on a water catchment basis, for example. This will enable companies to form SPCs across more than one county providing further economies of scale. Furthermore, companies may bid to form SPCs in more than one county.

Table 13. R&R and Key Details of Clustering

SUBJECTS	ROLES & RESPONSIBILITIES
Contracting authority	County-Company SPC
Asset holder	SPC - francisees lease the right to carry out specific projects
Contracting	One SPC takes on a cluster and subcontracts project(s) as O&M franchises
Technology	Differs by project within a small standardized range
Tariff	Differs by project within a set range clarified by WASREB
User fee revenue	Administered via mobile paymenet system (e.g., Mpesa, Safaricom) for automatically managed in cash flow waterfall
CAPEX	Government/Donor finance administered by WSTF and awarded by cluster
EPC	One company involved in SPC
O&M	Many individual franchisees
Large scale repairs	One company for cluster

2. Formation of joint venture SPC between County and Company

Though new to the water sector, Joint Ventures (JVs) are already becoming popular in Kenya's real estate sector as a way for landowners to attract investment and share risks by pooling resources, opening access to new finance sources and technical expertise (Olingo, 2016). A JV is an entity formed between two or more parties to undertake economic activity. It can also act as a conduit for providing equity funding for property projects.

Joint ventures between county governments and private sector actors can attract private sector participation in the Kenyan water services landscape in which private sector actors are not currently highly active and competetive. The model is a way of inviting private companies into the space in the case where they may not be vital or willing enough to form fully fledged SPC structures independently for activities in a new market segment that has been littel tested by commercial enterprise. At the same time, county governments require the technological experience of companies to carry out projects on the scale required. Thus, bring national and/or international technology companies in partnership with county governments can offer a win-win situation as it can promote implementation that adopts a commercial eye paired with strong public support. Furthermore, JV SPC enables off-balance sheet (project) financing, which can attract better credit terms and improve the return on capital invested through high leverage of invested equity. There may also be scope for tax advantages.

In order to form the JV, county government and the company become strategic investors, holding an equity stake in the newly formed SPC. The private partner(s) are therefore engaged in construction, commissioning of and training staff for O&M franchises, as well as contractually obligated to carry out large scale repairs. A formal Joint Venture Agreement (JVA) brings into existence the JV entity and govern the relationship between the co-venturers and the JV entity itself. The JVA. It sets out the formal structure the JV will take. This may be:

i) A company/group of companies, jointly owned by the co-venturers;

ii) A partnership by the co-venturers (arrangement with profit sharing between partners) created for specific purpose – no separate legal entity created and each of the partners with full legal responsibility for the project; or

iii) A contractual relationship governed by the JVA under which co-venturers would retain their assets and agree as to their separate rights and obligations. That is, a contractual consortium arrangement in which the parties contract to work together on a specific project. There is here, however, no concept of a sharing of a pool of profits as there is with a partnership. Each party is remunerated for specific services provided to the consortium and no separate legal entity is created (Njoroge Regeru & Company, 2017).

The new SPC should be registered as a private limited company under the Companies Act under the Laws of Kenya (Olingo, 2016). There is no requirement that nationals own a percentage of the company, opening the way for foreign investment. Apart from WSTF lending, multilateral and local banks and donors may also lend directly to the joint venture SPC.

Under a well-constructed shareholder agreement, the advantages of a joint venture include i) the public party's ability to exercise some control over key decisions at board and shareholder level; ii) transparency in that accounts and finances are presented to board; iii) improved public perception that the county is still actively involved in water services, and iv) continuity of partners even if the private partner changes[16].

The challenges and potential disadvantages of joint ventures include: i) in-built conflict of interest between the public party as the contracting authority and as member of the project company (in case of dispute under project agreement); ii) need to ensure the private party has autonomy to run day to day business; iii) board membership does not necessarily give control or visibility on operations; iv) tax and accounting issues (if project is to be off balance sheet for government, need to ensure that arrangements do not bring it back on balance sheet) (The World Bank Group, 2016b).

Relevant Kenyan Legislation for Forming a Joint Venture

A public entity could enter into a joint venture as long as there is no restriction under the law of Kenya. A joint venture is a commercial arrangement between two or more economically independent natural or legal persons who combine property and expertise in order to carry out a single business enterprise while maintaining a joint proprietary interest, a joint right to control and a sharing of profits an losses. It could be established in a form of a separate legal entity (e.g., 'company'), partnership, or contractual consortium.

The county government could take any form in establishing a joint venture since the County Government Act grants the county government power to enter into a contract (Article 6(2)) and establish a company, firm or other body for the delivery of a particular service or carrying on a particular function for which the county government is responsible to ensure its efficiency (Article 6(5)(a)). Same act also provides that a county government may enter into partnerships with any public or private organization in accordance with the provisions of any law relating to public or private partnerships for any work, service or function for which it is responsible within its area of jurisdiction (Article 6.(3)).

[16] The benefit of share of profits should not be greatly considered by counties as they will not receive preferential equity.

In specific area such as urban development, Kenya adopted a legislation, the Urban Areas and Cities Act of 2011, which provides that city can enter into contracts, partnerships or joint ventures as it may consider necessary for the discharge of its functions under the Act. This clause was applied by Nairobi County which established a joint venture with Kiewa Group for the redevelopment of the Old Ngara Estate.

Depending on the form of the joint venture-whether it is a separate legal entity or partnership-applicable law will differ: Companies Act, Partnership Act, or Limited Liability Partnership Act. However, the PPPIRC (Public-private-partnership in infrastructure resource center) recommends to take a corporate form for a joint venture between the public and private sectors, since in a partnership, each of the partners will take full legal responsibility for the project and in a contractual consortium arrangement, there is no concept of a profit sharing (The World Bank Group, 2016b).

3. Micro-Franchising Model

Following the formation of the joint venture SPC to manage the cluster, individual projects should be tendered for O&M micro-franchise contracts. A franchise is a license that a party (franchisee) acquires to gain access to a business's (franchiser's) knowledge, processes and technology to enable it to sell a product or provide a service under the business's name. In exchange for gaining the franchise, the franchisee pays the franchisor a start-up and licensing fees and/or a percentage of ongoing sales. Franchise contracts are temporary, akin to leasing of a business. They do not result in business ownership (Investopedia, 2016). Successful franchising streamlines and replicates proven business systems and procedures at different locations.

The rural water services sector is well suited to micro-financing given it requires high capex activities (technology installation) which can be undertaken by the joint venture as franchisor, and low OPEX requirements at the customer interface (O&M) that can be carried out by a micro-entrepreneur/SME/community as franchisee. With some adjustments, water services provision also present a simple, highly standardizable market with sufficiently strong and periodic demand (Hurlimann, 2011).

Applied to Kenyan water services micro-franchising yields benefits of scale while remaining rooted in local bottom-of-pyramid market context. Enabling micro enterprises take over the customer-facing and O&M side of the value chain, the franchisor can extend market reach into underserved areas – ensuring a strong social development component as well as profitability.

The micro-franchise model is similar to the PPP Act arrangements of O&M (*PPP Act 2013* 2nd sch 1, 2), lease or concession contracts (*PPP Act 2013* 2nd sch 3, 4). However, in these arrangements facility ownership remains with the public sector and in this case the facilities are owned by the public-private joint venture SPC.

Case Studies

Micro franchising has been operational in Kenya for more than 5 years in both the non- and for-profit spheres. Apart from various franchises in the commercial sector, micro-franchising has been pioneered in Kenya's rural vet services. Franchise models are new to social enterprises, but from 2011 UK NGO Farm-Africa has launched 150 branded Sidai Africa veterinary stores across Kenya, overseen by vets or livestock technicians to provide sustainable services to a dispersed rural market (Accenture Development Partnerships, 2012). The case study of RIWIK in the small wind turbine sector presented in section 2.4.4 also informs the development of the current micro-franchising model.

Micro-Franchising under the Current Model

In this model, the franchisor is the SPC/joint venture, which owns overall business rights and equipment. It controls macro-aspects of the company such as optimizing product and business model, marketing, training of franchisees as well as major repairs. It is vital that large scale maintenance is a contractual obligation of the franchisor company to ensure sustainable operations.

As franchisor, the SPC engages with local-level franchisees of individual projects included in the cluster. Formalized local water service provision as franchisees can boost sustainability of water points over current community management models, especially if livelihoods aspects are well considered. There may be cases where community committees are best positioned to offer services in remote ASAL areas, but individual entrepreneurs should be encouraged where possible as the technical feasibility study reported that group income projects tend to present a disincentive to performance compared to those of individuals. Entrepreneurs must have capacity and willingness to manage franchises, be passionate about business and have a minimum level of education.

Franchisees are responsible for day-to-day operations, benefitting from access to an established business model, the SPC's expertise and training, supply chains of standardized technology, and startup capital that were previously out of their reach due to financial or geographic issues. The franchisor benefits from gaining broader market coverage by delegating O&M to local entrepreneurs in rural and remote area.

Inclusion of youth and women is important as these groups have often been excluded from decision-making processes and thus from the benefits projects can bring. WSTF's role in this stage includes setting guidelines for the nature of franchises (e.g. targets for participation of women/youth, minimum training and repair support to offered by the SPC, etc.) as well as monitoring and evaluation of clustered projects, and facilitation of franchisees' savings via the Endowment Fund.

Table 14. Microfinancing R&R

ROLE	DUTIES
Micro-franchisor (SPC)	Optimal business model, provide standardized equipment, financing, marketing, training of franchisees, supply chain and processes
Micro-franchisees (e.g. CBOs, entrepreneurs, micro-enterprises)	Daily O&M, basic financial management facilitated by payment platform, saving and initiating project extension

Standardized Equipment

The most fitting technology must be selected for each franchise within a small range of standardized options, e.g. for solar and wind pumping systems and water pans as identified in the technical feasibility study. Mobile payment and financial management systems should also be provided by the franchisor for a simple and efficient standardized interface that the franchisee can use for transactions. Other necessary technologies to be provided on a case by case basis may include water purification systems, water storage tanks and piping for extended services.

As competition is encouraged between technology companies in the tendering process to ensure value for money and avoid creation of monopolies, it is impossible and indeed undesirable for WSTF to specify distinct

technology models but where possible certain should be standardized within a given range (e.g. this project's technical feasibility study indicates a recommended range of water pan size of 30,000-70,000m^3). Stipulated ranges should be set for wind and solar pumping capacities.

Financing

The franchisor provides equipment, in return for a small initial fee from the franchise followed by regular payments of a percentage of collected user fees to continue providing the service. Franchisees receive a cut of the user fees remaining after the franchise payment is made.

While 10% CAPEX investment (in cash or in kind) has been a standard initial community contribution to small scale water projects (e.g. in Upper Tanna MWI project), the technical feasibility study found this to be too high to permit sufficient quality and scale. Therefore a lower percentage of a larger project budget may solicit the same amount of community contribution but for a project of a larger size.

The micro-franchise must achieve more competitive/affordable pricing, better or more accessible services compared to other options to be successful. It must also achieve a profit margin large enough to motivate the micro-entrepreneur (Hurlimann, 2011). In addition to covering OPEX and loan the micro-entrepreneur must receive semi-regular payments to sustain his or her family. Paying a service fee as a franchise holder was seen as more practical than a lease-purchase or other arrangement for eventual transfer of the technology to the communities given concerns that equipment may not be operational at the end of the contract, delivering little value to the community. Franchise contracts should therefore be set for the expected duration technology life, with the option to transfer the franchise ownership (right/duty to carry out O&M) to another party should the original franchisee become unwilling or unable to continue operations.

The community should be empowered to save from any excess revenues from the service provision and use these for any service extension (e.g. extra storage capacity, piping, water purification).

Furthermore, franchisees can be facilitated to operate aggregate businesses – more than one business at a time to boost revenue from water franchise[17].

Training

Many franchisees have never run businesses before and need initial education on technology O&M and financial management (user fee collection, fees to the franchisor, commission they will earn). Startup training should be followed by ongoing periodic education for skills refreshment, best-practice sharing and opportunities for franchisees' feedback to franchisors.

[17] E.g. the caretaker of the water point visited in Wakalia, Embu County, wished to have a small concrete structure adjacent to the water point to enable him to run a store.

3.1.3 R&R OF THE WATER SERVICES PPP MODEL

Clear roles and responsibilities (R&R) are essential for the success of private sector partnerships, especially in the complex Kenyan water services landscape. In optimal partnerships with the private sector, the public actor should retains mainly sovereign tasks and the private bears those for implementation.

The R&R of the WSTF Private Sector Partnership Programme (PSPP) model are briefly outlined in the following Table 15. The R&R take into careful consideration the mandates of different actors in the Kenyan Water Sector in the Water Act 2016, as outlined in Annex 8. Their specific roles and responsibilities are elaborated at different levels from international to local in subsequent sections.

It is important to note that stakeholder involvement and consultation is necessary at every level to ensure the understanding and buy in of all participants. Furthermore, crosscutting considerations of environmental, water resource and social inclusion (especially of youth and women) have been elaborated in section three above.

Table 15. R&R of PPP Model by Geographic Level

LEVEL	AGENCIES R&R/ITEM	WSTF ENGAGEMENT	DESIRED OUTCOME
International *Frameworks, financing, technical assistance*	**All actors'** adherence to international treaties on water, aspirations to SDGs	Continued reflection of international standards in programme requirements	Aderence to water as a human right
	Development partners (e.g. bilateral and multilateral aid agencies, multilateral development banks) provide funds to WSTF and offer capacity building at necessary levels, including national level and "train the trainers" activities	Financial intermediary function to package various sources of finance delivered to programme recipients (special purpose companies) and repayment of disbursed loans to donors/MDB Recipient of and facilitator of capacity building and technical assistance for model at various levels. Reflection of donor interests in model	Simple concessional loan structure for water services PPPs Increased capacities at all levels
National *Financing, policy and regulation*	**Government agencies** (MWI, NWCPC, MOA, WRMA, PPP Unit) inputs on policy, strategy, regulation & planning	Consultation and cooperation with government ministries and agencies and integration of national policies, strategies, plans and regulations set at national level	Nationally coordinated programme adhering to all relevant standards (e.g. size range, technology type)
	WSTF PSP Center management of the PSP Programme	Establisment, staffing and management of the center for the smooth running of the PSP Programme	Smooth implementation of programme
	Water Services PSP Advisory and Oversight Board: for oversight and coordination of Water Services PPP SPCs	Set up by WSTF including representatives from WSTF, county, SPC, water users, CSOs, donors, and government agencies	Monitoring, Evaluation and accountability
Regional *Project formation, water resource management*	Water Resource Management Associations (WRUAs), Water Services Boards	Project initiation by WSBs Cooperation with water catchment protection agencies at the inter-county level Water Resource Management (WRM) activities by cluster, guided by WRUA plans	Integrated water resource management for sustained water supply and environmental protection

County *Financing, clustering, forming SPCs*	**County, Private Sector and WSTF invested SPCs** **Counties** identify and cluster projects with both social and commercial considerations, then form joint venture special purpose companies for increased finance and technical capabilities **Company**: shares risks, bring capital, commercial/technical expertise, and works on project identification and implementation with other actors, trains franchisees to run water services franchise equipment. Also carries out major repairs on the equipment	Issues call for proposals, application approval, concessional loans, Facilitates capacity building at county and local levels Oversight of the clustering of projects tomake these attractive to the private sector in joint ventures with county governments now mandated to provide water services Facilitation of the formation of joint ventures between county authorities and private sector (either by county, or where desired by county authorities – cross-county) through guidelines, matching workshops, and other meetings	County and Private sector invested SPCs manage clustered projects formed with both social and commercial considerations
Local *Forming franchises for O&M*	Entrepreneurs, Water User Associations, and Community Based Organizations as (potential) franchise holders: **1)** Answer call for proposals for water projects issued by the county 2) Manage water service points and carry out basic O&M under franchise contracts with the SPC 3) Pay startup fees and a percentage of income for right to manage water user fees, while carrying out routine O&M 4) Maintain the right to invest in enhancing or extending the project	Gives guidance/minimum standardsfor Franchise model for joint ventures/private sector to design how local-level projects can use chnologies (boreholes, solar, wind water pans) and management structures that ensures both community involvement and professional management	Local entreprenuers run franchises ensuring sustainable water services and income generation
ALL LEVELS *Consultation, Monitoring, Evaluation, technical assistance,* *Water resource management, etc.*	Various actors : national and county governments, NGOs, donors	Monitoring and Evaluation, regulatory oversight, capacity building, knowledge sharing on lessons learned	**Transparency and accountability**
	Advisors and consultants:	**Financial:** prepare an information memorandum and sell project to lending banks **Technical:** involve in feasibility study and assist in the technical, financial and operational side of the project **Legal:** review the legal, tax and regulatory system and work on complex documentation; accounting, and insurance	
	Ratings agencies, insurers		**Reduced risk of projects for lenders**

3.1.4 RISK ALLOCATION

As noted by the Kenyan PPP Unit, risk sharing and risk mitigation is essential for the success of PPPs. The main risks associated with water PPP projects relate to political, commercial, legal regulatory and contractual, water resource, and reputational risks (UNESCO, 2012). These and their subcategories are presented in Table

16 below, along with indications of the main risk bearers under this model and recommended risk mitigation actions.

Optimum risk transfer is achieved when every risk is allocated to the partner best positioned to affect the risky outcome and minimize any negative impact on the project. If no partner can control/manage a risk, then the partner who can best bear the risk should take it on (Park, 2010). In PPPs, this means limiting risks to senior (commercial) lenders and allocating them to equity investors, subcontractors, guarantors and other parties through contractual arrangements.

Table 16. Risk Overview

RISK	SUBCATEGORY	BEARER	MITIGATION
Political	**Expropriation** e.g. through taxes, failure to renew licences, environmental restriction	Private Company	Ownership, including of county governments, is clearly delineated in JV contract, giving incentive to ensure the success of project
	Political interference	Company	Roles of county & company are clearly defined in contracts
	Currency devaluation	Intl. Company	Loans will be made by WSTF in Kenyan Shillings
	New standards/directives	WSTF	Cooperation with higher levels of government and adherence to current plans (e.g. Vision 2030 etc.)
Commercial	**Construction :** cost overrun, delay, material availability, project site conditions/ownership, contractor failure, force majeure	Joint Venture	Project selection, identification and design, contracting and enforcement, reliable contractors selected for work, standardized/proven technologies used
	O&M : cost overrun, operator incompetence/low productivity	Franchise	Franchised business model used in every franchise, adequate initial and continuous training of franchisees, mobile payment platform simplifies financial management
	Insufficient Revenue : fall of demand, tariff (inaccurate pricing and demand estimate, government restriction), competition risk, collection issues	Franchise	Sustainable/pro-poor tariff setting with WASREB, mobile payment management system, sound financial planning
	Cash flow : fluctuations in demand/market	Franchise	Financial management system which accounts for seasonal revenue fluctuations
	Credit risk	WSTF Banks	Ensuring viability of projects, using equiment as collateral, credit guarantee fund, mezannine financing
	Technology performance risk : parts failure, material/labor availability	Company	Ownership and responsibility for equipment is maintained by the technology provider, clear contracts put responsibility on relevant SPC member to
	Information gaps : hidden costs	Company	Clear tendering and contracting process, expert consultants engaged in project design with lifecycle costing
	Cost of energy/other inputs	N/A	Use of green technology removes energy costs
Legal, regulatory & contractual	**Project award** (political interference)	Company	Clear tendering process must be established and followed
	Contractual : non-cooperation, vague agreements, revision of clauses, breach, early termintation	All Levels	Threat of Kenyan legal repercussions
	Non-enforcement of legislation	WSTF	Careful collaboration with regulatory authorities from project design phase
	Regulation	Joint Venture	Franchise arrangements developed in consultation with WASREB to ensure even small projects are captured
	Fiscal risk	WSTF County	Contingent liability reporting and management of public organizations

Water resource	**Scarcity of water resource**	All levels	WRMA cooperation and planning Increased water storage Action taken based on hydrological studies
	Quality/pollution	Franchise	Testing/monitoring – purification as a franchise option Environmentally friendly construction
	Climate Change : changing rainfall patterns/water availability	All levels	Integrate climate change issues into planning
Reputational	**Non-Compliance** with good practice	All levels	Oversight by PSP Advisory Board, civil society and other accountability measures
	Corruption	All levels	Cashless mobile payment and financial management system ensures cash waterfall is followed
	Stakeholder acceptance of private involvement in water services	WSTF	Awareness raising, training, consultation Demonstrate benefits of PPP

Note: Where "Joint Venture" is written, the risk is borne by both the company(ies) and the private parties. Where "Company" is written, it refers to companies within the JV.

For example, In order to overcome the barrier of water services technology system breakdown and subsequent abandonment, novel options for financing repairs were considered including establishment of a government run central/regional dedicated repair fund, a micro-insurance scheme to cover the cost of repairing or replacing equipment. However, as risks should be optimally shared between private and public actors – the private company should shoulder technology risk and be contracted with clear responsibilities for repairs.

Risk assessment must be carried out using various available tools.[18] Following such assessment, it is possible to evaluate choice between different PPP models including alternative risk and benefits allocations. Legal Due Diligence must also be carried out including consideration of legal, regulatory, institutional framework and identification of any impediments to implementation, how to address them, implications of alternative options, legally sound approach for preferred PPP) consider appropriate institutional arrangements (including WSP capacity). Allocation of risks in PPP contracts can affect the feasibility of different financing packages and the overall cost of financing.

3.1.5 SPECIFICATIONS FOR TARGET TECHNOLOGIES

Technology specification must balance quality of project with affordability. This model should set appropriate standards for target technologies (solar/wind pumping systems and improved water pans). Better skills and information are needed for planning, design, deployment and management of selected technologies.

Water Pans

Water pans are seen as a stop-gap due to poor quality water. Initially intended to addresses livestock demand, they are also used for domestic purposes when alternatives are lacking. Water pan size specification should

[18] Tools to assess the viability and risk of different options include the PRFAM RISK Assessment tool https://www.imf.org/external/np/fad/publicinvestment/pdf/PFRAMmanual.pdf, and the **Risk Adjusted Public Sector Comparator Model** http://www.mfcr.cz/assets/cs/media/Twinning_c-0002_2002-07_Public-Sector-Comparator-guidance-Ministry-of-Finance-the-Netherlands.pdf. **Other necessary assessments include** Economic and Social Cost Benefit Analysis (ECSBA): qualitative and quantitative assessment of the economic and social costs and benefits of projects – determination of Economic Internal Rate of Return (IRR) and the Benefit Cost Ratio (BCR), Value for Money (VFM) Assessment.

be determined by length of dry season and rainfall endowment (i.e. supply) paired with population density (i.e. demand).

High levels of siltation, infiltration and evaporation rates as well as poor sizing, surface to depth ratio, siting and site investigation need to be addressed to increase pan functionality. In semi-arid and arid areas, few water pans work throughout the year. The technical feasibility study found that pan retention after rains ranged from nil to 2-3 months (especially in Isiolo), 4-6 months (Homabay, Embu, Baringo) or up to 9-12 months (Baringo and Homabay). It recommended construction of water pans of 30,000m^3 to 70,000m^3 in size to ensure supply of water throughout the year[19]. Costs were estimated at KShs 9.5 million to KShs 22 million respectively[20]. Water pans should also include improved floor lining to minimize infiltration. It is estimated that the 30,000 m^3 lined water pan could provide water for around 32 weeks (14 weeks in the case of no lining) as compared to just five weeks for a 10,000m^3 unlined pan. While pumping systems were installed to abstract water from boreholes and shallow wells but it is recommended that these could also be attached to water pans to increase water distribution.

Wind Pumping Systems

At least 347 mechanical wind systems were deployed for rural water pumping over Kenya from the 1990's to 2000s, but uptake steeply declined with the advent of solar systems. Limited information and wind data has further discouraged adoption of small wind turbines. A very few supplies unsuccessfully attempted deploying SWT of less than 1 kW. Mounting frames made technology expensive, and of 25 mechanical wind systems deployed in surveyed counties only one was working during the survey. Mechanical wind pumping often fails due to failure of very basic components and lack of basic maintenance. If wind technologies are included in project cluster good training, parts supply chains and post-construction support must be guaranteed.

Solar Pumping Systems

Solar PV is used across all the study's ecological zones, but predominantly in arid and semi –arid areas (accounting for 80%) rather than humid areas (10%) in sub humid (7%) and semi-humid (3%). Challenges include generally small capacity[21], varying solar irradiation, poor orientation of modules reducing power output. Some 46% of surveyed boreholes had safe yield of 4-6 m3/hr (32-48 m3/day) sufficient for domestic and livestock demand of 78-104 households, but with limited application for irrigation. The majority of users expressed satisfaction with solar technology, which has enabled creation of mini-grids serving water kiosks and individuals around the water source. Thus, solar PV systems broaden water user base and even create additional revenue streams by supplying energy to other small facilities. The average cost of a borehole fitted with a solar pumping system is KShs 3.45 million.

A general view persists that solar, wind pumping systems and water pans are inferior technologies only suited for smaller applications. The PSP Programme grant-funded pilot stage should demonstrate that solar, wind systems and improved water pans are durable and suitable for large engineered applications. The main challenge to be overcome for the success of this model is ensuring that O&M franchises have access to parts for routine maintenance, trained mechanics and equipment for handling major repairs. Without these, past experience shows that infrastructure will lie non-operational for long periods of time. It is therefore essential

[19] Though in some areas such as Eldama Ravine, Baringo, 15,000m^3 could be sufficient to provide year-round supply.

[20] This is a considerable increase from the average water pan size surveyed, which was 17,800m^3 costing KShs 5.4 million, at mean rate of KShs 302 per m^3.

[21] 81% of installations being of less than 1.5 kW, limiting application to very small communities.

that technology providing companies carry the responsibility for handling any non-routine maintenance and repairs.

Water Use

Average consumption among survey users was 125 liters per household per day with average of 141 households per borehole and 162 per water pan respectively. Technologies supplied water for domestic uses to 96%, to livestock to 74% and 28% for small scale irrigation. While water for domestic use and livestock is important in all the 4 counties, demand for irrigation water was high in Embu County (71.4%) and to lesser extent in Baringo (15.4%) but only marginal in the Isiolo and Homabay counties accounting for 6.7% and 2.9% respectively.

3.1.6 FINANCING

Financing for water services come from the three Ts of taxes, tariffs and transfers. The Kenya Water Masterplan 2030 (2014) cites a KShs 592.4bn government budget available for water and sanitation - a shortfall of KShs 1.2tr against the estimated KShs 1.7tr investment and rehabilitation needed to achieve the Kenya Vision 2030 National Development Plan goal of making WSS available to all.

General financing challenges for water services PPPs for underserved areas include small project size, perceived low opportunities for cost recovery and seasonality of cash flows. Solar or wind pumping systems come with specific challenges relative to conventional diesel or hand pumping. On one hand, green energy technologies tend to require higher initial capital expenditure as the equipment is more expensive than conventional technologies (though solar PV prices have fallen dramatically). On the other hand, green pumping systems have generally lower operation and maintenance (O&M) costs as they do not require fuel or manpower inputs to function. However, relatively low maintenance costs may be punctuated by occasional but high repair and replacement costs. These challenges require thinking "outside the box" to customize financing mechanisms that attract private participation and finance to green water supply technologies in ASAL/peri-urban projects.

WSTF should use donor and public funds to reassure and incentivize private investors and creditors, and also work to strengthen communities' self-financing capabilities. Furthermore, PSP arrangements should improve efficiency and coordination of funds. This model's graduated approach of moving from grants to loans walks a line between two realities: 1) The necessity to move away from concessionality in recognition of a lack of government funds and that many donors intend to end grant support, and 2) private sector reluctance for commercial investment in water services engineering, procurement and construction (EPC) due to low cost recovery to date. The aim of reducing the concessional nature of Capital Expenditure (CAPEX) finance over time requires the PSPP model to move from a largely grant-based pilot programme, to blended grant/concessional loans and finally to increasingly commercial loans. Thus, grants will provide initial budgets to enable demonstration of project viability with increased commercialization of finance as projects are proven, structures are established and capacities are built.

Table 17. Transitioning from Grants to Loans in the PSP Programme

PILOT PROJECT (1-YEAR)	INITIAL ROLLOUT	FULL IMPLEMENTATION
WSTF Grant	Grant/Concessional Loan	Concessional loan – other financiers must crowd in.

Proving financial viability will be essential to support the move away from grants. Offering guarantees to attract credit and investment, as well as increasing revenues and therefore incentives for project participation are key elements addressed in the sections on financing and funding below.

At the project identification and planning stage the following three elements must also be considered: 1) better financial planning using a **lifecycle costing approach**; 2) **ensuring shared ownership** of projects and associated risks; and 3) building on previous **results based aid** approaches.

1) **Lifecycle costing:** As observed in the technical feasibility study and stakeholder consultations – water services project budgets are often too small to cover adequate expert planning, construction of technically sound or sustainable water points and do not factor in maintenance, repair and project renewal considerations. Training and sufficient funds are needed for joint ventures to move from least-cost logic to a life-cycle costing approach. This means ensuring that all infrastructure and service costs including repairs and expansion are fully accounted for in the initial model. The R&R of private and public sector actors for covering these costs and executing activities must be clearly delineated from the outset. In particular, this includes the need to address the CAPEX viability gap for professional planning, adequate construction costs and repairs.

2) **Shared Ownership of projects:** counties, private sector, and communities all have a stake in projects to ensure sustained commitment (everyone has "skin in the game") – the county and technology companies through shared equity in the SPC; and at the local level through payment of franchise fees.

3) **Build on previous results based aid elements of projects –** where output-based/progress-linked subsidy was given to pay back percentage of loans conditional on demonstrated delivery of infrastructure/services in low income areas to incentivize high performance and efficiency.

While the detailed financial analysis necessary to give specific project financing recommendations is outside the scope of this recommendation – the following characteristics of water services PSP project financing can be taken into consideration for 1) financing to the SPC, essentially capital expenditure (CAPEX) finance, and 2) funding for O&M through project revenue as well as servicing finance (both debt and equity) with any remaining revenues for project extension and/or renewal funds.

Project Finance

Project finance is necessary to pay for capital expenditure (CAPEX), i.e. the construction of the green technology water points by the joint venture SPC. This financing is invested by the county government, private companies, the WSTF PSP Programme and local banks in this model. Joint venture members should make a minimum equity contribution (suggested rate 20% divided between companies and county), with the remaining 80% funded in credit, the majority of which should come in the form of the WSTF PSP repackaged loan, with additional credit sourced from commercial banks where possible. Thus, the WSTF PSP Programme should offer i) subordinate concessional loans to fund projects and 2) credit guarantees to attract private lending.

i) **Concessional, subordinate loans:** repackaged donor/GoK finance for lending to joint venture SPCs' clustered projects. The loan tenure should be no more than the expected lifetime of the technology (10-15 years), and should be granted at concessional rates. Furthermore, this debt

should be subordinate to any commercial lending in the cash flow waterfall, meaning that repayments are made to WSTF only once commercial lending has been serviced.

High debt to equity ratio of the SPC can ensure maximum leverage and return on invested equity – meaning lower risk for private investors. However, where equity investment is insufficient to support proposed borrowing amount, credit guarantees will be necessary if private finance is sought.

ii) **Credit guarantees:** Given that the water sector is perceived by the private sector as high financial risk, and small green technology projects do not offer high collateral value against loans, WSTF should establish minimum contingency credit facilities through repackaging of loans from international lending institutions in local currency, paired with government support and guarantees. WSTF can also offer subordinate debt through mezzanine financing that will allow commercial lenders to receive loan repayments first.

Aside from the WSTF PSP Programme fund, other potential national public funds may come from the national government equalization fund for underserved areas. If future projects are classified as PPPs then viability gap funding from the PPP unit could also be made available. A list of potential sources of CAPEX funding are listed in Table 18 below. Many of these may be channeled by WSTF and repackaged as PSP Programme finance.

Table 18. Potential Sources of Financial Flows for CAPEX (EPC)

TYPE	SOURCE	NATURE
Nat. Public	National govt.	Equalization fund
	County funding	Under 5-year development plans
Intl. Public	Bilateral donor	Loan/grant/results-based-aid
	MDBs	Loan/grant/credit lines
	Microfinance	Community microloan
Nat. Private	Kenyan banks	Commercial loan / Maji fund credit line
	Private investment	Equity investment
	Community contribution	Cash/in-kind labor

Project Funding

Project funding is necessary to cover the operation and maintenance (O&M) of water points as well as the servicing of finance. This should be considered both at the individual project level and for clusters as a whole. The GoK has expressed desire to move away from public subsidy of O&M to revenues obtained from user fees, while mindful of some low-income users' inability to pay. For a project to break even, cash flows must be sufficient to provide cash needs, service debts with sufficient cushion for contingencies. The franchise model should aim for O&M cost coverage from user fees where possible, from cross-subsidization from other projects where not, and from public subsidies as a last resort.

Cash flow projections (accounting for revenue, expenses, etc.) must be justified by appropriate independent feasibility and engineering studies, by outside experts/consultants where necessary. Important tests include Debt Service Coverage Ratio (DSCR) and sensitivity tests: showing base case and worst case scenarios. Though social projects that do not meet "break-even-point" of covering all costs through project-generated

revenues should be included to meet WSTF's mission of reaching underserved areas – the overall cluster must be profitable in order to attract the private sector.

Revenue allocation and use should be strictly controlled by a pre-determined cash flow waterfall that favors commercial lending and investment while also ensuring project sustainability. This should be considered at both the franchise (project) and SPC (cluster) level. The following order of payment is recommended at each level:

i) **Franchise level (generated by user fees):**
   a. Franchise leasing fee
   b. Operation and maintenance (O&M) costs
   c. Renewal & extension fund

ii) **SPC level (generated by franchise leasing fees):**
   a. Debt Service i) senior debt (commercial lenders); ii) junior debt (concessional lenders – e.g. WSTF, MDBs)
   b. Company - return on equity
   c. County – return on equity (Alternative: County makes investment as unremunerated equity)

Table 19 below indicates the range of potential funding flows for O&M costs. However it should be noted that the only source of internal revenue generation is user fees.

Table 19. Potential Funding Flows (O&M)

TYPE	SOURCE	NATURE	PREVALENCE FOUND IN F/S
Nat. Public	WSTF	(Non)conditional grant	**18%**
	National govt	Equalization fund	
	County funding	Under 5-year development plan	
Intl. Public	Bilateral donor	Grant	**2%**
	MDBs	Grant	
Private	User fees	Flat rate / prepay / PAYG	**20%**
	Private investment	Re-investment, creation of repair/expansion fund	**4%**
Communities	Community/cooperative funds	Payment for one-off repairs or regular maintenance	**37%**
Innovations	Centralized dedicated repair fund	Can be funded by various sources and administered by WSTF	*Novel options*
	Repair insurance fund	Contributed by communities	

Tariffs

In this model, tariff setting and collection happens at the individual project level and is the responsibility of the franchise holder under supervision of the Water Services Regulatory Board (WASREB). WASREB offers detailed guidelines and approval mechanisms for water service provider (WSP) tariff setting to cover justified costs to first achieve O&M cost recovery, and later total cost recovery where possible. However, user fee collection has not tended to reflect real operation cost. In most cases surveyed in the technical feasibility study, O&M of water service technology points was paid by the community (58%) either from water sales revenue or direct contribution, though sometimes by the government (19%) in the form of subsidies (e.g. from WSTF, counties, and the national government) and very rarely by donors (2%). This feasibility study also found that average monthly maintenance costs of water pan O&M in target areas were less than $1,000 in 68% of cases and between $1,000 and $5,000 in 16% of cases.

WASREB generally allows WSPs to recover all reasonable and necessary O&M expenditure to provide efficient service[22], administrative costs of WSB as asset holder (e.g. monitoring and supervision of the WSP. Furthermore tariff increases for repayment of debts can be applied for WSPs already covering O&M, and for investments and depreciation (for WSPs already covering O&M and repaying debts. According to WASREB regulations WSPs should aim for full cost coverage within 10 years – on the way to achieving this there are three types of WSP:

1) Not achieving full O&M coverage (need to set targets to converge costs with minimum service - regulatory levy & administrative cost tariffs)

2) Achieving full O&M coverage but not debt repayment (further increases in tariffs strongly tied to accepted performance levels)

3) 100-150% O&M costs covered and debt repayment achieved or ongoing (tariffs now set to allow maximum water access)

Table 20. WASREB Current Tariff Cost Recovery Levels (WSREB, 2016)

% O&M Cost Coverage	Cost Components covered by fees
<100%	Not achieving full O&M coverage
100%	O&M Cost
101-149%	O&M cost + debt service + minor investment
≥ 150%	Classified as full cost recovery

User fee payment method options may assist on matching water payment to user's income patterns such as seasonal fluctuations (e.g. of flat rate, pay as you go, or pre-pay). Various methods of tariff payment in other parts of Africa are outlined in Table 21 below. This project opted for pay as you fetch payments given that

[22] These may include, but are not limited to, personnel, administrative, board, other operational and maintenance expenditures

almost all water collection is expected to be at water kiosks or directly at the water pan/borehole in remote, underserved areas – making connection fees or monthly household payments less viable.

Table 21. Rural Water Cost Recovery Policy in Selected Countries (Foster, 2015)

COUNTRY	TARIFF FORM
Sierra Leone	levies, monthly payments per household or periodic harvests
Ghana	pay-as-you-fetch at standpipes or pumps
Zambia	monthly, biannual or annual contributions
Uganda	various methods depending on nature of the community
Tanzania	communities establish mechanism to pay full O&M costs for higher service levels
Malawi	maintenance funds collected from each user household

Partnering with a mobile payment platform (e.g. via Safaricom/Mpessa) will provide fee payment, accounting and customer relationship management services to support operations. Franchises benefit because of easy payment collection and management. As cash does not change hands, but is automatically managed according to the above-mentioned cash waterfall there is more transparency, accountability and less space for corruption[23].

Increasing Revenue Generation Potential

Aside from adjusting tariffs, increasing water quality, quantity as well as service reliability/accessibility will influence water users' satisfaction levels and subsequent willingness to pay. Widening service volume and access can increase user base (i.e. number of paying users) or to enable charging for multiple uses of water (e.g. piped networks to agricultural sites for irrigation). Increasing water quality can also increase willingness to pay a higher tariff for drinking water. Furthermore, additional revenue streams may be considered such as offering phone/battery charging facilities at water points, or opening a store run by water point caretakers. Furthermore, a livelihood perspective can help develop supply systems to provide explicitly for actual water demands for both productive and domestic use. This may have positive impacts on the financial viability of the system. Providing safe water for drinking, water for livestock and farming will significantly increase productivity and therefore users will be able to sell their farm produce to cover outstanding debts for the water investments.

Investment in Project Extension through Endowment Fund

The Endowment Fund is an additional option that can act as a "water bank", allowing citizens a chance to build up savings for a cooperative repair, extension and renewal fund. There could also be potential to attract funds from other sources such as through bonds or Kenyan diaspora abroad. Savings in the Endowment Fund

[23] Although not suggested as a central part of the model as the idea is that user fees should be fair and affordable, the mobile payment system also allows for direct interaction between the fund and users if desirable – e.g. sending subsidies for water purchase directly to customers' mobile wallets – meaning that concessional finance directly reaches the users who need it.

can be used for project extension or renewal. Other considerations include the financial implications for national and county governments (fiscal impact and contingent liabilities) should be examined.

Costs and Revenues Indicative Analysis

Each water services project's financial feasibility must be analyzed on a case by case basis. However, for illustration purposes only, some rudimentary calculations were conducted based on data and assumptions presented in the feasibility study for boreholes fitted with solar pumping.

The three green technology combinations rated highly in cost-benefit analyses carried out for Embu and Baringo in this project's technical feasibility study report were : <borehole + solar pump>, <water pan > and <water pan + solar pump>. Table 22 below gives an indication of potential investment costs in these technology combinations.

Table 22. Potential Investment and Annual Costs of Technology Combinations (KShs)

County	Project Alternative	Investment Cost	Annual Investment Charges	Annual O&M Cost	Annual Cost (O&M + Investment)
Both Baringo and Embu	Borehole + Solar Pump	4,850,000	789,623	376,200	1,165,823
Baringo (15,000m^3 pan)	Water Pan alone	9,060,000	1,475,049	240,000	1,715,049
	Water pan + solar	12,010,000	1,955,336	616,200	2,571,536
Embu (70,000m^3 pan)	Water Pan alone	21,140,000	3,441,781	240,000	3,681,781
	Water pan + solar	24,090,000	3,922,067	616,200	4,538,268

Assumptions for calculating the maximum potential annual revenue from boreholes fitted with solar pumping are taken from technical feasibility study based on unrealistically optimal conditions (unfailing average demand, water resource and technology for 365 days of the year) at two tariff rates given as the upper and lower range for borehole fees per 20L jerrycan of 2 KShs (100 KShs per m^3) and of 5KSH (250 KShs per m^3). Average use of an optimally operational borehole with solar was calculated to produce revenue of 643,300 KShs per year at 100 KShs per m3 or 1,608,250 KShs per year at 250 KShs per m^3.[24] This ballpark analysis of potential maximum annual revenue[25] shows that revenues generated from the borehole fitted with solar can cover both O&M and cost of investment at the higher end of the existent tariff range and thus could therefore transition to concessional loan finance.

[24] The technical feasibility study states that average daily water use per household is 125 liters and that an average of 141 households use one borehole. This would mean water use of 17,625 liters per day, or 6,433m^3 if the borehole is accessed at this rate for the entire year.

[25] It should be noted that the maximum potential revenue is an unrealistically optimistic analysis of maximum water availability, maximum technology functionality and water sales based upon the data presented in the technical feasibility study. This is done not as a realistic cash flow projection but rather to give a rough indication of whether these hypothetical projects have the ability to break even. It is stressed again that detailed financial analysis based on site specific circumstances would have to be carried out to assess the true bankability of such projects.

Aslo based on the above data from the technical feasibility study – if the average water pan is used by 162 households each consuming 125 liters per day (total 20,250 liters per day) and the 30,000 m^3 lined pan can provide water for around 32 weeks (224 days) total usage would be 4,536 m^3. Thus, total revenue would be 453,600 KShs per year at a tariff of 100 KShs per m^3 and 1,134,000 KShs per year at a tariff of 250 KShs per m^3. This is below the annual cost of even a 15,000m^3 water pan alone. Furthermore, it was not clear from the technical feasibility study or consultation whether users would be willing to pay for water pan water given its low quality. Furthermore, if ware resource and quality improved willingness to pay and demand might also increase.

As no tariff payments were recorded for water pans in the technical feasibility study, a pilot study should be conducted including tariff charges for improved pans (anti-infiltration measures and fitted with solar pumping) to ascertain whether grant or concessional loan financing will be possible. It seems likely that water services can cover costs and perhaps even provide a profit at the above 2 Kshs per jerrycan rates, and with improvements to technology to increase supply (e.g. water storage tanks at boreholes, increased PV generation and/or a backup diesel generator, higher water pan capacity).

3.2 DETAILED ELABORATION ON EACH LEVEL OF THE MODEL

The model will now be elaborated on the R&R of different actors at each level from international (development partners, multilateral development banks, climate funds, etc.); national (government ministries and agencies); regional (catchment and WRUA and Water Service Boards (to become Water Works Development Boards under the new act)); county (county governments and WSPs); and local (communities, WUA, CBOs) as well as the interaction of private sector actors.

3.2.1 INTERNATIONAL

Support for the PSP Model at the international level comes in the form of frameworks, financing and technical assistance. Relevant actors include bilateral and multilateral donors, multilateral development banks, international organizations, foundations and international companies (discussed in Section 3.2.6 on the private sector).

STATUS, BARRIERS AND OPPORTUNITY

Status

Kenya is a longtime recipient of water aid through bilateral and multilateral donor-supported projects and programmes, in addition to donor funds channeled through nationally managed funds such as the Water Services Trust Fund (WSTF) and the Project Pipeline Financing Facility (PPFF) budgets. Donors supported capital costs in 48% of projects surveyed in this project's technical feasibility study contributing an average of 80.5% to each of those projects' costs. Donors are already piloting innovative financing models and facilities to include the private sector in water services in Kenya. These include World Bank pilots of partial guarantees and output-based subsidies to introduce commercial bank loans to poor and underserved areas since the late 2000s. More recently the first undertaking of the new Kenya Innovative Finance Facility for Water (KIFFWA), the Kenya Pooled Water Fund (KPWF), aims to act as a bond facility to source long term finance from Kenyan capital markets to on-lend to WSPs. Further, a DANIDA WSTF programme is linking water services to green growth opportunities, promoting private sector investment especially in underserved

areas such as ASALs. Further details of international development cooperation for Kenyan water services are provided in Annex 9.

Barriers

Donors and NGOs during the stakeholder consultation voiced concern that water sector investment is not making the desired impacts in spite of ongoing work, and further noted that projects did not always responding to the unique contexts and needs of ASAL and peri-urban areas. Donors' focus is shifting to investments in more bankable water projects, and current grant assistance of traditional bilateral donors' looks set to be reduced and eventually end in coming years. Low creditworthiness of water utilities and their low revenues to date may make it difficult to attract contributions from the international private sector in particular. There have been no cases of profitable water sector PPP projects in the Public – Private Infrastructure Advisory Facility (PPIAF) PPIAF Nairobi office. However, the PPP model could leverage MDB lending to central government for CAPEX, with community run, user funded O&M.

Opportunities

Donors such as DANIDA have voiced support for PPP model results to be fed into a WSTF programme – as a pilot with later consideration of scaling up the program to the national level. As large scale water services PPP programme could run into the tens of millions of dollars to meet many counties water pan and borehole pumping needs. Grants may be extended for EPC during this small-scale pilot to prove the functionality of the model to all actors, and attract private sector involvement in the next stage. This pilot could be run using grant funding of existing programmes if available, or seek to secure project preparation funding where not. If neither of these options is available, a pilot programme could be built into an application for a larger proposal.

New sources of climate finance can be sought for the Kenyan water sector such as through the Green Climate Fund (GCF), the Global Environment Fund (GEF) – including the Small Grants Programme at the Local Level – as well as the African Development Bank (AfDB) ClimDev-Africa Special Fund (CDSF), the Adaptation for Smallholder Agriculture Program (ASAP) under the International Fund for Agricultural Development (IFAD) as well as the Korea Green Growth Trust Fund and others.

WS PSP MODEL FUNCTIONS AND ACTORS

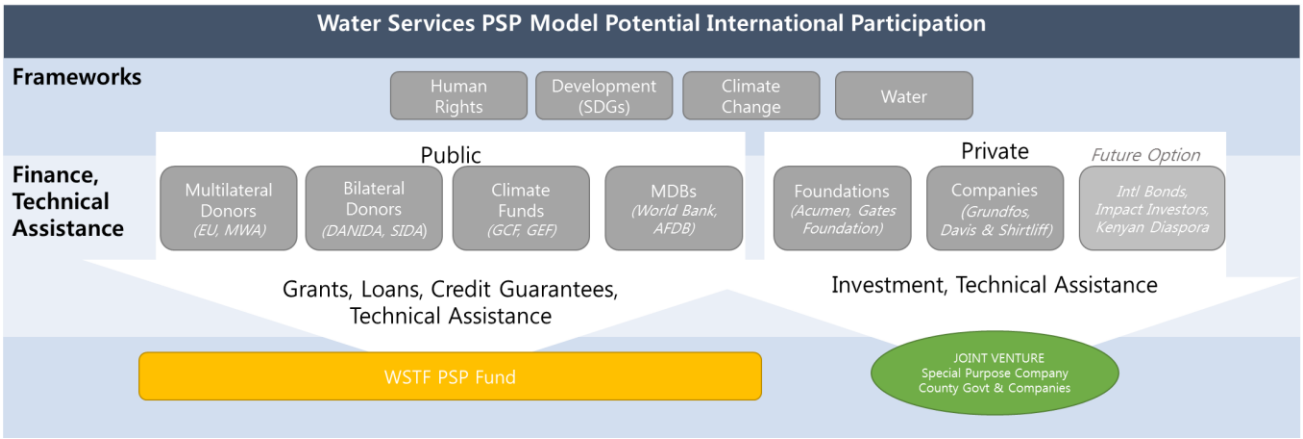


Figure 7.Water Services PSP Model Functions and Actors at the International Level

Potential international inputs to the model include guidance from frameworks on human rights[26] and sustainable development[27]; funding and technical assistance from international donors and multilateral development banks; commercial finance from international banks and other financiers, as well as potentially investment and participation by international companies. Participation of impact investors and other financing sources may also be an option for direct financing to the Water Services SPC.

International donors consulted during the consultation included agencies consulted Swedish International Development Cooperation Agency (SIDA), DANIDA, the Swiss Agency for Development and Cooperation, Dutch development cooperation SNV and the Millennium Water Alliance (MWA). These donors placed strong emphasis on capacity building and creating a simple model with clear R&R for rural services, with some reservations that a pure PPP model could support rural systems. However, there was appreciation for the fact that private sector engagement could allow sustainability and efficiency of water supply and called for thinking beyond business as usual. County government-led clustering with strong inputs from communities was seen as the ideal entry point for financing.

Other active donors and development partners in Kenyan Water include the EU, the World Bank (Public-Private Infrastructure Advisory Facility (PPIAF). As noted above, various climate financing institutions should also be considered. Furthermore, entrepreneurial finance sources such as Acumen or KawiSaffi Ventures should also be considered – especially for financing of renewable energy technologies. On the regional level, the African Development Bank (AfDB) Africa Water Facility, the Rural Water Supply and Sanitation Initiative and the EU-Africa Infrastructure Trust Fund (EU-AITF) could be further considered.

RISKS

At international level, IFIs offering guarantees to water service projects transfer the risks from commercial banks and project implementers onto themselves. There are also reputational risks for public sector donors if private sector involvement is not well received by beneficiaries or if improved service coverage and quality is not achieved. These risks should be offset as far as possible in WSTF's programme design, by ensuring strict checks and standards to ensure the creditworthiness of clusters, ensuring widespread stakeholder consultations to ensure public acceptance of private sector led water services.

Another risk is if the project is not well harmonized with other donor work in Kenya causing duplication and/or redundancy of activities. Again, the responsibility falls on WSTF to ensure that the project compliments rather than replicates ongoing work.

Another risk is that donor support for WSTF could fall with reducing aid budgets, causing difficulties in securing funds for the PSP Programme. Diverse donor ship should be sought and new sources of income exploited. Furthermore it is important for WSTF to demonstrate the value of projects through monitoring and evaluation of project results in comparison to baseline studies.

The program should build on lessons learned from WSTFs current financing mechanisms – capitalizing on lessons learned on WSPs in rural and urban areas as well as work on the sub-catchment water resources

[26] See section 2.3.2

[27] United Nations Sustainable Development Goal 6: "Ensure availability and sustainable management of water and sanitation for all" and related targets and indicators viewable here: https://sustainabledevelopment.un.org/sdg6

investment via WRUA and result based financing. The risk of lack of capacity in WSTF for effective execution of the project should be addressed by ensuring adequate funds and trained staff for its management.

FINANCING

There are a wide range of active and potential sources of international public finance for the Kenyan water sector. The main challenge of the WSTF is to attract and structure these sources for repackaged finance through the PSP Programme. In a crowded but evolving donor landscape, WSTF's priority is to partner and harmonize with other donor activities in order to offer optimal support for the WS PSP Programme. The next stage of this feasibility study will address the catalyzing of finance, but potential avenues to explore for donor cooperation are presented in the table below.

Table 23. Suggestions on Partnering with and Harmonizing Activities of Current Donors discussed during Consultation

AGENCY	POTENTIAL INPUT
Kenya Pooled Water Fund (KPWF)	Using the bond financing facility to finance Joint Ventures either: as an additional funding stream working in partnership with WSTF with funds channeled through WSTF
SIDA	Fundin, informing on innovative O&M for rural water project sustainability
DANIDA	Harmonization with ongoing DANIDA-WSTF cooperation on the green growth & employment creation in Kenya
Green Climate Fund	Application to the GCF on a broader programme including water sector PPPs
Kenya Markets Trust/SNV	Integration of lessons learned and elements of PPCP models into the francise level of this model
Adaptation Consortium (ADA), Resource Adaptation Programme (RAP)	Consultation/coordination and capacity building at community level in ASAL areas

As well as offering budget and programme finance to WSTF, international donors may offer credit lines or loans directly to Kenyan commercial banks.

3.2.2 NATIONAL

Kenyan Government ministries, departments and agencies provide policy, plans, frameworks, regulations as well as financing for water services and the partnerships formed between public and private actors to provide them. Although national legislation is becoming well developed on both water and PPP issues, there is need for clarification to put the policies into practical action. The WSTF must consult and cooperate with government ministries and agencies in order to integrate national policies, strategies, plans and regulations into the PSP programme and ensure adherence to all legal frameworks and set relevant standards (size range, technology type).

STATUS, BARRIERS AND OPPORTUNITIES

Status

Kenyan government funding for water services may come from national funds (e.g. WSTF, PPPF and the Kenyan Equalization fund). The government procurement system applies for projects being financed by a public agency/out of public funds and the PPP Unit process may apply in the instances outlined in section 2.1.

Key national legislation includes the Water Act 2002, with its PPP ambitions also reflected in the 9th key principle of the National Water Services Strategy 2007-2015, of "Public-Private Partnerships promoted to develop capital projects where feasible" as well as improving service provision performance by transferring operation to private entities delegation of operation of public/communal outlets to individuals linked to formalized providers by contract; obtaining economies of scale by clustering and establishing commercially-oriented providers operating under private sector principles. A list of relevant national legislation can be found in section 1.2.3. The status, barriers and opportunities of national level private actors is discussed in Section 3.2.6 below.

Barriers

Though clear national legislation is in place for water sector PPPs – the landscape is crowded with actors following devolution. There is a need to clarify R&R. National level policy gaps include the need to pass the PPP Amendment Bill 2016 to recognize county governments as contracting authorities of PPPs Furthermore, WASREB has concerns that WSPs are not regulated on the local level.

Opportunities

Harnessing of climate change policies and plans to foster cross-ministry support for water services PPPs that encompasses the mission of MWI, MENR, the National Treasury as well as the Agriculture and Energy Ministries.

WS PSP MODEL FUNCTIONS AND ACTORS

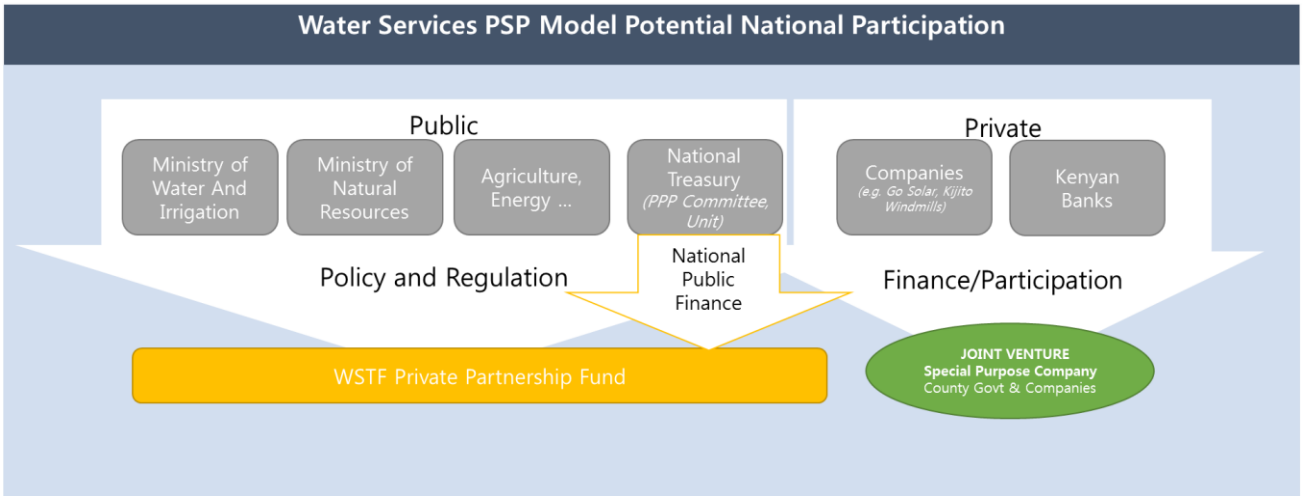


Figure 8. Water Services PSP Model Functions and Actors at the National Level

National level inputs to the model include finance, national policy, strategy, regulations, guidelines, programmes. It is important to foster sound, consistent and sustained public sector policies. The finer points of the business model – including standards and stipulations for type of private sector clustered projects (e.g. size range, technology type) must be set in close consultation and cooperation with relevant government ministries and agencies with integration of relevant national policies, strategies, plans and regulations. Government of Kenya funding sources are rather uncoordinated WSTF PSP Center should make a guideline of what is available outside of the PSP Programme to facilitate blended financing – both for joint ventures for project initiation or for the community level for project extension. Accounting for all national inputs will foster a nationally coordinated programme adhering to all relevant standards that is accepted across ministries. Checks should also be done by other relevant agencies such as WASREB (fairness and sustainability of proposed tariffs), and WRMA (viability and suitability of water resources).

Policy inputs from the Ministry of Water And Irrigation and the Ministry of Environment and Natural Resources are key, but other relevant ministries include the Ministries of Agriculture and Energy. If this programme were being pursued as a PPP then the Treasury's PPP Unit and PPP Committee would naturally play central roles but as this is not the case these parties should rather be consulted on if/how there would be scope to move forward to a PPP under a different model at a point in future.

Under the Ministry of Water and Irrigation specific consultation and continued participation from WASREB will be necessary to set tariffs of clustered projects and license WSPs. Consultation should be carried out with WASRE on a simplified registration procedure for micro-franchised WSPs. consultation on Innovative water tariff systems for franchises to capture previously unregulated small (community) enterprises without overburdening the process.

New national-level functions to be created for the smooth running of the programme would be the PSP Center within WSTF for management of the PSP Programme as well as a Water Services PPP Programme Oversight Board for oversight and coordination of Water Services PPP SPCs. This would be set up by WSTF including representatives from WSTF, County, SPC, water users, community service organizations (CSOs), donors, and government agencies to monitor and evaluate the programme as well as future work with the private sector carried out by WSTF.

The Water Services Trust Fund (WSTF) provides conditional and unconditional grants to Kenyan counties to assist financing of water services development and management in marginalized or underserved areas. This includes community initiatives for sustainable water resource management, as well as water service development in: rural areas considered not commercially viable for licensed Water Services Providers (WSPs); under-served poor urban areas, as well as research on water resources management and water services, sewerage and sanitation. Other important national agencies under the Water Act 2016 include the Water Services Regulatory Board (WASREB), Water Works Development Agencies (WWDAs, formerly Water Services Boards), and The Water Resource Management Authority (WRMA), which regulates water resource management and charges abstraction and discharge fees. Their specific roles are outlined in the model, and a broader description is included in Annex 10.

RISKS

Political risks include failure to renew water service or water extraction licenses, while on the other hand non-enforcement of legislation could also adversely affect projects by creating an unpredictable and unfair playing

field for public and private actors. Furthermore, introduction of new standards or directives by various ministries disrupting the framework under which the water services PSP has been developed. Currency devaluation could cause difficulty in paying back internationally sourced loans with revenue from Kenyan projects. If the water services clusters are not well managed they could cause or perpetuate water shortages contributing to national emergencies. Furthermore, there is also potential fiscal contingency risk at national level.

Political risk should be preempted and mitigated through WSTF's close consolation and cooperation with all relevant national government bodies.

Furthermore, the GoK has made available various risk mitigation tools that can assist with project development. These include Partial Credit Guarantees, Subsidies, Credit Ratings, technical assistance and letters of comfort/support. Kenya's PPP policy compensates foreign investors if a project is terminated due to political instability or other unavoidable circumstances. For example, as of 2015, the Kenya Commercial Bank has signed a US$ 3m development credit authority guarantee for water financing.

In line with the impact and risk assessments stipulated in the PPP Act, the PPP Unit has adopted the Framework for Managing Fiscal Commitments and Contingent Liabilities (FCCL) Management Framework, which manages and evaluates risk and advises on FCCL of government projects including PPPs. It requires contracting authorities to carry out feasibility studies on technical, procurement and PPP options, assessing the cost and risk allocations between parties and also to produce a project risk and financial assessment report testing affordability, VFM and stress tests on capital limits. The government controls and bears the risks for a major portion of the life of PPP assets, which is generally longer than the contract period that built them.

FINANCING

The Kenan government supported capital costs in 46% of the projects surveyed in the technical feasibility study with an average contribution of 76% of each project's costs. Current national financing is channeled through the WSTF (along with donor funds), the PPP Project Facilitation Fund (PPFF), and the Kenya Equalization Fund.

The WSTF provides (un)conditional grants to Kenyan counties for 1) community sustainable WRM initiatives; 2) rural areas' water services considered commercially unviable; 3) water services in under-served poor urban areas (*Water Act 2016*). The WSTF aims to invest KShs 16.6bn (US$163m) by June 2019 and is also currently managing a total allocated budget to invest in ASAL counties of around KShs. 5bn for 2016-2020 from the Kenyan government and various donors via the Thematic Programme for Green Growth and Employment in Kenya 2016-2020. Its four main financing and operation mechanisms are:

1) Rural WSS – through community based organizations and water utilities, targeted at ASALs
2) Urban WSS – through water service providers in low income areas
3) Sub-catchment protection – through WRUAs for communities, especially in ASAL areas
4) Result Based Aid – commercial bank project loans for WSPs and community based organizations (CBOs), who receive a percentage of the loan amount back on successful implementation. This

channels GoK/donor funds [28] to projects in areas with inadequate WSS to assure availability/accessibility for all under the WSTF strategic plan 2014-19.

PPP Project Facilitation Fund (PPFF)

The PPP Project Facilitation Fund (PPFF) established in 2015 under the PPP Act 2013 provides grants, donations, project levies or tariffs, project success fees, appropriations-in-aid to the State Department responsible for finance matters. Funds can be used for project preparation, PPP Unit activities, project viability gap financing, transaction advisor's retainer fees, and as a source of liquidity to meet any contingent liabilities arising from a project. It can support: recoverable land acquisition costs; PPP consultancy services (e.g. sector diagnostics and partnership strategy studies); project proposals and feasibility studies; project tender processes including advertisements; marketing and communications; project structuring and preparation of tender documentation; transaction and associated advisory services; other project preparation approved by the PPP Committee.

Kenyan Equalization Fund

The Kenyan Equalization Fund prescribed under Article 204 of the constitution of Kenya to provide access to basic services, including water, in marginalized counties. The government had allocated KShs 12.4bn including KShs 97m for Isiolo water and sanitation project and KShs 70.9m for borehole projects in fund.

Government financing for capital investment will likely remain necessary for water projects in underserved areas in at least the medium term. As well as direct subsidy other support mechanisms include guarantees for loans, as well as tax breaks on green technologies and facilitation of foreign direct investment in the sector.

3.2.3 REGIONAL (CATCHMENT)

Despite devolution of water services to the county level, the regional context remains important both because neither water sources or populations adhere to political boundaries. Furthermore, various regional water related institutions are still existent following previous national devolution to the regional level. Thus, this model allows joint ventures to be formed at regional level, between two or more counties and a private company, or at county level with just one county government depending on the preference of county governments.

STATUS, BARRIERS AND OPPORTUNITY

Status

Various regional actors play different roles in relation to water resource management and water service provision. The Water Resources Management Authority[29] has regional offices at the catchment level for decentralized decision making on water resource management and water allocation processes. Catchment Area Advisory Committees (CAAC), advise the WRMA, and also grant, adjust, cancel or make variations on water permits. Water Service Boards (WBSs) are responsible for the efficient and economical provision of water, asset planning and development, and overall services. WSBs generally plan regional projects,

[28] Supported by the World Bank through the Kenya Output-Based Aid (OBA) Fund for low-income areas, the German Development Corporation (KfW)'s Aid on Delivery (AOD) programme - expected to support access to $16 m (KShs 1.6 billion) of debt and enable provision of water and sanitation to 30,000 households. Utilities meet 20% of project costs up front and borrow 80% through a loan from domestic banks. A 40% grant is paid on achieving the targets. Some counties have also been supported by USAID's Development Credit Authority (DCA).

[29] To become the Water Resource Authority under the 2016 Water Act

investigate project design, manage procurement of goods and services and provide capacity building in water service management. Kenya's eight WSBs are: Athi, Coast, Tana, Lake Victoria North, Lake Victoria South, Northern, Rift Valley, and Tanathi.

Barriers

Several stages of devolution have led to various actors at different levels of water services and water resource management. The R&R of regional actors are especially complex within the post-2016 Water Act context. Furthermore, institutions mandated with the separate duties of water resources management and water and sanitation services do not have adequate monitoring and reporting processes neither for their mandated tasks, nor for coordination between them. Detailed monitoring and reporting framework should be developed to evaluate each institution's performances as well as to resolve issues that occur at every operational level.

Opportunities

Examples of the monitoring and reporting R&R can be: WRUAs reporting public concerns and illegal water abstraction to higher level institutions (BWRC and/or WRA) to reduce non-revenue water, and WSPs' reporting on their performance to WASREB for evaluation and renewal of their service licenses. Overall PSP monitoring at regional level can be done through the PSP Advisory and Oversight Board.

WS PSP MODEL FUNCTIONS AND ACTORS

Counties may decide to form JV SPCs at cross-county level to create clusters of larger scale, and/or to fully address the needs of nomadic populations in ASAL rangelands. However, some counties may wish to keep the provision of water services as a discrete function within county bounds. For this reason the model remains flexible about the level on which such partnerships are formed.

As water resources and follow water catchment rather than political bounds, cross-county considerations will come into play whether the joint venture is formed at cross-county or not. Thus, Integrated Regional Water Management Program (IWRM) frameworks and mechanisms created by state water agencies for "big picture" water planning at the regional level frameworks must be followed at all levels of model operation. Various participating agencies and organization considering water supply, water quality, watershed protection and protection of local ecosystems must therefore be involved in the identification and prioritizations water resources projects and programs based on local and sub-regional plans.

As the agency responsible for developing guidelines for water resources allocation and issuing water use permits, the BWRC may review seasonal availability of water for each clustered project, which is developed by the WWDAs, at the regional (cross-county) level to avoid excess water withdrawals that cause fast dry up of water resources as well as environmental deterioration of the catchment.

The Water Act 2016 is to transform the 8 WSBs into 47 Water Works Development Agencies (WWDAs) in each county of Kenya. The WWDAs develops and manage national public water works in cross-county whilst county public water works are developed by the respective county. WWDAs can identify regional level projects, and subsequent project proposals should be checked by the BWRC for proper water use before submitting the proposal to the PSP Center.

Once WWDA-developed cross-county project is approved by the PSP Center, the WWDAs should hand over the projects to the respective counties and/or joint committees upon commissioning. As mandated by the Water Act 2016, WWDAs will provide technical assistance and capacity building to WSPs to improve quality of water services provided to customers in the region.

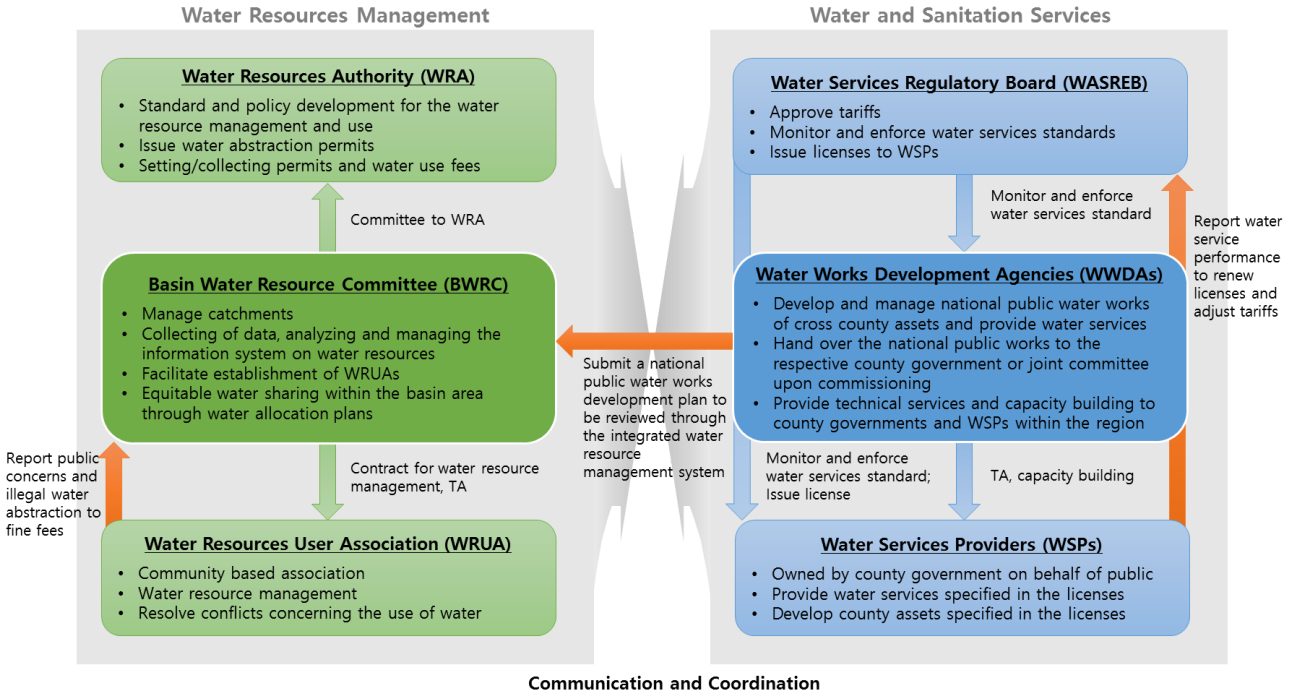


Figure 9. Current and Possible (in orange) Roles and Interaction between the Water Resources Management and the Water and Sanitation Service Institutions at the Regional Level.

Water service assets have been managed by Water Services Providers (WSPs) through Service Provision Agreements (SPAs) signed with WSBs, and licensed by the Water Services Regulator Board (WASREB) according to the newly amended Water Act 2016.

Furthermore, Water Resources User Associations (WRUAs), which have been part funded by WSTF, are water users and riparian land owners associated for the purposes of cooperatively sharing, managing and conservation of a common water resource. WRUAs contract with Basin Water Resource Committees (BWRC, formerly Catchment Area Advisory Committees)[30]. The WSTF channels grants to WRUAs to carry out activities in their sub-catchment management plans (SCMPs). WRUA protect water resources by conducting a water abstraction surveys the sub-catchments to identify all legal and illegal water abstractions. The WRUA also communicates with water users to resolve related conflicts.

In addition to increasing rainwater harvesting activities, which can be achieved through this project's target technology of water pans, other WRM activities include tree planting, contour farming and terracing, awareness campaigns to reduce water wastage, and others. Each water cluster should refer to WRUAs' SCMPs and implement actions to preserve the water resources that projects will rely on.

[30] Under the Water Act 2016, WRUAs formerly registered at the regional Water Resource Management Authority (WRMA) offices to ensure legal status and receive technical advisory from the WRMA, but due to role changes based on the Water Act 2016, WRUAs

RISKS

Various regional level risks to project success include: lack of stakeholder commitment, poor institutional capacity to enforce water resource management, conflict over management of water intake and supply among intra and inter county parties, degradation and limitation of water sources and therefore of water services. Inadequate water resource management causing water catchment depletion, pollution leading to scarcity of quality water. This can in turn lead to health risks, food scarcity and conflict risks over limited but vital water resources.

Intensive coordination among stakeholders to strengthen their commitment and collaboration, staged capacity building programs and clear roles and responsibilities for each party should be planned and agreed in advance.

FINANCING

An earmarked grant element of funding may be provided by WSTF or other donors to help support WRM activities as part of clusters, directed according to the priorities identified in WRUAs' SCMPs. WSTF should set guidance on minimum WRM activities that should be permitted before clusters can be approved for WSTF funding. Abstraction fees must also be accounted for in the model.

3.2.4 COUNTY

County governments are mandated to provide water services but lack the experience, frameworks as well as the financial and technical capacity to reach all those in their jurisdictions. Specifying national PPP and WSS legal and institutional frameworks to the county level has opened a space for cooperation between county governments, local water sector actors and the private sector. However, these actors lack formal experience of forming these partnerships. The PSP Model aims to overcome these issues by elaborating the R&R of counties and companies in a joint venture special purpose company (JV SPC) and providing CAPEX financing for viable clusters projects. Clear R&R are essential to have county government buy in, including political considerations/capacity building for relations/goodwill between county representatives and private actors in the JV SPC as well as franchised WSPs at the local level. As noted in the section above, the model should allow for creation of joint ventures between two or more counties together with companies – but this is expected to be the exception rather than the norm, according to county preference.

STATUS, BARRIERS AND OPPORTUNITIES

Status

Target county governments (Isiolo, Embu, Homabay, Baringo) have included water pan and borehole construction in their County Integrated Development Plans (CIDP, 2013-2017) and have indicated general intention to leverage PPPs but have not elaborated on how to do so and indicate that funding for water services plans should come from national government, international donors and county government budgets. According to the CIDPs, the need for targeted technologies in Isiolo is for 78 projects with eight rehabilitations, in Homabay for 135 projects and in Baringo for 231 with at least 10 rehabilitated boreholes per year in addition, as well as desiltation and renovation of pans. Embu has limited plans listed but this may be related to reporting style. Further details are provided in Box 5 below.

Box 5. Water pans/dams and boreholes in four target county plans

The inclusion of projects in counties' planned investment frameworks is important as public agencies are not able to call projects PPPs if they have not been pre-identified in county government planning documents.

Counties' Integrated Development Plans (CIDPs 2013-2017) include plans on water resources and quality, water supply schemes and water sources. All pledged to mobilise resources internally and externally to promote, support and encourage implementation of projetcs to expand water supply to communities, increase water quality and ease of access through own or partnership initiatives – citing government, county and donor budgets to pay for the works. Across all counties, water budgets ranked fourth after health, transport and education in 2016, with more than 75% of water budgets spent on water service infrastructure.

Specifically, Isiolo CIDP listed three proposed 20,000m3 water pans (Rumate, Narasha, Nteppes) at a cost of Ksh 3 million each to be funded by the National Government, County Government and development partners. Homabay's county-wide project for Constituency-Based Water Harvesting aimed to establish 2 water pans/dams in each constituency, and had a development expenditure budget estimate for environment protection, water and housing for 2017-18 of Ksh 3.009 bn. Meanwhile, Embu's plan did not mention any plans for water pans and only the rehabilitation of four boreholes.

Baringo CIDP cited 10 ongoing water pan projects and a county-wide pan/small dam construction project to build at least 60 water pans as well as 20 small dams. The Baringo County-wide Grountwater Development Programme also aims to site, drill and equip at least 60 boreholes as well as plans for rehabilitation of 10 boreoles extension of existing borehole distribution lines storage facilities.

Table. Target County Plans for Water Pans/Dams and Boreholes

County	Stated Plans		Mentioned Current WSPS
	Water Pans/DAMS	Boreholes	
Isiolo	**Short term** : 1 water pan **Mid-term :** rehabilitate 60 water points inlcuding pans and boreholes	**Short term :** 11 new, 8 rehabilitated **Mid term :** 5 new	Northern Water Services Board (WSPs not listed)
Homabay	16 pans/dams	119 boreholes « required »	Lake Victoria South Water Services Board
Embu	No water pans mentioned in plan	Rehabilitation of 4 boreholes	EWASCO, Itabua-Muthatari, Kithimu-Kithegi and Ngandori-Nginda
Baringo	- Ongoing projects on 10 water pans - County-wide pan/small dam construction project to build at least 60 water pans (2 pans/dams per ward per year)	- to site, drill and equip at least 171 boreoles (1.2b kes) - rehabilitation at least 10 boreholes per year (1.5b kes)	Rift Valley Water Services Board, Communities

Source : Isiolo County Integrated Development Plan (2013-2017) ; Homabay County Integrated Development Plan (2013-2017) ; Embu County Integrated Development Plan (2013-2017) ; Baringo County Integrated Development Plan (2013-2017).

Barriers

Low tariffs, reliance on poor customers, perceived low collection potential and small WSPs' lack of financial management systems and creditworthiness has led to a lack of county-level O&M funds. Such issues have seriously hindered financing of water infrastructure repair, especially in rural areas.

Barriers faced by county governments for engaging the private sector in water service provision are: low capacities of and lack of engagement between county departments and WSPs, poor payment system management, inappropriate tariffs for project sustainability, as well as corruption and high rates of non-revenue water. WSPs and county water departments must be strengthened to manage water services effectively.

Opportunities

New partnerships with private actors can increase the efficiency of county water service provision and allow them to fulfil their water supply mandate in a more cost effective and comprehensive manner. When passed, the PPP Amendment Bill 2016 will amend the PPP Act 2013 to recognize county governments as distinct contracting authorities for PPP projects[31], allowing them to form PPP arrangements and be responsible for management and administration of the project development cycle (PPP Amendment Bill 2016 s 54A (1)).This paired with the county mandate for water services make county governments the relevant agencies for entering into water service PPPs[32].

WS PSP MODEL FUNCTIONS AND ACTORS

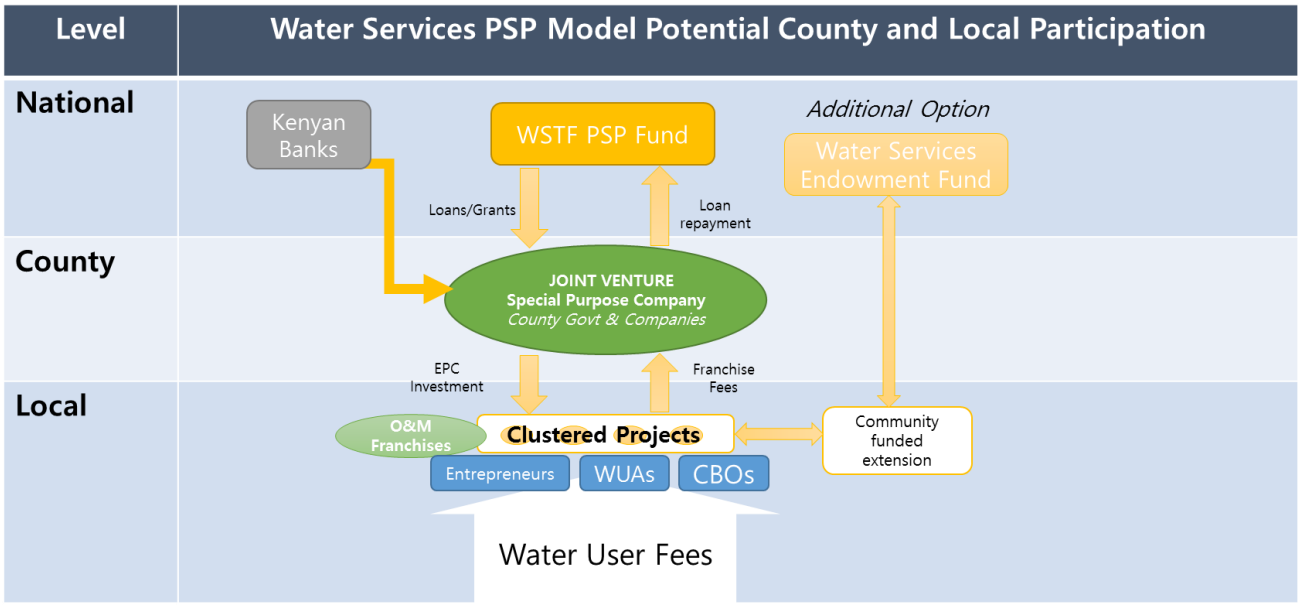


Figure 10. Water Services PSP Model Function and Actors at the County Level and the Local Levle

Under the current PSP model, county governments' role is significant throughout project development and implementation. Important roles of county government in this model are:

1) Identify and engage with local champions in the water services and project development partners.
2) Develop clustered water service projects in coordination with development partners and local community consultation.
3) Conduct feasibility studies on the project viability and sustainability as a contracting authority in support of the project development partners and the WSTF.
4) Aggregate local water services projects to create a package that is financially viable according to the criteria set by the WSTF guidance.
5) Responsible for asset investment to have local ownership of the project.
6) Creates joint ventures with private sectors.
7) Monitoring the performance of the projects and O&M.

[31] This Bill also provides for the Cabinet Secretary to make further guidelines, for example, the PPP Unit's relationship with county governments. Following the amendments, the PPP Committee shall consider not only national PPP priority lists, but also projects proposed by counties.
[32] As noted above, WSTF itself may enter water financing PPPs

8) Provision of capacity buildings to relevant local actors to enable them to become micro-franchisees offering improved water services and better cost recovery.

Joint ventures can be created by county government and private sectors to establish a SPC, which is responsible for water point EPC and leasing of businesses to local level WSPs as franchises. Joint ventures are responsible for training of franchise holders as well as, large maintenance and repairs, and technical support.

WSTF can assist the water services projects at the county level by:

1) Financing (grants, subsidies)
2) Provision of capacity building to county staff in project design
3) Knowledge-sharing of best practices
4) Cataloguing companies available for work
5) Supporting sustainability through the WSPP

If wishing to form a PPP proper, county corporations should prepare and submit a project proposal to the PPP Unit for consideration/recommendation – detailing the strategic and operational benefits of entering into the arrangement (PPP Amendment Bill 2016 s 54A(2)). If the PPP Unit recommends developing the project as a PPP, the county government may approve it subject to a detailed feasibility study. For every county PPP, the PPP Committee shall approve: 1) the feasibility study report prepared by the county government; 2) the negotiated commercial, financial and technical terms; 3) any proposed variations to a project agreement. County governments shall implement PPPs where the project 1) provides value for money; 2) is determined to be affordable; and 3) ensures appropriate risks are transferred to the private party. The Cabinet Secretary may further regulate for better PPP implementation arrangements by county governments, including on: 1) projects they may undertake; 2) contingent liability thresholds that may be approved; 3) management of PPP procurement; 4) negotiation of project terms (PPP Amendment Bill 2016 s 54A(5)). The detailed PPP process is included in Annex 8.

County governments take an active role in local service provision and county staff acting as "supporting organizations(SOs)" should have clearly defined roles to address the varied and specific water challenges in each jurisdiction in partnership with the private sector.

In each county, WSPs registered by WASREB should be the priority service provider. However, private sector or the water user associations (WUAs) and community-based organizations (CBOs) at local level can replace where established WSPs lack capacity to reach all areas, or have offered sub-standard services.

RISKS

Poor project design and financing structure might cause poor water quality, poor service quality, low monitoring and reporting required for the project sustainability. In the project development stage, the system assessment is required to determine whether the project as a whole can deliver good quality of water services as well as revenue generation.

FINANCING

County governments invest initial equity in the SPC to be joined by a minimum level of private company, WSTF concessional and local banks' commercial financing in this model. Such equity investment from the county governments strengthens the guarantee for the private sector (though some financial actors have requested guarantees at WSTF/national level).

Proactive and innovative county government financing can increase supply of treated water, and raise revenues to above O&M costs. Future CIDPs can directly link counties' PPP ambitions to their water sector project pipelines to facilitate integration in counties' budget management system. This should include lifecycle costing of individual projects and clusters as a whole. Thus, county governments should consider all stages of projects including development, implementation and operation in their annual budgeting system. This will include technical assistance provided for local communities, WUAs and CBOs.

3.2.5 LOCAL

WSTF aims to move from financing of community managed water service projects to integrating registered water service providers (WSPs). However, licensed WSPs, face challenges in expanding viable water services to rural areas, usually working in urban and peri-urban areas for operational advantages such as economies of scale and accessibility to sites. Thus, private partners must be engaged in water services projects without neglecting the critical role communities play, especially in rural areas.

STATUS, BARRIERS AND OPPORTUNITIES

Status

Community management is the predominant management approach in rural and peri-urban water supplies, with more than 15,000 community based organizations (CBOs) operating in the Kenyan water space. However, this often impacts on sustainability given communities' limited capacities and knowledge on operation and management. In worst cases, poor management of water projects means that water providers are heading to collapse. Communities have a desire to participate in project identification, location and planning in partnership with county governments. NGOs are also assisting this process in many cases (e.g. Kenya RAPID programme In Isiolo and other ASAL counties). Communities are also accustomed to providing labor and cash contribution for project construction.

Box 6. Successful Water User Association run water point arrangements

1. Kobar Village community water supply in Homabay central ward is a sub-county borehole project with budget of KSHS.5 million to serve 600 households. The private sector carried out a needs assessment and installed solar pumps, kiosks and piping. The community contributed land, labour, security, marketing and management.

2. At Radad Water Project in Mogotio, Baringo County, a borehole serves 800 households. The private sector provided technical assistance, the county provided funds and the community manages water services.

3. The rehabilitated Yamicha, Duma and Urura boreholes in Merti serve 900 households**.** The private sector manages the borehole and undertakes minor repairs while the county supports major maintenance in times of breakdown. The community protects the facility and get services from it.

Barriers

Community management limits the viability of private sector market entry and participation in water service projects. Barriers to private companies' involvement include: lack of cooperation and coordination between and failure to honor agreement among water service actors; conflicts in leadership and management; lack of funds to cater for unforeseen emergencies such as equipment failure; perception that provision of water services is too costly to run/maintain and a lack of frameworks and models for public-private cooperation at the local level.

While community contributions were seen as necessary to ensure their buy in, the average contribution of 20% CAPEX costs was seen as prohibitive to permitting project budgets of adequate size to provide quality

and sustainability.[33] Furthermore, low capacity community level accounting staff also reduces opportunity to access commercial credit results in deficiencies in bank reconciliation, procurement issues, lack of supporting documents and asset registers.

Opportunities

Water services franchises can offer income generation opportunities for local actors, with special efforts made to engage women and youth. Encouraging water services entrepreneurship through franchises also removes the burden of system management from the community. Prudent financial management can also offer potential savings opportunities for project extension and renewal. In this respect, the Water Services Endowment Fund (WSEF) can enhance sustainability of systems and provide a sort of water bank that offers credit for maintenance. This can complement commercial (micro) financing by banks.

WS PSP MODEL FUNCTIONS AND RELEVANT AGENCIES

Local level actors are community based organizations (CBOs), water user associations (WUAs), lone entrepreneurs and micro enterprises. They are engaged in 1) project identification, 2) running of individual (or several) franchises and 3) project extension, and potentially renewal. They also benefit from other income generating opportunities created by the establishment of green technology water service points. At local level, the JV SPC interacts with entrepreneurs and micro-enterprises in a franchisor-franchisee relationship. Meanwhile, the franchisees interact with users by providing water services and collecting payments.

Communities help identify projects in response to county government calls for proposals. They are supported but ultimately responsible for initial feasibility studies at proposed sites. For project identifications county staff or expert consultants should work with communities/small WSPs on project identification and selection from among technology "options" (e.g. water pan size; boreholes; capacity of wind/solar pumping technology). Selection from a small but flexible range of technologies means that the franchises are at once standardized while context specific. Independent assessors can check viability of business model for the given community setting and make adjustments at the project

Box 7. Alternative approach: Delegated management model (DMM)

Under the Delegated Management Model (DMM) a contractor is paid to carry out water services. The contractor may be a private company or a community group.

The project steps of the DMM are: 1) project planning; 2) community mobilization; 3) recruiting and selecting operators; 4) construction; 5) revisit communication/outreach strategy; 6) final assessment.

For example, Kanyathiang Water Supply Project in HomaBay runs 11 kiosks and 8 schools for a total of 1,900 users, under delegated management as an alternative to the common community based management model. Private operators are contracted to provide services funded by government, donors and beneficiaries, while the government retains ownership.

DMM is at the boundary of PPP classification, depending on the risk transferred. In the PPP model, the public delegation of rural water service delivery to the private sector is general, but the public sector may delegate this responsibility to community or WUAs/CBOs depending on circumstances.

[33] According to the technical feasibility study, project beneficiaries contributed to capital finances at 17.5% of surveyed technology points, covering an average of 19.5% of total costs. Based on this, each household would be required to contribute around KShs 11,800 for development of 30,000m^3 water pan and KShs 4,300 for a borehole fitted with solar pumping. As many rural Kenyans earn less than KShs 200 per day, this represents at least 2 months income in co-contribution (cash/in kind) for technologies considered under this project.

development stage. Project-level service delivery models developed in the SNV/Kenya Markets Trust toolkit can also help inform this level.

Following clustering, financing, construction of the water service systems is primarily the responsibility of private actors but a community cooperative may donate labor for excavation of water pan and/or for laying pipes in lieu of full cash payment of the franchise fee. Small pans of up to 10,000m^3 can be constructed with manual labor under food/cash for programmes but mechanized equipment (bulldozers, loaders, tippers and/or excavators) is required for larger pans therefore community participation in construction may be more limited in the size of pans recommended in the technical feasibility study (30,000-70,000m^3).

Following EPC, local level franchise holders are vital for successful water services implementation as they are the interface between the technology and the users. Franchises (entrepreneurs, micro-enterprises) pay for the right to provide water services and are responsible for O&M under a contract with a franchisor (the SPC). WUAs and the CBOs registered as a legal entity can act as franchise holders, contributors of funds, as well as contributors of labor in the model. Efforts should be made to form 3rd party agreements with WASREB for the effective functioning of the franchise mode. The franchisor provides training, technology standardization, and startup capital to the franchises. Depending on the size of the operation water point regular O&M staff may include a management committee, kiosk attendants, security officers and technicians. There is also need for qualified technicians to come on a sporadic basis for large scale repairs. This should be the contracted responsibility of the SPC – either Sub-County level technicians provided by county government or private company, or via the support of an external partner.

While the SPC franchisor will install and retain responsibility for the basic infrastructure, the franchisee may opt to extend or renew systems over time.

The result of the micro-franchise model may look similar to the delegated management model (see Box 7) it differs in that the franchisor is not a contractor but rather an entrepreneur who takes on greater resource, service delivery and customer demand risk than a contracted service provider, who is likely to get paid a similar amount regardless of the amount of water sold.

Capacity Building Needs

1) Project identification and initial feasibility studies (led by county/external expert consultants)
2) Franchises (financial management/accounting, basic O&M accounting, water quality monitoring)

Monitoring and Evaluation

Oversight and regulation is necessary to check O&M performance and accounting procedures. Auditing should occur as a regular function, rather than as an emergency measure when a service dysfunction has become critical.

RISKS

Low local financial management capacity, corruption, lack of or inadequate internal controls as well as external audit, monitoring and evaluation systems for quality control create risk at local project implementation level. Technical assistance for financial management, strategic business plan development, strengthening internal audit and developing monitoring mechanism can mitigate against these risks. Service risks and are borne by the franchisee.

FINANCING

Franchisees do not contribute to upfront CAPEX for basic project infrastructure, nor do they become its owners under the franchising model. Rather, they pay one-off franchise initiation fees (usually in cash, but sometimes in kind) followed by regular payments of a percentage of user fee for continued use of the service. Following project establishment, user fees are the main revenue source for the O&M and finance servicing. Where individual franchises do not generate enough internal revenues the cluster as a whole should be designed for overall profitability. In cases such as extremely remote or poor areas, where the cluster cannot be feasibly made profitable government subsidy may be needed as a permanent feature.

While the SPC is in charge of CAPEX for basic infrastructure, franchisees may use savings or microfinance loans for project extensions. If adopted in addition to the main model, the Water Services Endowment Fund may also be used by communities who have invested in it.

3.2.6 PRIVATE SECTOR

Engaging both companies and commercial banks can improve water service provision to underserved rural and peri-urban areas. Potential for expanded private sector participation is clear given that poor Kenyans are currently severely underserved, generally pay more and travel farther for water collection than other users. The bottom line for private sector engagement in PPPs is a minimum guarantee of payment and revenue. Thus, clear and reliable opportunity for profit is critical. The next section addresses the status of private companies in Kenyan water services, the barriers they face for entry and opportunities for widening their expansion. The participation of commercial lenders and foreign investors is considered in the financing section below.

COMPANIES STATUS, BARRIERS AND OPPORTUNITIES

Status

Companies' private investment by companies to earn money from the supply of water to bottom of pyramid markets through water pans and boreholes has been limited to date. Most have only been engaged in construction through public procurement. Companies that have been involved in water services technology provision include Grundfos, Davis and Shirtliff, Go Solar Systems, Epi-center Africa and Kijito Windmills Engineering Ltd., among others. There may be potential for engagement of other international companies for the provision of clustered projects.

Water service companies have not yet been formalized under a clear structure. Under the Companies Act, (mostly urban) water companies are registered as private, limited liability companies but the majority have been owned by local authorities to manage public assets to provide essential public services to date. Clarification of these companies' status can clarify issues such as staff transfer, taxation and accounting. Legacy issues such as poor project selection and design of previous water service projects have led to cost overrun or project abandonment, undermining perceptions of the fundamental viability of such projects. Thus, the current management model has undermined the sustainable business case for rural water supply investments.

Barriers

Challenges and bottlenecks hindering private companies' participation include problems of market entry/financing, O&M cost recovery (e.g. due to resource scarcity, non-revenue water, lack of willingness to pay) large scale repair issues. A lack of established companies and the new and evolving landscape of devolved water services and PPP legislation mean that there is currently no strong industry network linking actors, including on knowledge sharing. Furthermore potential small entrepreneurs lacked manufacturing and entrepreneurial expertise as well as knowledge on suitable business strategy. Financial and technical partnerships with larger companies are therefore required to achieve project initiation, sustainable operations, renewal and upscaling.

Market entry barriers include uncertain revenues (perceived lack of willingness/ability to pay for water) paired with a lack of government incentives and guarantees. Some companies may have been crowded out due to large inputs of cheaper Chinese resources such as solar PV technologies – though stakeholder consultation participants reported a turn away from these products due to lack of functionality in the medium to long term. Commercial competition may also have been stifled by Kenya's dependency aid/government support for water services, and corruptive and bureaucratic environment including long bidding and processing periods. The initial field mission suggests that private companies are willing to take on EPC and in some cases O&M but not make initial investments.

Cost recovery of O&M has proved challenging. Furthermore the remote geographic distribution and small size of projects reduce attractiveness of O&M activities even for Kenya-based companies. Efforts have been made to transform community-managed rural projects into formally recognized WSPs (The World Bank Group, 2015) but many small actors remain unregistered and therefore largely unregulated. Even where community-based O&M is working there is a further challenge that many companies do not make arrangements for and/or are unwilling to provide necessary technical skills and/or finance for repairs.

Both community operators and technology companies have often been unable to come to an agreement on who is responsible for conducting repair/renewal. In this model – it is suggested that the SPC franchise-holding company should cost its liability for likely repair bills into the franchising contract from the offset and be held liable for such works and parts supply when they arise. Training of communities on basic O&M procedures can also help to reduce the need for large scale repairs.

Opportunities

The case studies in section four enlighten on the many opportunities are open for private sector engagement in Kenyan services in innovative structures and partnerships. Key lessons for this model include opportunities for use of mobile payment platforms (e.g. Grudfos and Davis and Shirtliff), lease-purchase or leasing of services (e.g. Grundfos), the use of skilled entrepreneurs for service delivery (RIWIK), and opportunities for maintenance businesses for fairly routine repairs (Fundifix). The model aims to make best use of available international funds in the form of grants and concessional loans to catalyze private companies' investment and participation – thus opening opportunities for domestic and international companies in water services.

WS PSP MODEL FUNCTIONS AND ACTORS

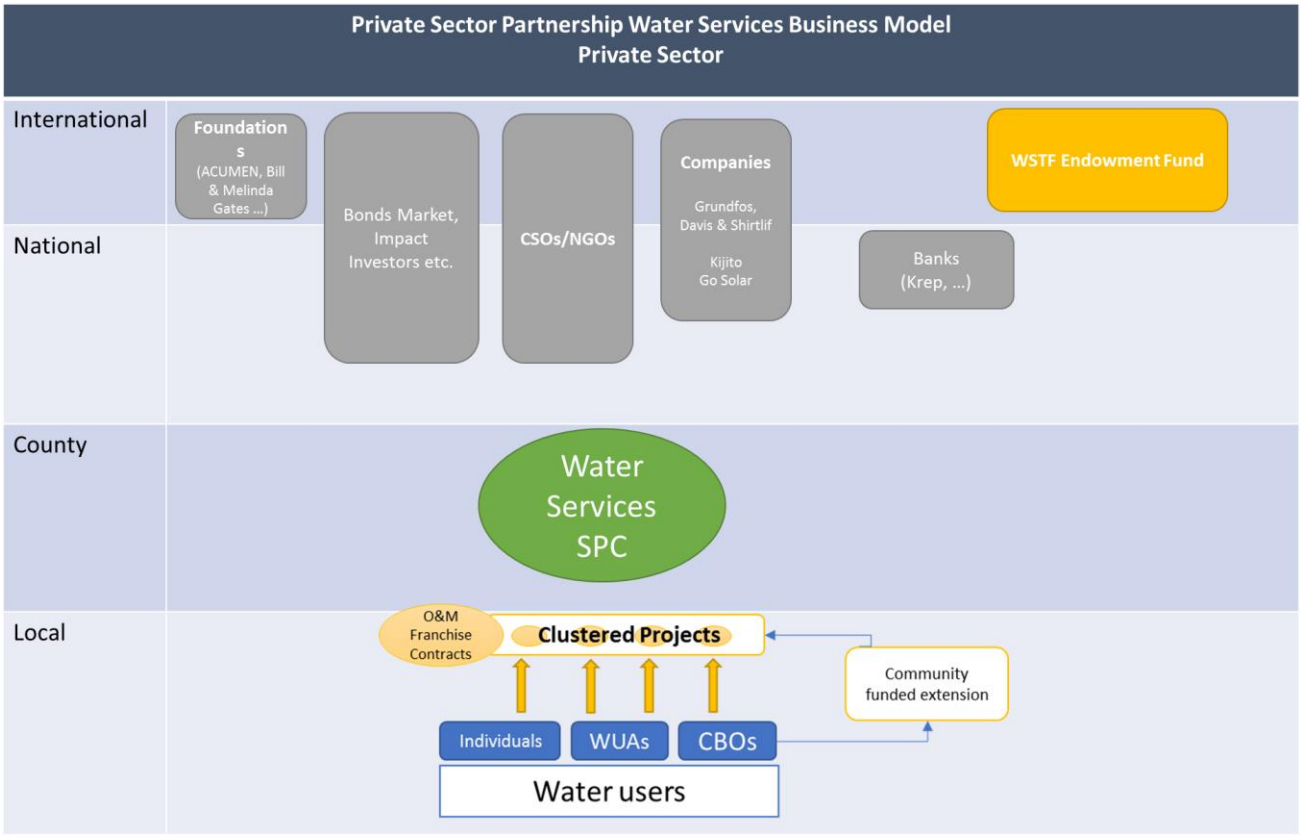


Figure 11. Water Services PSP Model Functions and Actors of the Private Sector

The franchise model's two-tier structure sees larger companies in joint ventures perform EPC and remain owners of the technologies, while smaller entrepreneurs perform the O&M further down the value chain. The model should encourage cross-sector cooperation between water providers and renewable energy companies both for provision of pumping equipment and aggregated income opportunities.

Companies consulted in the design of this model included Grudfos, Go Solar, Kijito windmills. Furthermore, the Kenya Water Industrial Association (KWIA) and Kenya Renewable Energy Association (KEREA) were also consulted. Their main concerns were the need to offer better incentives for their participation including guarantees, balancing clusters between high and low volume customers to guarantee minimum revenue as well as an attractive level of infrastructure need to attract private sector players. It was further noted that increasing demand for multiple use of water and ensuring water use for longer durations throughout the year can attract the private sector. A change of community mind-set on free water and services was critical for sustainable PPP models.

RISKS

Under this model, companies in the SPC take on political, construction, and technology risks. It is particularly significant that companies take on technology performance risk as they are responsible for replacing failed parts, ensuring that both materials and the relevant technical expertise is made available. This risk remains with the SPC because the only way for the SPC to recover its EPC expenditure is through retrieving micro-franchise payments, which will of course only be collectable if water services are functioning to allow collection of user fees. Companies risk due to information gaps and hidden costs should be minimized due to

clear tendering and contracting processes, as well as counties' clear lifecycle costing of individual projects as well as clusters.

FINANCING (COMMERCIAL LOANS AND EQUITY INVESTMENT)

Commercial Loans

As noted above, the unsustainable future of grant aid for water services in Kenya creates the need for more loan financing of water service projects in future – in both concessional and commercial form. Commercial financing may be facilitated by the fact that SPCs will operate at arm's length from counties as autonomous entities that can borrow money for project (off-balance sheet) finance, and be managed in a commercial rather than public bureaucratic manner. However, commercial loans can only be made subject to acceptable financing and security structure supported by evidence of repayment ability – which is in turn dependent upon the internal revenue generation potential of individual projects and of the cluster as a whole. Commercial lenders' minimum required "annual debt service cover ratio (ADSCR)" depends on the debt cushion and therefor revenue availability. Since rural water services projects' small and fluctuating cash flows do not promise a large debt "cushion", guarantees are needed to reassure lenders they will be repaid in worst-case scenarios. Developing loan financing products that are more suited to the water sector such as loans with longer tenors, and seasonal repayment structures (e.g. allowing for grace periods during the rainy season followed by bullet repayments that occur right after the dry season when water pan and borehole use and therefore revenue is typically at its highest).

Higher levels of guarantees for loans offered to joint ventures by commercial banks should be offered at first and later reduced once the profitability of clusters have been proved (and improved). Consultation participants stated preference for receiving guarantees from national as opposed to county government, which would necessitate following the PPP Procedure. A further incentive for commercial banks to lend to water services PPPs could be facilitated by the WSTF by opening tenders for management of the community Water Services Endowment Fund (WSEF) with the condition that an accompanying micro-credit facility must also be offered.

Equity Investment

Along with the county governments, private companies are expected to make a minimum equity investment in the JV SPC. Private equity has been little invested in water pans and solar/wind pumping systems to date, but bottom of the pyramid investment funds are emerging. For example, two Green Climate Fund-supported investment ventures are due to start operation in Kenya's green energy sector. These are the KawiSafi Ventures fund for investment in-country technology companies in off-grid communities as well as Green Energy Access Programme, an investment fund to provide financing for decentralized energy service companies for off-grid and mini-grid systems for rural households and communities and renewable energy for industrial players. As the water points of the WSTF PSP Programme clustered projects will make use of green technologies, the availability of these funds for direct investment in JV SPC should be explored.

While subsidies and incentives for company participation are necessary in initial stages but are ultimately unsustainable, therefore concessional financing and credit guarantees should be encouraged following the pilot stage, with careful regulation to prevent against misuse by utilities.

Legal Regulation on Attracting Foreign Investment

According to the U.S. Department of Commerce, Kenya has an improving environment for foreign direct investment (FDI) (US DOS, 2016). In general, the Kenya government provides almost same treatment as local investors to foreign investors in ownership, access to government-financed research and the government's export promotion programs. There are no substantial limitations on joint venture arrangements between foreigners and nationals, or on establishing a 100% foreign owned company and registering a branch of a foreign company. Also, the Kenyan legal system is quite flexible on exit options by leaving it to the arrangement between the investors.

There are requirements for investors such as compliance with environmental, health and security standards. In case of potential adverse impact on the environment or health, an approval from concerned authorities are needed, the National Environment Management Authority (NEMA) or Public Health Authorities such as Ministry of Health, County Health officer. Other barriers identified is : 1) difficulty in obtaining work permits; 2) fixed minimum amount($100,000) for foreign investment to be qualified for investment incentives and an investment certificate; 3) restriction on holding land only on the basis of leasehold tenure with cumbersome and opaque process in acquiring the land.

In addition, Kenya provides exceptions from import duty and the Value Added Tax (VAT) for supplies imported or bought for the construction of power-generating plants, as well as certain equipment and machinery. Under the VAT Act 2013 and its amendment Act of 2014, solar cells and modules that are not equipped with elements such as diodes, batteries or similar equipment are free from import duty and exception from VAT (VAT Act 2013, 1st Sch). PV semi-conductor devices including PV cells and light-emitting diodes, together with wind-powered generating sets (preassembled) are subject to a 5% import duty and 16% VAT.

4. SUMMARY AND RECOMMENDATIONS

4.1 SUMMARY

Kenya faces many evolving challenges related to water service provision including water scarcity, pollution of water sources, climate change, a growing and urbanizing population, political and ethnic conflict as well as corruption. The country's diverse ecological and socio-economic landscape also present different challenges by region. The public mandate for Kenya's water services has moved from the national to county level, paired with an aim to move from public to private provision as well as from grants to concessional loan funding supported by internal revenue generation via user fees.

The business model for a Green Technology Water Services Private Sector Participation Programme (WSPP) for underserved peri-urban and Arid and Semi-Arid Lands (ASAL) areas in Kenya may be implemented to assist in financing provision of water to underserved areas. It aims to help balance between water as a human right and also water as a service that must be provided at real yet affordable cost. Leveraging new public and private sector finance and expertise can help reduce dependence on grant financing. This model aims to clarify roles of different actors, legal issues and make recommendations to enhance financial feasibility. It also includes a suggestion of a Water Services Endowment Fund to act as a kind of community "Water Bank" for project extension and improvement.

Surveys of the three target technologies of water pans, solar pumping and wind pumping systems sampled in the target counties of Embu, Baringo, Isiolo and Homabay found performance was hampered by: low capital investment limiting technology type and capacity; poor project design and management; limited experience and under-capacity community management. However, potential was found for revenue generation from water service private sector participation and associated businesses through clustering of O&M service provision to enhance economies of scale.

Legal frameworks are in place for water service PPPs where they are mandated at the county level but experience, clarity of roles and a proven business model are lacking. The rural water service sector may not be ready for PPPs as defined under the PPP Act given the small scale of services, lack of experience, trust, financing, revenue potential as well as lack of qualified and interested private actors. Therefore, a Private Sector Participation (PSP) Model was developed which may not necessarily meet the strict definition of the PPP Act and does not require following its lengthy process.

A newly established PSP Center within the WSTF could form necessary guidelines, frameworks and partnerships for WSPP and WSEF implementation. An advisory and oversight board is also necessary.

Key considerations in creating the model included WSTF aims of:

- **Transitioning from concessional financing**
- **Engaging new partners from both the public and private sector**
- **Implementing innovative financing structures**
- **Transitioning from community to professional management structures**
- **Use of green technologies (borehole, solar, wind)**
- **Promoting sustainable infrastructure**

Under the WSPP, the county government forms project clusters and invites a private company or companies to a joint venture water services special services company (JV SPC). Private partner(s) undertake construction, high-level operational functions such as management of finance and major repairs and form contracts with smaller private water service providers (WSPs) as micro-franchise holders at the local level. Franchisees carry out basic daily operations and maintenance (O&M) tasks and gaining revenue from service fees. The public sector retains project identification, monitoring and supervising role. Civil Society Organizations can help ensure that cross-cutting considerations of climate change; human rights; gender and youth; and water resource management are addressed across the model.

Different roles for actors at were explained at the following levels: international (finance and technical assistance), national (finance, policy, and regulation), regional (water resource management, project development), county (project finance and formation, clustering, forming and controlling SPCs) and local (franchise holders, users). Risks of water service PPP projects include politica, commercial, legal regulatory and contractual, water resource, and reputational risks. These should be allocated to the party who can manage them at lowest cost.

Financing for water services come from the three Ts of taxes, tariffs and transfers. Since the WSTF remit covers commercially unviable rural areas as well as the underserved urban poor, a WSTF PSP business model should not aim for full internal cost recovery from all water points.

However, proving and improving financial viability will be essential to engage the private sector and also support the move away from grants. Offering guarantees to attract credit and investment, as well as increasing revenues and therefore incentives for project participation are key elements addressed. The following three elements must also be considered: 1) better financial planning using a lifecycle costing approach; 2) ensuring shared ownership of projects and associated risks; and 3) building on previous results based aid approaches.

Engaging both companies and commercial banks can improve water service provision to underserved rural and peri-urban areas.

4.2 KEY RECOMMENDATIONS

Key recommendations include clustering of projects, franchises rather than community management models, encouraging multiple uses of water, use of mobile payment platforms, and leaving the main technology risk with technology providers rather than O&M stakeholders. These are outlined in Table 24 below.

Table 24. Key Recommendations

ITEM	LEVEL	DETAIL
New finance partnerships	Public	Climate Funds for PSP Programme, International companies and investors
	Private	Commercial banks for Water Services Endowment Fund
Consultation, coordination and cooperation at all levels	International	Coordination with existing and new donor projects, priorities and plans
	National	Adherence to government policy, plans, frameworks and regulations – securing cross-ministry buyin and support
	Regional	Cross-county cooperation to share the burden of providing equitable water services to roving ASAL populations, attention to cross-boundary water resource issue at water basin and catchment level ; Capture interests, knowledge and participation of regional water players such as Water Service Boards
	County	Ensure interests of county elites are sufficiently reflected to ensure their buyin and full participation
	Local	Address community concerns about private sector participation discuss and raise awareness on the importance of paying for quality water, ensure broad representation including women and youth, reflect communities ability/willingness to pay in tariffs,
	Private Sector	Discover key incentives for private sector involvement such as preffered size and nature of clusters in order to inform guidelines for counties
	Civil Society	Enlist civil society inputs and support on adherence to international directives and standards on water service provision
Capacity building and technical assistance targeted to specific needs at all levels	International/ Civil Society	May provide inputs to trainings/offer technical assistance such as « Train the Trainers » workshops, etc.
	WSTF	Training of relevant staff on PSP model/hiring of qualified staff. Creation of the PSP Unit, delegation of a supervisory board
	National	Training of relevant staff on how to interact with the new model according to their organization's mandate
	Regional	
	County	For project identification and design, lifecycle costing ; Water Works Development Agencies (WWDAs) can provide capacity building
	Local	Project identification and initial feasibility studies (led by county/external expert consultants) ; Franchises (financial management/accounting, basic O&M accounting, water quality monitoring)
	Private Sector	Facilitation of meetings between county and private sector actors to facilitate understanding of needs and the later forming of JV SPCs
County-Company Joint Ventures over tendering	Joint ventures enable counties to keep « skin in the game » for continued control over and risk sharing of clusters while maintaining clear roles and responsibilities	
Move to sustainable lifecycle financing and earmark funds for water resource management	Move from least cost logic of minimum water infrastructure CAPEX investment and unskilled community management to full cost	
Micro franchising for separation of EPC and O&M functions	SPC is charged with installment and resolving major issues with operation ; Franchisee is in charge with customer facing services and basic O&M ; Financial management is largely operated automatically by mobile payment platform	

5. CONCLUSION AND NEXT STEPS

Current activities alone cannot deliver the requisite volume and capital needed to develop sustainable water supplies for Kenya's ASAL and peri-urban areas. Therefore low financial and technical capabilities for viable rural and peri-urban green technology water supplies must be addressed in new ways. As the Kenyan constitution mandates government provision of water to the public, private sector participation cannot be expected to shoulder the entire weight of service provision. However, private sector finance and expertise can ease the burden on the public purse by bringing efficiencies and investment.

The outcomes from the present CTCN assistance will contribute to addressing knowledge gaps to inform other programmes such as the EU climate proof programme, the Danida-funded thematic programme for Green Growth & Employment Creation in Kenya (2016–2020), as well as serving to catalyzing larger financing. As the Kenyan constitution mandates government provision of water to the public, private sector participation cannot be expected to shoulder the entire weight of service provision – especially to typically poor and underserved populations in ASAL and peri-urban areas. However, private sector finance and expertise can ease the burden on the public purse by bringing efficiencies and even investment.

Next Steps

The next steps for CTCN TA completion to be carried out by UDP are the dissemination workshop, drafting of a concept note and catalyzing finance. Following that, the deployment of the business model could be: 1) Programme Preparation, 2) Programme Initiation, 3) Project identification and clustering, 4) Evaluation and Approval, 5) joint venture formation and financing, 6) Implementation, and finally 7) Monitoring and Evaluation. A more detailed tables on the steps and R&R of these stages is included in Annex 11.

A small-scale pilot to prove the functionality of the model to all actors, and attract private sector involvement is recommended. This pilot could be run using grant funding of existing programmes if available, or seek to secure project preparation funding where not. If neither of these options is available, a pilot programme could be built into an application for a larger proposal. It should follow the below next steps on a smaller scale and include steps to improve and refine the model based on pilot study findings.

Table 25. Next Steps

STAGE	ACTIONS
CTCN TA completion	Drafting a concept note
	Catalyzing finance
Programme preparation	Finalizing of business model internally and with government agencies
	Establishment of detailed requirements and guidelines
Programme initiation	Announcement & Promotion of PSP Programme By WSTF
	Capacity building of counties and companies
Project identification and clustering	Capacity building of sub-county actors to identify projects
	Evaluate, select and approve projects to form cluster
Cluster evaluation	Approval of clustered projects from relevant agencies
	WSTF PSP center approval of project clusters
Joint Venture formation and financing	Counties and Private companies to form joint ventures – agree detailed financial arrangements
	WSTF loan approved for JV SPC's implementation of clustered projects
	Any remaining financing needs to be met from other sources by SPC
	Franchises are formed for individual/sub-clusters of projects
	WSTF releases funds to Joint Venture
Implementation	EPC
	Franchises implement the clustered projects with JV/WSTF oversight
	JV company obligated for large scale repairs of project
Monitoring and evaluation	Framework should be developed to facilitate M&E at all levels

REFERENCES

Accenture Development Partnerships. (2012). *A new franchise model for veterinary services in Africa.* Retrieved from https://www.accenture.com/in-en/~/media/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Strategy_5/Accenture-Sidai-Africa-ADP-Assessing-Franchise-Model.pdf

AEA Group. (2008). *Final report. Kenya: Climate screening and information exchange.* Retrieved from http://www.dewpoint.org.uk/Asset%20Library/DFID/Climate%20Risk%20Assessment%20Report%20-%20 Kenya.pdf

Chiramba, T., Mogoi, S., Martinez, I., & Jones, T. (2011). Payment for Environmental Services pilot project in Lake Naivasha basin, Kenya. *UN-Water International Conference.* UNEP. Retrieved from http://www.un.org/waterforlifedecade/green_economy_2011/pdf/session_4_biodiversity_protection_cases_kenya.pdf

Diallo, O. (2015). *Levers of change in Senegal's rural water sector. World Bank Water and Sanitation Programme Report.* Retrieved from https://www.wsp.org/sites/wsp.org/files/publications/WSP-Levers-of-Change-Senegal-Rural-Water-Systems.pdf

Economist Intelligence Unit. (2015). *Africa Infrascope 2015: Evaluating the environment for public-private partnerships in Africa.* Retrieved from https://ppiaf.org/documents/2399/download

Foster, T. (2015). Sustainable finacne for universal rural water services . *25th World Water Week*. Oxford University.

Fugers, B. (2011). *RIWIK Wind Energy.*

Global Public Policy Network on Water Management. (2009). *Water and sanitation as cross-cutting issues for agriculture, rural development, land, drought and desertification.* Retrieved from http://www.stakeholderforum.org/fileadmin/files/GPPN_2008-9/Papers/GPPN_Water_as_a_Cross_Cutting_Issue_for_CSD-17.pdf

GWP-TAC. (2000). *Integrated Water Resources Management.* Global Water Partnership/Technical Advisory Committee.

Hurlimann, T. (2011). *Micro-franchising: application and success factors. Kellogg School of Management.* Retrieved from https://www.kellogg.northwestern.edu/~/media/Files/Research/CRTI/110923CRTI%20Academic%20Deliverable%20Tobias%20Huerlimann.ashx

IIED and SOS Sahel. (2010). *Modern and mobile: The future of livestock production in Africa's drylands.* International UK.

Investopedia. (2016). *Franchise*. Retrieved May 24, 2017, from http://www.investopedia.com/terms/f/franchise.asp

Isiolo County. (2013). *County Integrated Development Plan.* Retrieved from https://roggkenya.org/wp-content/uploads/docs/CIDPs/Isiolo-County-Integrated-Development-Plan_CIDP_2013-2017.pdf

Kenya Markets Trust. (2016, October 31). *Which Water Service Delivery Model is Best for Your Region?* Retrieved April 17, 2017, from http://www.kenyamarkets.org/press/address-governance-water-bodies-sector-players-told/

Kibirde, M. a. (2008, August). Survival for the Fittest: Pastoralism and Climate Change in East Africa. *Oxfam Briefing Paper*, p. 116.

McSweeney, C. N. (2009). *NDP climate change country profile: Kenya.* Retrieved from http://ncsp.undp.org/sites/default/files/Kenya.oxford.report.pdf

Njoka, J. T. (2016). *Kenya: Country situation assessment working paper.* University of Nairobi, Kenya. Retrieved from http://prise.odi.org/wp-content/uploads/2016/01/Low-Res_Kenya-CSA.pdf

Njoroge Regeru & Company. (2017). *Real estate joint ventures: protecting your interests.* Retrieved from http://www.njorogeregeru.com/article/article-details.aspx?AID=5

Olingo, A. (2016, April 27). *Here's my land, bring your cash we make a deal.* Retrieved May 26, 2017, from Dayily Nation: http://www.nation.co.ke/lifestyle/DN2/How-REAL-ESTATE-joint-ventures-work/957860-3179414-wfm4er/index.html

Onjira, P. (2014). Application of remote sensing and rainfall-runoff-inundation model to near realtime flood inundation mapping in Kenya. *Master's Thesis.* Tokyo, Japan: National Graduate Institute for Policy Studies.

Park, D. (2010). *Project Finance & PPP Project Finance & PPP.* Retrieved from http://www.kdi.re.kr/upload/16209/2-2.pdf

REGLAP Secretariat. (2012). *Key statistics on the drylands of Kenya, Uganda and Ethiopia.* Retrieved from http://reliefweb.int/sites/reliefweb.int/files/resources/Annex%2B1%2BKey%2BStatistics%2Bon%2Bdrylands%2Bof%2Bthe%2BHorn%2Bof%2BAfrica_October_%2B2012.pdf

Republic of Kenya. (2013a). *Kenya's National Climate Change Action Plan.* Retrieved from http://cdkn.org/wp-content/uploads/2013/03/Kenya-National-Climate-Change-Action-Plan.pdf

Republic of Kenya. (2013b). *Technology needs assessment and technology action plans for climate change adaptation.* Retrieved from http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TNR_CRE/e9067c6e3b97459989b2196f12155ad5/40fa25c67080433087602619dcdefc6d.pdf

Republic of Kenya. (2013c). *The Public Private Partnerships Act s. 4.* Retrieved from http://pppunit.go.ke/downloads/download/6

Republic of Kenya. (2015). *Kenya's Intended Nationally Determined Contribution (INDC).* Retrieved from http://www4.unfccc.int/submissions/INDC/Published%20Documents/Kenya/1/Kenya_INDC_20150723.pdf

Republic of Kenya. (2016). *The Public Private Partnership (Amendment) Bill.* Retrieved April 17, 2017, from http://bcckenya.org/assets/documents/Public%20Private%20Partneship%20(Amendment)%20Bill%202016.pdf

Republic of South Africa. (n.d.). *Working for Water (WfW) Programme*. Retrieved June 5, 2017, from https://www.environment.gov.za/projectsprogrammes/wfw

The World Bank Group. (2011). *Financing Small Piped Water Systems in Rural and Peri-Urban Kenya.* Retrieved from https://openknowledge.worldbank.org/handle/10986/17316.

The World Bank Group. (2013). *Climate change impacts on water resources and adaptation in the rural water supply and sanitation sector in Nicaragua.*

The World Bank Group. (2015). *County Government's Manual for Commercial Financing of the Water and Sanitation Sector of Kenya.* Retrieved April 17, 2017, from https://www.wsp.org/sites/wsp.org/files/publications/WSP-Manual-Commercial-Financing-Water-Sanitation-Sector-Kenya.pdf

The World Bank Group. (2016). *Kenya Infrastructure Finance/PPP project (P121019) The World Bank Implementation Status & Results Report.* Retrieved April 17, 2017, from http://documents.worldbank.org/curated/en/540651467318742909/pdf/ISR-Disclosable-P121019-06-30-2016-1467318728511.pdf

The World Bank Group. (2016a). *Kenya Infrastructure Finance/PPP project (P121019): The World Bank Implementation Status & Results Report.* Retrieved from http://documents.worldbank.org/curated/en/540651467318742909/pdf/ISR-Disclosable-P121019-06-30-2016-1467318728511.pdf

The World Bank Group. (2016b). *Joint Ventures / Government Shareholding in Project Company.* Retrieved from https://ppp.worldbank.org/public-private-partnership/agreements/joint-ventures-empresas-mixtas

The World Bank Group. (n.d.). *Overview (Kenya)*. Retrieved April 15, 2017, from http://www.worldbank.org/en/country/kenya

UNDP Kenya. (n.d.). *Adaptation to Climate Change in Arid and Semi-Arid Lands (KACCAL).* Retrieved April 30, 2017, from UNDP Kenya: http://www.ke.undp.org/content/kenya/en/home/operations/projects/environment_and_energy/Adaptation_to_Climate_Change.html

UNESCO. (2012). *Managing water under uncertainty and risk.* UN Water Report.

US DOS. (2016, August 1). *Kenya - Openness to and Restriction on Foreign Investment*. Retrieved June 5, 2017, from https://www.export.gov/article?id=Kenya-openness-to-foreign-investment

WOCAT. (2017). *Water Resource Users Association for the management of water resources in a river sub-catchment.*

World Bank and CIAT. (2015). *Climate-Smart Agriculture in Kenya. CSA Country Profiles for Africa, Asia, and Latin America and the Caribbean Series.* The World Bank Group. Retrieved from http://sdwebx.worldbank.org/climateportal/doc/agricultureProfiles/CSA%

World Health Organization. (2009). *Summary and Policy Implications Vision 2030 - The resilience of Water Supply and Sanitation in the Face of Climate Change.* Retrieved from http://www.who.int/water_sanitation_health/publications/vision_2030_summary_policy_implications.pdf

World Resources Institute. (2007). *Nature's benefits in Kenya: An atlas of ecosystems and human well-being.* Retrieved from http://pdf.wri.org/kenya_atlas_fulltext_150.pdf.

WSREB. (2016). *Tariff Guidelines.* Water Services Regulatory Board.

ANNEXES

ANNEX 1. DETAIL ON PREVIOUS STAGES OF THE CTCN TECHNICAL ASSISTANCE

The Draft Feasibility study on both the technical aspects (conducted by UDP) and the potential for water services PPP in Kenya (conducted by GTC) were submitted to WSTF and PPP business model stakeholder consultation meetings were held[34]. The meetings engaged the various stakeholders involved in planning and implementation of water services to collate their concerns on low cost technologies and their experiences in PPP to inform the development of PPP business model for deployment of low cost technologies in Kenya. The meeting was intended to collect factual data, opinion as well as experiences from different stakeholders in the water sector to inform the identification of a viable PPP business model.

Specific objectives of the consultation meeting were gathering information on:

i. Past and current experiences in water sector PPPs
ii. Key barriers and risks related to water sector PPP
iii. Perceived opportunities for successful implementation of PPPs in the Kenyan water sector
iv. Various innovative approaches to PPP and division of roles

Meetings consisted of six targeted focus groups, seven meetings with single stakeholders, a field trip to one of this project's targeted counties (Embu), questionnaires delivered by email and in person at focus groups, as well as initiation and wrap up meetings with WSTF and their invited stakeholders. The focus groups were held with central government, local authority, private sector, finance and development partners, and civil society, and users who were represented through Water User Associations (WUAs). Meetings were held with the following individual stakeholders: Danish International Development Agency (DANIDA), Korea Trade Promotion Agency (KOTRA), Korea International Cooperation Agency (KOICA), a Kenyan PPP Expert, UN Environment Kenya Country Programme, World Bank, and solar pumping company Grundfos.

[34] Between May 8th and 12th, 2017, organized by the Green Technology Center-Korea and external local consultants from be-associates acting on behalf of UNEP-DTU partnership

ANNEX 2. GOALS AND OBJECTIVES

Universal goals, objectives, desired outputs and supporting activities of this technical assistance is presented in the table below.

Universal Goals			
Goal	**Objective**	**Outputs**	**Activities**
Increased and sustainable financing	Leveraging new sources of financing and expertise	Engaging new private sector actors *(e.g. national/international companies, commercial lenders, investors)*	Reducing barriers to entry
			Incentives and guarantees
		Engaging new public sector actors *(e.g. donors, counties)*	Better coordination of national/county funds Access climate related funds
		Innovative financing mechanisms	Water Private Sector Partnership Programme WSTF Endowment Fund
	Reduced concessionality through cost recovery (WSTF moves from Grants to loans)	More individual projects reaching and surpassing break even point	Increased revenues through multiple use of water
			Increasing user base (piped networks)
		Cross-subsidization of clustered projects	Project identification and bundling
Sustainable Water Service projects		Lifecycle costing	Accounting tools, increased budgets
		Realistic Tariff setting	WASREB guidelines for both small projects and clusters
		Better user fee collection	Staff are well trained, dedicated and accountable Electronic payment systems in use
		Clear Cashflow waterfall	Both O&M and debt servicing are covered, mezzanine financing to help attract commercial lenders
	Better O&M framework for water service franchises	Service delivery	Will traned staff, standardized technology and procedures in place
		Technological maintenance	
	Sustainable repair framework established	Repair R&R committed to by the private sector	Contracting
Sustainable Water Resources	Water resource management linked to Water Serivices PPPs	Water Rresource User Associations engaged Water pans for water harvesting (increased water resource)	Sustainable livelihood activities Focus on ecosystem services Tying in to current national plans

ANNEX 3. QUESTIONNAIRE RESPONSE TABLES

Q) Which water services roles do you see as PUBLIC and which are PRIVATE ?					
Role	**Agencies' Answers**				
	Always Public	**Mostly Public**	**Equally Public/ Private**	**Mostly Private**	**Always Private**
i) Project finance (CAPEX)	KREP WUA2	NDMA RAP	WUA1 WASREB		
ii) Project planning	RAP, WUA1		NDMA, KREP WUA2	WASREB	
ii) Construction	WUA2	RAP, WUA1		NDMA WASREB	KREP
iv) Day to day operation		NDMA WUA2	WUA1 WASREB	KREP RAP	
v) Management (e.g. fees collection)		NDMA WUA2	WUA1	RAP WASREB	KREP
vi) Maintenance		NDMA	RAP, WUA1	KREP WASREB WUA2	
vii) Repairs			RAP, WUA1	NDMA, KREP WASREB WUA2	
viii) Project Extension (e.g. new pipelines)	KREP	RAP WUA2	NDMA, WUA1	WASREB	
ix) Project funding (i.e. for steps iv to viii)	KREP	NDMA RAP WUA2		WASREB	

Q) Do you see your entity fulfilling any of the following R&R in supporting water sector PPPs?		
Role	**Agencies**	**If yes, please provide details**
i) Project finance (for construction)	**NDMA** **KREP** **WUA1** **WASREB**	**NDMA:** *Constitution mandates government to provide water to public* **WASREB:** *Allowing for cost of financing in the approved tariffs* **WUA1:** *fundraising, materials and personal contribution toward construction* **WUA2:** *County government should provide funds* **KREP:** *Subject to acceptable financing and security structure supported by evidence of repayment ability.* **RAP:** *County Government and international NGOs undertaking services delivery* **WASREB:** *monitors and enforces standards for design & construction*
ii) Project planning	**WUA1** **WUA2:** **RAP**	**NDMA:** *government has trained manpower* **WASREB:** *Utilities* **WUA1:** *Participate in project identification, location and planning* **WUA2:** *County government should link with community* **RAP:** *RAP and many Local organizations in Isiolo*
ii) Construction	**WUA1**	**NDMA:** *The private sector can do this* **WASREB:** *monitors and enforces standards for design & construction* **WUA1:** *Offer labour during construction, supplies locally available materials* **WUA2:** *Role of private sector* **RAP:** *Private Sector Service Providers*

iv) Day to day operation	**WUA1** **WUA2:**	**NDMA**: *Done by beneficiaries* **WASREB:** *Utilities* **WUA1:** *Management committee, kiosk attendants, security officers, technicians* **WUA2:** *committee to collect funds* **RAP:** *PPPs and hired community personnel*
v) Management (e.g. fee collection)	**WUA1**	**NDMA:** *Public* **WASREB:** *Utilities/ private contractors* **WUA1:** *Participate through management committee to collect fees and check meter readings* **WUA2:** *committee to hire technician* **RAP:** *PPPs and Hired community personnel*
vi) Maintenance	**WUA1**	**NDMA:** *Public* **WASREB:** *Utilities/ private contractors* **WUA1:** *Participate in regular maintenance of water supply system* **RAP:** *County Government*
vii) Repairs	**WUA1**	**NDMA:** *Private sector* **WASREB:** *Utilities/ private contractors* **WUA1:** *Water users contribute funds for repairs* **WUA2:** *private technician should be employed* **RAP:** *County Government*
viii) Project Extension (e.g. new pipelines)	**WUA1**	**NDMA**: *Private and government* **WASREB:** *Utilities/ private contractors* **WUA1:** *Community donates land for expansion of pipelines and kiosk* **WUA2:** *county government should assist community* **RAP:** *County Government*
ix) Project funding (i.e. for steps iv to viii)	**NDMA** **WASREB**	**NDMA:** *Together with Private sector and the public* **WASREB**: *Allowing for the cost of financing in the approved tariffs* **WUA2:** *county government should fund* **KREP:** *Subject to acceptable financing and security structure supported by evidence of repayment ability.* **RAP:** *County Government*

Q) Which of the following are suitable government support mechanisms for attracting companies to participate in water sector PPPs ?		
Item	**Agencies (Yes/No)**	**Comments**
Incentives	NDMA, WASREB:	WASREB: Usually does not cost as much
Subsidies	NDMA: Yes, (WASREB: No)	WASREB: Not sustainable
Credit Guarantees	NDMA, WASREB: Yes	WASREB: More practical for commercial financing but may be misused by utilities
Insurance	NDMA: Yes, WASREB: No	No known insurance product for this type of business

ANNEX 4. DEFINITIONS OF TERMS IN KENYA'S PPP ACT 2013

In Kenya, PPPs are defined in the PPP Policy and in the PPP Act as: … an arrangement between a public entity and a private party under which-

(a) The private party undertakes to perform a public function or provide a service on behalf of the public entity;

(b) The private party receives a benefit for performing the function, either by way of

i. Compensation from a public fund

ii. Charges or fees collected by a private party from users or customers of a service provided to them; or

iii. Combination of such compensation and such charges for fees

(c) The private party is generally liable for risks arising from the performance depending on the terms of the agreement.

The following terms are explained in the PPP manual version 1:

Arrangement	A contract signed between a public entity and a private company subject to the Laws of Kenya - "public entity" (the « contracting authority »)
Contracting Authority	A Central Government, local government, authorities and any other person acting on behalf of the Central Government or local government authorities.
Private party	A person or body not owned either in whole or part by a public entity, and is not a public entity
Public function or services	Functions or services that the government is legally mandated to ensure are provided
Benefit	The income or payment that the private party receives. Benefit can take three forms: - Payment from the government – "availability-based" PPP or an "annuity" PPP - Collection of charges or fees directly from infrastructure/service users – "revenue-based" PPPs - Hybrid PPPs which might combine both the above benefits, and also possible benefits from providing related services (e.g. providing parking facilities at a PPP building, etc.)
Risks arising from performance	I the private party does not deliver, manage or maintain the project properly, it will suffer losses or damages. This could be from receiving lower income from users or the government payments, penalties or fines, or other damages or losses. Alternatively, if the private party performs it should make a reasonable profit from delivering, managing and maintaining the project

Source : PPP Manual

ANNEX 5. PUBLIC PRIVATE PARTNERSHIP ARRANGEMENTS

The below table outlines the 13 PPP arrangements defined in Kenya's PPP Act 2013.

SECOND SCHEDULE [Section 19.] PUBLIC PRIVATE PARTNERSHIP ARRANGEMENTS (Source: Kenya PPP Act 2013)	
Management	where a private party is responsible for the management and performance of a specified obligation, within well-defined specifications for a specified period of time not exceeding ten years, and the contracting authority retains ownership and control of all facilities and capital assets and properties.
Output performance based contract	where the private party is responsible for the operation, maintenance and management of an infrastructure facility for a specified period of time not exceeding ten years and the contracting authority retains ownership of the facility and capital assets.
Lease	the private party pays the contracting authority rent or royalties and manages, operates and maintains the facility or utilises the leased property for the purpose of exploration, production and development of minerals and receives fees, charges or benefits from consumers for the provision of the service
Concession	contracting authority issues a contractual licence to the private party to operate, maintain, rehabilitate or upgrade an infrastructure facility and to charge a user fee while paying a concession fee to the contracting authority.
Build-Own-Operate-Transfer	the private party designs, constructs, finances, operates and maintains an infrastructure facility owned by the private party for a specified time period not exceeding thirty years, or such longer period as may be agreed, after which the private party transfers the facility to the contracting authority.
Build-Own Operate	the private party designs, finances, constructs, operates and maintains the infrastructure facility and provides services for a specified period of time.
Build-Operate-and-Transfer	the private party finances, constructs, operates and maintains an infrastructure facility and transfers the facility to the contracting authority at the end of a specified term which shall not exceed thirty years.
Build-Lease-and-Transfer	the contracting authority authorizes the private party to finance and construct an infrastructure or development facility and upon its completion lease it to the contracting authority for a specified period and upon the expiry of which the ownership of the facility automatically transfers from the private party to the contracting authority.
Build-Transfer-and-Operate	where the private party constructs an infrastructure facility and assumes the costs and risks associated with the construction of the building and upon completion, transfers the ownership of the facility to the contracting authority and continues to operate the facility on behalf of the contracting authority.
Develop-Operate-and-Transfer	favourable conditions external to a proposed infrastructure project by a private party are integrated into the arrangement by giving that private party the right to develop adjoining property, and enjoy the benefits the investment creates as the parties agree on condition that the private party transfers the infrastructure facility to the contracting authority within a period not exceeding thirty years from the commencement of the project and the developed property remain the property of the private party in perpetuity.
Rehabilitate-Operate-and-Transfer	the private party refurbishes, operates and maintains for a specified period, an existing facility at the expiry of which the private party transfers the facility to the contracting authority.
Rehabilitate-Own-and-Operate	an existing facility is transferred by the contracting authority to the private party to refurbish and operate it with no time limitation imposed on ownership and the private party abides by the conditions of the arrangement during the operation of the facility.
Land Swap	a contracting authority transfers existing public land or an asset to the private party in consideration of an asset or facility that has been developed by that private party.

ANNEX 6. PPP MANUAL WATER SERVICES UTILITY CASE STUDY

Case Study of Fictitious Water Services PPP Clear Water Utilities included in the draft PPP Unit Manual (Source: Kenya PPP Manual Version 1 Draft)	
Story of Practice	**Lessons for Structuring**
XYZ city has been growing fast and the XYZ municipality was struggling to provide drinking water across the city. Ten years ago the municipality ran a tender for a private partner to take over the municipal water department and supply drinking water across the city. The tender was based on an output specification of coverage and water quality, with financial bids based on the proposed price to be charged to water users. Clear Water Utilities was awarded the contract, and took over operation, maintenance and expansion of the municipal water infrastructure.	- A PPP project can involve construction of **new infrastructure**, or taking over already **existing public infrastructure** - The project was tendered on an output specification basis, so the **bidders could determine the best approach** to the coverage of water supply
During the tendering bidders set out plans for how and when they would achieve the water coverage targets set by the municipality. After five years Clear Water Utilities was around one year behind its coverage targets. This affected its income, so the firm was working hard to accelerate coverage.	- During tendering, bidders provided their **proposed investment plan and coverage plans**. The incentives should be in place to encourage the private partner to meet these plans
Clear Water Utilities is responsible for billing customers and collecting their monthly payments based on water usage. If billings or collection falls behind it is Clear Water Utilities who suffers, so there is a strong incentive to keep up to date. The price for water is regulated by the utilities regulator, however Clean Water Utilities pays a quarterly commission charge for the municipality to staff an oversight body. The oversight body checks on coverage, charges and deals with any complaints raised by the public.	- Since this is a monopoly and the private partner is collecting charges directly from users, the government needed to directly **regulate** the price charged - In some projects, financial contributions from the private partner can be used to set up and operate the public body which **manages the Project Agreement**
The municipality pays a subsidy component for water used by low income households. Without this subsidy payment the project would not be commercially viable for Clear Water Utilities, and the municipality would need to take back the responsibility for providing water directly itself.	- Some projects require **subsidies** as users cannot afford to pay commercial tariffs. However the subsidy is structured so that it does not allow the private partner to underperform

ANNEX 7. GROUNDWATER MANAGEMENT AND ADAPTATION STRATEGIES

Approach	Instruments	Challenges
Command and control	Laws, regulations and entitlements	Laws are easy to make but very difficult to enforce
Community management	User-communities take responsibility for sustainable groundwater management	Good at information gathering and education but not at checking groundwater overdraft
Market instruments	Volumetric pricing for water extraction promotes efficient use	Effective metering is often lacking. Pricing is challenging as social and ecological value of water is politically sensitive
Payment for watershed services (PWS)	Compensating upstream actors for preserving water for downstream users via market arrangement, taxpayer-funded investments or tradeable credits	Difficult to measure improvement, funded actions need to be specific to the hydroecologic setting Concerns over equity and sustainability
Demand management	Water saving technologies (e.g. drips/sprinklers for agriculture), adaptation to less groundwater (shift to less groundwater intensive crops/occupations)	Challenging as water is a vital resource May reduce abstraction but not evapotranspiration
Supply augmentation	Developing alternative water sources (e,g, inter-basin transfer, desalination, recucling and reuse, managed aquifer recharge, rainwater harvesting)	Large water transfers may export ecosystem service issues elsewhere
Indirect approach	Attention to energy prices, food policies (e.g. subsidies/taxes on certain crops)	Need for further consideration of the food-water-energy nexus

ANNEX 8. DETAILED OUTLINE OF PPP PROCESS UNDER THE PPP ACT AND PPP REGULATIONS

The PPP Manual spells out the process under the PPP Act 2013 and the PPP Regulations. It should be noted that the process may be elaborated for county-level following the adoption of the PPP Bill 2016.

The stages (re-numbered from those in the PPP Manual) detailed below are: 1) Project Identification and Selection; 2) Feasibility Study; 3) Procurement Preparation; 4) Solicited Procurement; 5) Preparation process for Privately Initiated Investment Proposals(PIIPs); 6) Contract Award; 7) Implementation; 8) Amendment, Termination and/or renewal.

All stages apart from stage 5 can be followed for the PPP Preparation process for Solicited Procedures, that is, projects identified by national or county governments. Stages 5-8 can be followed for the preparation process for Privately Initiated Investment Proposals (PIIPs), that is, projects initiated by a private company.

While the following tables have been adapted from the PPP Manual guide on the actions of the Contracting Authority (CA) and others, this should be taken as reflective of and supplementary to the PPP Manual only, which should also be referred to as the authoritative guideline from the PPP Unit itself.

Across all stages of the process, the PPP Unit advises consideration of the five principles of i) Value for Money, ii) Affordability, iii) Commercial Viability, iv) Manageability and v) Acceptability.

Five Guiding Principles of PPPs (Source: Adapted from Kenya PPP Unit)		
Principle	**Description**	**Lesson: Form a PPP project only if …**
Value-for-money	Combination of cost, price, quality, quantity, timeliness and risk of the PPP project	It offers a better combination of these factors than traditional public service delivery/procurement
Affordability	To government budgets or user fees	The Government can meet payments or liabilities required in its multi-year budget for the duration of the contract, and/or if users can reasonably pay required tariffs or user fees
Commercial viability	Private partners in PPPs need to maintain healthy and profitable companies for the project to succeed and deliver value.	It is commercially viable or financeable for the private sector
Manageability	For both the government and for the private partner.	The Project Agreement and related monitoring and management procedures are clear and workable, and capacity is in place to manage the contract and for the CA to meet its obligations under the contract
Acceptability	Government should ensure fairness and protect public interest.	It will be acceptable and in the public interest to deliver the public infrastructure or service via a PPP. Communication to educate and prepare both consumers and the general public may be needed

1) Project Identification and Selection

Item	Actor	Note
Establish PPP Node	CA in consultation with PPP Unit	CA's basic capacity and organizational arrangements for PPPs ensured. Node headed by CA accounting officer and staffed by financial, technical, legal and procurement experts.
Identify possible projects for development as PPPs	PPP Node	**Sector Diagnostic Study** ***PPF Funding Available*** ***PPP Unit Template Available*** **Sector Review and Assessment includes:** REVIEW of existing policies, laws, studies, plans, programs and other sector information (Strategic Plans , Development Programs, Counties' CIDPs). ANALYSIS of trends, objectives, organization of sector, institutional responsibilities, delivery capacity, funding, successes, challenges, shortfalls. SECTOR INVESTMENT program(s), capital expenditure plans, identified projects. PRIVATE SECTOR PARTICIPATION: existing level and forms. PEER COMPARISONS: approaches, models and organization followed in other sectors/countries. STAKEHOLDER CONSULTATIONS: government, consumers, private and civil society bodies (potentially) involved in sector.
		PPP Project Proposal ***PPP Unit Template Available*** Considering: Potential and benefits of private involvement, sector reform requirements, possible PPP projects and prioritization Must be part of CA's sector development programme/CIDP.
Submission of project proposal for approval	**CA=>PPP Committee**	**Approval to proceed to Feasibility Stage** Selected projects should have more potential benefits if delivered as a PPP than directly by the CA.
National priority projects list	PPP Committee	Inclusion of PPP in the National Priority Projects list. Projects can be added on an ongoing basis.

2) Feasibility Study

Item	Actor	Note
Constitute teams/ appoint key staff	**Project appraisal team**	Supports the Transaction Manager on preparation of the feasibility study. Consists of a representative of the PPP Unit and technical, financial, and legal experts of the CA and a representative of the PPP Node. - Key convener of the process, involving and informing decision makers - Carries out regular market consultations
	Transaction manager	Senior person in the CA designated. Responsible for project management, process organization, documentations, establishing key committees and managing transaction advisor.
	Transaction advisor	Appointed in coordination with the PPP Unit via competitive procurement or the PPP Unit pre-qualified Transaction Advisory Panel. CA staff or an external advisor (consortium of consultants) with sufficient financial, technical, and legal capability. ***PPF Funding Available, TOR for Transaction Advisors, and List of Pre-Qualified Advisors***
	PPP node champion	Should have sufficient political weight to sell the project to the highest levels of government, within political spheres and to the media.
Prepare and submit F/S report to ppp committee ***PFF Funding Available***	**CA**	**Feasibility Study Template** ***Template Available*** Consider technical, legal, economic, financial, environmental, social, affordability. PPP FS must also consider: - Whole lifecycle of project - PPP Structuring for the transaction (PPP Options appraisal, with preferred recommendation) - Correct performance incentives - Value for money - Public sector comparator - Direct and contingent fiscal liabilities - Output specifications required for the project, - Government, user and market perspective
		Risk Allocation Matrix ***Template Available*** Identification, assessment and allocation, risk allocation matrix.
		Feasibility Study Report ***Template Available*** Key elements: 1. Needs analysis 2. Technical solutions options analysis 3. Project due diligence 4. Financial analysis and modelling (pff viability gap funding may be available) 5. Risk allocation 6. Options appraisal and preferred option 7. Project agreement terms 8. Implementation approach (schedule), as well as ***procurement options and ppp structure analysis, market sounding***
Recommendation and approval of feasibility study report	PPP Committee => Cabinet	CA should not proceed with project procurement until receiving written notification of approval from the PPP Unit.

3) Procurement Preparation

Item	Actor	Note
Procurement strategy	Feasibility study transaction advisor execute with additional experts if needed	Selection of an appropriate procurement strategy. Types in Kenya: 1. One-stage solicited procurement 2. Two-stage solicited procurement (option: with competitive dialogue) 3. PIIP procedures (discussed below) *Two-stage processes work best but Competitive Dialogue procedure allowed only for* extremely complex projects.
Project marketing plan	PPP Unit CA Transaction Advisor	**Project Marketing Plan** Informed by previous market soundings/consultations. Sets out promotional work to be done prior to formal procurement notification procedures – e.g. formal advertising of the RFQ.
Consultation on bidding documentation package		**Detailed tendering plan** Sets out procurement process, steps, and calendar
		Request for Qualification (RFQ) ***Template Available*** issued by the CA to start the first procurement procedure stage, inviting firms to apply for selection for the second stage. Includes project information, qualification criteria for firms, and application instructions. — Must meet PPP Act requirements, follow standard templates.
		Project Information Memorandum (PIM) ***Template Available*** Document(s) describing project and its context.
		Request for Proposal (RFP) ***Template Available*** Detailed document issued by CA to firms selected for second stage procurement. Includes instructions to bidders (ITB): Terms of reference, and detailed instructions on procurement steps.
		Draft Project Agreement To be signed between the CA and the selected firm at the end of the procurement allowing quick commercial close.
Other documents to include		**Feasibility study (F/S) :** Previously prepared F/S to be provided to bidders in whole or in part.
		Expected financial contributions or other forms of state support : Document summarizing any financial contributions, guarantees, or other government support involved in the project.
		Relevant technical annexes : Further technical and other detailed information on the project that will be made available to firms.
Data room	CA	**Data Room established, with sound indexing and registration of all documents, and secure access and use.** Physical/virtual data room established where all project information is kept for access by shortlisted bidders during the procurement process.
Approval	PPP Committee	**Approval to launch the formal procurement/ tendering** : Do not start the formal procurement process without PPP Committee approval Specific approval must be given to for Competitive Dialogue Procedure (if applicable).

4) Solicited Procurement

- Transaction Manager and PAT should remain responsible for the overall process, with close support of the Transaction Advisor.

- There are opportunities for bidders to raise objections to the Petition Committee at both the pre-qualification and the proposal stage.

Item	Actor	Note
Pre-Qualification Committee (PQC)	Usually the PAT	Constitution of **PQC.** Evaluates and decides which firms are qualified during initial shortlisting. Ensures a fair range of capable bidders enter the procurement – ensure bidders are competent, and that sufficient competition is achieved.
Marketing plan	CA	Should include international publication of requests for large projects. Should ensure selection of the Private Contracting Party based on clearly announced procedures and criteria.
Administration and facilities	Transaction Manager	Appropriate arrangements are made and physical facilities are available. Establishing CA team and Transaction Advisor R&R, communication channels and contacts arrangements.
Pre-Qualification of firms	Pre-Qualification Committee	Specific criteria and procedural requirements exist for evaluation of technical and financial proposals.
Formalization of shortlist	CA	Specific criteria exist for qualification, disqualification and shortlisting. Holding a preliminary meeting with shortlisted bidders is optional for the CA (Not the same as a Competitive Dialogue Process).
Constitution of Proposal Evaluation Team	Same team as the PQC	Evaluates and ranks the proposals submitted by shortlisted firms during the proposal stage and proposes the preferred bidder.

5) PPP Preparation Process (Privately Initiated Investment Proposals, PIIPs)

- *In this case, the CA is dealing with one project proposal made by one firm rather than identifying projects and initiating a competitive process.*
- *CAs should be cautious regarding PIIPs. A private firm may identify useful projects that the CA has not but can also force a CA to spend resources investigating an unplanned project, which may or may not be beneficial.*

Item	Actor	Note
PIIP Project Proposal	Private Proponent CA	PIIP Project Proposal Submitted to the CA PPP Node. Eligibility requirements for PIIPs to be further considered for approval for a Feasibility Study. Criteria: 1. Project must be included in CA development programme 2. Project must involve at least one of the following conditions : - Urgent need for continuity in services - Substantial costs of intellectual property related to the proposed design - Only one possible supplier or holder of exclusive rights
Submission of proposal approval to proceed	**PPP Unit => PPP Committee**	*Options for subjecting PIIPs to competitive procedures are forthcoming*
Negotiation	CA-Private Proponent	Direct negotiations are a weak form of procurement, as the CA is on the 'back foot'. There is need for a strong transaction advisor and to explore ways in which the PIIP could be subjected to competition.

6) Contract Award

Item	Actor	Note
Submission of evaluation report to PPP Committee for approval	*Preparation: Transaction Manager/PET/ Transaction Advisor* Submission: *CA => PPP Unit => PPP Committee*	**Evaluation Report *Template Available*** Explains the evaluation process and result of selection; justifies identification of the first ranked bidder Should also indicate the second and subsequent ranked bidders
Constituting a Negotiation Committee (NC) to finalize the contract	Recommended continuation of the PEC, with Transaction Advisor as a member	Negotiation should be reduced thanks to preparation at previous stages. Only one preferred bidder remaining, hence little or no competitive pressure. PPP Act and Regulations severely limit negotiation scope at this stage: mainly finalizing project agreements and related contracts, no fundamental terms, conditions or prices may be changed. Any major project or contract modification at this stage will result in loss of value-for-money for the CA.
Project and risk assessment report and final contract	*Transaction Manager / Transaction Advisor => CA => PPP Unit, DMO*	**Project and Risk Assessment Report *Template Available*** Purpose is to compare project conditions and related risks at award stage with initial approved conditions and related risks at the feasibility stage and see that these are acceptable.
Review and recommendation on award of the project	**PPP Committee => Cabinet**	PPP Committee will make a recommendation, leading to preparation of a Joint Cabinet Memorandum by the Cabinet Secretary.
Parliamentary ratification		Necessary only if the project involves a concession for natural resources (Article 71 of the Constitution)
Approval at county level		Under the additional regulations for County Governments it is possible under certain conditions for County. Governments to conclude PPP awards without Cabinet approval. This requires: 1. Constitution of a County level PPP Committee 2. Approval from the DMO that the project presents no contingent liability to national/county government
Contract execution by the CA		Signing of an approved project agreement – the central contractual mechanism for managing the project. Commercial close, and in some projects a separate financial close. Only the accounting officer of a CA may sign a project agreement.
Financial close		Signing of financing agreements by private partner and financiers; conclusion of interest rate swaps. Financial Close may also involve the signing of direct agreements between the CA and financiers. CA should follow the project until all of these events have occurred.
Approval of tender cancellation	PPP Committee	In exceptional situations project commercial and/or financial close may not be successful and the CA may revert to subsequently ranked bidders.
Contract and risk management Plan	Transaction Manager/PPP Node	**Contract and Risk Management Plan *Template Available*** Based on the final risk allocation matrix. Covers CA's arrangements, methods and resources for managing the Project Agreement and associated risks. Should meet FCCL reporting requirements to the DMO.

7) Implementation

Item	Actor	Note
Project agreement management and monitoring	CA and/or relevant regulators	Appropriate management arrangements ensure CA's effective management and monitoring of contract implementation. **Monitoring and Evaluating Reports** ***Template Available*** Project Agreement includes many provisions concerning contract management. Specific management arrangements to be established should be set out in the contract and risk management plan, finalized during contract award stage. Effective monitoring and evaluation for feedback to this project and others.
Appointment of independent expert (IE)	CA	IE appointed for project agreement coordination, management and implementation. Consideration should be given on whether an IE is required for all stages of and/or for full duration of the project agreement. Can be funded by the CA or in combination with the project company/private partner.
Contract and risk management plan Implementation	CA	Ensures: - Overall management responsibility for the project within the CA - Required support including personnel, equipment and facilities as appropriate - Proper contract and project administration - Risk management - Mechanisms for user/public feedback, as appropriate - Required budget allocations have been made, and resources are in place for effective management by the CA
Monitoring and evaluation framework		***FCCL Team and/or Ppp Unit to Provide Monitoring Templates*** *CA shall, in collaboration with the private party, prepare a monitoring and evaluation framework comprised of:* *(a) project Management Plan;* *(b) performance criteria;* *(c) external audit and reporting requirements;* *(d) submission of progress reports;* *(e) verification of project assets and value; and* *(f) stakeholders communications* *Sh*ould emerge naturally from the project agreement and the contract and risk management plan. Key components of the monitoring and evaluation framework are: performance criteria, directly linked to the output specifications and the payment mechanism in the project. Agreement; audit and reporting system enabling the CA to assess performance; Identification of information useful for monitoring by oversight entities (PPP Unit, National Treasury and others).
Audit and reporting system		Three pillars: - Contractor's periodic self-reporting by the contractor in periodic reports; - System for registration of performance shortcomings reported by users/the CA; - Random inspections by the CA to check truthfulness and completeness of the self-reporting and complaints register

8) Amendment, Termination and/or Renewal

Item	Actor	Note
Initial assessment	CA with PPP unit	Decision on whether project amendments are substantive. It is reasonable for minor Contract corrections or changes to be made which are not of a substantive nature and which improve the performance of the contract.
Approval of substantive contract amendments	PPP Committee	Effective scrutiny and public interest consideration of Project Agreement amendments, terminations and/or renewals. If required contract amendment(s) are considered to be substantive, PPP Committee approval is required. If the project receives PFF viability gap or contingent liability support, DMO and PFF approval is required. The PPP Committee decide based on the PPP Act (Article 64.2) The CA should prepare a motivation to explain whether the proposed amendments will: - Change or especially reduce the value-for-money provided by the project - Alter the affordability of the project - Change the allocation of risks between the partners - Affect service delivery to the public - Change the impact of the project on the environment
Contract amendments		Project Agreements will include provisions for dealing with amendments within the Kenyan legal framework and the relevant provisions of the PPP Act and Regulations
Renewal		Agreement may include provisions and procedures for possible renewal
Premature termination		Project Agreement should include escalation provisions to avoid a project moving too rapidly into termination procedure. Termination can result in the CA being required to unexpectedly take over infrastructure operation or service delivery. It can also have significant market impacts on existing/future contracts if seen as arbitrary/inappropriately handled. Should be last resort following the tickle, hurt, kill principle.
Natural termination		Project Agreement may terminate naturally on reaching stated contract period end. Project Agreement will include provisions covering procedures and responsibilities on contract expiry, including handing over of assets in good order, etc.

ANNEX 9. DONOR WATER SECTOR PROJECTS IN KENYA – WSTF

Selection of Donor Funded Water Projects in Kenya	
Project Name	**Project Description**
Medium Term ASAL Programmes MTAP II (2010-2016, KShs 945m) (EU and Danida)	To direct investment in water, county/community level planning for natural resources and economic development[35]. It aimed to help communities plan and manage their natural resources at local level, championing green growth issues including water investments and private sector investment opportunities, among others. To contribute to reduced poverty in the context of Kenya's Vision 2030, and of safeguarding the state of the environment and promoting sustainable management of natural resources in Eastern and Northern Kenya.
Green Growth & Employment Creation in Kenya (2016-2020) DANIDA has contributed KShs 1,050m, along with KShs 3,750m from other development partners (EU, Sweden, Finland and IFAD) and KShs 600m from the Kenyan government for water related investments managed by the WSTF	8 target counties including six MTAP counties plus Mandera and Turkana. The project includes the target of enhanced WRM and investment for marginalized communities' improved water access in ASAL counties, including Isiolo. Its fifth output is enhanced experience for promoting water provision PPPs in ASALs, seeking pilot models through corporate social responsibility (CSR) activities, green technology for increased water service coverage and sustainable drylands productive opportunities, among others. It aims to partner with county governments on projects identified in their County Integrated Development Plans (CIDPs) as well as on monitoring and evaluation, resources for programme support and management and sustainability. It is also focused on "small and medium sized investments", community involvement and reaching the poorest segment of society and implementing climate proofed infrastructure using green technologies. It was to support WRUAs' sub-catchment management plans for protection and conservation of water resources. WSTF was to engage with ASAL governments to identify priority areas and interventions, as well as increasing knowledge on alternative private sector-led delivery mechanisms.
Kenya Water and **Sanitation Programme** (Danida, EU, SIDA)	The Programme is implemented in six (6) counties through the Directorate of Arid and Semi-Arid Lands, Ministry of Devolution and Planning, and the first phase ended in Dec 2014 (Garissa, Wajir, Marsabit, Tana River, Lamu, Isiolo).
Joint Water Programme (17 million euro) (SIDA, Finland)	WRUA activities in the six counties (Tharaka Nithi, Kwale, Migori, Nandi, Laikipia, Narok).
Upper Tana Natural Resources Management Project (UTaNRMP) (IFAD)	targeting six (6) counties in the Upper Tana region (Embu, Muranga, Kirinyaga, Nyeri, Tharaka Nithi, Meru).
Pilot Output-Based Subsidy Program for Small Scale Water Providers (World Bank Water and Sanitation Program (WSP), Public Private Infrastructure Advisory Facility (PPIAF) and the Global Partnership for Output Based Aid (GPOBA))	The Programme (Output Based Aid) works through providing subsidy for loans obtained by Water Services Providers (WSPs) from Kenyan commercial banks with the aim of increasing water and sewerage connections to urban low income areas. WSTF is the funding instrument for the subsidies which are capped at 60% of the total investment to the poor. Funding market-based infrastructure finance for 21 CBO water providers in rural and peri-urban areas to link and build capacity of CBOs and micro lenders.

[35] GoK will input 20-30 % of the budget including staff costs, office facilities and running costs

World Bank Output Based Aid for Rural Projects with K-Rep Bank	Innovative approach to rural infrastructure finance - facilitating access to finance for community-based water providers by blending output-based subsidies and commercial finance.
Upscaling of Basic Sanitation for the Urban Poor (UBSUP) (Bill and Melinda Gates Foundation (BMGF))	Subsidized provision of plot and household sanitation. BMGF Programme is implemented in partnership with the KfW support.
Community Water and WASH Activities (UNICEF WASH)	Implemented in 20 target ASAL and flood prone districts.
Majidata (UN Habitat)	Funding towards the mapping exercise for urban low income areas in Kenya resulting in the Maji Data and the website www.majidata.go.ke
Kenya Water Financing Facility (Netherlands)	issues investment-grade water bonds to domestic institutional investors to support countries' national water and climate priorities within the auspices of the Global Innovation Lab for Climate Finance (the Lab).
Kenya Innovative Finance Facility for Water (KIFFWA) (Netherlands Water Partnership)	Provides early stage capital and finance expertise to support creation of viable water investment opportunities and attract private finance.
Kenya Pooled Water Fund (KPWF) (Netherlands Water Partnership)	A non-profit Kenyan entity and the first activity of KIFFWA. Acts as a pooled bond facility to source long term finance from Kenyan capital markets to on-lend to WSPs.

Sources: WSTF Brief (Nov 2016) http://waterfund.go.ke/brochures?download=15:wstf-brief

https://www.nwp.nl/sites/default/files/styles/190x190_smoel/public/Kenya%20Story%20-%20May%20GWI.pdf

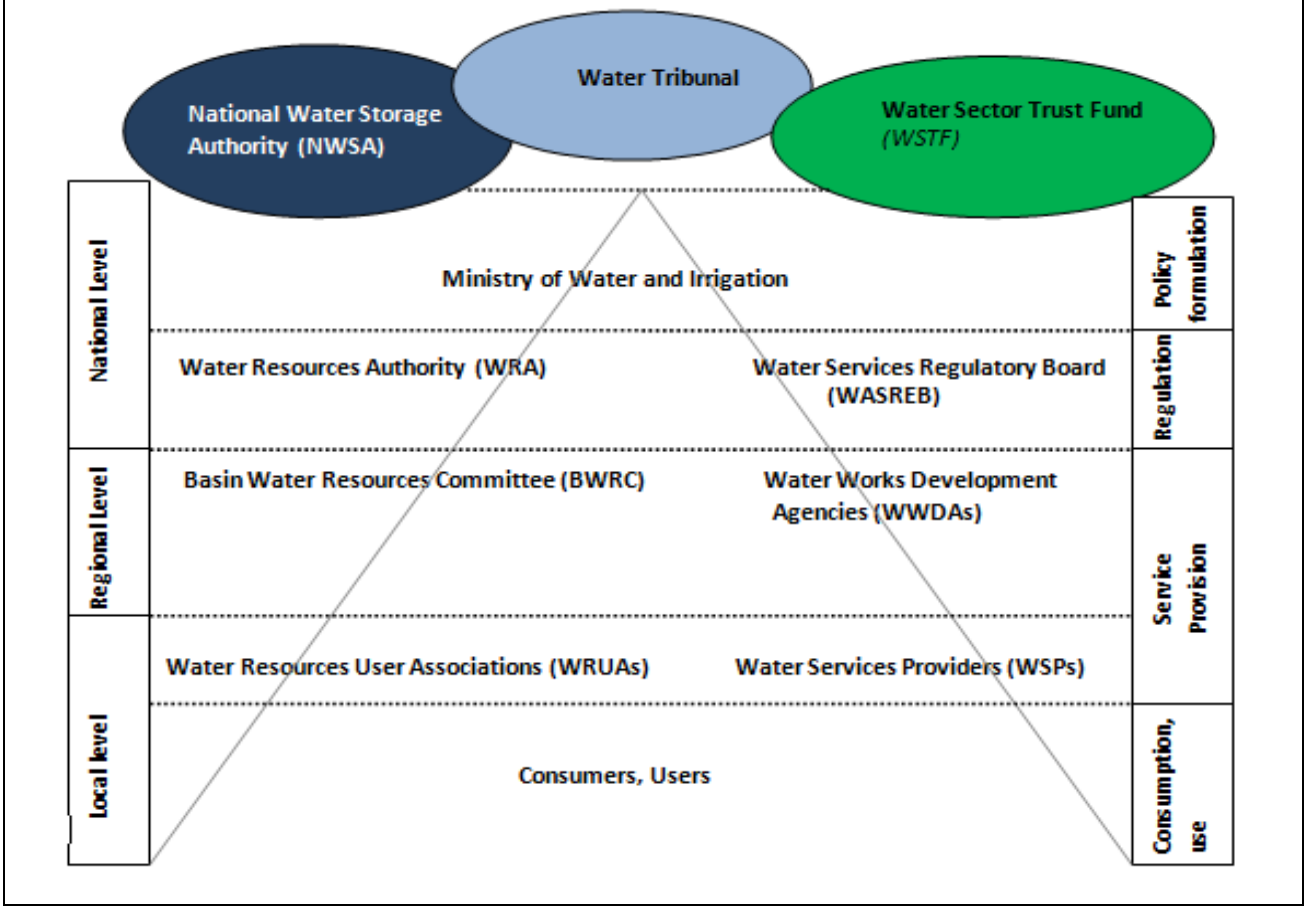
ANNEX 10. NATIONAL LEVEL WATER-RELATED MINISTRIES, AGENCIES AND ROLES

Related Ministries and Government Departments	
Title	**Description**
Ministry of Water and Irrigation	Works to ensure water resources availability and accessibility by all, contributing to national development by promoting and supporting integrated water resource management to enhance water availability and accessibility. **Strategic objectives** - Accelerating the implementation of water sector reforms; - Improving the sustainable management of water resources; - Improving the provision of water and sewerage services; - Improving utilization of land through irrigation and land reclamation; - Strengthening institutions in the Ministry and the water sector; - Mobilizing resources and promoting efficiency in their utilization; Improving the management and access to water resources information
Water Services Trust Fund (WSTF)	Provides conditional and unconditional grants to Kenyan counties to assist financing of water services development and management in marginalized or underserved areas. This includes community initiatives for sustainable water resource management, as well as water service development in: rural areas considered not commercially viable for licensed Water Services Providers (WSPs); under-served poor urban areas, as well as research on water resources management and water services, sewerage and sanitation.
Water Services Regulatory Board (WASREB)	Functions have been retained from the 2002 Water Act as, among other tasks, setting water service provision and asset development standards; issuing WSPs licenses, approving county tariffs. It is also to develop a model memorandum and articles of association for all water companies applying to be WSPs. Furthermore, it monitors facility design, construction and operation and management (O&M), advises the Cabinet Secretary on financial support for WSPs; monitors implementation of the Water Services Strategy (2007-2015); establishes a complaints mechanism; inspects water works/services; regulates asset development including business, investment and financing plans for efficiency, effectiveness and realization of the right to water services, and makes recommendations on water provision to marginalized areas.
Water Appeal Board (to become the Water Tribunal)	Has the power to hear and determine any dispute concerning water resources or water services where there is a business contract, unless the parties have otherwise agreed to an alternative dispute resolution mechanism.
National Irrigation Board (NIB)	Infrastructure development.
Ministry of Environment and Natural Resources (MENR)	Mandated to protect, conserve and manage the environment and natural resources for socio-economic development. is engaged in catchment conservation for water recharge.
Directorate for Climate Change	Coordinate matters on climate change Four divisions: Adaptation, mitigation, knowledge management, finance and negotiation. Adaptation and mitigation departments work closely with the water sector due to it being greatly impacted by climate change. Ministry discourages use of fossil fuels in water pumping, placing great focus on use of green technologies.
National Environment Management Authority (NEMA)	To coordinate various environmental management activities undertaken by other lead agencies. Advisory entity on PPP for environment. Ensures compliance and enforcement: Environmental and Social Impact Assessments (ESIAs), Environmental Assessments (EAs). Issue of sanitation often neglected especially in rural areas.
National Treasury	Responsible for managing Kenya's National and County Levels of Government Finances – also houses the PPP Comittee

PPP Committee	Aims to assure PPP projects' consistency with national priorities and approves PPP project proposals and lists, formulates guidelines, standards, procedures, examines feasibility studies, oversees the entire PPP project implementation process, ensuring approval of any governmental support including from the Project Facilitation Fund.
PPP Unit	The secretariat and technical arm of the Committee, providing technical, financial and legal expertise. It assists the Committee by making recommendations on project approval or governmental support, and by formulating guidelines and standards. The Unit also gathers and analyses data on PPP projects for example on identifying Government contingent liabilities and any financial issues or inducing private sector investment to improve PPP implementation. The PPP Unit provides capacity building and assists contracting authorities throughout the PPP process, and also ensures PPP process conformance to relevant laws and regulations.
Ministry of Devolution and Planning	Mission to provide leadership, coordination, an enabling environment for planning, transformed public service delivery and management of devolved system of government. Includes the Directorate of Arid and Semi-Arid Lands, department of devolutiona nd the department of planning.
Ministry of Agriculture, Livestock and Fisheries	Goal and purpose of conserving protecting and managing agricultural livestock and fisheries resources for socio-economic development. Its aim is to improve the living standards of people by ensuring maintainance of agricultural livestock and fisheries resources.

Title	Description
Kenya Water Institute (KEWI)	Training, research, consultancy and outreach for the water and related sectors. Plays a role in ensuring that communities gain access to clean water. KEWI intends to conduct groundwater related consultancies, such as resources assessment, research, test pumping, borehole rehabilitation, maintenance and test-drilling, at an affordable cost.
Water Resource Authority (WRA)	To Water Resource Management, is mandated to protect, conserve, control and regulate water resource use through the National Water Resource Management Strategy (2006-2008), formulate/enforce standards, procedure and regulation for water resource management and use of water resources. It also plans and issues water abstraction permits and sets and collects permits and water use fees.
National Water conservation and pipeline Corporation (NWCPC, to become the National Water Harvesting and Storage Authority (NWHSA))	Bulk water supply, dam construction, flood control, land drainage, ground water development and MWI reserve WSP.
Water Works Development Agencies (WWDAs, formerly Water Services Boards)	Develop, maintain and manage national public water works until they are transferred to a county government, authority, joint committee or a WSP. They also provide technical services and capacity building to county governments.
Basin Water Resources Committee (BWRCs, formerly Catchment Area Advisory Committees)	Manage water catchments and facilitate establishment of Water Resource User Associations (WRUAs) at the sub-basin level,advise the WRMA, and also grant, adjust, cancel or make variations on water permits.
Water Resource User Associations (WRUAs)	Manage water resources and resolve water related conflicts.
Water Service Provider (WSP)	Defined in the Act as a company, public benefits organization or other providing water services and develop county assets for the licensed service area. WSPs are ultimately the responsibility of the county governments.

Water Related Organizations' New Titles and Structure (Water Act 2016)



Source: MWI, 2016 (Act No. 43 of 2016)

ANNEX 11. OUTLINE OF WSTF PSP PROGRAMME PROCESS

Stage	No	Action	Lead Actor(s)	Partners
1. CTCN TA Completion	1	Drafting a concept note	WSTF, UDP	
	2	Catalyzing finance	WSTF, UDP	Donors, MDBs, GoK
2. Programme Preparation	3	Finalizing of business model internally and with government agencies	WSTF	Central Government Agencies
	4	Establishment of detailed requirements and guidelines	WSTF	Regulatory Authorities, Participating financiers, Private companies, Kenyan Banks,
3. Programme Initiation	5	Announcement & Promotion of PSP Programme By WSTF	WSTF	Counties, Private Companies
	6	Capacity building of counties and companies		
4. Project identification and clustering	7	Capacity building of sub-county actors to identify projects	WSTF	WWDA, Counties, Private Companies
	8	Evaluate, select and approve projects to form cluster	WWDA (cross-county projects), Counties	Communities, Local Champions,
5. Cluster evaluation	9	Approval of clustered projects from relevant agencies	Counties	WASREB, BWRC
	9	WSTF PSP center approval of project clusters	WSTF	PSP Center, Role of Advisory Board
6. Joint Venture Formation and Financing	10	Counties join with Private companies to form joint ventures – form detailed financial structure	Counites Private companies	Facilitation by WSTF PSP Center
	11	WSTF loan approved for JV SPC's implementation of clustered projects	WSTF	JV, Role of Advisory Board
	12	Any remaining financing needs to be met from other sources by SPC	JV	Kenyan Banks, impact investment funds, etc.
	13	Franchises are formed for individual/sub-clusters of projects	JV	Local entrepreneurs
	14	WSTF releases funds to Joint Venture	WSTF	JV
7. Implementation	15	EPC	JV Private company	Subcontractors where needed
	16	Franchises implement the clustered projects with JV/WSTF oversight	Franchisees	JV
	17	JV company obligated for large scale repairs of project	JV	Franchisees
8. Monitoring and Evaluation	18	Framework should be developed to facilitate M&E at all levels	Advisory Board	All levels