

PROJECT INFORMATION DOCUMENT (PID) CONCEPT STAGE

Report No.: PIDC1127

Project Name	Coastal Region Water Security and Climate Resilience Project (P145559)
Region	AFRICA
Country	Kenya
Sector(s)	Water supply (50%), General water, sanitation and flood protection sector (25%), Public administration- Water, sanitation and flood protection (15%), Irrigation and drainage (10%)
Theme(s)	Water resource management (40%), City-wide Infrastructure and Service Delivery (30%), Climate change (20%), Rural services and infra structure (10%)
Lending Instrument	Investment Project Financing
Project ID	P145559
Borrower(s)	The National Treasury
Implementing Agency	Ministry of Environment, Water and Natural Resources
Environmental Category	A-Full Assessment
Date PID Prepared/ Updated	11-Nov-2013
Date PID Approved/ Disclosed	12-Nov-2013
Estimated Date of Appraisal Completion	16-Apr-2014
Estimated Date of Board Approval	01-Jul-2014
Concept Review Decision	Track II - The review did authorize the preparation to continue

I. Introduction and Context

Country Context

The Kenyan profile reveals strong regional disparities in the distribution of poverty. The country is currently emerging from a strong, yet uneven, decade of growth. From 2000 to 2009, annual growth rates averaged 3.9 percent, a notable increase from the previous decade's average of 2.3 percent. Additionally, post-election violence throughout 2008, combined with a severe drought commencing in 2007, the global financial crisis, along with high food and fuel prices, contributed to a dramatic decline in the country's economic performance and a negative per capita growth rate in 2008.

And yet the economy, underpinned by structural reforms, a new Constitution and a spur in infrastructure investment, recovered in 2010, climbing to a rate of 5.6 percent. A series of domestic

and external shocks reversed this momentum, decreasing growth rates to approximately 4.5 percent. While national absolute poverty has declined, it remains high compared with neighboring countries such as Tanzania and Uganda with the lowest incidence in the Central province and the highest in the North Eastern province). Inequalities in the distribution of incomes in urban areas continue to rise.

Kenya's economy is vulnerable to erratic climatic patterns and a fragile natural resource base, including limited water availability. Tourism and agriculture, followed closely by industry and services, are the main drivers of growth. The World Bank estimates that climate variability costs the country an average of 2.4 percent of GDP per year and water resources degradation, another 0.5 percent, seriously affecting the country's competitiveness. Climate change threatens to result in additional stresses related to rising temperatures (increasing system evaporation and irrigation requirements) and uncertain changes in rainfall. Other environmental threats are numerous, as evidenced by unsustainable water abstractions, poor land use practices, deforestation, encroachment in recharge areas, and pollution – which have already seriously degraded many critical watersheds.

The coastal region in particular is faced with complex challenges that may hinder the realization of its full development potential, including rampant poverty, youth unemployment (which may lead to religious radicalization and insecurity), gender disparity, food and nutritional insecurity, natural resources degradation, climate change and variability, and inadequate infrastructure. Five of the six counties in the Coastal region (i.e. the areas that were part of the Coast Province prior to devolution in 2013) are among the fourteen counties regarded as most marginalized nationwide due to historical injustices and other factors. This area is also particularly susceptible to climate variability and change, not only from changes in upstream hydrology, land degradation, and water quality but also from sea-level rise.

In 2009, the population of the Coastal region was estimated at 3.3 million, of which about 81.2% reside in just three counties, namely Mombasa, Kwale and Kilifi. The population of the Coastal region is estimated to more than double to about 8.0 million in 20 years.

Kenya's Vision 2030 aims to transform Kenya into a newly industrializing, middle-income country providing a high quality life to all its citizens by the year 2030. The Coastal region promises significant economic potential for Kenya as a whole. The province harbors several flagship projects, including the US\$ 20 billion Lamu Port and Southern Sudan–Ethiopia Transport Corridor (LAPSSET), Mombasa Port Expansion, Dongo Kundu bypass, etc. The latter two projects are part of the grand plan of creating a Mombasa Free Trade Zone similar to Dubai, which ultimately costs about 200 billion Shillings (US\$ 2.35 billion). Mombasa is the largest seaport in East Africa and plays an important role in both the country's and the region's economy because the commercial imports and exports of its neighboring land-locked countries transit through Mombasa. The city is also a popular tourist destination, attracting the majority of tourists to the country. This generates significant pressure on infrastructure, housing, transport and social services, as well as on the environment and water resources.

Sectoral and Institutional Context

Kenya's people and the economy are highly vulnerable to erratic climatic patterns and limited water availability due to their reliance on key sectors (agriculture, tourism, hydro-energy, etc.) that depend on rainfall and water availability. In the last two decades from 1992-2012, Kenya tops Africa in terms of people affected by droughts (~46m people) and stands fifth in terms of those affected by

floods (~2.8m people) in the same period. Kenya has limited freshwater endowments and is classified as a chronically 'water scarce' country in absolute and relative terms. It faces the additional challenge of high inter-annual and intra-annual rainfall variability. Climate variability and hydro-climatic shocks (droughts and floods) impact disproportionately on the poor, and climate change is projected to exacerbate existing climate risks and water resource constraints. Kenya has yet to adequately manage its highly variable hydrology to improve climate resilience, as evidenced in decades-long underinvestment in water infrastructure.

The government has planned a large-scale water investment program to address these challenges and to close the massive water infrastructure gap that has been estimated at US\$ 5-7 billion. This is planned to be supported by the establishment of a strong institutional and legal structure that aligns the water sector to the Constitution of Kenya, 2010 (with a Water Resources Bill being prepared to fit with the new devolution principles). The government has requested that the World Bank support these ambitious plans for the water sector through a long-term, transformational program aimed at building water security and climate resilience for economic growth. The Kenya Water Security and Climate Resilience Program responds to this need, and is an integral element of the 2010-2013 Country Partnership Strategy. The first phase of this program, the Kenya Water Security and Climate Resilience Project (KWSCR-1) was approved by the IDA on June 18, 2013.

In looking ahead, a special focus is required on the economically-critical Coastal region (the areas that were part of the Coast Province prior to devolution in 2013), and particularly on Kenya's second-largest city, Mombasa. The current level of water infrastructure development is not in tune with the envisaged economic potential of the Coastal region. There is an obvious water infrastructure deficit, dissipating the impacts of other on-going and planned flagship projects unless action is taken now. The total water demand for the Coastal region has been projected at 364,243 m³/d for 2015, and is expected to more than double by 2035 (887,253 m³/d). About half the demand is from Mombasa County. Currently, the Coastal region shows a water supply deficit of about 215,043 m³/d. The situation is particularly critical in Mombasa, where the existing supply satisfies only 30% of the demand. Non-revenue water (NRW) in the city accounts for about 45-50% of the water supply due to inefficiencies in water distribution systems. The Mombasa Water and Sewerage Company (MOWASCO) currently has about 73,000 registered or connected customers, out of which only 34,000 are active, obtaining water albeit on a rationed basis (i.e., only for about six hours a day). Through support from AFD, MOWASCO has piloted a Non-Revenue Water (NRW) reduction program. And under WaSSIP Additional Financing, it is expected to receive more support for reduction of NRW through improved network modeling, metering and billing, as well as technical support to conduct a customer identification survey.

In this context, a Water Supply Master Plan study for the Coast / Mombasa was carried out under the Water Supply and Sanitation Improvement Project (WaSSIP), financed jointly by the World Bank and AFD. This and other studies have confirmed that the Coastal region has water resources available to satisfy the water demand of the region at least until 2035. Those studies have also confirmed that the Mwache Dam is a priority source of water to meet demand and increase water security for Mombasa. There is substantial work required to further strengthen Kenya's climate resilience, including for climate risk assessments to existing and proposed water infrastructure.

Relationship to CAS

The overall Water Security and Climate Resilience Program (KWSCR) is included in the Country Partnership Strategy (2010-2013). In June 2013, the World Bank approved the Kenya Water

Security and Climate Resilience Project (KWSCR-1), as the first operation under this program. It focuses on the progressive development of a water investment pipeline, integrated and participatory basin planning, and technical assistance to the evolving water sector institutions and sector reforms at a critical period of constitutional and political transition. The proposed Coastal Region Water Security and Climate Resilience Project (KWSCR-2) is the second operation under the program. A new Country Partnership Strategy for 2014-2018 is under preparation, and is expected to maintain a strategic focus on the water sector.

KWSCR-2 also contributes significantly to the World Bank Group's goals of ending extreme poverty and promoting shared prosperity, particularly given the historical and current poverty and inequality situation of the coast province relative to other provinces of Kenya. Access to water for domestic use will improve sanitation, general health conditions, and quality of life among poor urban and rural households. Poor urban households that currently rely on expensive water sources will experience a net positive income effect due to access to relatively cheap water supply source. In addition, the irrigation and rural development component of the project will contribute to food and nutritional security of the urban and rural poor that spend a substantial proportion of their income on food. As this component would affect food availability and prices, it would have a significant impact on poor households in the project area.

The proposed project is also aligned with the World Bank Group's Africa Regional Strategy, specifically Pillar Two: Vulnerability and Resilience. Reducing vulnerability and building resilience in the water sector is the central purpose of the proposed project. To this end, the Mwache Dam and related infrastructure would act as a buffer against the most severe hydrologic shocks (including floods and droughts), address food insecurity, low productivity and constrained growth in Mombasa county and the Coastal region more broadly.

The proposed project would build on and complement other ongoing activities in the broader water program in Kenya, including the World Bank Water and Sanitation Service Improvement Project (WaSSIP), which supported the Master Plan for the coast, under which the Mwache Dam project was prioritized for implementation, as well as WSP support to the marginal areas of Mombasa County.

II. Proposed Development Objective(s)

Proposed Development Objective(s) (From PCN)

The project development objective of the KWSCR-2 is to improve water security and build climate resilience in the Coastal Region.

Key Results (From PCN)

Key results that the proposed Project will support are:

- (i) Provision of 67.9 MCM/year (186,000 m³/day) of water
- (ii) Development of 2,500 ha of irrigation
- (iii) Enhancement of livelihoods of 62,830 direct beneficiaries through irrigation and rural development
- (iv) Confirmation of financing for the Water Treatment Plant and water transmission lines

III. Preliminary Description

Concept Description

The KWSCR program adopts a long-term programmatic approach, whereby a series of investment operations linked to the same overarching objective are undertaken. The first operation in the series, the Kenya Water Security and Climate Resilience Project 1 (KWSCR-1) supports laying a strong institutional and legal foundation for sector growth and sustainability and the roll-out of Kenya's vast water sector investment program. This approach provides the necessary flexibility for the phasing of investment operations to address opportunities and challenges as they emerge. It is expected that the KWSCR will be implemented over a period of ten to twelve years, which demonstrates the Bank's long term commitment to Kenya's water sector.

The lending instrument is Investment Project Financing (IPF) that supports a series of projects (SOPs). The approach proposed allows the preparation of a series of independent projects under a common program framework. Participants in the series may be national and sub-national entities that address water security and climate resilience issues through their involvement in the program. In this SOP approach, interested parties may opt for participation in the program, but there is no interdependency required among specific projects in the series.

The Coastal Region Water Security and Climate Resilience Project (KWSCR-2) is the second operation in the series, focusing on water security and climate resilience in the coastal region and complements the first project that focuses on national capacity-building, investment pipeline development, and a targeted irrigation investment in western Kenya.

The proposed Project would have four components, subject to the availability of financing, focusing on: Mwache Dam and Related Infrastructure (C1); Irrigation and Livestock Development (C2); Rural Area Development and Water Resources Management; (C3) and Project Management (C4). Each component is briefly discussed below.

Component 1: Mwache Dam and Related Infrastructure

This component will finance the construction of the main dam (Mwache), three check dams, raw water transmission lines (gravity-fed) to the treatment plant, transport infrastructure (approach road to dam site and bridges), electromechanical equipment and buildings related to the dam site i.e. all of the infrastructure needed to supply water (raw water, before treatment works) to the Mombasa water supply system. The component would also include implementation of the environmental management plan.

The proposed dam is a concrete gravity dam with height of 77.9m, crest length of 425 m and with a reservoir capacity of 118 million m³. The dam is expected to supply 186,000 m³/day (67.9 MCM/year) for urban water supply (all of which will go to Mombasa County), as well as water for irrigation to a nearby command area of about 2,500 ha. The hydrological assessment, including climate change impacts and the sediment management plan preparation are being finalized. Whilst the sensitivity of the water supply reliability of the dam reservoir to climate change was considered using an increased coefficient of variation in discharge flow pattern, a comprehensive sedimentation management plan, involving catchment management, reservoir operation, etc. is under preparation to minimize sediment deposit impacts on water supply reliability in the long run. The dam design and safety plans are being reviewed by a dam safety Panel of Experts and subject to further modifications. The dam site is located across the Mwache River at the Fulugani village (Kwale

County), about 22 km west of the city of Mombasa in the Coastal region of Kenya and near the coastline.

It is expected that the final design of Mwache dam will consider uncertainties related to future climate scenarios, as well as other uncertainties such as those related to population growth and changing patterns of urbanization and the expansion of informal, small-holder irrigation.

Component 2: Irrigation and Livestock Development

Component 2 would support the development of an irrigation scheme of 2,500 ha in Kwale county, as well as intensive training of farmers through participatory approaches, introduction of new high value crops, a marketing study and development of market linkages, strengthening of the existing irrigation service, and formation of, and capacity building for, an irrigation Water Users' Association(s). The direct target beneficiaries of the proposed irrigation scheme at full development would be approximately 25,830 people – i.e. about 2,200 households including that are currently farming land in the proposed irrigable area, and some 1,500 other households who would gain incremental wage employment opportunities on the new irrigated farms and through related economic activities. The component will increase the value of food production in the area from about Ksh 240 million to about Ksh 2 billion per year contributing to enhanced food security in the coastal region and the development of food exports to other regions of Kenya.

Key activities under this component would include: (i) infrastructure for 2,500 ha of irrigation producing food crops and livestock products for home consumption and the local market as well as horticultural crops for the local and export markets; (ii) training of and capacity building for irrigation farmers' organizations, including technical support for the formation of Irrigation Water Users Associations (IWUAs) and other farmers' organizations to empower them to operate and maintain the irrigation system and contract with the market for improved access to agricultural inputs and marketing of their products; (iii) a study of the potential local and export markets to absorb horticultural produce from the project, promotion of market linkages between irrigation farmers and agribusinesses, including exporters (such as VEGPRO), to support sustainable and inclusive agricultural production and development of value chains; (iv) strengthening public extension service through the Farmer Field School (FFS) approach to ensure that work is relevant to the needs of resource-poor farmers; and (v) establishment of a fund to provide seed capital to 'kick-start' irrigated and livestock production.

As climate change will increasingly impact rain-fed agriculture, the development of irrigation in the area will improve climate resilience, particularly through the avoided damage from increasingly frequent climate events and changes in rainfall patterns. Indeed, a recent World Bank paper (Climate Change, Agriculture and Food Security in Tanzania, September 2012) noted that food security in 110 districts in neighboring Tanzania appears likely to deteriorate as a consequence of climate change, with this decline coming through reductions in agricultural production, principally food production, due to increases in temperature and changes in rainfall patterns. In the dry scenario, average agricultural production levels are more than 10 percent below the levels of a hypothetical no climate change scenario by mid-century. In light of this, it is clear that a move away from rain-fed agriculture will help to buffer the region's economy to climate change impacts, and contribute to climate resilience.

Component 3: Rural Area Development and Water Resources Management

This component is aimed at developing and uplifting the livelihoods (economic and social) of communities in the immediate Mwache area as well as other areas in Kwale County and would be geared to improving the livelihoods of the PAPs (i.e. approximately 5,300 households – approximately 37,000 people) in Mazeras, Mnyenzi, Chigato and Mwatate sub-locations of Kinango District. It will also include targeted Water Resources Management activities, both in the catchment area as well as more broadly in the Coastal Region.

The rural area development will include potential development initiatives that the communities in the area consider vital and which can be off shoots of the Mwache dam including for instance; fisheries, Small and Micro-Enterprises (SMEs), water supply and sanitation, health, ecotourism, watershed management and other social infrastructure.

These activities will be conducted in accordance with a Rural Area Development Plan (RADP) that will (i) define effective strategies to meet the needs of communities beyond the immediate area of influence to improve or at least restore their livelihoods, incomes and living conditions, in a manner that (ii) coordinate and synchronize these strategies with ongoing programs and projects that have been endorsed by governments and donors and (iii) create opportunities for rural development targeting the larger communities in the Project area, through direct funding by the Project and/or benefit sharing of revenues from the Project.

This component will also include support for improved climate-resilient water resources management. This will be done through support for WRMA and the associated basin/local offices in the Coastal region, in terms of support for institutional infrastructure, information infrastructure, improved decentralized and multi-sectoral planning, and climate risk assessments for upcoming investments and associated water systems. The component could also include activities targeted at understanding and addressing key issues in the greater catchment area, such as soil and water conservation, and erosion control in key hot spots to reduce sediment production and mitigate siltation. A key focus will be to improve climate resilience in this critical area of Kenya.

Promoting pro-poor, climate-resilient growth in the overall catchment area for Mwache is crucial to achieve the expected benefits from the multipurpose Mwache dam (i.e. water supply for Mombasa, increased agricultural production, and subsequent economic growth). Watershed management including environment, agriculture, irrigation, forestry, livestock, water supply and energy, among others should be tackled on a participative, multi-sectoral and cooperative manner, focusing at the local community levels for service delivery and support to sustainable co-management of natural resources.

Component 4: Project Management

This component will establish and finance a Project Implementation Unit (PIU) within the Coastal Development Authority (CDA). It is currently envisioned that the PIU will take the lead on execution of project activities (including preparation of tender and design documents, technical supervision of works, and contract management as well as planning, coordination and reporting for all project activities. The PIU will be supported by an Implementation Support Consultant (ISC), which could be a consortium of firms with relevant national and international experience. The ISC will be embedded in the PIU and will be responsible for delivering key activities, including project planning and reporting, civil works supervision, implementation of social and environmental

safeguards instruments, etc. The ISCs will also provide capacity building, including in technical areas and for general fiduciary and safeguards functions (in coordination with PMU).

The central Project Management Unit (PMU), established under Phase 1 of the program, will maintain overall fiduciary responsibility and supervise execution, including the delivery of contracts. While the PIU will be responsible for coordinating the implementation of environmental and social safeguards instruments (including the ESMP, RAP and VMGP), the PMU will be responsible for supervising timely and appropriate implementation of safeguards instruments. The specific mandate and role of the PIU and PMU relative to other key stakeholders (including CWSB, MOWASCO, Mombasa County, and Kwale County) will be clarified in a Memorandum of Agreement that is currently under preparation.

Note: At present, the financing envelope for the activities above (Mwache Dam and related infrastructure, full development of the irrigation scheme and livestock activities, rural area development and water resources management, and project management), as well as the Water Treatment Plant and transmission lines associated with the Mwache Dam, are estimated at US\$ 360 million.

The Bank and MEWNR are assessing different options for financing activities that exceed the US\$ 200 million IDA envelope. For financing the Water Treatment Plant and transmission lines associated with the Mwache Dam, MEWNR is assessing financing options including investments from Mombasa County and private sector participation. A potential Public-Private Partnership (PPP) structure is currently being explored by the PPP unit in The National Treasury. Under the PPP structure, a private company could build, operate and/or finance these investments on the basis of a long term Water Purchase Agreement (WPA) signed with a government off-taker. It is also likely that additional IDA funds would be available in subsequent years to contribute to the overall financing needed.

IV. Safeguard Policies that might apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01	✗		
Natural Habitats OP/BP 4.04	✗		
Forests OP/BP 4.36			✗
Pest Management OP 4.09	✗		
Physical Cultural Resources OP/BP 4.11	✗		
Indigenous Peoples OP/BP 4.10	✗		
Involuntary Resettlement OP/BP 4.12	✗		
Safety of Dams OP/BP 4.37	✗		
Projects on International Waterways OP/BP 7.50		✗	
Projects in Disputed Areas OP/BP 7.60		✗	

V. Financing (in USD Million)

Total Project Cost:	360.00	Total Bank Financing:	200.00
Financing Gap:	160.00		

Financing Source	Amount
BORROWER/RECIPIENT	0.00
International Development Association (IDA)	200.00
Total	200.00

VI. Contact point

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