

PROJECT INFORMATION DOCUMENT (PID)
APPRAISAL STAGE

Report No: 84401

Project Name	Cities and Climate Change – PPCR - Additional Financing
Region	AFRICA
Sector	Sub-national government administration (50%); General water, sanitation and flood protection sector (50%)
Project ID	P146059
Borrower(s)	Republic of Mozambique
Implementing Agency	Administration of Infrastructure for Water and Sanitation (Administração de Infra-Estruturas de Água e Saneamento – AIAS)
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Environment Category	☐ A ☒ B ☐ C ☐ FI ☐ TBD (to be determined)
Date PID Prepared	January 31, 2014
Date of Appraisal Authorization	February 5, 2014
Date of Board Approval	May 22, 2014

A. Country and Sector Background

1. Mozambique is a pilot country for the PPCR and its Strategic Program on Climate Resilience (SPCR) was prepared by the Ministry of Environmental Affairs Coordination (MICOA) and the Ministry of Development and Planning (MPD) with support from the World Bank, the African Development Bank and the International Finance Corporation and was endorsed on June 2011. The overall goal of Mozambique's SPCR is: *“Improved quality of life and long-term resilience to climate change for vulnerable people living in areas exposed to climate change.”* The Mozambique - SPCR sets-out a program of policy and institutional reforms, pilot investments, studies and knowledge management initiatives to integrate climate risk and long-term climate resilience into core development planning and implementation, with the aim to generate transformational changes through scaled up actions in the priority sectors. The SPCR pilot investments are focused on the following key priority areas: coastal cities; transport; water resources management; agriculture; natural resources; and forestry.

2. The proposed Additional Financing (AF) is one of the three World Bank-supported pilot¹ investments included in the SPCR for Mozambique. The three pilots are: (i) Transforming hydro meteorological services (approved by World Bank board in April 2013; (ii) Introducing climate-resilience into the design and management of Mozambique's roads; and (iii) Green infrastructure and flood control in the city of Beira. Through full integration with the MCCCCP, which works

¹ Other PPCR funded pilots in Mozambique are financed by the AfDB and IFC.

with 20 municipalities the AF² will advance broader PPCR ambition of support for ‘transformative’ interventions that build climate resilience.

3. The proposed Additional Financing (AF) will scale-up the development impact of the MCCCCP by means of additional activities related to green infrastructure under Component 2 - Enhance Resilience of Strategic Municipalities in Coastal Cities. The City of Beira is considered to be the municipality most exposed to current and future climate risks in Mozambique³. The project will seek to build climate resilience by supporting the planning and sustainable management of green infrastructure. This will reduce urban flooding and deliver a range of other environmental benefits to the inhabitants of the city. The AF will also seek to build on experience in Beira by extending the implementation of methodological approaches to the identification and sustainable management planning of urban green infrastructure to other municipalities in Mozambique – including of green mapping and approaches to develop longer-term, sustainable financing for the management of green infrastructure assets.

4. Consistency with the PPCR goals. The proposed AF will contribute to the PPCR goal of initiating transformational change⁴ through adopting an inclusive and participatory process to design and implement the AF. The AF will introduce innovative approach to city planning, focusing on the long-term climate risk and resilience that could have transformative impacts in the area of urban development in the country as whole. The proposed green infrastructure development under the AF will create tested technical and knowledge basis, including guidelines, for the dissemination in other cities in Mozambique, leveraging the PPCR transformative impact.

5. Original Loan. The MCCCCP is a US\$120 million Sector Investment Loan (SIL), approved on April 3, 2012, which became effective July 18, 2012. The Project Development Objective (PDO) is to strengthen municipal capacity for sustainable urban infrastructure provision and environmental management to enhance resilience to climate related risks. The project has the following two components: (i) strengthening the municipal sector (US\$35 million), and (ii) enhance resilience of strategic coastal cities to climate change (US\$85 million). Aligned with the different nature of each component, the project has two implementing agencies: the Ministry of State Administration (MAE) implements Component 1, and the Administration of Water and Sanitation Infrastructure (AIAS) implements Component 2. The AF will scale-up implementation of Component 2 by financing green infrastructure investments to protect and

² The Government of the Republic of Mozambique (GOM) has requested that this SPCR pilot is processed as an AF to the MCCCCP (see Annex 3). This request is in line with the Bank priority of seeking to streamline and harmonize activities within existing institutional structures, and with the existing program of work, while also avoiding fragmentation of portfolio.

³ Impact of climate change on disaster risk in Mozambique, Mozambique National Institute for Disaster Management (INGC), study funded by Denmark, United Nations Development Programme (UNDP), and the German development agency GTZ (2010); Mozambique Country Note on Disaster Risk Management, World Bank (2009); The Economics of Adaptation to Climate Change, World Bank (2010); Mozambique Strategic Program for Climate Resilience, World Bank (2011); Turn Down the Heat: Why a 4⁰ World Must be Avoided, World Bank (2013).

⁴ On October 2013, World Bank President Jim Kim wrote the article “How Ho Chi Minh City’s Filthy Canal Became a Park. The article praised the transformational results of a Bank financed project that supported the transformation of this once-filthy waterway into a model for improving urban natural environment in difficult settings around the world, which controls floods in a city severely affected by extreme climate impacts, eliminated water-borne diseases and provides highly appreciated recreational opportunities.

improve the natural environment within the urban area that plays a key role in abating flooding in the city of Beira. These include: the banks of the Chiveve River, sections of the banks along the open-air canals, and some low-lying areas identified for flood contention basins. Lessons and experience from implementation at Beira city level will inform municipal planning support to 20 other cities covered by Component 1 of the MCCCCP. It is anticipated this will leverage the transformational impact of the PPCR-financed activities at the national level.

6. Status of Implementation and ISR ratings. Project implementation is rated satisfactory: for DO and IP, and for compliance with loan covenants. Financial Management (FM) rating has been downgraded to MS in the August, 2013 ISR because there is an unresolved FM issue related to the use of project funds for activities not eligible under the credit for Component 1 (explained in detail in paragraph 7 below). There are no environmental, social or other safeguard problems. The drainage feasibility study for Beira is being updated, which is also providing the inputs needed to initiate the preparation of the environmental and resettlement instruments. The procurement guidelines are being followed. As of October 30, 2013 the project has disbursed US\$9.3 million of the International Development Association (IDA) Credit. Current disbursement arrangements are adequate and IFR will continue to be used as report method for the original and AF funding sources.

7. Rationale for Additional Financing. Recent analysis indicates that Mozambique is one of two African countries on the list of 10 high risk countries globally that face the greatest risks to climate change. The City of Beira is considered to be the most exposed to current and future climate risks in Mozambique. Rising sea level is gradually contributing to severe erosion along the coastline adjacent to the city center. High ground water table, tropical cyclones and severe storms regularly cause severe flooding in the city and these have a particular impact on poorer households in the lowest lying areas of the city. Encroachment of urban development into mangroves, existing ‘green space’ and into areas that help drain the city are exacerbating exposure to climate risks by reducing storm protection and downward infiltration of rainwater, and thus increasing flooding. This combination of issues poses a challenge to a number of Mozambique’s coastal cities. Efforts to tackle these problems in Beira could therefore generate lessons and experience that would be of relevance to other urban areas in Mozambique.

8. Urban green space – including parks, creeks, undeveloped floodplain areas, dune and mangrove systems play a key role in reducing climate risks to the city, by receiving, absorbing and channeling excess water during flooding. While the dunes and mangroves (now the focus of support from other donors, including Switzerland) provide much needed protection against coastal erosion and severe coastal storms in Beira, parks and undeveloped floodplain areas help reduce flooding in the city by soaking-up rainfall. Natural creeks also play a key role by providing natural drainage to complement the role played by the existing, man-made system of open drainage canals built during the 1960’s and currently being rehabilitated with IDA support as part of MCCCCP. Unfortunately, many of the city’s creeks are becoming blocked through lack of urban planning enforcement, fly-tipping and sedimentation. Furthermore, parks and floodplains that help soak-up flash floods are being encroached. Hence these ‘free’ environmental services are gradually being degraded. This also contributes to the burden of vector- and water-borne diseases in Beira, including malaria and cholera.

9. To address the above issues, the AF would finance activities that improve planning of urban green infrastructure for building climate resilience, help restore the functioning of natural drainage channels in the city to complement the ongoing renovation of the open canal system and then promote the sharing of knowledge and experience with other cities. More specifically, the AF financing would (i) map, delineate and improve the planning of green infrastructure assets in the city, (ii) prepare concept and detailed designs for green infrastructure investments for selected areas within the city of Beira, including: a linear, tidal, parks along the Chiveve River, along sections of the open-air drainage canal banks, and along low lying areas identified for flood retention basins, (iii) undertake public works to implement the green infrastructure investment in the selected areas, and (iv) promote the sharing of knowledge with government, municipalities and key stakeholders by supporting multiple events to disseminate information on the green infrastructure benefits and detailed technical issues.

10. In addition, the proposed AF would increase the city of Beira capacity to address climate resilience by protecting and enhancing ecosystem services, which includes biodiversity, drainage and flood mitigation improving shade and cooling effects within the city and reducing vector- and water-borne disease burdens through better environmental management. This goes beyond “business-as-usual” practices in the urban infrastructure provision and environmental management. Also, the PPCR funds provided to this AF will allow Mozambique to pilot in a vulnerable coastal city the green infrastructure approach to increase climate resilience. Many cities in other countries have already incorporated green infrastructure as a key flood control feature. However in Mozambique, the proposed green infrastructure investment would be the first. The preliminary studies and consultation events carried out to outline the proposed green infrastructure investments have triggered significant interest from the communities and in particular from the municipal authorities. The information reached other municipalities, which have contacted government authorities and the donors to demonstrate interest in similar green infrastructure investments in their cities.

11. A comprehensive urban-environmental initiative supporting strengthening the Municipality of Beira resilience to present and future climate-related impacts has been built by the donors’ community. Activities aligned with this initiative include: (i) ongoing development of urban and port development plans supported by the Netherlands, (ii) rehabilitation of the coastal protection infrastructure, supported by Switzerland; (iii) implementation of an early warning system supported by German Cooperation through GIZ; (iv) rehabilitation of the sanitation and underground drainage systems, supported by the European Development Bank; (v) ongoing improvements of the municipal urban-environment and financial systems, supported by Denmark, Switzerland and Austria; (vi) increasing municipal capacity to manage drainage systems (under preparation), supported by the Nordic Development Fund; (vii) improvement of the hydraulic capacity of the Chiveve River (under preparation), supported by the German Cooperation, through KfW. Also aligned with this broad donors’ initiative, the ongoing IDA-financed MCCCCP finance activities to support the sustainable rehabilitation of the drainage canals which takes into account climate change considerations. The proposed AF to the MCCCCP will further enhance Beira resilience to present and a future climate impact by providing support to another critical issue - protection of natural drainage, which is widely acknowledge by the donors’ community as a key issue, but has not yet received direct financing support.

12. Primary beneficiaries are the poor who are most affected by floods and the consequent losses of assets and diseases outbreaks, as well as by the lack of access to urban amenities such as green and recreational areas. Secondary beneficiaries include businesses, institutions and residences that are also at risk of flooding as well as all Beira's inhabitants in general. These interventions will generate multiple benefits for the population of Beira. They should (i) reduce exposure to floods and increase the city resilience to cope with the expected scenario of increasing severity of intense rainfall events as predicted by a number of climate models; (ii) create disincentives for irregular urban encroachment on these sensitive natural environments; (iii) create recreational alternatives in the city; (iv) reduce malaria, cholera and diarrheic outbreaks associated with each flood event; (v) contribute to abate the urban phenomena of the 'heat island effect'; and (vi) generate lessons and experience for other municipalities. The design solutions adopted and the activities already financed under the original project provide for increasing the overall sustainability of these interventions. Among the primary beneficiaries, women and children will benefit the most because they constitute the group most exposed to floods, permanent humidity in their homes, and direct contact with flood water highly contaminated with untreated sewage, and, in consequence, with water-borne diseases, since they tend to stay longer in the area they live, while men usually stays longer away from home.

13. PPCR- Beira Urban Pilot. The proposed AF is one of the three World Bank-supported pilot investments included in the Strategic Program for Climate Resilience for Mozambique (SPCR). The SPCR was prepared by the Ministry of Environmental Affairs Coordination with support from the World Bank, the African Development Bank and the International Finance Corporation. The three pilots are: (i) Transforming hydro meteorological services (approved by World Bank board in April 2013; (ii) Introducing climate-resilience into the design and management of Mozambique's roads; and (iii) Green infrastructure and flood control in the city of Beira. The overall goal of Mozambique's SPCR is: *"Improved quality of life and long-term resilience to climate change for vulnerable people living in areas exposed to climate change."* Through full integration with the MCCCCP, which works with 20 municipalities the AF will advance broader PPCR ambition of support for 'transformative' interventions that build climate resilience.

B. Objectives

14. The Project Development Objective is to strengthen municipal capacity to sustainably provide urban infrastructure that reduces the risks of climate related impacts.

C. Project Description

15. The proposed AF will finance climate resilient planning and improved management of green infrastructure to increase resilience of Beira to control floods and address future climate change. The green infrastructure investments will improve and protect natural drainage which has been spared from urban encroachment. These, together with the man-made drainage canals, function as integrated system to control floods in the city. These systems reduce floods by lowering the ground water table levels throughout the year and by evacuating/storing storm water, especially when heavy rains and high sea tides coincide. These integrated flood control systems in Beira are in need of urgent improvements and protection to further respond to present

and further floods. The development of the proposed integrated soft and hard investments in green infrastructure will create tested technical and knowledge basis for the dissemination of this experience in other cities in Mozambique, leveraging the PPCR transformative impact.

16. The main green infrastructure investments under the AF will target a natural creek known as the Chiveve River (see images on Annex1). With a total 3.5kms length, the Chiveve constitutes a natural river in an urbanized area, which drainage basin covers approximately 1,320,000 square meters, encompassing Beira downtown commercial area and low to medium income residential neighborhoods. A significant extension of mangrove vegetation is still present in the downstream section of the Chiveve River, while in the upstream section the most significant natural feature is its wide flood plain, water-saturated most of the year, where exogenous vegetation such as grasses, reed and some bushes are dominant. Photos from the 1960's show a much wider Chiveve river and large extensions of mangroves within the urban area. Today, the Chiveve is much narrower, and its flood plains and mangroves smaller. These remaining green areas are covered by excessive sedimentation, garbage, and are used for open air defecation practices. However the remaining areas, which encompass the Chiveve river floodplain and banks and are still free from urban encroachment, continue to play an important role in draining ground and surface water, thus contributing to control flood levels in the city of Beira. Under climate change uncertainties, the key role played by this area to control floods significantly increases.

17. The project will also include preparation of map overlays showing green infrastructure assets of Beira municipality and scoping studies that also identify green infrastructure assets and management opportunities to increase climate resilience for five other climate-vulnerable municipalities. The scoping studies will be used to inform the preparation of climate resilient urban planning guidelines for Mozambique's municipal sector – with a focus on the sustainable management of green infrastructure. The guidelines will also reflect on experience from other approaches to building climate resilience of urban areas in Mozambique, including work undertaken by the Institute of Disaster Management (INGC). The recent application of LIDAR analysis to map digital elevation for some municipal areas (including of Beira and forthcoming use in Chokwe) and analysis and experience from USAID-and GIZ-funded work on urban resilience at local level

18. A preliminary conceptual design for the green infrastructure investments for the Chiveve River in Beira has been prepared. This conceptual design aims at enhancing the environmental services provided by the Chiveve River to the city of Beira, including flood control while also unleashing its potential as an urban amenity. In order to achieve this potential, main green infrastructure investments proposed include: (i) removal of excessive accumulated sedimentation covering the mangrove trees respiratory roots (pneumatophores) throughout the river floodplain area, which causes the degraded condition of this ecosystem, hinders the seedlings to emerge and triggering the visible lack of biodiversity, while also reducing the river flood plain storage capacity– this must be carried out by hand or by usage of small devices to avoid further damaging the mangrove trees while also preserving the natural wetland system; (ii) improvements in the existent secondary drainage system draining to the creek to increase its conveyance capacity while also adopting technical solutions to lessen urban run-off into the creek in order to control sedimentation; and (iii) improvements in the secondary road systems

surrounding the Chiveve River in order to ensure the roads play the double role of protecting the river natural functions while also contributing to unleash its potential as an urban-environmental asset.

19. The above activities will be complemented by investments to further boost amenity use such as (i) creation of a walking/biking pathway surrounding the mangrove vegetation along the 3.5kms long of the Chiveve River – this will clearly define the limits of the environmentally protected area along the river slopes and waterway, while also creating a recreational facility greatly appreciated in urban area; (ii) landscaping investments to improve and expand the green coverage, while also use landscaping solutions to create an urban amenity asset and clearly define limits of the area assigned to public use and environmental protection purposes; and (iii) provision of public urban furniture, such as benches, recreational equipment for children and adults, lavatories, as well as some selective structures to support economic activities compatible with the protection of the Chiveve River and that have potential to generate revenues for the maintenance of the proposed set of investments.

20. The proposed AF will also finance green infrastructure investments of similar nature (but of more limited scale) as described for the Chiveve River in other smaller areas that also play an important role in drainage and storage of storm water. A preliminary identification of these areas was carried out by the ongoing hydraulic assessments being undertaken for the rehabilitation of Beira drainage canals, financed under the MCCCCP. In addition, the ongoing preparation of the Beira Urban Master Plan, financed by the Netherlands Government, has also focused on identifying areas for flood contention basins. These two ongoing studies are being developed in an integrated manner and adopting consistent approaches. Based on these ongoing studies, areas suggested for the additional green infrastructure investments under the AF include: (i) Sections of the banks along the open drainage canal (which rehabilitation is funded under the MCCC) free from urban encroachment and offering enough space for some green infrastructure investments; (ii) Areas surrounding low lying areas where frequently ground water surfaces and storm water accumulates. The selection of these areas will be made as part of the ongoing technical studies financed under the MCCC for the rehabilitation of the drainage system in Beira. It is expected that green infrastructure investments in these areas will discourage urban encroachment by offering an attractive environment for community gathering and recreation, while also restraining impulses of irregular dumping of solid waste.

D. Financing

Source:	(\$m.)
Strategic Climate Funds	15.75
Total	15.75

E. Implementation

21. Implementation arrangements are expected to be the same as those used for MCCCCP. The MAE, and specifically its Directorate for Local Government Development (DNDA), is the implementing agency for Component 1. The AIAS, a specialized semiautonomous agency under the supervision of the Ministry of Works and Public Services (MOPH), is the implementation

agency for Component 2. As explained above, the proposed AF will finance activities to be included under the Component 2 of the original project. No significant change in AIAS implementation capacity in place would be required since the activities proposed for the AF would be implemented in the city of Beira where the original project already implements a number of activities. The implementation of the activities under the proposed AF will be coordinated the overall PPCR-financed activities in Mozambique. To ensure this coordination becomes effective, AIAS will maintain the PPCR project coordination unit informed with respect to the fiduciary, technical, and safeguard issues related to the implementation of the AF activities. In addition, AIAS will report to the PPCR project coordination unit on the results of the PPCR-AF funded activities in order to contribute to the broader PPCR M&E results monitoring framework at the SPCR level. Also, PPCR project coordination unit will be invited to participate in the supervision of the implementation of the proposed AF activities carried out by the Bank project team.

F. Safeguard Policies (including public consultation)

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

G. List of Factual Technical Documents

Mozambique Cities and Climate Change Project – Appraisal Document

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* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas

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